International Journal for Talent Development and Creativity

(*12*(2); *13*(1&2); *14*(1&2) 2026)



Volume 12 Number 2
Volume 13 Number 1
Volume 13 Number 2
Volume 14 Number 1
Volume 14 Number 2

ISSN: 2291-7179

ISSN: 2563-6871 (Online)

International Journal for Talent Development and Creativity

(*12*(2); *13*(1&2); *14*(1&2) 2026)





International Journal for Talent Development and Creativity

(*12*(2). *13*(1&2). *14*(1&2), 2026)

ISSN: 2291-7179 (Print)
ISSN: 2563-6871 (Online)

IJTDC Journal Subscription

For annual subscriptions to the IJTDC Journal ONLY (**two issues per year**), please fill out the following form:

First Name:		Last Name:	
Job Title:		Organization:	
Mailing Address:		Address (cont.)	
City:		State/Province:	
Zip/Postal Code:		Country:	

Please indicate if the mailing address is your: □ Home or □ Office Address

Work Phone:		Home Phone:	
Fax:		e-Mail:	

Media types (Note that electronic media type is only possible with institutional subscriptions):

☐ Paper ☐ Electronic ☐ Paper and Electronic

The reselling of personal subscriptions is strictly prohibited. Subscribers are requested to send payment with their order whenever possible. Issues will only be sent on receipt of payment.

The subscription fee is exclusive of GST/VAT. There are four types of subscription, including:

- Individual Subscription, Print only (US100);
- Individual Subscription, e-access only (US$50);
- Individual Subscription, Print & e-access (US$125);
- Institutional Subscription, Print & e-access (US$400).

☐ Please send me an invoice/receipt.

Method of Payment (must be paid in US dollars). The due amount can be made by Bank (wire) Transfer to:

- Account name: International Centre for Innovation in Education (ICIE),
- Account number: 1010270881
- Bank Name & Address: Sparkasse Ulm, Neue Str. 66, D-89073, Ulm-Germany.
- Bank Identifier Code (BIC): SOLADES1ULM
- German Bank Code: 63050000
- IBAN: DE86 6305 0000 1010 2708 81

Claims for issues not received should be made in writing within six months of the date of publication. No refunds will be made after the first issue of the journal for the year has been dispatched.

For our customers from North & South America, please send this form to:

Kari McCluskey,
Regional Director, ICIE Canada
Box 111, Domain, Manitoba, R0G 0M0, Canada
e-Mail: ka.mccluskey@lostprizes.com, ka.mccluskey@uwinnipeg.ca

Other customers, please send this form to:

Dr. Sandra K. Linke,
Director, International Centre for Innovation in Education (ICIE-Germany),
Postfach 12 40, D-89002, Ulm-Germany.
e-Mail: Sandra@icieworld.net; Sandra.linke@icieworld.net

This form can be obtained from the journal's page at:

www.icieworld.net
www.ijtdc.net

International Journal for Talent Development and Creativity

(*12*(2). *13*(1&2). *14*(1&2), 2026)

Founders:

Taisir Subhi Yamin
ICIE, Germany. Université Paris Cité, France.

Ken W. McCluskey
University of Winnipeg, Canada.

International Editorial Board:

Alessandro Antonietti, *Italy*
Andrea Torrey Balsara, *USA*
Bill Nicholl, *England*
Birgit Neuhaus, *Germany*
Claude Houssemand, *Luxembourg*
Dean Keith Simonton, *USA*
Dimitry Ushakov, *Russia*
Douglas P. Newton, *England*
Edward Nęcka, *Poland*
Fred A. Bonner II, *USA*
Jacques Grégoire, *Belgium*
James Kaufman, *USA*
Joseph Renzulli, *USA*
Katerina M. Kassotaki, *Greece*
Leandro Almeida, *Portugal*
Lynn D. Newton, *England*
Menachem Nadler, *Israel*
Mojca Kukanja Gabrijelčič, *Slovenia*
Sally M. Reis, *USA*
Susen Smith, *Australia*
Sylvie Tordjman, *France*
Tracy Riley, *New Zealand*
Uğur Sak, *Turkey*
Vlad P. Glăveanu, *Irland*

www.icieworld.net

Editor-in-Chief:

Karen Magro
Faculty of Education, University of Winnipeg, Manitoba, Canada.

Associate Editors:

Beverly Hayward
Sotheby's Institute of Art, London, UK.

Christine Boyko-Head
Mohawk College, Canada.

Cynthia Morawski
University of Ottawa, Ontario, Canada.

Derek Stoven
Faculty of Education, University of Winnipeg, Canada.

Don Ambrose
Editor, Roeper Review, Education and Sciences, Rider University, U.S.A.

Ghada Sfeir
University of Calgary, Alberta, Canada.

Julia Ellis
University of Alberta, Canada.

Kenneth L. Reimer
Faculty of Education, University of Winnipeg, Canada.

Michael P. Lukie
Faculty of Education, University of Winnipeg, Canada.

Roland S. Persson
School of Education & Communication, Jönköping University, Sweden.

Sandra K. Linke
ICIE-Germany, Ulm-Germany.

Todd Lubart
Institut de Psychologie, Université Paris Cité, France.

Trevor J. Tebbs
Psychology Department, Castleton State College, Vermont, U.S.A.

Copyright 2026 © the Authors, all articles are published under a CC-BY-NC-SA 4.0 license. **ISSN: 2291-7179** (Print)
ISSN: 2563-6871 (Online)

The International Journal for Talent Development and Creativity (IJTDC) is a refereed journal published twice a year by both the International Centre for Innovation in Education (ICIE) & Lost Prizes International (LPI): **www.ijtdc.net**

● All manuscripts will be peer reviewed through a double blind process. Manuscripts should be double spaced and should not exceed 8,000 words in length. Please follow the Publication Manual of the American Psychological Association, 7th Edition. ● Please submit three copies of your article - two that do not include your name or academic affiliation and one that includes your name, academic affiliation, and email address so that the editor can correspond with you. ● You will receive feedback on your manuscript in 4-6 weeks. ● Send manuscripts to the Editor-in-Chief: **Prof. Dr. Karen Magro**
e-Mail: k.magro@uwinnipeg.ca

ICIE THE INTERNATIONAL CENTRE FOR INNOVATION IN EDUCATION
LPI Lost Prizes International
Université Paris Cité
THE UNIVERSITY OF WINNIPEG



ulm university universität uulm





UNIVERSITÀ CATTOLICA del Sacro Cuore

Catholic University of the Sacred Heart





JÖNKÖPING UNIVERSITY
School of Education and Communication



Durham University

School of Education



MACH-III CENTER

University of Minho



Universidad do Minho



RIDER UNIVERSITY



University of Rijeka

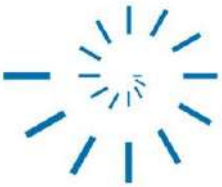
Univerza v Ljubljani
Pedagoška fakulteta





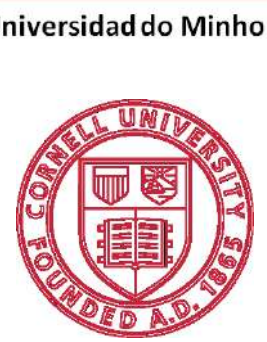
University of Ljubljana

Pädagogische Hochschule Schwäbisch Gmünd
University of Education





AALBORG UNIVERSITY
DENMARK



Cornell



Faculdade de Psicologia
UNIVERSIDADE DE LISBOA





UNIVERSITY OF LUXEMBOURG
Institute of Lifelong Learning and Guidance (LLLG)





ANADOLU ÜNİVERSİTESİ



UNIVERSIDADE PORTUCALENSE

Table of Contents

From the Founders:

The Architecture of Knowledge Production and Dissemination
- **Taisir Subhi Yamin; Ken W. McCluskey** **7**

From the Editor's Desk:

Advancing Scholarly Reflection in a New Era of Education: Encouraging Creativity and Connection Across the Disciplines
- **Karen Magro** **9**

Articles:

The Past We Inherit, the Future We Build: Some Thoughts on Creative Thinking Past, Present and Future
- **Lynn D. Newton** **21**

Cyber-Creativity in Education: Human-AI Pedagogies in the Space-Time Continuum
- **Giovanni Emanuele Corazza** **37**

Personal Integrative Thinking as a Cognitive Asset in a Complex World
- **Douglas P. Newton** **47**

Shaking up Shakespeare: A Reflective Essay on a Legacy of Playful and Relational Teaching Across K-12 and Post-Secondary Education
- **Harrison Campbell** **57**

The Effects of Context-Based Learning on Gifted Students' Transformative Potential in Addressing Environmental Issues
- **Zekai Ayık** **73**

Cultural Aspects in Motion and Arts as Staging: Arts-Based Pedagogy for Cultural Learning in Adult and Higher Education
- **Josie L. Andrews** **91**

AH-HA Moments: Remembering the Way Forward – Creating the Way Back
- **Christine Boyko-Head** **105**

Global Competencies: Fostering Creative Learning and Critical Thinking Through Artificial Intelligence, Promises and Perils
- **Abel Ebiega Enokela** **117**

Engaging K-12 Students in STEM via Planetary Exploration
- **Michael Paul Lukie; Edward A. Cloutis; Andrea Misner; Jesse Kuik; Amanda Ziegler** **127**

The Multilevel Criticality Framework: A Pedagogical Guide for Developing Global Competencies, Critical Literacy, and Democratic Agency in Adult Education
- **Hussein Chaitani** **149**

Incorporating Inquiry-Based Learning and Analytical Psychology into the High School Classroom
- **Michael Paul Lukie1; Kathleen Zawaly** **163**

Using Creative Problem Solving Strategies in Classrooms: Pre-service Teachers' Perspectives
- **Julia Ellis; Rowan Gazdewich; Malcolm Guglich; Leith Haines; Ava Henschel; Zach Hiltz; Natalie Kieser; Skylar LeBlanc; Jenna McChesney; Youssra Mohammed; Lyndzie Nguyen; Claire Parlee; Joel Turpin; Luke Yakemchuk** **179**

Well-Being in Education: An Ecological Systems Perspective
- **Lesley Eblie Trudel** **195**

From Self-Awareness to Collaboration Across Difference: A Developmental Framework for Identity-Centered Global Competence Development
- **Nadia Ibrahim- Taney** **203**

Creativity in Gifted Education: Educational Practices at the Institute for Creativity & Giftedness
- **Fernanda Hellen Ribeiro Piske; Joseph S. Renzulli** **211**

We don't know what we don't know: Primary Teachers' Attitudes to Academic Full-year Acceleration for Children in China and New Zealand
- **Wang, L; Wardman, J; Stephens, J.M.** **225**

We don't know what we don't know: Rethinking Giftedness and Talent Terminology
- **Roland S. Persson** **237**

Our Student Success Initiative: From Hypothesis to Contribution to Major Impact
- **Mike Babb** **243**

Stories that Teach: Dialogue, Narrative, and the Construction of Educational Knowledge in We Make the Road by Walking
- **Jessica Sokolowski** **259**

"She Noticed Me": Retrospective Accounts of Relational Teacher Noticing among Canadian University Academics
- **Kenneth Lloyd Reimer** **267**

Legacy in the Making: Mapping a maker of art, research and teaching, with reference to Make Medway Community Makerspace in Kent, England
- **Bev Hayward** **279**

From Iron to Gold: The Forge of Imagination Reflections on a Life in Education
- **Howard Esbin** **285**

Reflections of a Lifelong Learner
- **Humam Bishara Ghassib** **299**

Small Decisions, Small Acts, Large Impacts: A Letter Reflecting on a Beginning Scholar's First Year of Academic Administrative Practice
- **Derek Stovin** **305**

Interview:

Pioneering the Teaching of Creative Writing in Malta: An Interview with David Samuel Hudson
- **Daniel Xerri** **317**

Submission Guidelines

From the Founders:

The Architecture of Knowledge Production and Dissemination

Taisir Subhi Yamin ; Ken W. McCluskey

The evolution of education—particularly within the fields of giftedness, talent development, and creativity research—is undergoing a profound paradigm shift. Our global landscape is increasingly defined by geopolitical realignments, sociocultural shifts, environmental challenges, and the rapid integration of emerging technologies such as Generative Artificial Intelligence. In an era marked by such accelerated change, conventional educational systems face an urgent imperative. They must adapt to more agile, creative, and forward-thinking pedagogies. In response, our scholarly community must remain steadfast in its core mission—not merely to observe these transformations as passive chroniclers, but to actively architect the future of human excellence.

Now entering its 14th year of publication, the *International Journal for Talent Development and Creativity* (IJTDC) stands as a testament to institutional continuity, global connection, intellectual resilience, and scholarly rigor. Over the past decade and a half, the IJTDC has served as an essential engine for knowledge production, global knowledge dissemination, amplifying diverse perspectives and connecting researchers across continents. This special volume—titled **"The Continuum of Excellence: Synthesizing Intellectual Legacies for the Future (Part One: *12*(2), *13*(1&2) and *14*(1&2), 2026)"**—marks a significant milestone in our ongoing mission. As the official journal representing the International Centre for Innovation in Education (ICIE), the IJTDC remains deeply committed to bridging foundational scholarship with transformative innovations, ensuring that cumulative wisdom directly informs modern educational practice.

Central to this effort is the recognition that high-quality, evidence-based scholarship is the bedrock of meaningful educational progress. In an interconnected world, rigorous research transcends regional boundaries, yielding valid insights that inform public policy, elevate classroom pedagogy, and foster equity across diverse cultural contexts. By prioritizing methodological rigor, alternative pedagogical paradigms, empirical depth, and ethical inquiry, high-quality research distinguishes short-lived educational trends from sustainable, transformative practices that unlock human potential. Fostering these elevated research standards on a global scale ensures that innovations in talent development remain universally relevant while respecting local realities.

This collection captures the voices of scholars from diverse corners of the world, highlighting the necessity of cross-disciplinary synthesis. We believe that by integrating deep, specialized knowledge with collaborative, creative problem solving, we can address the most pressing challenges of our time, including the integration of Artificial Intelligence and the

cultivation of global competencies. In these pages, you will find intensive, high-level syntheses that honor the past while embracing the innovations needed to move forward.

Through a rich synthesis of theoretical frameworks, empirical studies, and reflective retrospectives, this collection highlights critical themes, including:

- **Productive Thinking and Institutional Innovation:** Reconceptualizing creativity not as a static, isolated trait, but as a dynamic, iterative process that must be embedded within core curricula and organizational strategies.
- **Future-Ready Competencies:** Cultivating essential mindsets—rooted in resilience, creativity, adaptability, critical problem-solving, and ethical reasoning—to prepare learners for complex global futures.
- **Human-Centered Learning in the Digital Age:** Balancing technological integration, particularly Artificial Intelligence, with the irreplaceable human dimensions of mentorship, empathy, and creative agency.
- **Sustainability:** Educators at all levels are working to create communities of hope and pedagogies aimed at protecting and cherishing the planet. Creatively building life-sustaining futures is rooted in a visionary education.

Our broader vision for IJTDC remains resolute: to sustain a premier international platform for rigorous scholarly dialogue and creative inquiry. By providing a collaborative space where global researchers, practitioners, and policymakers converge, we aim to offer a definitive blueprint for an interdisciplinary field—one that empowers leaders to cultivate human talent with compassion, intellectual depth, and visionary foresight. We hope these pages serve not merely as a repository of knowledge, but as an active catalyst for ongoing inquiry and transformative action.

In bringing this publication to fruition, I extend my deepest gratitude to our Editor-in-Chief, Dr. Karen Magro, whose steadfast leadership and dedication continue to shape the intellectual integrity of this journal. I am equally grateful to our associate editors, peer reviewers, and contributing institutions whose thoughtful insights have elevated the quality of every article. As we look ahead, we invite continued international partnership, firm in our belief that collaborative synergy remains the cornerstone of global progress in educational research and practice.

We hope that this special volume serves as a catalyst for future inquiry, challenging us to look back to move forward, and to continue the vital work of nurturing the creative spirits that will shape the world of tomorrow.

From the Editor's Desk:

Advancing Scholarly Reflection in a New Era of Education: Encouraging Creativity and Connection Across the Disciplines

Karen Magro
The University of Winnipeg, Canada

"I am a part of all that I have met;
Yet all experience is an arch wherethro'
Gleams that untravell'd world, whose margin fades
For ever and for ever when I move" (Alfred Lord Tennyson, 1833, excerpt from "Ulysses").

In our 2026 IJTDC invitation letter, we state that education in general, the education of the gifted and talented, and research into aspects of learning, thinking, and creativity continue to be influenced by geopolitical shifts, sociocultural changes, environmental challenges, and emerging technologies (Yamin, 2026). Global migration movements as well as linguistic and cultural diversity further the awareness that we are citizens of a larger world community that is not limited by global proximity. The varied contributions in this volume open a dialogue where education can act as a catalyst for creativity, critical thinking, and new knowledge mobilization. The scholars featured in this special volume see opportunities and possibilities for engaged learning that can be connected to personal development, problem-solving, and positive social change. At all educational levels, establishing learning climates that are dynamic, interdisciplinary, and multimodal can be catalysts to greater transcultural awareness and the development of global competencies.

Extending Insights into Creative Learning

Johannes Vermeer's (1668) astronomer reflects a sense of wonderment, curiosity, and a desire to explore and understand the cosmos and the connection between the individual and the larger world. As educators, we are also on a journey of learning—teachers and students are both learners with unique life experiences and perspectives. We make a path through mentoring, facilitating, co-creating, and coaching. Our role is often to see a spark, a talent, or a gift that is unique to each learner and with effective teaching and learning resources, these talents can flourish. Vermeer's classic painting has relevance for our own time as we ponder the future with AI and other new technologies. We are still also searching for a peaceful path that moves us away from conflict and war. The ongoing climate crisis is further impacted by political conflicts and faulty decision making at many levels. As educators, we can develop new courses and programs that would lead to climate restoration and peace. We can further make connections to global competencies that evolve throughout life cycles.



Figure 1: Johannes Vermeer (1632–1675), *The astronomer* (1668), Oil on Canvas, Musée du Louvre (The Louvre Museum), Paris, France. Public Domain. By Johannes Vermeer https://artsandculture.google.com/asset/wd/bQELiVC_QJaAlQ, Public Domain, https://commons.wikimedia.org/w/index.php?curid=116806430

In *Pedagogy of hope*, Paulo Freire (1994/2021) writes that the struggle to improve the world must include critical thinking, action, and hope:

> Without a minimum of hope, we cannot so much as start the struggle. But without struggle, hope, as an ontological need, dissipates, loses its bearings, and turns into hopelessness. And hopelessness can become tragic despair. Hence the need for a kind of education in hope. Hope, as it happens, is so important for our existence, individual and social, that we must take every care not to experience it in a mistaken form, and thereby allow it to slip toward hopelessness and despair.

Rather than despair, a challenge for progressive educators, notes Freire (1994/2021) is to move beyond barriers and create the conditions in educational contexts where learners are motivated to develop the skills they need to mobilize personal agency and social change. Mobilizing creativity is one way we can build communities of hope.

This volume includes theoretical and conceptual papers that highlight the importance of critical and complex thinking, creativity, collaboration, and emotional and social learning. Citing the work of Blanco-González (2018), Dr. Lynn Newton writes of the "importance of embedding the creative products and processes not only in their temporal contexts but also in

their wider socio-cultural contexts" (L. Newton, 2026, this volume). Creativity and problem solving as well as problem finding crystallize hope that we need if we are to survive and thrive as a planet. Dr. Newton writes elements of creativity continue to grow as disciplines "continue to evolve, with new methods and tools leading to adjusted interpretations and emerging reconstructions" (Newton, 2026, this volume). Multidisciplinary perspectives "from geology and palaeontology (rocks and fossils), archaeology and anthropology (people and place), geography and environmental history (landscapes and environments), and, sociology and psychology (groups and individuals)" illuminate our insights into creativity (Newton, this volume). Lynn Newton's ideas have important implications for the development of new curricula across the disciplines as well as innovative teaching and learning approaches.

Giovanni Emanuel Corazzo investigates the role that cyber-creativity plays in education. Dr. Corazzo writes that "the transition from the Industrial Society, through the Information Society, toward a Post-Information Society is characterized by hyper levels of artificial intelligence, connectivity, and sociocultural change. Education systems need to evolve rapidly, to prepare humanity for uncertain futures, moving beyond mere regulation or instrumental use of AI and developing cyber-creativity as a core competence for human agency" (Corazzo, 2026, this volume). A complex world requires complex and integrative thinking. In this volume, Dr. Douglas Newton emphasizes that personal integrative thinking can be viewed as a "cognitive asset" that can be encouraged through dynamic teaching and learning. Dr Newton raises vital questions for learners today: "How can an individual learn and adapt to new technological changes? How can self-efficacy, personal, and social agency as well as individual creativity thrive in a world where AI is a challenge?" (Newton, 2026, this volume). Dr. Newton provides important theoretical guidelines that encourage competent and integrative thinking.

Innovative pedagogies include multiliteracies, perspectives taking, and creative exploration through inquiry. A number of the articles in this volume champion a deeper understanding of literature, critical literacy, drama and art, reflective writing, and the development of emotional, cultural, and social literacies. Dr. Harrison Campbell highlights the role of drama in teaching and learning complex literature, including Shakespeare. Drawing from varied theorists, Dr. Campbell emphasizes that "we should be moving our approaches to Shakespeare away from over instruction alone" and instead, work to help learners "embody the text" to explore personality, setting, perspective, narrative, and themes (Harrison, 2026, this volume). He notes that "literacy in a theatrical space affords a direct connection between arts immersion techniques and successful reading practices" (Harrison, this volume). Harrison Campbell's research provides both theoretical and practical examples that highlight elements of creativity such as play, experimentation, improvisation, engagement, self-agency, and collaboration. The spirit of innovation, joy, spontaneity, and collaborative engagement are central to dynamic learning.

Robert J. Sternberg wrote that learners need "creativity to generate new ideas, intelligence to vet the quality of the ideas, and wisdom to ensure that the ideas serve a common good" (Sternberg et al. 2009). Dr. Jessica Sokolowski challenges learners to be researchers and designers of their own learning. Inspired by *We make the road by walking: Conversations*

about education and social change (Freire and Horton, 1987/1990) Dr. Jessica Sokolowski explores how narrative inquiry, dialogue, storytelling, memory and lived experiences construct educational knowledge imperative for 21st century skillsets. Dr. Sokolowski writes that "when we think about the interpretation of stories, we consider also the role that our own stories play in that interpretation. The meaning that we give to stories, and the way that we understand our own truths based on these stories, is significant in and through the discourse surrounding them"(this volume). As learning experiences, stories can be re-interpreted and perhaps transformed in ways that encourage critical reflection and decision making in positive ways. In this volume, Dr. Abel Enokela identifies multiple teaching and learning strategies where Artificial Intelligence can be successfully applied in the classroom. Dr. Enokela writes that "AI-powered education seems to have created a pathway for educators to strategically teach learners creative and critical thinking skills. Integration of AI in educational processes is desirable as traditional pedagogy may be inadequate (Parissi et al., 2023), especially to engage learners with learning experiences that can arouse their creativity and critical thinking skills" (Enokela2026, this volume). A reality is that AI applications will continue to evolve at exponential rates and as educators, we are challenged to understand how AI will impact learning landscapes. Dr. Enokela describes multiple AI applications that educators can readily apply in diverse learning environments. Dr. Enokela also highlights the promises, perils, and overall challenges of AI as they continue to evolve. Critical thinking, self-direction, and knowledge mobilization that fosters self-agency will always remain vital.

Dr. Zekai Ayik's research study explore transformative education within the context of environmental awareness and planetary protection. His study involves high ability learners who have the potential to solve complex global problems that include climate change and environmental degradation. Dr. Ayik writes describes "gifted students are individuals who demonstrate exceptional intellectual abilities, creativity, and problem-solving skills, often excelling in areas such as analytical thinking, innovation, and the application of knowledge across various domains (Renzulli, 2005; Sternberg, 2005; Subotnik et al., 2011)" (Ayik, 2026, this volume). Dr. Ayik asserts that gifted learners are "especially attuned to socio-scientific issues" and that gifted learners can apply creative, cognitive, and emotional skills to authentic learning contexts. The challenge we face as educators is creating educational systems that highlight a visionary world view where a reverence for life is nurtured. All learners need opportunities to engage in problem solving and creating sustainable futures. How can all learners make a difference?

In her comprehensive content analysis of arts-based pedagogies to encourage cultural awareness and knowledge extension, Dr. Josie Andrews asserts that arts-based pedagogies can be a vital learning framework "for cultural learning that can support reflection, dialogue, critical inquiry, and relational engagement in adult and higher education" (Andrews, 2026, this volume). With valuable specific examples that traverse cultures, Dr. Andrews paper highlights three interconnected dimensions: identity and belonging, power relations, coloniality, and "culture-as knowledge and place- based heritage and community learning" (Andrews, this volume). The ideas in her research paper have important implications for learning that extends beyond the traditional classroom. Nadia Ibrahim emphasizes a flexible and creative curriculum

with learning strategies that engage and motivate adult learners. Professor Ibrahim notes that preparing students to engage in ways that encourage transcultural awareness challenges educators to be reflective and creative. It requires revisioning the learning climate to encourage transformative learning. "Simply placing students in diverse environments does not necessarily lead them to examine their own assumptions, understand others' experience, or develop the ability to engage across difference" (Ibrahim, 2026, this volume). Professor Ibrahim offers many creative and practical learning strategies aimed at encouraging empathy and learning through differences. Along similar lines, Dr. Julia Ellis explores the way inclusive, dynamic, and creative learning climates can be nurtured in higher education. Dr. Ellis's research describes the way pre-service teachers applied a set of creative problem solving strategies in their re-visioning and construction of imagined classrooms or schools.

In this volume, Drs. Michael P. Lukie and Edward Cloutis provide a creative approach that integrates geography and education. Examples of ways to activate engagement, inquiry, curiosity and a deeper level of learning in Science, Technology, Engineering, and Mathematics (STEM) are provided. The authors provide clear examples of techniques and strategies that secondary school science and geography teachers can use. Concepts in physics, mathematics, chemistry and Earth sciences are applied to planetary exploration. Detailed examples of resources, learning strategies, and teaching approaches are provided. In a second article, Dr. Lukie and his colleague Kathleen Zawaly explore the important interdisciplinary connections that can be made between analytical psychology and senior high curricula that include world conflicts and social studies. From an interdisciplinary perspective that encourages active inquiry, students have opportunities to develop complex and critical thinking skills in creative ways. Using the 2013 Euromaidan protest in Ukraine (https://en.wikipedia.org/wiki/Euromaidan) as an example of a world issue, these authors explore Jungian analytical themes that include the myth of the scapegoat, the myth of the island, the good-evil archetype, the mother archetype, and predator anxiety.

The strategies highlighted in Drs. Fernand Hellen Rubeiro Piske and Joseph S. Renzulli's "Creativity in Gifted Education: Educational Practices at the Institute for Creativity and Giftedness (C&S)" have practical applications that can enrich education for all learners. Drs. Piske and Renzulli further identify the dispositional, situational, and institutional barriers that erode dynamic learning. It would take a collective effort from all educational stakeholders and all members of a given society to address these challenges. In her conceptual essay "Well-Being in Education: An Ecological Systems Perspective," Dr. Leslie Eblie Trudel explores the concept of wellbeing. While many K-12 educational institutions focus on the importance of "wellbeing" and student "success," a deeper level of understanding and deconstructing this concept is needed, particularly as wellbeing relates to academic self-efficacy, emotional intelligence and individuals' access to rich learning resources where schools foster a positive climate of learning. Dr. Eblie Trudel anchors her discussion by adapting Uri Bronfenbrenner's (1979) Ecological Systems Theory which highlights the way personal, family, community, and broader global factors impact educational environments and individual learners. Indeed, learners today are impacted by social media, geopolitical conflicts, family fragmentation, and schools that do not have adequate resources. We have profound challenges and opportunities to

revision educational systems that are holistic, rigorous, and meaningful in ways that can build cultures of peace and hope for the future.

Internationally, the importance of nurturing global competencies and creative communities of learning is on the rise (Reimers, 2020; Magro, 2026). There is an understanding that in a complex world, complex and integrated ways of thinking are needed. In Canadian provinces like Manitoba, a "connecting anchor" throughout the K-12 educational system (including Adult Literacy) is the concept of "Mino of "the good life" or "Mino-bimaadiziwin." (Manitoba Education and Early Childhood Development, 2024). Betasamosake Simpson's (2025) connects "mino-bimaadiziwin" to balance, a reverence for life, rebirth, and flourishing:

> Mino-bimaadiziwin compels me to build a different world, outside the one colonization enforces. It compels me to do this in a relational fashion, and to seek out others who are doing different but similar world-building world locally and globally… It requires me, and all of us, to dream of, envision and actualize ways of living outside our current imaginings, and to do this as practice for generating the knowledge we need to reimagine the world (Simpson, 2025, p.110).

In his theoretical essay, Dr. Hussein Chaitani reminds educators that critical thinking and a deeper level of learning should be valued and integrated more into the curriculum across the disciplines and educational levels. His article on global competencies and critical literacy in adult education explore hermeneutic criticality, literacy, culture, power and agency. Dr. Chattani deconstructs the way literacy is shaped by political ideologies and structural hierarchies. He writes that by understanding "multilectics" as a "dialogic and multi-perspective approach to knowledge" educators are in a better position to understand the way individual experience, culture, and community impact classroom discourses and learning. Dr Chattani advocates for learning a range of multiliteracies that would impact self-efficacy, agency, and positive social change. The importance of creative writing and engaging youth in reading to build imagination and creativity is highlighted in Dr. Daniel Xerri's interview with the Maltese writer David Samuel Hudson. Dr. Xerri's interview with Hudson emphasizes that creative writing is "an accessible, teachable craft rather than an innate gift" (Xerri, 2026, this volume). Creative writing is demystified and the idea of capacity building and talent development are explored in ways that can enrich diverse learning contexts.

As educators, our experiences can be opportunities to reflect on past decisions and chart new emotional and social pathways. Using metaphor and poetry, drama and prose, Dr. Boyko Head explores the threads that weave a tapestry of teaching and learning. She uses the symbol of education as a "labyrinth" which is "a circuitous, meandering conduit to an invisible, uncertain centre" to explore the complex dynamics of learning. Using personal and practical examples, Dr. Boyko Head presents an artistic, analytic, and reflective approach to understanding the complexity of teaching and learning as "a paradox both circular in space and linear in time" (Boyko Head, 2026, this volume). Dr. Boyko Head invites a conversation on the socio-cultural and psychological dimensions of the teacher as an adult learner.

Several scholars in this volume highlight the importance of educators as reflective practitioners. In this narrative, they reflect upon their life experiences (so far) and their creative learning journey. Dr. Ghassib describes his commitment to being a "lifelong learner" in his

journey becoming a theoretical physicist. A holistic vision of learning that integrates knowledge paradigms in both the sciences and humanities is explored. Early childhood experiences, cultural context, the historical and temporal nature of time are important dimensions of learning. Dr. Ghassib's personal narrative reflects the way socio-cultural factors, language, history, political events, and educational opportunities and experiences impact identity, belonging, and learning trajectories. His curiosity to understand the complexities of the universe challenge educators to consider the importance of existential, spiritual, and emotional learning. Dr. Bev Hayward explores her journey of creativity which includes her own understanding of identity as a complex "oscillation of blurred and overlapping routes" in education and the art field. Her journey (so far) has involved multiple and varied work places, social roles, and academic positions. In many ways, the ideal of formal and informal learning as meaning making places where individuals come together to communicate, collaborate, and create. Dr. Hayward emphasizes the importance of reaching out to the larger community and to new spaces of learning that could include art galleries, museums, field excursions, and community arts-based projects as ways to energize and mobilize learning. Her ideas emphasize the importance of educators discovering "hidden" talents, valuing uniqueness, and nurturing greater hope and positivity in education today and in the future. Bev Hayward emphasizes the importance of supportive communities that honour and respect unique talents. Her narrative has implications for educators at all levels who wish to help encourage talent development and creativity across the disciplines.

Dr. Howard B. Esbin, the founder of Heliotrope and the creator of Prelude, a 21st C. learning game has worked with stake holders and community members in education, industry, the private sector, international development, and philanthropy. He vividly recounts his life experiences as a continual journey of learning. The themes in his personal narrative highlight the importance of creativity and imagination as central to enriched learning. "When a person is focused, their goals are clear, and their elemental traits are harmonized" (Esbin, 2026, this volume). Esbin highlights the vital importance of imagination and creativity in setting new goals and overcoming barriers. Mentors, community resources, mobilizing opportunities, and varied work and life experience further shape creative learning journeys. Dr. Esbin's narrative emphasizes essential dimensions of creativity that include risk-taking, the ability to see possibilities where others do not. In his letter, Dr. Derek Stovin reflects on his insights into academic administrators' experienced knowledge. Leadership style, emotional and social intelligence, effective and flexible academic program planning, and a deeper level of engagement and positive relationship building among faculty reflect creative leadership patterns. He writes that throughout his own career as an educator and scholar of higher educational administration," [he] sometimes experienced wise, empowering, and inclusive leadership within culturally healthy, vibrant, and supportive organizational environments" (Stovin, 2026, this volume). Dr. Stovin's reflections reinforce the idea that dynamic, creative, and empathic leadership can transform institutional norms.

Emotional and social literacies include skills such as self-awareness, empathy, intrinsic motivation, communication, and self-regulation (Goleman, 1995). In his study "She noticed me: Retrospective accounts of relational teacher noticing among Canadian university teachers,"

Dr. Kenneth L. Reimer's explore the experiences of diverse university educators by inviting them to reflect on a memorable teacher who made a difference in their life. Dr. Reimer identifies themes that connect to the importance of emotional and social intelligence. Memorable teachers were empathic; they were active listeners who recognized and "noticed" the unique talent of learners. Specifically, Dr. Reimer's study "seeks out the voices of students who have gone on to excel academically and earn doctorates in the realms of the arts, science, and education" (Reimer, 2026, this volume).

In "Our student success Initiative: From hypothesis to contribution to major impact - mapping the journey of a foundational idea," Mike Babb describes his leadership role as a principal and coordinator. He highlights a three year enrichment education program that helped vulnerable learners who were experiencing personal and situational obstacles that interfered with their education. The Student Success Initiative (SSI) was part of the Manitoba provincial government's poverty reduction initiative that would prevent students from leaving school early. Teaching and learning strategies that focus on motivation and learner engagement, addressing immediate challenges that learners are experiencing, and providing essential resources that would help students stay in school and graduate are highlighted. Mike Babb's narrative emphasizes a "team effort" is needed when re-visioning education systems that encourage the full participation of all learners. Overall, community and educational communities need a greater awareness of dispositional, situational, and institutional systemic barriers that leave too many learners "at-risk" for not realizing their gifts, talents, and skills. Awareness, empathy, and engagement, at all levels to encourage a truly inclusive educational environment takes time and commitment, as Mike Babb notes. Emotional and social learning can be integrated with academic and technical studies in ways that maximize unique learning potential.

Working to Encourage Global Competencies

In unique ways and in different forms, collectively, the contributions in this special volume reinforce the importance of global competencies (GC). Global competencies (GC) within learning contexts refers to multi-layered skills such as connection to self and others, creativity, critical thinking, communication, collaboration, and citizenship (Magro, 2026, in press). From an international perspective, the need to encourage global competencies in work, school, and community contexts continues to increase. Lifelong learning and "successful" intelligence that can be applied to creativity, problem solving, and problem finding in diverse learning contexts (Sternberg, Jarvin, and Grigorenko, 2009). Globally competent learners would be able to "investigate the world beyond their immediate environment" and "communicate ideas effectively with diverse audiences, bridging geographic, linguistic, ideological, and cultural barriers" (Boix Mansilla and Jackson, 2022, p.2). Parallels can be made between the development of global competencies, transcultural learning, and transformative learning perspectives (Magro, 2026). The focus on perspectives taking, multimodality, spiritual and emotional learning, creative learning, and critical thinking skills reflect a deeper level of learning (Dirkx, 2012). As I noted earlier, educators play a key role in creating a vibrant climate of learning that extends beyond the traditional classroom.

Integrating global competencies into the curriculum challenges educators to think in interdisciplinary ways. Rather than viewing subject areas as isolated from each other, disciplines are interrelated and complementary. Knowledge in one discipline can inform and enrich another subject area so that more complex and holistic learning can be encouraged. Creative learning and problem solving are more likely to occur when adult literacy learners see text-to-self, text-to-text, and text-to-world connections. New courses continue to develop around land-based or place-based learning. Environmental literacies can be integrated into the disciplines like English language arts, history, biology, and world issues. Place-based curriculum initiatives have the potential to inspire creative learning and critical thinking. In connecting poetry with visual art that has environmental themes, educators can ask students questions that encourage them to research the history of a painting and the landscape that includes the flora, fauna, birds, lakes, rivers, trees, and so on.



Figure 2: Vincent van Gogh (1883-1890). Kingfisher by the waterside, 1887. van Gogh Museum, Amsterdam, The Netherlands, EU. Public Domain. By Vincent van Gogh - Van Gogh Museum, Public Domain, https://commons.wikidia.org/w/index.php?curid=39845927

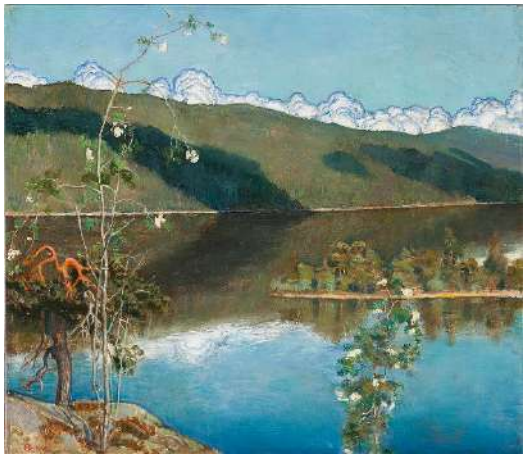


Figure 3: Akseli Gallen-Kallella (1865-1931). *Thunderclouds on the horizon,* 1897. Oil on Canvas. By Akseli Gallen-Kallela
https://www.facebook.com/photo/?fbid=915344212945826&set=gm.8959018957473192&idorvanity=1730259997015827,
Public Domain. https://commons.wikimedia.org/w/index.php?curid=129318010

Encouraging Artistic Literacies and Multiliteracies

Skills in global competencies are more likely to develop when educators highlight different modalities of literacy learning to include art, dance, music, creative writing, drama,

digital storytelling, and other forms of creative expression (Dirkx, 2012). Emotional, social, cultural, and historical lenses of learning can be nurtured when English language arts skills are integrated. The recent film adaptation of Homer's 7th century *The Odyssey* might be a catalyst for students to revisit famous art works that illuminate scenes that highlight Ulysess' journey. Texts like "The Odyssey" reflect a long oral tradition of storytelling and the idea that myths provided life lessons that would inform values, beliefs, ideals, and actions. Access to online art galleries and museums provide valuable access to contemporary and classic art works.



Figure 4: Giuseppe Bottani (1717-1784), *Athena revealing Ithaca to Ulysses*. Oil on Canvas. Pinacoteca Malaspina, Padua, Italy, By Giuseppe Bottani - Bridgeman Art Library: Object 557603 Public Domain. https://www.jstor.org/stab

Interdisciplinary learning involves an inquiry into the way in which one or more disciplines can inform and complement another discipline. The ability to integrate knowledge from varied disciplines can be applied to solve problems such as the climate crisis, global health concerns, economic inequalities, and global peace (Magro, 2024, 2026). Social, cultural, and historical factors complement and connect disciplines to each other. Emerging research in ecological awareness might integrate visual art ("EcoArt"), geography, geology, anthropology, Indigenous land-based perspectives, cultural studies, and environmental poetry/literature (Magro, 2023). To encourage global competencies, educators can extend learning experiences to and through place-based learning and through dynamic interdisciplinary engagements with local art galleries and museums (Magro, 2024, 2026). Museums and art galleries can be important sites of learning when educators encourage a sense of adventure, discovery, and critical reflection.

Our special volume continues a conversation about educational change, initiative, and innovation. Given the worldwide challenges we face, all levels of education need to revision a curriculum that is practical, dynamic, and evolving. We also need to build a "curriculum of hope" that inspires (Kidd, 2020). Global competencies compel adult literacy educators (and adult learners) to explore their own creative potential as researchers, cultural ethnographers, artists, advocates, storytellers, and writers. A willingness to move beyond the boundaries of any given discipline encourages a continuous journey of learning. Professional development, collaboration, and the creation of new curricula, particularly in place-based learning and in artistic pedagogies have the potential to engage a greater diversity of adult learners today. We see an ever evolving dynamic from subject area discipline(s) to creativity and innovation.

Organizing this journal for nearly 14 years has been a collective effort. I would like to extend my gratitude to Dr. Taisir Yamandin for his dedication to the journal and the ICIE and for always seeing possibilities in difficult contexts. I am so grateful to all the authors who contributed their own unique scholarship to this volume. I am especially grateful to Dr. Christine Boyko Head for her dedicated time, consultation, and editorial help. Her scholarly insights enriched these volumes. Thank you to all the peer reviewers whose helpful suggestions strengthened the content of this volume. I extend my gratitude to Dr. Michael P. Lukie for his effort and technical expertise. My deep appreciation is extended to Drs. Beverly Hayward, Douglas Newton, and Lynn Newton for their extra efforts, editorial support, and generosity in contributing to key themes for this special volume.

References

Betasamosake Simpson, L. (2025). *Theory of water.* Alchemy.

Boix Mansilla, V., & Jackson, A.W. (2022). *Educating for global competence: Preparing our students to engage with the world.* ASCD.

Butler, S. (2021) The *odyssey by Homer.* Wildside Books. (originally published in 1900 by Longman, Green, & Co.).

Council of ministers of education (2018). *Pan-Canadian systems level framework on global competencies.* https://www.globalcompetencies.cmec.ca/global-competencies.

Dirkx, J. (2012). Nurturing soul work: A Jungian approach to transformative learning. In E. W. Taylor, P. Cranton, and Associates (Eds.). *The handbook of transformative learning* (pp. 116-130). Jossey-Bass.

Freire, P. (2021). *Pedagogy of hope.* Bloomsbury Academic

Horton, M. & Freire, P. (1990). *We make the road by walking: Conversations on education and social change.* Temple University Press.

Goleman, D. (1995). *Emotional intelligence*. Bantam Books.

Kidd, D. (2020). *A curriculum of hope: As rich in humanity as in knowledge* Independent Thinking Press.

Kornelsen, L., Balzer, G., and Magro, K. (2020). *Teaching global citizenship: A Canadian perspective*. Canadian Scholars.

Magro, K. (2019). Transcultural literacies: Encouraging transformative and creative learning. In K. Magro & M. Honeyford (Eds.) *Transcultural literacies: Re-visioning relationships in teaching and learning* (pp. 123-163). Canadian Scholars.

Magro, K. (2023). An iridescent kaleidoscope: Encouraging creative learning in English language arts. In D.C. Haydey & K. Reimer (Eds.*). Advancing creativity and innovation in education* (pp. 99-127). International Centre for Innovation in Education (ICIE).

Magro, K. (2024). Encouraging Transformative and Creative Learning in Adult Literacy Education through Artistic Literacies. *Australian Journal of Adult Learning*, *64* (3), 347-375.

Magro, K. (Ed) (2026). *The Emerald handbook on teaching global competencies: Theoretical perspectives and practical applications inside and outside the classroom*. The Emerald Publishing Group.

Manitoba Education and Early Childhood Development (2020). English Language Arts Curriculum: A Living Document. https://www.edu.gov.mb.ca/k12/cur/ela/framework/index.html

Manitoba Department of Education and Early Childhood. Global competencies and a framework for learning (2025), https://www.edu.gov.mb.ca/k12/framework/index.html
Manitoba Education, Advanced Education and Training (2025): Adult learning and literacy report. https://www.edu.gov.mb.ca/all/publications/index.html
Mezirow, J., Taylor, E.W., & Associates. *Transformative learning in practice: Insights from community, workplace, and higher education*. Jossey-Bass.
Reimers, F. (2009). Educating for Global Competency. In J. Cohen & M Malin (Eds). *International Perspectives on the Goals of Universal Basic and Secondary Education* (pp. 183-202). Routledge.
Sternberg, R.J., Jarvin, L., & Grigorenko, E.L. (2009*). Teaching for wisdom, intelligence, creativity, and success.* Corwin Press.
Stonechild, B. (2023). *Challenge to civilization*. University of Regina Press.
Tennyson, A.L. (1809-1892) "Ulysses". Retrieved, August 20, The Poetry Foundation. https://www.poetryfoundation.org/poems/45392/ulysses.

Public Domain Art Works Cited:

Giuseppe Bottani (1717-1784), *Athena revealing Ithaca to Ulysses*. Oil on Canvas. Pinacoteca Malaspina, Padua, Italy, By Giuseppe Bottani - Bridgeman Art Library: Object 557603 Public Domain. https://www.jstor.org/stab
Gallen-Kallella, A. (1865-1931). *Thunderclouds on the horizon,* 1897. Oil on Canvas. By Akseli Gallen-Kallela https://www.facebook.com/photo/?fbid=915344212945826&set=gm.8959018957473192&idorvanity=1730259997015827, Public Domain. https://commons.wikimedia.org/w/index.php?curid=129318010
van Gogh, V. (1883-1890). Kingfisher by the waterside, 1887. van Gogh Museum, Amsterdam, The Netherlands, EU. Public Domain. By Vincent van Gogh - Van Gogh Museum, Public Domain, https://commons.wikidia.org/w/index.php?curid=39845927
Vermeer, J. (1632–1675), *The astronomer* (1668), Oil on Canvas, Musée du Louvre (The Louvre Museum), Paris, France. Public Domain. By Johannes Vermeer https://artsandculture.google.com/asset/wd/bQELiVC_QJaAlQ, Public Domain, https://commons.wikimedia.org/w/index.php?curid=116806430

About the Author

Prof. Dr. Karen Magro is a full professor of education at the University of Winnipeg, Canada. Her research and teaching focuses on English language arts education, the psychology of teaching and learning, transformative learning theory, creative learning, artistic pedagogies, and global competencies. Karen has taught nationally and internationally for over 40 years. Her most research book is *The Emerald handbook on teaching global competencies: Theoretical perspectives and practical applications inside and outside the classroom (*Magro, Ed., 2026, Emerald Publishing Limited).

The Past We Inherit, the Future We Build: Some Thoughts on Creative Thinking, Past, Present and Future

Lynn D. Newton
Durham University, UK

Abstract

Creative behaviour has a long history. Drawing on diverse sources, this paper presents a thumb-nail sketch that illustrates how imaginative, creative thinking has a continuous thread from the past to the present and, optimistically, into the future. Nevertheless, it has not always been recognised for what it is and myopic views have existed (and still do), making it important to foster responsible creativity and creative behaviours in education as part of a curriculum in the future.

Keywords: Reviewing creativity; creative thinking; creative behaviours; creativity in the past; creativity in the future; responsible creativity.

Introduction

Taking a new perspective can often help clarify an issue or inform the way to solve a problem. Choi & Pak (2006) highlighted how, by drawing on knowledge and understanding from different disciplines (multidisciplinary) and analysing and synthesising evidence gathered by distinct disciplinary fields to explore potential links between the fields (interdisciplinary), problems or challenges can be addressed and more holistic understandings built.

Multidisciplinary perspectives tell us about the development of our ancestors, how creativity helped them to survive, and why it is important to foster creative thinking in education in the present to prepare our children for an uncertain future. From geology and palaeontology (rocks and fossils), archaeology and anthropology (people and place), geography and environmental history (landscapes and environments), and, sociology and psychology (groups and individuals) – the evidence tells us about not only what we know today concerning creativity but also how, over time, creative thinking changed life. The importance of embedding the creative products and processes not only in their temporal contexts but also in their wider socio-cultural contexts is emphasised by Blanco-González (2018). In addition, the evidence for its existence, nature, use and its outcomes that influenced life is growing as the disciplines that gather the evidence continue to evolve, with new methods and tools leading to adjusted interpretations and emerging reconstructions.

As Stahl (2021) states: "Creativity, like all concepts, has a history." (p. 3). But it also has a present and a future. Nurturing creativity is vital not only for the people on our planet today, and other living things we share it with, but also for the planet itself, and the diversity of environments and their occupants in the future (Newton, 2026). In this article I provide some brief illustrations of how creative behaviours form a continuous thread from the distant past to the present, and some thoughts on creativity in education for the future.

Many of us take for granted our ability to do things like driving a car to travel from A to B, switching on a lamp as dusk falls or adjusting the heating as the temperature drops. Yet being able to do these things is a consequence of other people's ideas, innovation, invention and ingenuity. In other words, they used their imaginations to think creatively and consider alternative possibilities to meet a need or solve a problem.

40,000 years ago, a family group might be seen settling down for the night under an overhanging ledge beside a river, having walked for many miles to get there. One member of the group spreads hides on the ground. Another uses a sharp flint to shape sticks to spear fish. One hits a piece of iron pyrites with a flint to create a spark, while some are looking for more wood for the fire. A young child makes patterns in the wet sand beside the river with a stick. There is evidence in their behaviours of creative thinking. This capability – being creative - is something that enables humans to be flexible and adaptive thinkers, to come up with novel ways to do things, gain satisfaction from our own or others' achievements, and generally flourish. As humans have developed over time, evidence suggests so too has their creative thinking, from the past and into the present, and hopefully, into the future.

Looking back: distant origins

The nature and use of human creativity, seen through the outcomes of creative behaviours, is not something new. It enabled our ancestors to meet their survival needs for light, heat, food, shelter and safety. Creativity enabled them to interact with their environments, imagine possibilities, draw on resources and use them in innovative ways, solve problems and, sometimes, create more problems in the process, not always anticipated. Evidence from geology and palaeontology helps us understand how our planet evolved, environments changed and living things developed (Christian, 2018). As climates became warmer and wetter, coastlines changed, atmospheric CO_2 levels settled, and forests gave way to grasslands on which grazing animals flourished. What followed was a crucial point in human evolution. Evolutionary biologists explain how the groups that later included *Homo sapiens* were able to survive the changes in the world around them (Cassidy, 2021). As they moved around to hunt and find shelter, figuratively and literally they left their footprints behind, with artifacts like stone tools and flint, bone and shells showing where they rested. The cooling and drying of the planet triggered Ice Age cycles, leading to extinction of some larger creatures and migrations of our human ancestors to escape the ice.

By about 40,000 years ago, our ancestors had become accomplished hunter-gatherers and developed sophisticated stone tools, co-operation skills, and developing language, all contributing to further change. The evidence and interpretations from different disciplines show sustained creative thinking as an enabling factor in human flourishing (Geneste, 2017). Anthropologists and experts from other academic disciplines like theology, linguistics and sociology, looking at the archaeological evidence, put flesh on the bones, providing insights into the development of language and communication, ritual and play, concepts of community, human actions and interactions, and the emergence of larger, mobile social groups and communities (Atkins et al., 1998; Rosaldo et al., 2018).

About 11,000 years ago, probable shifts in the Earth's orbit caused ice to melt, sea levels rose and the planet took on its current geological state. Many flora and larger fauna disappeared and, once again, humans used imagination and creative thinking to adapt and survive. As the climate settled, the evidence suggests that they continued to use imagination to control their world through technological innovation, a process that has continued through to the present. Initially, this was seen through the evidence from diverse contexts showing human occupation of sites (like caves and shell and bone deposits); human made structures (walls and hearths); artifacts (stone tools, pottery sherds, weapons, jewellery); and, working of materials (cutting, splitting, filing, polishing, firing, shaping). Such contributions are considered by Van Oyen and Pitts (2017). They critique traditional views of ancient artifacts as simply reflecting abstract ideas like social status and wealth, which ignore the relationships between the humans and the objects themselves and the cultural environment in which they emerge, what they call entanglement.

The creative process itself became a focus for Morriss-Kay (2010), who was interested in the evidence that suggested past humans created images from their imaginations. She argued creating visual art was a defining feature of humans and possibly a stimulus of and aid to human cognition. Stout and Chaminade (2012), drawing on the neurological evidence for the development of language, made links between visual creativity, language and cognition in their discussion of the use of stone tools. Stahl (2021) identified creativity and improvisation as crucial in what she described as intellectual crosscurrents. She focussed on how people located and used new materials in novel ways while at the

same time drawing on precedence and responding to changes in wider continental landscapes. Cognitive archaeology emerged as a subfield of archaeology, and was of interest to Malafouris (2021), who discussed becoming human in the context of how hand tools interact with materials in a trans-actional process, "…a process archaeology of mind where thinking becomes thinging" (p. 38). Mithen (1996) was also particularly interested in the cognitive origins of art and science. He explored ideas of how the experience and views of our ancient ancestors shaped the minds of modern humans. Beginning with hunter-gatherers, Mithen discussed the emergence of values and beliefs, and the creation of expressive and technically accomplished early painting.

The Chauvet cave, in the limestone rocks of the Ardeche Gorge in south-eastern France, was discovered in 1994. Groups of people are thought to have migrated from Africa and discovered the caves about 35,000 years ago. A multidisciplinary team of geologists, archaeologists and artists has spent the last 30 years investigating the cave, tracing its geological history and mapping the use of the cave and its chambers. They highlight the importance of the evidence of creativity displayed in the artwork - murals of animals, geometric shapes and handprints. Experimental archaeologists and artists reproduced two examples from the caverns, to explore materials and techniques used on complexly shaped and textured surfaces and the use of colour, light and shadow for depth and movement. In 2018, photogrammetry was used to scan the caverns and create a virtual cave, revealing details not previously noted, like perspective alignment and 3-dimensional representation. The art in the Chauvet cave is seen as unique creative expression. Genestre (2017) argued such artwork is not only of aesthetic value; it provides symbolic representations of different perceptions of the world and ways of communicating knowledge. He suggested:

> At the times when hunter-gatherer-fishers came to symbolic thinking and had only begun to express their ideas graphically, they … chose the most suitable ones for creating meaningful performances rendered through animal images and abstract symbols (Geneste, 2017, p. 39).

Another example of multidisciplinary collaboration on a site from 26,000 years later has added to our understanding of creative behaviours. Work on the desert "kites" of Eastern Jordan has shown different facets of human creativity in the construction of massive, ancient Neolithic animal traps (see, for example, Tarawneh et al., 2026). These "kites", some of which date back 9,000 years, are long, converging walls that funnel game towards circular pits, trapping them. Adjacent habitation sites reveal artefacts like knapped flint tools, stone carved animals and drilled beads. Carved standing stones show design plans for the kite-shaped structures, indicating the imagination of possibilities and mental manipulation of ideas of scale.

James and Thorpe (1995) suggest it would be a mistake to underestimate the creative achievements of our ancestors. Materials decay and there is little or no evidence of their existence to be found. We know more about the next 9,000 years of human history, development and creative behaviour because more archaeological evidence has survived and tools for finding such evidence have become more sophisticated.

Looking back: into the time of revolutions

Discussing archaeology today, Shanks and McGuire (1996) described the impact of the emergence of new technologies and techniques like LiDAR (**Li**ght **D**etection **A**nd **R**anging), sonar, drones and magnetometry, all of which have expanded exploration of sites both above and below surfaces, on land and in water. These have aided understanding of contexts and landscapes. Murphy (2017) discussed how materials available served as both temporal and cultural signifiers, while Shanks and McGuire (1996) discussed how this enabled us to see creativity as a mode of ancient cultural production. As populations expanded, and mobility became more common, we see the shift from hunting-gathering-fishing to farming and agriculture and industry. We also see changes in the economic and political management of peoples from mobile tribal groups to settled communities, and to towns and cities within defined and managed boundaries and governance. Evidence of creative behaviours and the processes and products of creative thinking and problem solving populate these 9,000 years. Historians have interpreted them to provide a context and computer scientists have created virtual environments to help us experience how things might have been.

We now have a vast range of evidence of creative behaviours, generation of ideas and the creation of products for diverse purposes. From around the world, archaeological finds, anthropological interpretations and historical records point to the rapid growth of big ideas, theories and inventions, all because of imaginative thinking, creativity and problem solving. Some selected examples in Table 1 show the speed and nature of growth in innovative activity alongside the development of big ideas.

Table 1: Applying creative thinking to meet needs and solve problems over the last 9,000 years. The examples are neither exhaustive nor representative of the breadth of ideas that reflect creative behaviours in different fields. They serve to show how the growth of big ideas burgeoned over time and in turn made possible invention and innovation, seen in many of the artifacts.

Timeline	Artifacts	Big Ideas
c.9,000 years	e.g., candles; quern-stones; fired bricks; tiles; swords; papyrus; writing tablets; plumbing; sailing craft.	Early ideas: astronomy; mathematics; writing; bartering of goods; settlement; agriculture (crops and animals).
c.5,000 years	e.g., abacus; simple pulleys; wheels; lathes; wooden bowls; coins; concrete; central heating; gunpowder; paper; wheelbarrows; porcelain; mechanical clocks.	Early ideas: government; banking; solar system; matter; physics; disease; geometry; trigonometry; philosophy; democracy. Iron Age: mining; working of iron to produce iron artifacts.
c.1,000 years	e.g. gears; chain drives; suction pumps; crankshafts; printing press; printed materials.	Developing ideas: agricultural management (crop rotation); mercantile economics; trades and guilds; algebra; contagious disease. Renaissance: art; architecture; culture; literature; science; ideas; exploration.
c. 500 years	e.g., telescopes; theodolites; flushing toilets; newspapers, human / animal powered tools and machines.	Emergence of: botany; geology; physics; gravity; magnetism; experimental scientific method; palaeontology; classical economics. Age of Enlightenment: natural rights; social justice; public education. Romanticism (emotions; imagination; individuality; nature).
c.300 years	e.g., steam engines; power looms; dynamos; electric lighting; beam engines; steam ships; steam trains; police service; postage stamps.	The Industrial Revolution: electricity; manufacturing; factories; economic theories; business; corporations; transport systems; communication; modern mass democracy; voting; law enforcement.
c100 years	e.g., radio; television; cinema; telegraph; telephones; typewriters; calculators; batteries; weaponry; photography; photocopiers; bicycles; cars; trams: buses; trains; aeroplanes; steam ships; jet engines; x-rays; scanners; household appliances; transistors; space rockets; space telescopes.	Political economics; management theory; education for all; atomic theory; chemistry; evolution; genetics; health systems; relativity; electronics; infections; antibiotics; viruses; vaccination; organ transplants; plastics; synthetic materials; nuclear power; flight; space exploration; big bang theory; fibre optics; early computing.
Last 50 years	Radios, record players, tape recorders, video recorders); microwave ovens; microchips; internet; world wide web; networked computers; mobile phones; e-mail; Wikipedia; robots; electric vehicles; self-driving cars; pacemakers; artificial organs; quantum computers.	Cloning; genetic modification; DNA; genome mapping; electronics; information technology; system design models; design thinking; universal design for learning; educational inclusivity; globalisation; social innovation (EDI; social care); cultural capital. The Digital Revolution: global communication; social media; data access; laser technology; AI.
Now		

As knowledge and understanding of the past expands, it becomes increasingly difficult to pinpoint with accuracy the actual beginnings of the abstractions and understandings that shaped big ideas. The influence of temporal contexts is important, as ideas were not only technological, but also socially, culturally, politically and economically determined. Influential change occurred through innovative creative thinking and generated new processes and products (both tangible artifacts, abstract

concepts, routines and procedures, and diverse self-expression). Disciplinary areas for research and development expanded and, in turn, altered perspectives of how we see ourselves, our place in the world and how we relate to it. In recent years, as knowledge and understanding within disciplines grew, so too did creative mergers of ideas between disciplines, generating new ideas and even paradigm shifts, as seen, for example, in science or economics.

Such developments reflect enduring human creativity in action and bring us to the present. An article by Pringle (2013) discussed the human capacity for creativity, from early origins to language and symbolism, technological ingenuity to invention, and cognition to social skills. She sums up with: "The human chain of invention remains unbroken, and in our superbly connected world our singular talent to create races on ahead." (Pringle, 2013, p. 43)

Looking around: questioning the present

We might consider ourselves different from our distant ancestors, but we share many of their needs, face challenges, are presented with opportunities, and produce appropriate solutions to increasingly complex problems (Newton, 2026). Once we have established safe environments, our creativity can be used for different and sometimes more personal ends, like objects of adornment with aesthetic attributes. Yet prior to the mid-20th century, creativity as an area of research or even a term, was relatively rare (Franklin, 2023), only gaining popularity in the mid-20th century. Alternatives like originality, genius, imagination and invention were more common. The term creativity was, until the 20th century, usually only applied to poets, with artists being seen as copiers of what they saw. Today, there is no shortage of advice on, information about, and research into creativity. In July 2026, a search of Google Scholar for "Creativity" showed over 6.3 million items and this ignores other data bases. What has this to say about creativity today?

It is generally agreed that the modern era of research on creativity began with the work of the psychologist, J.P. Guilford (Feist & Runco, 1993). The focus for this section starts here. In his Presidential address to the American Psychological Association, Guilford (1950) noted the neglect of creativity as a field of study and identified the need for more systematic research. By the end of the 1960s, creativity had emerged as a field of study, although publications were still relatively low. Vernon (1970) brought together work from key researchers of the time who studied creativity from their own specialist perspectives. The book covers historical and contemporary work on, for example, genius; cognitive psychology, personality; creativity and intelligence; psychometric approaches; and, how to stimulate creativity.

By the 1980s, the research base began to broaden to include enhancing creativity in educational settings. In their study of the historical lines of development of creativity up to and including the 1980s, Ryhammar and Brolin (1999) noted the continued psychological focus, particularly on personality-related, and cognitive aspects. They argued that knowledge of this was important for those working in education and those constructing policies for educational systems. The assessment of creativity, beyond divergent thinking, was also becoming of interest. For example, Amabile (1988) developed a model which emphasised the relationship between creativity and organisational innovation, useful in more holistic approaches to making judgements about the quality of creative thinking that can be applied in educational contexts (see Newton, 2010). To gauge the interest in research on creativity triggered by Guilford's work, Feist and Runco (1993) studied research papers in a "new" journal on creativity, from its appearance in 1967 up to 1989. They noted that while there was an increase in the societal and education-focused articles, there was little interest in empirical research into these aspects.

Research in the 1990s showed increasing interest in schools, classrooms and teachers, with variation by phase of education, cognitive mechanisms and pedagogical approaches, in effect, democratising creativity, as promoted by Guilford (1950). As well as an increase in the number and variety of publications, studies were more qualitative, with action research and in-depth studies of classrooms. Boden (1990) reviewed what was known about creativity at that point, explaining how the creative mind works, challenging some of the myths about who can (or cannot) be creative, and distinguishing between "psychological" and "historical" creativity, later to become known as creative thinking we can all do (little-c) and creative thinking that is new to the world (big-C). Also at this time,

in the UK the NACCCE report (1999) was published, in which the Chair of the Advisory Committee identified creativity as the crucial 21st century skill needed to solve pressing, contemporary problems and discussed evidence and recommendations that placed education as central to solutions. The NACCCE report was influential in its reach and focused on classrooms and teachers. It was also embedded inside socio-cultural contexts. The title of the NACCCE report sent a clear message that all our futures depended on rethinking what goes on in classrooms for the benefit of all. By the end of the decade, Ryhammar and Brolin (1999) noted the growth of interest in creativity in a social context, as well as the generation and testing of models and frameworks, often within a broader thinking skills perspective.

As we move into the 21st century we see the growth in national and international activity, allowing for greater transdisciplinary sharing of research and ideas. The sources of information showing our growing understandings and interpretations of creativity in educational contexts have expanded the evidence base since 1999 to hundreds of thousands of documents. Figure 1 gives a feel for the flow of this focus on creativity since 1950 by decades in a sample of two key fields of activity, psychology and school curricula. The graph suggests that since Guilford's address in 1950 the overall growth in items on creativity and psychology has grown. Note that no precision is intended here, given that the capture of earlier publications may not be reliable. It does show the trend for creativity in school curricula starting later, towards the end of the century, and seems to be slower but nevertheless, both areas are growing.

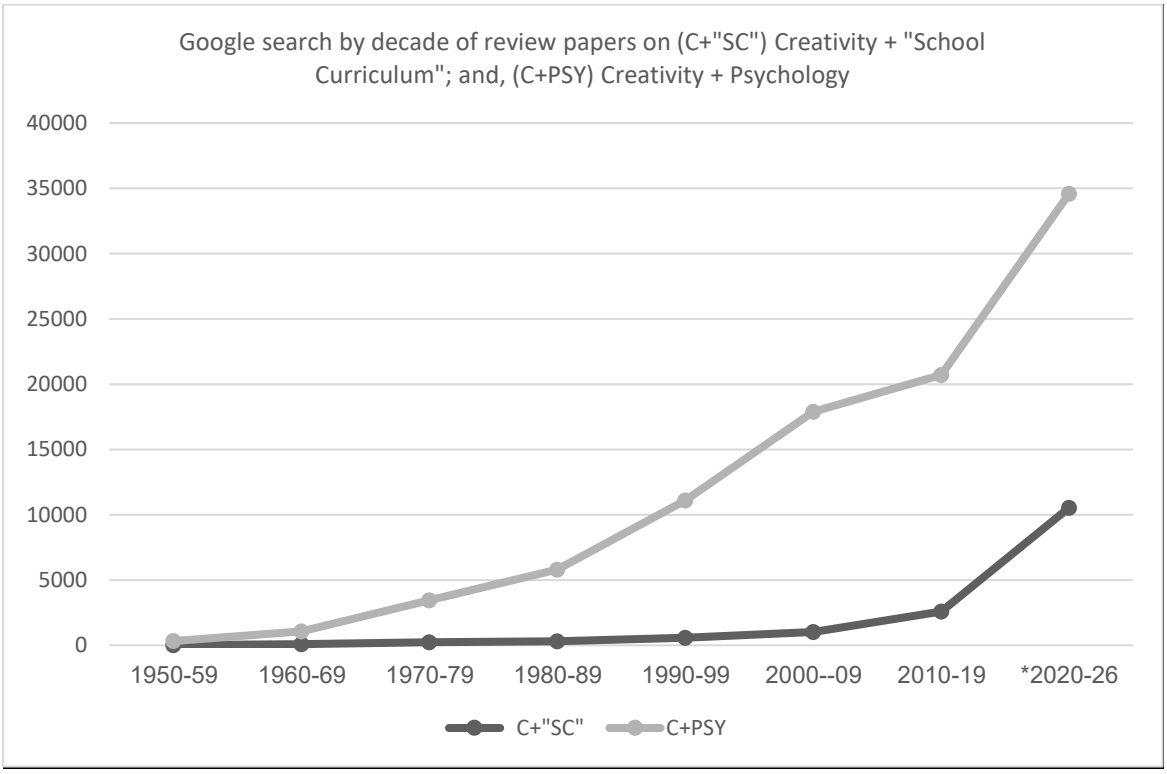


Figure 1: Graph showing the results from a Google Scholar search by decade of publications providing reviews of two areas of study: "Creativity and the School Curriculum"; and "Creativity and Psychology".

Learning from the Present

Drawing on the literature of the last quarter century, several themes emerge that show the diversification in research on creativity and creative thinking in education generally and on creativity from different perspectives.

[1] Creative teaching and teaching for creative thinking

When teaching creatively, the focus is on the teachers and their own creative thinking, planning for engagement and effective teaching, learning and assessment. Most teachers are good at this (Newton, 2012; Wallace, 2002). However, this does not necessarily mean any novel thinking has been happening on the part of the students (Newton, 2012). This shifts the attention to teaching for creative thinking, where the learners' own creative thinking is important and their ability to use creativity as a process with creative behaviours, outcomes or products.

[2] Imagination and possibility thinking

According to Finn et al. (2023), applying imagination to complex societal challenges is an innate human capacity. They discussed imagination and creativity and distinguished clearly between the two. The former, imagination, they see as generating possibilities. The latter, creativity, they see as developing those possibilities into outcomes. Craft (1999) introduced the term 'possibility thinking' (PT) to the creativity lexicon, to describe a process she considered common across creativity in life in general, different domains, and differing levels of creative activity. She argued that PT is at the core of creativity in education and shifted the focus to learning from knowing what and how, to knowing why and what if. She captured PT in the act of posing questions in different contexts to take different perspectives, with imagination and play contributing to the creative thinking process. In a later study, Craft et al. (2013) explored PT in classrooms where individual and group activities were used to stimulate what they call "what if…?" and "as if…" thinking. They were looking at a range of factors: question-posing; question-responding; self-determination; intentional action; development; being imaginative; play; immersion; and innovation. They showed young children can be creative problem solvers, use their imagination to produce and evaluate ideas, and revisit problems and generate alternatives.

[3] Leadership, environments and opportunity

Encouraging and sustaining opportunities to be creative can be of benefit to many organisations. For this to happen, leadership support for and recognition of creativity is important. Nolan and Hutchinson (2023) describe creativity as one of the nine characteristics of an agile leader. The Durham Commission (2019) recommended that schools appoint people who can help schools do this, creativity champions, in their Creative Collaboratives (Recommendation 1) for which the help of professional resources have been developed (see, for example, Lucas et al., .2022).

Environments where teachers provide opportunities for active learning are seen as a major way of developing key competencies, including creative thinking and problem solving (Eurydice, 2012). Such environments provide contexts in which all learners can be problem finders as well as problem solvers, raising questions, discussing ideas and testing potential solutions (Newton & Newton, 2018). Tools for teachers to judge whether their classroom environments offer opportunity for creative thinking exist. Richardson and Mishra's (2018) SCALE [**S**upport for **C**reativity in **A** **L**earning **E**nvironment] judges the suitability of classroom environments in three key areas: physical environment, learning climate and learner engagement. Such opportunities are not confined to the school itself. Visits to galleries and museums, talks from artists and poets, creative partnerships with artists in residence … all add to the active learning experience.

However, these opportunities often emphasise creativity in the arts and ignore the humanities and sciences and so a balance is needed. Guidance on creativity across all subject disciplines is found in, for example, Kaufman et al. (2017). They emphasise that creativity in the arts is very different from that in other areas like science or sport. Their handbook brings together experts from around the world to discuss creativity across different domains. Newton (2012) brought together the work of a group of educators who had explored creativity across different areas of the primary school curriculum, providing ideas for different age ranges in different subjects. Integrating activity is also the focus of STEAM, where arts and STEM subjects are brought together in an integrated pedagogical approach (Bell & McGregor, 2021).

[4] Recognising creativity

One of the difficulties many teachers identify is a lack of ability to assess creativity (Newton, 2013). When 'assessment' means a precise measure, this is understandable, given the infinite possibilities of creative thinking. Cropley (2001) questions the desire or, even, feasibility to assign grades. Of more use to the learner is advice on how to improve. For this the notion of recognising creative thinking is more useful. We can recognise elements of the creative process and creative behaviours, make judgements of a creative product or a solution to a problem, or we may look for evidence of divergent thinking. Drawing on Amabile's (1988) work, Newton (2010) recommended using the term 'recognising creativity' instead, and Barbot et al. (2016) discussed exploring creative potential with the EPoC [Evaluation of Potential Creativity] programme. From their studies they have developed a multidimensional and hierarchical structure of creative potential and a set of tests to sample creative tasks and thinking modes in different domains. Recently, in 2022, the OECD's programme for the assessment of international students [PISA] was extended to include the PISA Test of Creativity, with the first report published in 2024. Idil et al. (2024) noted that 25% of students did not reach the PISA baseline, with girls performing better than boys overall. Success factors (achieving above the base line) included socio-economic status, spoken home language and use of digital technology.

[5] Know what and know how

Over the last 25 years, many books, particularly international handbooks and guides, have synthesised research on creativity. For example, Sternberg and Kaufman (2018) advanced understanding of creativity by collating developments since the 1980s. Contributors, all leading scholars in their field, offered insights into understanding the nature of creativity, its 'measurement', its investigation, its development and its importance for society. It provides one of the most comprehensive accounts of the thinking about creativity in recent years.

To encourage and support creativity in educational contexts, governments, organisations and political groups have also commissioned reports and guidance. For example, in the UK, the Warwick Commission (2015) report promoted the fostering of creativity as a human right. The report highlighted the decline in arts subjects in school and signalled the impact of the emerging digital revolution on creativity and culture. A collaboration between Arts Council England and the University of Durham produced the Durham Commission on Creativity in Education (2019) report. Chaired by Sir Nicholas Serota, Chair of Arts Council England, it brought together a broad panel of 18 Commissioners with a research team from Durham University. Together they reviewed literature, gathered evidence from stakeholder groups (education, businesses and creative industries), and built a policy framework to embed creativity across all ages, subjects and abilities. They focused on identity, mobility and well-being, producing ten recommendations for embedding creativity throughout education, from the early years to post-16 contexts.

This revisits the question: What approaches to education and curriculum will promote and foster creativity and creative thinking in education in the 21st century in all its areas (Newton & Newton, 2014)? When discussing what makes creativity such an important subject, in his foreword to Sternberg and Kaufman (2018), Csikszentmihalyi (2018) succinctly concluded that: "… it is not just about now; it is mainly about the future" (p. xvii).

The growing global issues the world faces as a result of past and ongoing human activity (such as climate change, global warming, pollution, desertification and resource depletion), are the consequence of past innovation and invention. The same creative thinking that brought us to where we are now is needed to tackle these issues. UNESCO (2017) highlighted the need to think about global competences to address the sustainable development goals, and creativity as a global competence needs recognition for its contribution here. People need to be aware that we can use creativity responsibly to address future needs and solve current and future problems (Newton, 2026).

Looking forward: imagining the future

Peddiwell (1939) described how young children in the Stone Age might explore, practise and refine skills, and develop competence through creative thinking and imaginative play. They were learning how to cope in their world. It prepared them for their adult lives, that is, for their futures. The notion of humans being able to survive and flourish has become a focus for educators today.

Expressing concern about the state of contemporary education, Robinson and Aronica (2016) presented a vision of how education could enable young people to flourish, arguing that education systems need to move away from standardised approaches and uniformity to educational environments that nurture creativity, interests and talents. Hughes (2025) similarly had human flourishing at the heart of his book. He explored the problems with schools and curricula today because of their backward-looking historic legacy of 19th century curriculum and assessment models and the assumption that what works for one will work for all. He pointed to an educational system that should not only encourage growth and flourishing, but it should also promote thinking competencies and be inclusive. Some countries are already beginning to act, placing creativity as a key component of their curricula, from pre-school education through the compulsory stages to adulthood and lifelong learning.

In preparing today's children for this future, nurturing their thinking capabilities has to be an important part of that support. Creative thinking can help them determine what they need to know and understand, why they need to think creatively to meet needs or challenges and find solutions, how to evaluate evidence critically, and feel confident enough to make wise decisions. In other words, they need to become purposeful, productive thinkers (Newton & Newton, 2018). In a handbook for educators, Moseley et al. (2005) worked with seven contributing authors, each with many years of experience in education as well as individual disciplinary expertise from psychology to science, education theory and professional practice. They conducted an extensive review of different frameworks, models, tools and tests that help researchers and teachers think about thinking in educational contexts. The final chapter presents a model for productive thinking. Creativity in the past helped people to survive, even to flourish, and, in conjunction with other kinds of thinking, it is the main tool we have for doing the same today.

Wegerif and Kaufman (2015) brought together ideas about teaching thinking from a group of researchers from around the world. They saw the understanding of teaching thinking as a key to a successful economy, and to democratic engagement and individual well-being. For example, contributors explored what we mean by thinking, approaches to thinking generally and specific kinds of thinking, its assessment, and the impact of new technologies and neuro-educational research. Discussing what he called our mental repertoire of thinking tools, Sternberg (1985) had argued for the need to encourage reflection on our thinking processes and teaching about them to improve them. Encouraging this not only helps learners develop as thinkers, they become aware of the different kinds of thinking. They learn how to use the thinking they are mastering to support decision making and think more about their own thinking – metacognition. Jia et al. (2019) have reviewed work from psychology, neuroscience and education on the role of metacognition in creative thinking. They describe how knowing about and regulating our cognitive processes is a critical component of creative thinking and conclude that further research is needed to explore interactions between components during the creative processes. Nor is it only about the thinking and cognitive processing. Moods and emotions matter, both for teachers and learners in the educational environments (Newton, 2014; Newton, 2016) but according to Newton, this is often the elephant in the room. If teachers focus only on cognition and activity, and ignore emotion, the outcome will not be as effective as it could be with hearts and minds working together. Teaching with a framework for purposeful productive thought is a skeleton on which to connect the interactions and help enable teachers to do this (Newton & Newton, 2018).

An additional challenge in designing ways forward in education is the place of new technologies, particularly digital technology and Artificial Intelligence (AI). The digital age started over 30 years ago and these technologies themselves have continued to undergo transformations at an unprecedented rate, with accelerating change and impact. Christian (2022) discussed thinking in the future, describing new technologies, expanding networks, and global impact, not always positive. We are moving rapidly into

an age where technological developments, particularly AI, robots and automation in industry, manufacturing, and everyday life, are reshaping our lives and our futures. We are in a digital revolution with massive implications for the sort of education we provide and curriculum experiences we offer (Newton, 2022). We have entered what Seldon (2018) calls the fourth education revolution, and we need to rethink education provision at all stages. As we move forward, curricula need to be fit for purpose, both for work (possibly reduced for some), and for leisure (possibly increased for some). This requires us to revisit the aims of education and the definition of creativity itself, with the need to distinguish between human creativity and machine 'creativity'.

Over the last decade, researchers have begun exploring the difference between human creativity and the 'creativity' of Artificial Intelligence (AI), with some suggesting that the current definition of creativity should be expanded to include reference to AI. Buoncompagni (2021) describes different types of AI that can do things that would normally be done by humans, one of which is 'create'. However, Runco (2025) cogently argued that human creativity and AI 'creativity' are different. While both humans and AI can create something novel and fit for purpose, the two core requirements for creativity in the standard definition, there are some things that are unique to human creativity: authenticity and intentionality. The former relates to the origins or ownership of the creativity. For Runco, with humans this rests with the individuals who are behaving creatively in response to their own emotions, motives, beliefs or ideals. Runco compares this with AI 'creativity', which is derivative rather than authentic. The creative output by AI is either identical to what is found in its database search or is a derived summary of it. Regarding intentionality, this is to do with what stimulates or initiates the creative process in the first place. For Runco (2025) humans are the source of the intent, initiating the process by finding problems for themselves and inputting them into the digital technology. He suggested that authenticity and intent should be added to the standard definition of human creativity, as these are most useful for distinguishing human creativity from that of machines. He also suggested that since we have artificial intelligence (AI), perhaps we should also talk about artificial creativity (AC), because even if the creative output was original and effective, it would lack the authenticity and intentionality of human creativity.

Creative thinking has solved many problems for us, in the past and the present, but it has also produced some of the problems of today, the unintended consequences of solutions and inventions of the past. We need to extend our consideration of creativity to include the appraisal of its potential effects and consequences (Newton, 2026). Creativity should be used morally, ethically and with wisdom, points made by Sternberg (2001) and Craft (2006). This suggests that a further element might be added to thinking about human creativity, that of responsible choice for wise decision making - creative responsibility.

Rebecchi et al. (2024) brought ideas together to discuss what they describe as navigating the moral landscape of creativity, and the imperative of integrating responsibility, creativity and sustainability. They provide a definition of the concept of responsible creativity:

> … the capacity to produce original content (ideas, behaviors, objects, etc.) relevant to one's context while considering the potential moral and legal ramifications of one's intentions and actions in the present and future, aiming to minimize harm (and/or promote good). (Rebecchi et al., 2024, section 6)

A model for thinking about responsibility and creativity holistically was provided by Urban (2014). Having identified a components model of creativity, he brought together societal, cultural, political, social, and environmental components to create a competence model. He suggested this could provide a foundation for creative education that incorporated challenges and competencies needed for the future. Suyidno et al. (2019) saw scientific creativity and its responsible use as key for overcoming increasingly complex real-life problems. They applied their Creative Responsibility Based Learning [CRBL] model in physics lessons with senior high school students and found their approach to be effective in increasing both scientific creativity and awareness of the need for responsibility.

Anticipating consequences aligns with what Ambrose (1996) called *panoramic scanning.* This involves the ability to think long term with a broad scope and capture bigger-picture thinking. Trying to read the future with precision is impossible, but starting with a panoramic view of thinking in the classroom can help. Teachers can plan to build understanding and reasoning, creative thinking and problem solving, evaluative critical thinking and decision making into a framework for planning active learning experiences. The learners think about their own thinking, producing alternative worlds and are competent in deciding responsibly which they want: they are wise thinkers.

In conclusion

It is said today is yesterday's tomorrow. Tomorrow comes very quickly. Creative behaviours have changed little although the understanding of creativity has evolved. One thing is certain: just as the present looks nothing like the past, the future will probably be nothing like the present. We are already anticipating a very different future with the advent of various technologies. We see a rate of change that is daunting and some may struggle to keep up with it because of lack of skills, knowledge, access to resources, or finance.

The children of today are the adults of tomorrow. The future will be in their hands. How are we preparing them for this future? Reflecting on the last 40,000 years and pondering the future, Table 2 shows the focus of creative behaviours over time. It reflects a change in the goals of how imagination and creativity were used. It also points to the sometimes-unforeseen negative consequences (and perhaps sometimes foreseen but ignored).

Table 2: Charting the flow of the focus of creative behaviours from early humans to the present day.

The Past (from about 40,000 years ago)	**The Present** (learning from the last 300 years)	**The Future** (moving forward)
→ **ORIGINS** →	→ **REVOLUTIONS** →	→ **NOW** →
Creativity for: - Self/group - Understanding the world - Aesthetics - Pleasure	Creativity for: - Society - Financial gain - Consumerism - Materialism - Self-interests	Creativity for: - Sustainability - Inclusivity - Responsible use - Health & well being - The planet
SURVIVAL CREATIVITY Place & Process	**ECONOMICS / PROFIT CREATIVITY** Process, Product & People	**RESPONSIBLE CREATIVITY** Planet (People, Process & Place)

In the past, our ancestors focused on needs to survive. Their creativity was centred around priorities of place and process to ensure their own continued existence. In the present, the focus has shifted to gain, often financial, and with creative processes used to generate products and often with the exploitation of peoples. This is increasingly at the expense of the planet and its natural resources and the extinction of some forms of life. Global warming, deforestation, pollution of oceans, draught, - this way of being is not sustainable. In the future, what is the responsibility of individuals, communities, governments and societies, to the planet and for the survival of all living things, including humans? How can we educate the children and young people of today who will have to live with and deal with the

problems of tomorrow? If used wisely and ethically, what Runco (2022) called positive creativity can be our hope (Newton, 2026).

Global and intercultural perspectives will influence the focus of future research and ethical processes, and responsible individuals will need to manage the nature, direction and pace of change. This means that there are as many new questions raised as existing ones are answered. For example, in education:

- What kinds of creative competence will remain uniquely human?
- How will creativity be 'measured'?
- Will creativity need different approaches when face to face to online?
- What are the kinds of creative thinking in different disciplines?
- Will textual materials need adapting or even exist?
- How will identities and self-efficacy be reflected in creative potential?
- How can we integrate creative thinking with other forms of thinking?

The lesson of the last 40,000 years is that, despite limited and changing notions of creativity, it is a consistent feature of human behaviour. It can be applied in a variety of contexts for diverse purposes, sometimes to solve pressing problems and support survival, but also simply for the pleasure of the process and the rewards of the product. For those not experts in the field of creativity, there might be a tendency to think in narrow terms – the myths about creativity – and this could impede development of creative behaviours. We must avoid being guided down narrow paths and led by blinkered views. We may even ask: Do we need to think about this? I believe we must if we want responsible creative thinkers in the future.

References

Amabile, T. M. (1988). A model of creativity and innovation in organizations. In B.M. Staw & L.L. Cunnings (Eds.) *Research in organizational behavior* (pp. 123-167). JAI Press, Inc.

Ambrose, D. (1996). Panoramic scanning: Essential element of higher-order thought. *Roeper Review, 18*(4), 280-284. https://doi.org/10.1080/02783199609553760

Atkins, R., Simmons, I. & Roberts, B. (1998). *People, land and time*. Arnold / Hodder Headline Group.

Barbot, B., Besançon, M. & Lubart, T. (2016). The generality-specificity of creativity: Exploring the structure of creative potential with EPoC. *Learning and Individual Differences, 52,* 178-187. https://doi.org/10.1016/j.lindif.2016.06.005

Bell, P. & McGregor, D. (2021). The nature of creativity in arts and science teaching: Views from the primary classroom. *Journal of Emergent Science, 21*, 31-44. ASE Publication, ISSN: 2046-4754

Blanco-González, A. (2018). Copying from sherds: Creativity in Bronze Age pottery in central Iberia (1800-1150 BC). In J. Sofaer, L. Bender Jørgensen, M.L. Stig Sørensen, D. Maričević & R. Brockhurst (Eds.), *Creativity: An exploration thought the Bronze Age and contemporary responses to the Bronze Age* (pp. 19-38). Oxbow Books.

Boden, M.A. (1990). *The creative mind: Myths and mechanisms*. Routledge.

Buoncampagni, G. (2021). Migration intelligence: AI and bio-surveillance of migration flows. *Journal of Digital Information Management, (19)*2, 59-64. https://doi.org/10.6025/jdim/2021/19/2/59-64

Cassidy, M. (2021). *Biological evolution: An introduction*. Cambridge University Press.

Choi, B.C. & Pak, A.W. (2006). Multidisciplinarity, interdisciplinarity and transdisciplinarity in health research, services, education and policy: 1. Definitions, objectives, and evidence of effectiveness. *Clinical Investigative Medicine*, *29*(6), 351-364. PMID: 17330451

Christian, D. (2018). *Origin story: A big history of everything*. Little, Brown Spark.

Christian, D. (2022). *Future stories: A user's guide to the future*. Penguin Random House.

Craft, A. (1999). Creative development in the early years: Some implications of policy for practice. *Curriculum Journal, 10*(1), 135-150. https://doi.org/10-1080/0958517990100110

Craft, A. (2006). Fostering creativity with wisdom. *Cambridge Journal of Education, 36*(3), 337-350. https://doi.org/10.1080/03057640600865835

Craft, A., Cremin, T., Burnard. P. Dragonovic, T. & Chappell, K. (2013). Possibility thinking: Culminative studies of an evidence-based concept during creativity. *Education 3-13*, *41*(5), 538-556. https://doi.org/10.1080/03004279.2012.656671

Cropley, A.J. (2000). Defining and measuring creativity: Are creativity tests worth using? *Roeper Review, 23*(2), 72-79. https://doi.org/10.1080/02783190009554069

Csikszentmihalyi, M. (2018). Foreword. In R.J. Sternberg & J.C. Kaufman (2018). *The nature of human creativity* (pp. xii-xxvii). Cambridge University Press.

Durham Commission on Creativity and Education (2019). Report authored by S.J. James, L.D. Newton, & S. Daniels [Durham University] and N. Morgan & W Cohu [Arts Council], A. Ruck [Warwick University] and B. Lucas [Winchester University] with guidance from the Commissioners. https://www.artscouncil.org.uk

Eurydice (2012). *Key data on education in Europe report.* https://eurydice.eeacea.ec.europa.eu

Feist, G.J. & Runco, M. (1993). Trends in the creativity literature: An analysis of research in the Journal of Creative Behavior (1967-1989). *Creativity Research Journal*, *6*(3), 271-286. https://doi.org/10.1080/10400419309534483

Finn, E., Capurro, C.T., Bennett, M.G. & Wylie, R. (2023). Applied imagination. *Frontiers of Psychology, 14*:1275942. https://doi.org/10.3389/fpsyg.2023.1275942

Franklin, S.W. (2023). *The cult of creativity: A surprising recent history*. University of Chicago Press.

Geneste, J.-M. (2017). From Chauvet to Lascaux: 15,000 years of cave art. *Archaeology, Ethnology and Anthropology of Eurasia*, *45*(3), 29-40. https://doi.org/10.17746/1563-0110.2017.45.3.029-40

Guilford, J.P. (1950). Creativity. *Americal Psychologist*, *5*, 444-54. https://doi.org/10.1037/h0063487

Hughes, C. (2025). *Changing assessment: How to design curriculum for human flourishing.* Brill: Curriculum, Learning and Assessment Series 6, UNESCO: IBE. https://www.brill.com/ibe

Idil, Ş., Gülen, S. & Dönmez, I. (2024). What should we understand from PISA 2022 results? *Journal of STEAM Education, 7*(1), 1-9. https://doi.org/10.55290/steam.1415261

James, P. & Thorpe, N. (1995). *Ancient Inventions*. Michael O'Mara Books, Ltd.

Jia, X., Li, W. & Cao, L. (2019). The role of metacognitive components in creative thinking. *Frontiers in Psychology*, Review, *10:*2404. https://doi.org/10.3389/fpsyg.2019.02404

Kaufman, J.C., Glăveanu, V.P. & Baer, J., eds (2017). *The Cambridge handbook of creativity across domains*. Cambridge University Press.

Lucas. B., Spencer, E., Stoll, L., Fisher-Naylor, D., Richards, N. James, S. & Milne, K. (2022). *Creative thinking in schools: A leadership playbook*. Crown House Publishing Ltd.

Malafouris, L. (2021). Making hands and tools: steps to a process archaeology of mind. *World Archaeology*, *53*(1), 38-55. https://doi/org/10.1080/00438243.2021.1993992

Mithen, S. (1996). The prehistory of the mind: A search for the origins of art, religion and science. Thames and Hudson.

Morriss-Kay, G.M. (2010). The evolution of human artistic creativity. *Journal of Anatomy*, *216*, 158-176. https://doi.org/10.1111/j.1469-7580.2009.01160.x

Moseley, D. et al. (2005). *Frameworks for thinking.* Cambridge University Press.

Murphy, G.A. (2017). Rethinking standardisation through late antique Sagalass ceramic production. In A.Van Oyen and M. Pitts, (Eds). *Materialising Roman Histories* (pp.101-122). Oxbow Books.

NACCCE (1999). *All our futures: Creativity, culture and education.* Department for Education and Employment. www.national-advisory-committee-on-creative-and-cultural-education.pdf

Newton, D.P. (2010). Assessing the creativity of scientific explanations in elementary science: an insider-outsider view of intuitive assessment in the hypothesis space. *Research in Science and Technological Education*, *23*(30): 187-201. https://doi.org/10.1080/09500690903233249

Newton, D.P. (2014). *Thinking with feeling: Fostering productive thought in the classroom.* Routledge.

Newton, D.P. (2016) *In two minds: The interaction of moods, emotions, and purposeful thought in formal education*. ICIE.

Newton, D.P. (2022). *Living with digital teachers: AI, the classroom, and the future*. ICIE.

Newton, L.D., Ed. (2012). *Creativity for a new curriculum: 5-11*. Routledge / David Fulton.

Newton, L. (2013). *From teaching for creative thinking to teaching for productive thought*. ICIE.

Newton, L. (2026). "Creativity is our hope." In K. Magro (Ed.), *The Emerald handbook on teaching global competencies* (pp. 85-101). Emerald Publishing Company, Ltd. https://doi.org/10.1108/978-1-80686-247-420261006

Newton, L.D. & Newton, D.P. (2014). Creativity in 21st-century education, *PROSPECTS: the Quarterly Review of Comparative Education, (44)*4, Special Issue: Learning and Competences for the 21st Century, 575-590. https://doi.org/10.1007/S11125-014-9322-1

Newton, L.D. & Newton, D.P. (2018). *Making purposeful thought productive*. ICIE.

Peddiwell, J.A (1939). *The saber-tooth curriculum*. McGraw-Hill. [Original edition: foreword by Harold Benjamin; this 2004 edition: new Foreword by John I. Goodlad.]

Pringle, H. (2013). The origins of creativity. *Scientific American, 308*(3), 36-43. https://research.ebsco.com/plink/7f157315-678f-37c3-af51-d1685d74a17f

Rebecchi, K., Lubart, T. & Hagège, H. (2024). Teaching responsible creativity: a path to ethical innovation, *Discover Education, 3*(103). https://doi.org/10.1007/s44217-024-00164-0

Robinson, K. & Aronica, L. (2015). *Creative schools*. Penguin

Rosaldo, R., Lavie, S. & Naraya, K. (2018). Introduction: Creativity in anthropology. In S. Lavie, K. Narayan & R. Rosaldo, Eds. (2018). *Creativity/Anthropology* (pp. 1-8). The Anthropology of Contemporary Issues Series. Cornell University Press.

Runco, M. (2022). Positive creativity and the intentions, discretion, problem finding, and divergent thinking that support it can be encouraged in the classroom. *Education Sciences*, *12*, 340-352. https://doi.org/10.3390/educsci12050340

Runco, M. (2025). Updating the standard definition of creativity to account for the artificial creativity of AI. *Creativity Research Journal, 37*(1), 1-5. https://doi.org/10.1080/10400419.2023.2257977

Ryhammar, L. & Brolin, C. (1999). Creativity research: Historical considerations and main lines of development, *Scandinavian Journal of Educational Research, 43*(3), 259-273. https://doi.org/10.1080/0031383990430303

Seldon, A. (2018). *The fourth education revolution: Will artificial intelligence liberate or infantilise humanity?* University of Buckingham Press.

Shanks, M. & McGuire, R.H. (1996). The craft of archaeology. *American Antiquity, 61***(**1), 75-88. https://www.jstor.org/stable/282303 Accessed 20-07-2026.

Stahl, A.B. (2021). Investigating creativity and improvisation through archaeological sources: An introduction. *International Journal of African Historical Studies, 54*(1), 1-20. https://www.jstor.org/stable/45381056 Accessed 20-07-2026.

Sternberg, R.J. (1985). *Beyond IQ: A triarchic theory of human intelligence*. Cambridge University Press.

Sternberg, R.J. (2001). Why schools should teach for wisdom: The balance theory of wisdom in educational settings. *Educational Psychologist, 36*(4), 227-245. https://doi.org/10.1207/S15326985EP3604_2

Sternberg, R.J. & Kaufman, J.C. (2018). *The nature of human creativity*. Cambridge University Press.

Stout, D. & Chaminade, T. (2012). Stone tools, language and the brain in human evolution. *Philosophical Transactions of the Royal Society: Biological Sciences, 367*, 75-87. https://doi.org/10.1098/rstb.2011.0099

Suyidno, Susilowati, E., Arifuddin, M., Misbah, Sunarti, T. & Dwikoranto (2019). Increasing students' responsibility and scientific creativity through creative responsibility based learning, *Jurnal Penelitian Fisika dan Aplikasinya*, *9*(2), 178-188. https://doi.org/10.26740/jpfa.v9n2.p178-188

Tarawneh, M., Barge, O., Brochier, J.É & Crassard, R. (2026). Earliest evidence for the use of desert kite mass-hunting structures in southeastern Jordan during the last pre-pottery Neolothic B. *Archaeological and Anthropological Sciences, 18*, 40. https://doi.org/10.1007/s12520-026-02409-5

UNESCO IBE (2017). *Future competencies and the future of education.* UNESCO International Institute for Educational Planning / IBE. https://www.unesdoc.unesco.org/ibe

Urban, K. (2014). From creativity to responsible Createlligence®. *Gifted Education International, 30*(3), 237-247. https://doi.org/10.1177/0261429413485399

Van Oyen, A. & Pitts, M., Eds. (2017). *Materialising Roman histories*. Oxbow books.

Vernon, P.E., Ed. (1970). *Creativity*. Penguin modern psychology readings. Penguin.

Wallace, B., Ed. (2002). *Teaching thinking skills across the early years*, David Fulton Publishers.

Warwick Commission (2015). *The future of cultural value*. Commission Report. Warwick University.

Wegerif, R, Li, L. & Kaufman, J.C., Eds. (2015). *The Routledge international handbook of research on teaching thinking*. Routledge.

About the Author

Lynn Newton is Professor of Education at Durham University UK, where she has served as Head of the School of Education for 12 years. She stepped down from this role in 2024, and now focuses on teaching Masters modules, supervising doctoral students and carrying out and writing about her own research which is now mostly into aspects of creative thinking.

A science and mathematics specialist, she originally trained as a middle school teacher and began her career as a classroom teacher and science curriculum leader. She moved into university life at the University of Newcastle (UK) where she lectured in science and environmental education and pedagogy, and trained teachers. During this time, her past classroom experiences provided the motivation for her PhD research, exploring teachers' questioning for understanding in science. There followed studies of conceptions of understanding in different disciplines, working with young children to sixth formers, school teachers and university lecturers, and within different disciplines.

Following a move to Durham University, her research interests evolved into exploring teachers' notions of creative thinking, initially in science and then more broadly. This resulted in a book, *Creativity for a New Curriculum: 5-11* (Newton, 2012). Working with her husband, Professor Douglas Newton, she then began to embed creative thinking into a wider framework of purposeful, productive thought. Since 2012 she has been module leader for a masters' module on this topic, which she teaches with her husband. The essence of the module is the focus of a book, *Making Purposeful Thought Productive* (Newton & Newton, 2018). Between 2016 and 2019, in collaboration with Arts Council England, she was one of the lead researchers involved in the *Durham Commission on Creativity and Education* and was a co-author of the Commission Report (James et al*.,* 2019). She is still involved in the implementation of the report's recommendations and has recently co-authored the report on the evaluation of eight funded Creativity Collaboratives (Recommendation 1 in the report), published in Spring 2026.

Over time, as well as presenting her ideas at conferences, she has written, edited or co-authored over 30 books, over 100 academic papers, and many professional publications on these areas, some alone, many with her husband. She has supervised many doctoral students and currently supervises PhD and research masters' students and has won a University award for doctoral supervision. In 2021, the *International Journal for Talent Development and Creativity* included her in the *Profiles of Creativity* section (volume 9, pp. 203-210).

Address

Prof. Dr. Lynn Newton,
Durham University, School of Education, Confluence Building,
Lower Mountjoy, Stockton Road, Durham, DH1 3LE, UK

e-Mail: l.d.newton@durham.ac.uk
Website: www.durham.ac.uk/education

Cyber-Creativity in Education: Human-AI Pedagogies in the Space-Time Continuum

Giovanni Emanuele Corazza
University of Bologna, DEI, Marconi Institute for Creativity, Italy

Abstract

We are moving towards a Post-Information Society characterized by hyper levels of artificial intelligence, connectivity, and sociocultural change. Education systems need to evolve rapidly in order to prepare humanity for uncertain futures by moving beyond mere regulation or instrumental use of AI toward developing cyber-creativity as a core competence for human agency. Cyber-creativity is defined as collaboration between humans and artificial agents with variable levels of relative autonomy. The proposed theoretical foundation combines three cornerstones. First, the dynamic definition of creativity as potential originality and effectiveness to cover all manifestations across the four Ps of Product, Process, Person, and Press. Second, the Dynamic Universal Creative Process (DUCP) that postulates four layers of complexity (i.e., material, biological, psycho-social, and artificial) and locates cyber-creativity at the interface between the psycho-social and artificial layers. Third, the Space-Time Continuum (STC) as a model for situated contexts through different degrees of tightness and looseness in conceptual space and available time.

Building on these foundations, the article characterizes artificial agency through interactivity, productiveness, autonomy, and adaptability, while rejecting any anthropomorphic interpretation of AI. It proposes four cyber-creative pedagogical strategies corresponding to the four STC quadrants: human-in-command augmented performance in tight space-tight time; time-boxed divergent co-creation in loose space-tight time; deep augmented problem-based learning in tight space-loose time; and open-ended human-AI transdisciplinarity in loose space-loose time. Across all quadrants, human primacy must be preserved. The ideal educational system should not privilege one supposedly superior pedagogy. Rather, it should dynamically balance experiences across all four quadrants, while teachers should evolve into designers of contexts, calibrators of AI agency, guardians of epistemic quality and morality, and mentors of creative identity.

Keywords: Creativity; Cyber-Creativity; Creative Education, Artificial Intelligence; Artificial Agency; Dynamic Definition of Creativity; Dynamic Universal Creative Process; Space-Time Continuum.

Introduction

The Industrial Society was characterized by standardization and synchronization megatrends, enabling mass production of homogeneous products with tight time schedules and concentrated resources around urban areas (Thompson, 1967). The schooling system was designed following the same principles of standardized knowledge and rigid levels to be achieved at specific ages, with specialization at a prime (Kerckhoff, 1995). This schooling system determined the stratification of the Industrial Society by structuring the relationship between social origin and educational attainment and, through the organization of the transition from school to work, shape individuals' trajectories in the social hierarchy, thereby producing distinct patterns of mobility and inequality. Of course, exceptions to the standardized pedagogies existed, such as Montessori's approach (Montessori, 2013).

In the second half of the twentieth century, contraposing trends emerged in the form of personalization and distribution, thanks to the rapid growth of networking technologies and the world wide web, which allowed everyone to access all information, at all times, from all connected locations (Corazza et al., 2010). This gave life to the Information Society, in which pure access to information was a commodity, opening up new possibilities for social mobility and the need for innovation in pedagogies. Unfortunately, most educational systems showed resistance to abandoning the standardization and synchronization cornerstones in favor of new avenues for flexibility and

generalization. Arguably, this might be a reason behind the current chasm between competences developed in education and those needed on the job, highlighted in a dramatic way by the World Economic Forum (Di Battista et al., 2025), and made worse by the ever growing acceleration in societal change (Rosa, 2013).

Today, in the transition towards what can be identified as the Post-Information Society, we are witnessing the surge of hyper-levels of artificial intelligence (AI) and machine-to-machine communications, with a clear threat to job security for many traditional professions (OECD, 2023). In front of this worrisome scenario, it should be evident to every decision maker that it is now impossible to avoid re-thinking about the schooling system, pedagogical approaches, and the foundational objectives of education. This matter is both urgent and necessary, and the main motivation behind this article. Given that it can be argued that the hybridization of human and artificial intelligence is unavoidable, it is our belief that in the Post-Information Society *a primary goal of education is to enable humans to remain in control of artificial intelligence*, in any discipline, profession, endeavor. For this purpose, *creative thinking* becomes the fundamental skill for humans, given that in the next future all answers that can be found in existing knowledge will be efficiently and rapidly provided by artificial agents. Organic creativity will be a necessity for everyone (Corazza, 2017b).

Letting *cyber-creativity* be defined as any form of collaboration between humans and AI agents with variable levels of relative autonomy (Corazza, 2025), the focus of our discussion about the future of education is centered on how to optimize the introduction of cyber-creativity in curricula. Three elements form the theoretical foundation for this discussion: the dynamic definition of creativity, requiring potential originality and effectiveness (Corazza, 2016); the dynamic universal creative process (DUCP), uniting all creativity episodes in our cosmos and postulating four layers of complexity: material, biological, psycho-social, and artificial (Corazza, 2019); and the space-time continuum (STC), a model for context introduced in the comparative study of intelligence and creativity (Corazza & Lubart, 2020). Exploiting these foundational blocks, the contribution of this article consists in modelling cyber-creativity as a dynamic phenomenon at the intersection between the psycho-social and artificial layers of complexity of the DUCP, and in mapping its introduction in education onto the STC quadrants, to describe a variety of pedagogical approaches for cyber-creative teaching and learning (Corazza, Darbellay, et al., 2021).

The Dynamic Creativity Framework

The Dynamic Creativity Framework (Corazza et al., 2022) moves away from static and product-centered conceptions of creativity by treating it as a phenomenon unfolding across time, culture, and societies. Its foundation is the dynamic definition proposed by Corazza (2016), according to which creativity requires *potential* originality and effectiveness. The term potential is decisive. In fact, when one enters the creative process there cannot be any guarantee for success, but only a potential for originality that depends on the level of the challenge posed to the state-of-the-art. The search might fail and lead to creative inconclusiveness, which is not only legitimate but a crucial part of the process (Corazza, 2020). Assuming an outcome has emerged, its effectiveness is not an objective property that only needs to be recognized: it requires the ability to estimate it through a sensitivity towards possible futures (Corazza, 2017a, 2024). An idea, action, or artifact may therefore possess creative potential before its value is fully recognized as a creative achievement, while an outcome initially celebrated as creative may later lose such status. Creativity is thus understood as a temporally open phenomenon, subject to emergence, evaluation, and transformation.

This definition has a unique theoretical advantage: it can be applied consistently to all four classical Ps of creativity: Product, Process, Person, and Press (Rhodes, 1961). Each analytical perspective is characterized by a different form of potential (Corazza & Glăveanu, 2020). For Product, an artifact can be considered a creative achievement when its potential for originality and effectiveness crosses a threshold, but immediate or universal recognition is not required. Indeed, it could be argued that the higher the originality of an idea, the longer it typically takes for society to recognize it. For Process, a sequence of explorations, estimations, and implementations may itself contain such potential, independently of whether it terminates in an already validated product. This opens the way to

recognizing not only creative achievement but also creative inconclusiveness, namely processes that generate potentially valuable transformations without necessarily reaching definitive closure. Further, on some occasions the process outcome is totally irrelevant; such is the case, for example, when creativity is used therapeutically (Bertman, 2018). Considering Person, this is the usual connotation for creative potential consisting in the capacity of an agent to produce, recognize, and develop tangible or intangible ideas that may become original and effective under suitable conditions. Finally, for Press, physical or virtual environments, cultures, institutions, and social systems are all characterized by a potential as testbeds for a creative process, according to the extent to which they enable or constrain the emergence of originality and effectiveness. No change of definition is therefore required when moving from one P to another: the same dynamic criterion operates across products, processes, persons, and contexts. This is a crucial property for a definition to be valid.

Once creativity is defined dynamically, a further question arises: could creative processes be observed even outside of the human species, based on phenomena of emergence out of complexity? The concept of the Dynamic Universal Creative Process (DUCP) answers positively by proposing a framework capable of describing creativity episodes across four different layers of complexity: material, biological, psycho-social, and artificial (Corazza, 2019). The assumption is not that all layers experience creative manifestations in the same manner. In fact, the psycho-social layer is the only one characterized by intentionality, goal-directedness, and sightedness, and for this reason we identify this manifestation as strict-sense creativity. When no intentionality, goal-directedness, or sightedness can be scientifically recognize, we identify the potential for originality and effectiveness as wide-sense creativity.

At the material layer, wide-sense creativity can emerge in dissipative systems that are kept away from equilibrium: irreversible trajectories of evolution can emerge, which are both original and effective in their materiality (Prigogine, 1961), obviously without intention or consciousness. At the biological layer, the appearance of life itself is an unsurpassed creative achievement, and living systems have the potential to exploit adaptation and exaptation (Gould & Vrba, 1982) to generate potentially original and effective responses to changing environments (Kaufman & Kaufman, 2015). The psycho-social layer includes all forms of creativity by individuals, groups, and societies that through our history have led to the exponential growth of human culture (Enquist et al., 2008). The artificial layer, finally, concerns computational systems capable of generating, transforming, selecting, or acting upon information in ways that may enter creative trajectories, without implying human-like consciousness or subjective experience (Colton & Wiggins, 2012).

For the present article, the crucial point lies at the interface between the psycho-social and artificial layers. Their interaction creates a new field of possibility in which creative processes are no longer attributable to a single isolated human agent, nor reducible to the autonomous operation of a machine. *Cyber-creativity* is born from the collaboration between these two layers: humans and artificial agents participate, with different capabilities, limitations, degrees of autonomy, and forms of agency, in processes that may generate outcomes with potential originality and effectiveness (Corazza, 2025). There are many open research challenges in the study and understanding of cyber-creativity (Corazza et al., 2025), including in the field of education, which must address not merely the instrumental use of AI tools but the orchestration of heterogeneous agents within dynamic creative processes. The next question, therefore, concerns the forms of agency that artificial systems can exercise and the conditions under which they can enhance human capabilities without inducing cognitive dependency.

AI agency: Interactivity, Productiveness, Autonomy, and Adaptability

Even though we have introduced the artificial layer in the DUCP, a mistake to be avoided is to attribute to AI any form of human-like intelligence, conscience, or creativity (Floridi, 2025; Runco, 2023). Anthropomorphization of AI clutters our understanding of the constructive ways of interacting with it (Deshpande et al., 2023). The actual point is to understand whether and how artificial systems could be involved with humans in the creative process at both functional and phenomenological levels, by producing effects that may enter the field of content generation with a potential for originality and effectiveness. To this aim, the notion of *AI agency* allows us to move beyond the question of whether

AI is intelligent in a human-like way, and to focus instead on observable forms of artificial agency (Floridi, 2025).

An artificial generative agent is characterized by four capabilities: *interactivity* (the agent displays interfaces and communication modalities), *productiveness* (the agent can produce meaningful content or action), *autonomy* (the agent is endowed with some level of autonomous decision making), and *adaptability* (the agent can survive in changing environments). Taking the example of a Large Language Model (LLM) used as the reasoning engine of an AI agent (Ferrag et al., 2026), interactivity with humans is based on natural language processing through an interface which may exploit text, voice, images, or even video. The simplicity of interface has been instrumental in the success of this technology. Productiveness is based on the capacity of LLMs to generate useful outputs in response to prompting the artificial neural network within a certain context window and with the possible aid of relevant information (Arslan et al., 2024). The level of autonomy depends on the mechanisms for goal setting and the allowed trajectories of behavior that can be iteratively refreshed without human intervention depending on environmental responses. Finally, adaptability refers to the agent's capacity to monitor the environment, remember previous interactions and feedback, consider contextual constraints, and as a consequence change its own behavior.

These capabilities, although clearly limited, acquire a superhuman flavor in the moment the AI agent can perform billions of operations per second, exploit memory capacities that exceed the size of the entire human knowledge, and connect with millions of other agents through ultrafast networks.

The Space-Time Continuum

Creativity and intelligence, as well as the pedagogies oriented towards developing these two fundamental constructs, are situated phenomena. Hence, their scientific study requires a model for context. The Space-Time Continuum (STC) was introduced for this purpose (Corazza & Lubart, 2020), considering that reasoning spans two contextual dimensions: conceptual space S (the domain in which reasoning occurs) and the available time T (the period available for the production of a response). Borrowing the idea from the analysis of societies (Gelfand, 2012; Gelfand et al., 2011), to each dimension one can attribute a level of tightness vs. looseness. A tight conceptual space S is one where a single correct solution is foreseen, at most with few variations on the theme, with strong constraints, and with little or no tolerance for ambiguity and errors. On the other hand, in a loose conceptual space many alternatives are contemplated, without pre-conditioning the outcomes of the search and with ample possibility for discontinuities, requiring high tolerance for ambiguity. On the temporal side, if time T is tight then the context imposes strict limits on delivery of expected outcomes, and delays and distractions are punished. At the opposite extreme, loose time T allows ample periods of time for the process, for which planning is not at a prime, and in any case there is tolerance for delays.

Mapping the STC on two orthogonal tightness-looseness axes leads to the graphical representation reported in Figure 1.

The STC contains infinite contexts with variable levels of tightness-looseness in S and T. For a simplified analysis it is possible to merely exploit the four quadrants: tight space-tight time (TS-TT), loose space-loose time (LS-LT), loose space-tight time (LS-TT), and tight space-loose time (TS-LT). These quadrants correspond to sharply different and meaningful situations. For examples of application of the STC quadrants to education, business, and development see (Corazza, Reiter-Palmon, et al. 2021).

The STC model can also be exploited to study human-AI interactions in situated contexts. For artificial agents the tightness/looseness in space S corresponds to the distinction between narrow AI and general AI (Bory et al., 2025). A specialized expert system, a dedicated chatbot, or a robotic arm in industrial settings operate in tight conceptual spaces, whereas a multimodal LLM with access to general databases and flexible interactions lives in a loose conceptual space. Considering time, some artificial agents must produce outputs in real time, under strict latency and operational constraints, whereas others can afford extended iterations, persistent memory, or long-term adaptation.

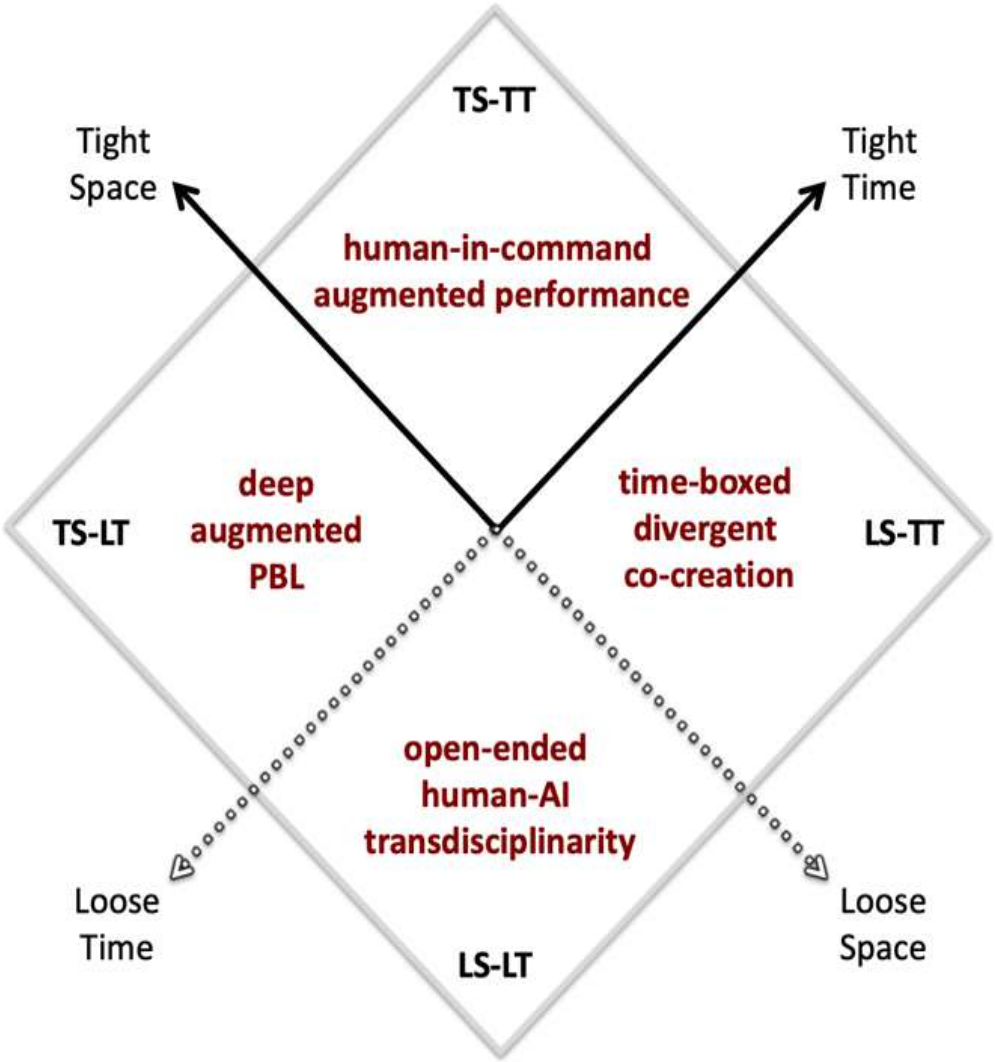


Figure 1: The Space-Time Continuum. In each quadrant, a different pedagogical approach for the development of cyber-creativity skills is reported.

The mapping constrains the productiveness of artificial agents. The more space looseness is granted to the agent, the higher its potential to produce unexpected outcomes. The more looseness is granted in time, the greater its possibility to adapt, refine, and stabilize its outputs across iterations. Yet, unlike human agents, for artificial agents the STC degrees of freedom are not existential but functional.

Cyber-Creative Pedagogies in the STC

Now we can bring together all these ingredients to formulate a vision of possible futures in which the situated introduction of cyber-creativity in education becomes potentially effective. If cyber-creativity is to become a core competence for the Post-Information Society, education cannot limit itself to regulating the use of AI or adding isolated modules on prompting and digital literacy. The actual challenge is to design pedagogies through which students (and teachers) learn to think, create, judge, and act in collaboration with artificial agents.

A fundamental requirement is that the human side must always remain in control of the cyber-creative relation. This does not necessarily imply minimizing AI agency, but ensuring human primacy in goal setting, problem framing, authenticity of expression, critical judgment, value estimation, and

moral responsibility. How to achieve all this is clearly an open problem. AI should expand cognitive capabilities rather than induce their atrophy (Clark, 2025; Fasoli et al., 2025). In particular, cyber-creative education should jointly strengthen critical thinking (to interrogate, verify, and challenge artificial outputs) and creative thinking (to imagine ideas with a potential for originality and effectiveness, that neither prior knowledge nor algorithmic regularities could predetermine). But how can we translate these high-level objectives into actual pedagogical approaches, albeit at an abstract level?

The four quadrants of the STC might offer a framework for designing differentiated cyber-creative pedagogies, see again Figure 1. The original application of the STC to education already proposed four pedagogical configurations and argued against the dominance of any single one (Corazza, Darbellay, et al., 2021; Corazza, Reiter-Palmon, et al., 2021). However, artificial agents were not yet included in those studies as active participants in the learning process. Extending that framework, four strategies could now be proposed.

In the TS-TT quadrant, cyber-creativity could take the form of *human-in-command augmented performance*. Students work within well-defined disciplinary constraints and strict deadlines, while AI agents support rapid information retrieval, simulation, and checking. The pedagogical objective is not unrestricted originality, but reliable performance under pressure without surrendering human judgment, a critical asset to be developed and preserved. Students should be required to verify AI outputs, expose errors, justify final decisions, and demonstrate that they can override the artificial agent. This quadrant is particularly important for developing epistemic discipline, critical vigilance, and responsibility.

In the LS-TT quadrant, a pedagogical strategy could be identified as *time-boxed divergent co-creation*. Students face open-ended challenges (S is loose) but must produce results within a limited period T. AI agents can rapidly generate alternatives, introduce distant associations, simulate stakeholders, or act as idea challengers. Human learners retain responsibility for framing the challenge, navigating the expanding possibility space, expressing authentic ideas, selecting promising directions, and estimating their potential originality and effectiveness. Hackathons, design sprints, and rapid interdisciplinary challenges could become useful formats for this quadrant.

In the TS-LT quadrant, with experiences that could last several months (Higuera-Martínez et al., 2022), *deep augmented problem based learning* (PBL) might be offered to students. The domain and expected standards remain relatively well defined (although the "problem" itself might be ill-defined), but extended time allows interactive group work with iteration, reflection, practice, and learning from errors. Here, an AI agent or a multi-agent system (Lin et al., 2025) may serve as adaptive tutor, simulator, critic, or long-term project companion, potentially exploiting memory of previous interactions. The educational objective is sustained competence development and the development of an entrepreneurial spirit, rather than immediate output. The danger of cognitive offloading (Gerlich, 2025) must be countered by requiring students to explain reasoning and moral implications, compare trajectories, revisit failures, and progressively assume greater control of the process.

Finally, in the LS-LT quadrant, cyber-creativity could take the form of *open-ended human-AI transdisciplinarity*. Students pursue long-term transdisciplinary projects with evolving goals and weakly checkpoints. Artificial agents may act as co-explorers, generative partners, or even coordinated agent collectives. This quadrant offers the greatest potential for radical originality, serendipity, and new knowledge formation, but also the highest risk of losing direction. Human agency is therefore essential in assigning meaning, values, purpose, and criteria of relevance.

The role of teachers and professors should consequently evolve. Besides their typical role as domain experts, they would become designers of space-time contexts, calibrators of AI agency, guardians of epistemic quality and moral values, mentors of creative identity, and orchestrators of transitions across quadrants. Student assessment should increasingly consider not only the final product, but also the quality of the cyber-creative interactions, the level of foresight in human judgment, the distribution of agency, the evolution of ideas, and the capacity to challenge the artificial partner.

Discussion and conclusions

The advent of AI is causing a revolution of unprecedented impact and transversality. Of course, every technology that was introduced and became widespread in the course of our cultural evolution as a species implied cognitive transformations, and this has been true in particular for all digital technologies (Walker & Herrmann, 2010). The crucial point is that in any transformation there will be gains and losses in terms of cognitive capacities. Hopefully the balance remains positive thanks to larger gains than losses: but will this still be the case for AI? We believe the answer is non-obvious and depends critically in our actions and pedagogical choices.

We argue that any technological transition implies four elements: affordance, constraints, offloading, and reinvestment. Exploiting the affordance provided by the novel technology, a new cognitive operation can become possible for humans. However, interacting with any technology also implies that a particular format or logic is strictly followed, leading to new constraints in the way we think. As an example, interacting with an LLM can provide useful insights on disparate matters almost instantaneously, as long as the user is able to write appropriate prompts and maintain a critical attitude for output verification. Prompt design and output verification are the constraints implied by the use of LLMs. Then, if the novel technology becomes widely available and works efficiently, cognitive offloading is a natural consequence: cognitive work that was produced internally is transferred outside our minds (both for individuals and groups), freeing up cognitive resources. Now, the critical element is to determine what happens to these freed-up cognitive resources: if they are reinvested for higher order functions, the transformation leads to growth. If they are simply left unused, the result is a degradation of cognitive capacity.

The four styles of cyber-creative pedagogies we have described in this article are all intended to provide context-aware scaffolding for reinvestment of cognitive resources that are freed in the interaction between humans and AI. By controlling the tightness and looseness of the conceptual space and available time for cognitive tasks, it appears possible to engage students in a variety of situations that should open chances for in-depth understanding, learning, and creating, avoiding simple shortcuts. In our view the ideal course of studies should not concentrate all its resources on a single, supposedly superior, pedagogy in any specific STC quadrant. As already suggested by the original STC application to education, the objective should be to design a balanced and dynamic visitation of all four quadrants in the course of studies (Corazza, Reiter-Palmon, et al., 2021). The amplitude of possibilities in finding this dynamic balance would allow great differentiation between pedagogical styles, while providing an unequaled richness in cyber-creative experiences for both students and teachers.

References

Arslan, M., Ghanem, H., Munawar, S., & Cruz, C. (2024). A Survey on RAG with LLMs. *Procedia Computer Science, 28th International Conference on Knowledge Based and Intelligent Information and Engineering Systems (KES 2024)*, *246*, 3781–3790. https://doi.org/10.1016/j.procs.2024.09.178

Bertman, S. L. (2018). *Grief and the Healing Arts: Creativity as Therapy*. Routledge.

Bory, P., Natale, S., & Katzenbach, C. (2025). Strong and weak AI narratives: An analytical framework. *AI & SOCIETY*, *40*(4), 2107–2117. https://doi.org/10.1007/s00146-024-02087-8

Clark, A. (2025). Extending Minds with Generative AI. *Nature Communications*, *16*(1), 4627. https://doi.org/10.1038/s41467-025-59906-9

Colton, S., & Wiggins, G. A. (2012). Computational Creativity: The Final Frontier? In *ECAI 2012* (pp. 21–26). IOS Press. https://doi.org/10.3233/978-1-61499-098-7-21

Corazza, G. E. (2016). Potential Originality and Effectiveness: The Dynamic Definition of Creativity. *Creativity Research Journal*, *28*(3), 258–267. https://doi.org/10.1080/10400419.2016.1195627

Corazza, G. E. (2017a). Creativity and Anticipation. In R. Poli (Ed.), *Handbook of Anticipation: Theoretical and Applied Aspects of the Use of Future in Decision Making* (pp. 1–13). Springer International Publishing. https://doi.org/10.1007/978-3-319-31737-3_102-1

Corazza, G. E. (2017b). Organic Creativity for Well-Being in the Post-Information Society. *Europe's Journal of Psychology*, *13*(4), Article 4. https://doi.org/10.5964/ejop.v13i4.1547

Corazza, G. E. (2019). The Dynamic Universal Creativity Process. In R. A. Beghetto & G. E. Corazza (Eds.), *Dynamic Perspectives on Creativity: New Directions for Theory, Research, and Practice in Education* (pp. 297–319). Springer International Publishing. https://doi.org/10.1007/978-3-319-99163-4_17

Corazza, G. E. (2020). Creative Inconclusiveness. In *The Palgrave Encyclopedia of the Possible* (pp. 1–8). Springer International Publishing. https://doi.org/10.1007/978-3-319-98390-5_61-1

Corazza, G. E. (2024). Creativity and Futures Studies. In R. Poli (Ed.), *Handbook of Futures Studies* (pp. 131–144). Edward Elgar Publishing. https://doi.org/10.4337/9781035301607.00016

Corazza, G. E. (2025). *The Cyber-Creativity Process: How Humans Co-Create with Artificial Intelligence*. Cham: Palgrave Macmillan.

Corazza, G. E., Agnoli, S., Jorge Artigau, A., Beghetto, R. A., Bonnardel, N., Coletto, I., Faiella, A., Gerardini, K., Gilhooly, K., Glăveanu, V. P., Hanson, M. H., Kapoor, H., Kaufman, J. C., Kenett, Y. N., Kharkhurin, A. V., Luchini, S., Mangion, M., Mirabile, M., Obialo, F.-K., … Lubart, T. (2025). Cyber-Creativity: A Decalogue of Research Challenges. *Journal of Intelligence*, *13*(8), 103. https://doi.org/10.3390/jintelligence13080103

Corazza, G. E., Agnoli, S., & Mastria, S. (2022). The Dynamic Creativity Framework. *European Psychologist*, *27*(3), 191–206. https://doi.org/10.1027/1016-9040/a000473

Corazza, G. E., Darbellay, F., Lubart, T., & Panciroli, C. (2021). Developing Intelligence and Creativity in Education: Insights from the Space–Time Continuum. In S. Lemmetty, K. Collin, V. P. Glăveanu, & P. Forsman (Eds.), *Creativity and Learning: Contexts, Processes and Support* (pp. 69–87). Springer International Publishing. https://doi.org/10.1007/978-3-030-77066-2_4

Corazza, G. E., & Glăveanu, V. P. (2020). Potential in creativity: Individual, social, material perspectives, and a dynamic integrative framework. *Creativity Research Journal*, *32*(1), 81–91. https://doi.org/10.1080/10400419.2020.1712161

Corazza, G. E., & Lubart, T. (2020). Intelligence and Creativity: Mapping Constructs on the Space-Time Continuum. *Journal of Intelligence*, *9*(1). https://doi.org/10.3390/jintelligence9010001

Corazza, G. E., Reiter-Palmon, R., Beghetto, R. A., & Lubart, T. (2021). Intelligence and creativity in the space-time continuum for education, business, and development. *Journal of Creativity*, *31*, 100003. https://doi.org/10.1016/j.yjoc.2021.100003

Corazza, G. E., Vanelli-Coralli, A., & Pedone, R. (2010). Technology as a Need: Trends in the Evolving Information Society. *Advances in Electronics and Telecommunications*, *Vol. 1*(1). http://yadda.icm.edu.pl/baztech/element/bwmeta1.element.baztech-80c3d73a-3b5b-4c0d-9149-6b928b245614

Deshpande, A., Rajpurohit, T., Narasimhan, K., & Kalyan, A. (2023). *Anthropomorphization of AI: Opportunities and Risks* (arXiv:2305.14784). arXiv. https://doi.org/10.48550/arXiv.2305.14784

Di Battista, A., Grayling, S., Játiva, X., Leopold, T., Li, R., Sharma, S., & Zahidi, S. (2025). *Future of jobs report 2025*. World Economic Forum. https://www.voced.edu.au/content/ngv%3A101811

Enquist, M., Ghirlanda, S., Jarrick, A., & Wachtmeister, C.-A. (2008). Why does human culture increase exponentially? *Theoretical Population Biology*, *74*(1), 46–55. https://doi.org/10.1016/j.tpb.2008.04.007

Fasoli, M., Cassinadri, G., & Ienca, M. (2025). The Dark Side of Cognitive Enhancement: A Framework for the Technologically Induced Cognitive Diminishment. *Journal of Cognitive Enhancement*, *9*(3), 346–359. https://doi.org/10.1007/s41465-025-00331-7

Ferrag, M. A., Tihanyi, N., & Debbah, M. (2026). From LLM Reasoning to Autonomous AI Agents: A Comprehensive Review. *IEEE Access*, *14*, 84237–84285. https://doi.org/10.1109/ACCESS.2026.3698694

Floridi, L. (2025). AI as Agency without Intelligence: On Artificial Intelligence as a New Form of Artificial Agency and the Multiple Realisability of Agency Thesis. *Philosophy & Technology*, *38*(1), 30. https://doi.org/10.1007/s13347-025-00858-9

Gelfand, M. J. (2012). Culture's Constraints: International Differences in the Strength of Social Norms. *Current Directions in Psychological Science*, *21*(6), 420–424. https://doi.org/10.1177/0963721412460048

Gelfand, M. J., Raver, J. L., Nishii, L., Leslie, L. M., Lun, J., Lim, B. C., Duan, L., Almaliach, A., Ang, S., Arnadottir, J., Aycan, Z., Boehnke, K., Boski, P., Cabecinhas, R., Chan, D., Chhokar, J., D'Amato, A., Subirats Ferrer, M., Fischlmayr, I. C., … Yamaguchi, S. (2011). Differences between tight and loose cultures: A 33-nation study. *Science*, *332*(6033), 1100–1104. https://doi.org/10.1126/science.1197754

Gerlich, M. (2025). AI Tools in Society: Impacts on Cognitive Offloading and the Future of Critical Thinking. *Societies*, *15*(1). https://doi.org/10.3390/soc15010006

Gould, S. J., & Vrba, E. S. (1982). Exaptation—A Missing Term in the Science of Form. *Paleobiology*, *8*(1), 4–15. https://doi.org/10.1017/S0094837300004310

Higuera-Martínez, O. I., Corazza, G. E., & Fernández-Samacá, L. (2022). PBL in the space-time continuum for engineering education. *European Journal of Engineering Education*, *47*(6), 1260–1277. https://doi.org/10.1080/03043797.2022.2149388

Kaufman, A. B., & Kaufman, J. C. (2015). *Animal creativity and innovation* (pp. xxi, 516). Elsevier Academic Press.
Kerckhoff, A. C. (1995). Institutional Arrangements and Stratification Processes in Industrial Societies. *Annual Review of Sociology*, *21*(Volume 21, 1995), 323–347. https://doi.org/10.1146/annurev.so.21.080195.001543
Kosinski, M. (2023). *Theory of Mind Might Have Spontaneously Emerged in Large Language Models* (arXiv:2302.02083). arXiv. https://doi.org/10.48550/arXiv.2302.02083
Lin, Y.-C., Chen, K.-C., Li, Z.-Y., Wu, T.-H., Wu, T.-H., Chen, K.-Y., Lee, H., & Chen, Y.-N. (2025). *Creativity in LLM-based Multi-Agent Systems: A Survey* (arXiv:2505.21116). arXiv. https://doi.org/10.48550/arXiv.2505.21116
Montessori, M. (2013). *The Montessori Method*. Transaction Publishers.
OECD. (2023). OECD Employment Outlook 2023: Artificial Intelligence and the Labour Market. *OECD Employment Outlook*, *2023*. https://doi.org/10.1787/08785bba-en
Prigogine, I. (Ilya) (with Internet Archive). (1961). *Introduction to thermodynamics of irreversible processes*. New York, Interscience Publishers. http://archive.org/details/introductiontoth0000prig
Rhodes, M. (1961). An Analysis of Creativity. *The Phi Delta Kappan*, *42*(7), 305–310.
Rosa, H. (2013). *Social Acceleration: A New Theory of Modernity*. Columbia University Press.
Runco, M. A. (2023). AI can only produce artificial creativity. *Journal of Creativity*, *33*(3), 100063. https://doi.org/10.1016/j.yjoc.2023.100063
Thompson, E. P. (1967). Time, Work-Discipline, And Industrial Capitalism. *Past & Present*, *38*(1), 56–97. https://doi.org/10.1093/past/38.1.56
Walker, W. R., & Herrmann, D. J. (2010). *Cognitive Technology: Essays on the Transformation of Thought and Society*. McFarland.

About the Author

Giovanni Emanuele Corazza is a Full Professor at the Alma Mater Studiorum University of Bologna, founder of the Marconi Institute for Creativity (MIC), Core Faculty Member of the Bologna Business School (BBS), Member of the Board of the International Society for the Study of Creativity and Innovation (ISSCI), and Leader of the ISSCI AI Task Force. He holds a PhD in Telecommunications and Microelectronics from the University of Rome Tor Vergata and a PhD in Psychology from the Université Paris Cité, after graduating cum laude in Electronic Engineering from the University of Bologna. His interdisciplinary research spans creativity studies, cyber-creativity, artificial intelligence, futures studies and anticipation, neuroscience, and next-generation telecommunications. A central focus of his recent work is the development of dynamic approaches to creativity and the study of human-AI co-creative processes. His publications include The Cyber-Creativity Process: How Humans Co-Create with Artificial Intelligence (Springer Nature, 2025), the article "Cyber-creativity: A decalogue of research challenges" (Journal of Intelligence, 2025), and work on the Dynamic Creativity Framework and the DA VINCI model of the creative process. His academic career has combined research, education, institutional leadership, and European technology strategy. He has been a Full Professor at the University of Bologna since 2001 and a Core Faculty Member of BBS since 2020, where his teaching includes creativity and innovation. He was President of the Fondazione Guglielmo Marconi from 2019 to 2023, President of the CINECA consortium for supercomputing from 2017 to 2019, Member of the Board of Directors of the University of Bologna from 2012 to 2018, and Head of the Department of Electronics, Computer Science and Systems (DEIS) from 2009 to 2012. Earlier, he chaired the School for Telecommunications from 2000 to 2003. At European level, he served on the Partnership Board of the 5G Infrastructure Association from 2013 to 2018 and as Vice-Chairman of the NetWorld2020 European Technology Platform from 2013 to 2016. He also chaired the Advanced Satellite Mobile Systems Task Force (ASMS-TF) and founded and chaired the Integral Satcom Initiative (ISI), a European Technology Platform devoted to satellite communications. His international experience includes visiting positions at the University of Southern California and ESA/ESTEC, as well as work as Principal Engineer at Qualcomm and Advanced Member of Technical Staff at COM DEV. He has served as principal investigator for 13 projects funded by the European Commission and five projects funded by the European Space Agency.

Address

e-Mail: giovanni.corazza@unibo.it

Personal Integrative Thinking as a Cognitive Asset in a Complex World

Douglas P. Newton
Durham University, UK.

Abstract

The Digital Revolution has brought with it the need for an education which prepares people to function well in this rapidly emerging world. This goes beyond competence and confidence in using digital devices or even possessing a lot of disciplinary knowledge. It needs an integrative way of thinking about personal concerns that constructs 'the bigger picture' and, when appropriate, retains a human-centred perspective. Some proficiency in this kind of thinking – called here Personal Integrative Thinking – can be an antidote to simplistic thinking and can facilitate and integrate diverse kinds of thought like creative thinking, problem solving, and ethical action. Versions of integrated thinking are applied elsewhere for other purposes, but Personal Integrative Thinking is likely to be an asset in negotiating life's demands. Matters that bear upon cultivating Personal Integrative Thinking in various phases of education are described, and opportunities for contributions by education leaders, researchers, and practitioners are highlighted.

Keywords: Personal Integrative Thinking; Thinking in a complex world; The Thinking Curriculum.

Thinking in a complex world

Perhaps, looking back, life always seems simpler then than it is today, but the Digital Revolution *has* radically restructured how we live. Now there is a ready access to vast amounts of information, fast global communication, interaction mediated and managed by algorithms, and virtual communities which cross borders (Lappin, 2025). Economies, societies, and personal lives are driven by digital technology in a hypercomplex, interconnected world. Opting out is hardly an option as the neatly compartmentalised world of local concerns and confined consequences fades away (Homer-Dixon, 2011). We must live with this digital world, negotiate our way through it, and thrive in it. Fortunately, our students have what it takes to think, athough not always an inclination to do so, or with some proficiency in it.

For some time, in all stages of education, exercising various kinds of thought has been seen as laudable (e.g. Moseley et al., 2005). Now, in the digital world, proficiency in information appraisal and critical thinking, for example, is an asset (Newton, 2026). These are worthy aspects of a thinking curriculum but, in isolation, they are not always enough to meet the needs of a highly interconnected world, or of a personal life in it. There are times when we need to step back from the detail and use 'joined up thinking' to construct a bigger picture or take a bird's eye view. Fragmented knowledge, understanding, and experience are connected and contextualised to make more comprehensive understandings that inform actions and make them fair and considerate. Seurat's pointillist paintings provide a popular analogy: only from afar do the dots merge to make sense of his pictures. This is what Personal Integrative Thinking aims to do.

The notion of integrative thinking has tended to focus on specific activities, especially the needs of the workplace. For example, one use is in business management and commerce (where it may also appear as Systems Thinking). Its aim is to integrate intuition, reason, and imagination to rise above 'either/or' options and generate an action that accommodates both (Busco, Granà & Quatrone, 2017; Osborn et al., 2022). Another use is in designing environments to live in, as in urban planning (Benson & Dresdow, 2009). Others use integrated thinking to mean the healing of fragmented learning. Students tend to acquire disconnected knowledge and miss fruitful connections (Abbot & Nantz, 2012; Kowalski, Lineweaver & Novak, 2022). Integrated thinking may decompartmentalise learning by breaking down

barriers between and within subjects or disciplines. A literature review found that this was generally confined to 'Middle School' STEM subjects and was a response to a 'need for interdisciplinary and innovative talent cultivation' (Li & Zhan, 2022, p. 15). Finland introduced 'transversal competences' in primary and lower secondary schools which combine subjects in 'multidisciplinary learning modules'. The aim is to engage children, connect knowledge, and replace rote and passive learning with practice in problem-solving, largely to meet the needs of the economy and working life (Säntti, Hansen & Saari, 2021). In primary schools in England, a cross-curricular, thematic approach was common until the introduction of a subject-based National Curriculum (e.g. Newton & Newton, 1998). The approach accepted that children do not think in terms of isolated subjects. The term is also used to describe multidisciplinary learning in higher education intended to address the 'wicked' problems[1] of, for instance, sustainability and climate change (e.g. Cruz et al., 2023; Newton, 2026). Kallio (2011) saw integrative thinking as a useful approach in adult learning, especially when its product transformed existing notions and beliefs.

The roles of integrative thinking in these are not identical. In some, it is like a tool that primarily services the needs of the workplace. In others, it produces a kind of academic learning. Useful as these are, they do not explicitly offer a way of thinking to support a personally meaningful life, negotiate its problems, and keep people and their concerns at its centre. Nussbaum's notion of capabilities, however, can give some direction to a thinking curriculum that includes the deliberate development of integrative thought to meet today's personal needs. She contends that we all need to develop capabilities that enable us to pursue and manage life 'rather than be passively shaped or pushed around by the world' (Nussbaum, 2002, p. 124)[2]. To paraphrase for brevity, these include a capability to *think and plan effectively*, to care about *personal well-being*, to *relate to the world and others* with consideration, and to *feel and be human*. Proficiency in Personal Integrative Thinking can support these and, hence, autonomous behaviour and personal contributions in a democratic society (Spencer, 2025)). Personal Integrative Thinking by itself does not dictate someone's behaviour: it is a constructive kind of thought that brings ideas, understandings, and experience together to provide more comprehensive understandings that can offer insights and inform actions. Hence:

Personal Integrative Thinking is a kind of purposeful thought which seeks to construct over-arching mental models incorporating relevant perspectives, experience, well-founded knowledge, relationships, variables, causal connections, and ethical considerations relating to the personal needs and challenges of everyday life.

The aim is to foster a mental capacity that constructs a bigger picture, to find satisfaction in it, to use it to overcome or resist simplistic thinking and, when the need arises, to make well-informed, ethical decisions relating to everyday life. When applied to problem solving, the mental model may facilitate the construction of more broadly acceptable solutions. The process is likely to draw upon open (e.g. imaginative, abductive, creative thinking), closed (e.g. deduction), and evaluative (critical) thinking. It is an asset in life where worthwhile participation faces inertia, passivity, facile thought, or a lack of recognition that there is a bigger picture. Exercising Personal Integrated Thinking does not need large or long-term projects. Figure 1 depicts a very simple form, perhaps for younger children. For older children, the problem presented in Figure 2 is a little more complex and includes causal links re-arranged to reflect an emerging insight. In practice, these depict only the start of bigger pictures.

[1] The term 'wicked problems' refers to the complex, and ill-structured challenges we face in the world. The term was coined by Rettel and Webber (1973).

[2] Capabilities are ethical, normative, and holistically facilitate a considered life whereas competencies are tool-like proficiencies for achieving particular ends, typically in the workplace (Lozano et al., 2012).

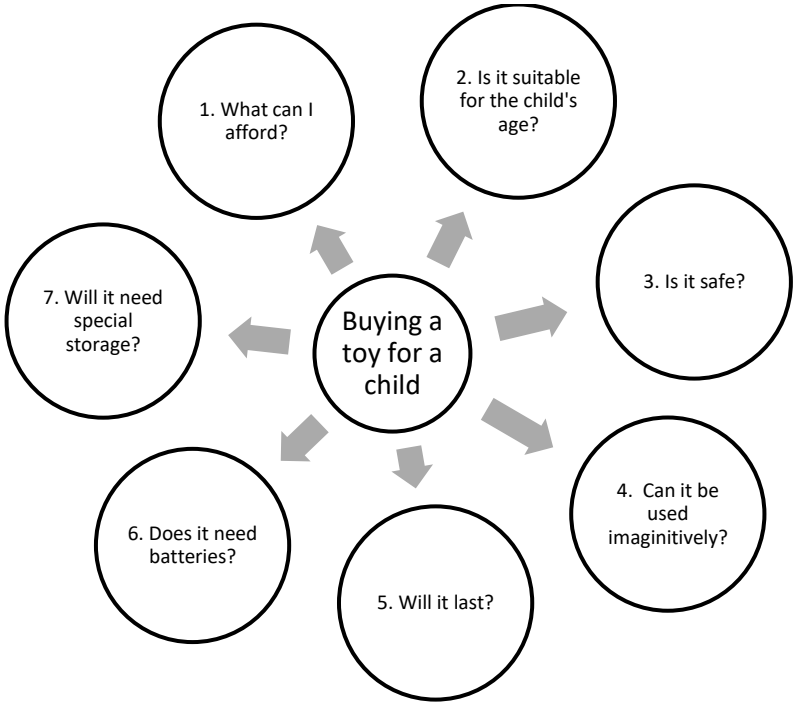


Figure 1: Problem solving and decision-making with the help of integrative thinking: Things to think about when choosing a toy. Although elements all may be relevant, they can be ordered according to perceived importance against which a toy may be judged. In practice, elements would be expanded to clarify, for example, what is meant by safe, and how long the toy needs to last.

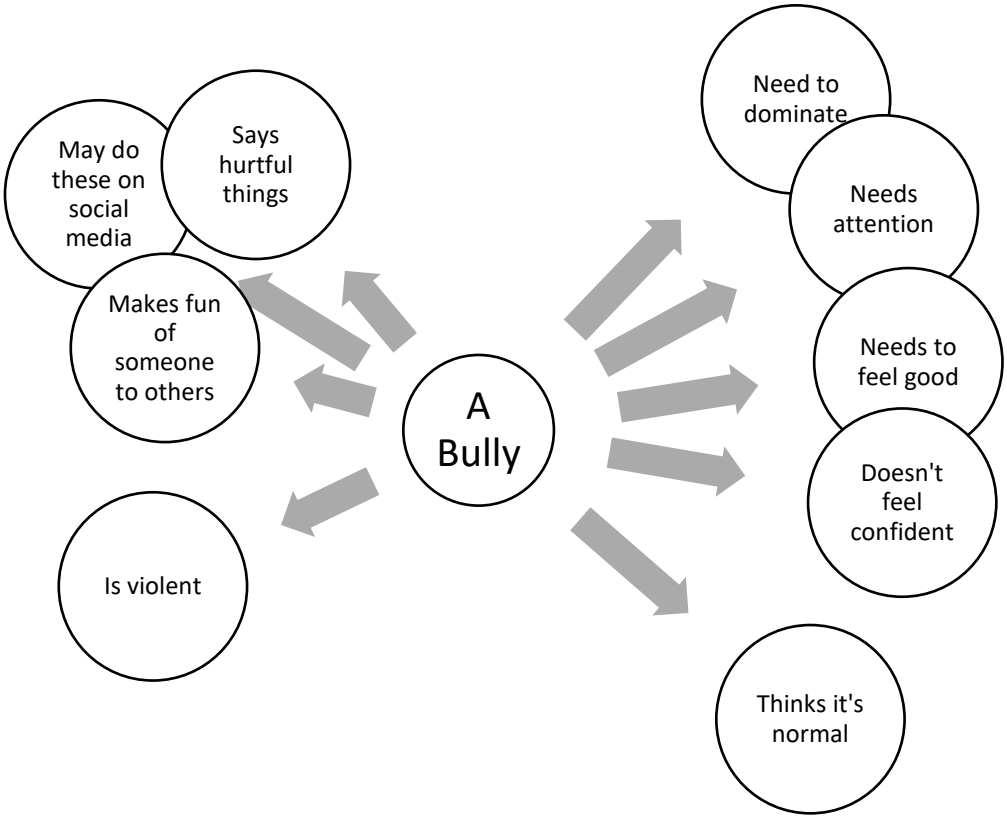


Figure 2: **Problem solving with causal integrative thinking:** A mind map of kinds of bullying (left) and some causes (right). Related items have been clustered to reveal two kinds of cause (psychological needs and learned behaviour), and that several solutions to the problem of bullying may be needed.

Personal Integrative Thinking in a thinking curriculum

As a principle, the fostering of integrative thinking, particularly in the earlier phases, is not for the sole purpose of application in the workplace but is for personal use, as needed, in everyday life. That is, it is a contribution to the development of the educated citizen to support understanding, well-being, and the navigation of life's needs, challenges, and responsibilities. The process may involve information gathering and appraisal, open and closed kinds of thinking, and evaluative or critical thinking and, in a real way, it integrates these kinds of thinking under its umbrella. In lending itself to Nussbaum's capabilities, it offers support for a life that is meaningful, satisfying, purposeful, and human-centred. It does this in at least three ways (which are not exclusive):

- *Creating personal, comprehensive understandings.* These are often broad mental models of various aspects of the world. Unlike integrative thinking in the workplace, the purpose of these overarching understandings may not be to inform actions or decisions. Instead, it provides learners with models that satisfy psychological needs, like the need to understand how our world works, our place in it, human nature and identity (Hinchliffe, 2001; Hodgson, 2010; Newton, 2012a; Vlieghe & Zamojski, 2019) [3]. It illustrates to the learner that the world is a complex, interconnected place. In most democratic societies, this is an important lesson for the future citizen who needs to see through naïve promises, simplistic policies, and self-serving solutions. For instance, sound bites, popular in journalism and politics, supposedly capture the essence of current topics but omit context, assumptions and arguments and encourage simplistic understandings (Rinke, 2016). For whatever motive, they provide only a part of the picture and omit what is probably the most important part in favour of a memorable turn of phrase. Contextualised understandings can include, for instance, causal links, chain effects, interactions, patterns, tendencies, likely responses, cyclical processes, and life's exigencies, all in an interactive system.

- *Cultivating personal decision-making.* A lot has been written about organisational integrative thinking that informs business decisions. Personal decision-making, however, refers to decisions we make about opportunities and alternatives that have consequences for ourselves. To inform such decisions, some people rely on emotional responses, others on logic, and some on what friends tell them (see also Toda, 1980). We make many decisions every day, mostly trivial, of no great import, and that matter little to others. Some, however, change lives. For example, students eventually reach the point where they must decide on a career. As adults, after pursuing one career, they may need to find another. Later, they may have the option of retirement. All have one thing in common: they are generally prompted by and generate emotions ('I feel that I would enjoy working with animals.' 'I am so frustrated with what I do that I must look elsewhere.' 'The thought of retirement scares me'). These emotions stem from values and an unconscious appraisal of the threats and risks they produce (Lerner, Valdesolo & Kassam, 2015; Newton, 2016). Personal Integrative Thinking brings together matters perceived to bear upon the decision, including values, emotions, and consequences. For instance, it may highlight the need for an approach that supports personal values, or suggests the nature of an escape plan as a defence against a poor decision. Problem-solving and decision-making in this way incorporate the intellect, emotions, intuition, and values; that is, they use a bigger picture[4]. Education tends to ignore intuition and values and suppresses the role of emotions even when they warn of or welcome particular options (Newton, 2014, 2016, 2017).

- *Incorporating personal, ethical consideration.* Integrative thinking aims for an 'all-things-considered' construction (Hurteau & Gagnon, 2022). This is not confined to what *could* be done, but extends to

[3] While Nussbaum's capabilities support a resistance to exploitation and manipulation, they also can underpin the construction of more comprehensive and meaningful understandings. One meaning of 'a wise person' is someone who possesses comprehensive, integrated understandings (see e.g. Kallio, 2020; Zhang, et al., 2023).

[4] Making decisions of this kind amounts to *practical wisdom*, thinking for action, especially when in conjunction with ethical considerations (Newton, 2016; Hacker-Wright, 2023).

what *ought* to be done, as consequences of actions may spread from the decider to others, directly or indirectly. In short, the bigger picture should include the ethical acceptability of actions. Rawls (1971), for instance, saw fairness as essential for a functional, free society. What is seen as fair depends on time and place but, in the West today, it often affords a right to equal treatment regardless of age, gender, race, language, disability, financial, and social circumstances (UN, 2025). Unfair treatment by deception, fraud, or manipulation is seen as unethical, and even unlawful, as in the careless use or misuse of personal data[5]. Some people also frown on behaviours seen as selfish, Machiavellian, harmful to the physical or natural environments, or that are a cultural taboo, and they campaign to have them repressed. Of course, interaction between individuals generally depends on at least some acceptance of ethics' Golden Rule, 'Do to others as you would have others do to you'. Doing what is ethically acceptable can call for empathy, altruism, compassion, self-reflection, and seeing the situation through the eyes of others (Jeste et al., 2020; Peters & Green, 2024).

In this way, contextualised understandings can support capabilities, such as, relating to the world and others, thinking, planning, and keeping safe, maintaining well-being, knowing human nature, and avoiding dehumanised interaction (Zheng, 2023).

A contribution from digital technology

In today's world, rather than a shower of information, we now have a deluge. But digital technology can, on occasions, help. By searching a store of past data, artificial intelligence (AI) may extract what could be relevant when constructing a bigger picture. Interpersonal practices, codes of conduct, and legal constraints may be acquired similarly and offered as ethical cautions (Bruine de Bruin, Parker & Fischoff, 2012). Nevertheless, what is seen as fair comes from a very varied human world and not from an algorithm (e.g. OECD, 2025; Williams-Ceci & Williams, 2026). Interpersonal behaviours can call for sensitivity, discretion, empathy, and compassion tuned to the particular people involved, and no-one is quite the same as another (Sinha & Lakhanpal, 2024). There is the risk that an indifferent machine (even one with an algorithm that detects emotions) tempts users to impose solutions where they are inappropriate (LaCroix, 2025). Blockley (2020) reminds us that artificial and human intelligence are not the same. While AI may provide what it has culled from data banks, it should not be used blindly. AI can also put personal data at risk, breach privacy, and be culturally, temporally, and politically biased (Hua, Jin & Jiang, 2024). But, assuming its 'suggestions' stands up to scrutiny, Personal Integrative Thinking can weigh their relative importance in the bigger picture. This is not to say that someone's mental models of situations will be perfect, or that they will point the way to certain success. But in human-centred matters, human oversight is wise if people are to avoid being slaves to the machine (Khan & Shaheen, 2021).

Fostering Personal Integrative Thinking

Fostering Personal Integrative Thinking may not have received much direct attention. An exception may be wise thinking which 'benefits from an appreciation of context dependency', that is, integrative thinking (Grossman, 2017, p. 233). Although seen as much needed and found to be teachable, it has yet to develop a significant presence in thinking curricula (Sternberg, 2001; Newton, 2016; Bruya & Ardelt, 2017). Teaching strategies in common use elsewhere, however, are potentially useful here. For example, Personal Integrative Thinking may be fostered by:

- Posing problems, scenarios, situations relating to the challenges of the real world and those of life. These can appear in the guise of a problem to solve or an inquiry. For instance, design-thinking (an iterative process) is used to solve practical problems. The process repeatedly confronts an emerging solution with experience and modifies it until it is effective. It relies on

[5] See, for instance, the UK's Information Commission Office, https://ico.uk

an integration of knowledge, know-how, and experience (e.g. Li & Zhan, 2022; Razzouk & Shute, 2012).

- Projects, like those of phenomenon-based study, may be multidisciplinary[6]. For instance, topics can range from Bug Hotels to Renewable Energy and introduce real global challenges. A project on *Houses and Homes,* for example, may explore changes in dwellings over millennia (potentially combining at least History, Geography, and the Sciences). If taken further, it can relate to local housing, and what it might reasonably and usefully become. Nevertheless, Personal Integrative Thinking may be exercised by relatively small topics; they do not have to be long-term activities. Small-scale opportunities may present themselves fairly often in news, campus events, and student experiences.
- A teacher's modelling of integrative thinking to construct a bigger picture, make decisions, and incorporate an ethical dimension can clarify the process and expectations for learners (Kowalski, Lineweaver & Novak, 2022). Activating relevant knowledge, scaffolding student thinking, using brainstorming, concept-maps, and graphic organisers to sort ideas and show connections is also likely to help. Readers will probably be aware of mind mapping software that can aid the process.
- When scaffolding students' mental model construction, it may help to use an *aide memoire*, like that of Figure 3. Figure 4 shows an application, but the *aide* is not formulaic: open-minded thinking may supplement it.

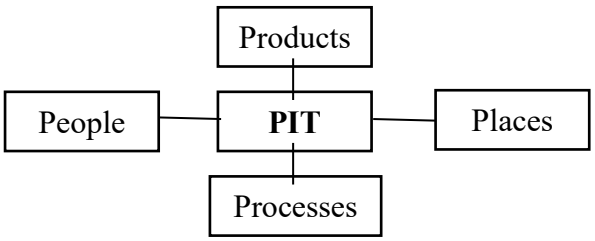


Figure 3: An *aide memoire* which may support some kinds of personal integrated thinking (PIT). It is applied in Figure 4 which depicts a contextualised understanding graphically.

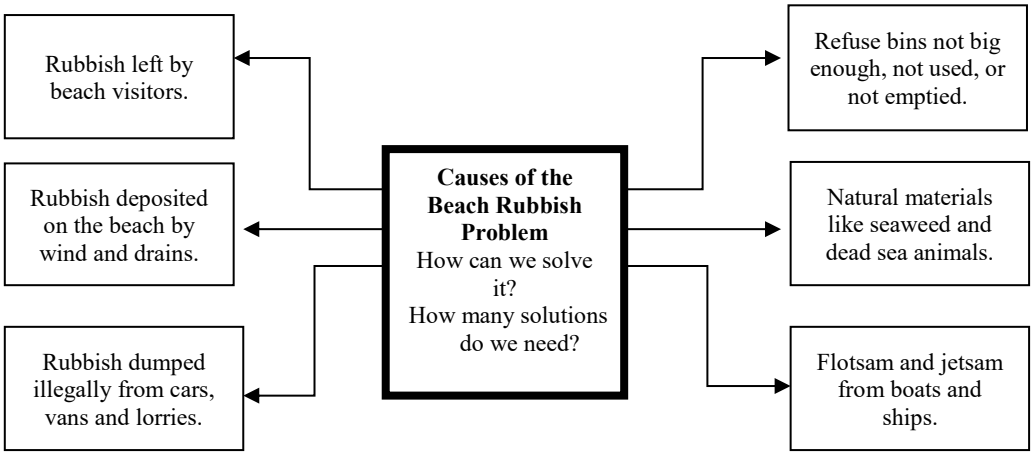


Figure 4: Some causes of beach rubbish. The mind map follows a sea-shore visit (Places) which reveals refuse (Products) with diverse causes (Processes). This is unwelcome to beach users (People). Used to generate potential solutions, it can indicate that one solution alone is unlikely to be sufficient.

This leaves the nature of progression in Personal Integrated Thinking proficiency as an open question. Young children can have difficulty decentring and taking perspectives other than their own. Nevertheless, they can show some empathy and increasingly respond to the Golden Rule and the value

[6] See, for instance, https//www/visiteducfinn.com/what-is-the-finnish-phenomenon-based-learning-approach/

of fair treatment (Dorris et al., 2022). At any age, students need to exercise kinds of purposeful thought, like creative thinking and evaluation, partly because these are components of integrated thinking (Songxing & Guozheng, 1989), but also because they are valuable assets in themselves. If the topic is meaningful and the expectations appropriate, open, closed, and evaluative responses are often within their abilities.

Assessment

Integrative thinking, often qualitative, tends to be open-ended with many possible outcomes. Some may be unexpected yet still be acceptable. For instance, when addressing a situation where groups of people do not agree on a proposed solution, a well-practised student may construct a 'third way' that is acceptable to all. But there may be more than one third way. As with creative thinking, it can be better to think of 'recognising' integrative thinking, rather than 'measuring' its unpredictable outcomes precisely (Newton, 2012b). It may help to transform students' written accounts into concept webs or convert them into word clouds (Ziegler & Montplaisir, 2012)). A clear view of what is to be expected from a group of students can make assessment reasonable and focused. For instance, in judging ethical integration, do you expect: sensitivity to the possibility, judgement of its significance, the proposed action, or all of these (Pai & Hwu, 2025; He et al., 2025)? Evidence of how the students addressed a task may help the teacher guide future activities. It could come from observation and listening as the task is in progress. If summative assessment is required, and assuming that proficiency is normally distributed in a large group of students, the integrated structures they create may lend themselves to a 'diamond sort'. The submissions are ranked from 'strong' to 'weak' with only small numbers of students at the extremes and increasingly larger numbers in the middle ranks (see Kokotsaki & Newton (2015) for an example in creative thinking).

Organisational matters

Personal Integrative Thinking, by its nature, has a broad remit and may not fit easily into an existing slot in today's compartmentalised educational systems. The constraints may be less when teaching younger learners. Those who teach older learners, however, are often specialists in one or two subjects and can find going outside areas of expertise challenging. Sometimes, team teaching can bring diverse expertise together, as Abbott and Nantz (2012) found when teaching economics and history in higher education. While their teaching aimed to be interdisciplinary, rather than to cultivate Personal Integrative Thinking, the approach may be adapted for other stages. Small topics, however, are likely to be easier to accommodate in a tight timetable than big projects.

Beyond matters of organisation, there are those of teacher training. Teachers of older students are prepared to be experts in their field, but integrated thinking needs a broader readiness. It should, for instance, include wise thinking (usually in the form of practical wisdom) where being ethical and considerate is in the bigger picture (Newton, 2016). Specialist teachers may find it useful to have training which prepares them for this.

The inertia of past practices and structures could be obstacles to teaching Personal Integrative Thinking, so there is a need for teaching resources that include tested teaching and assessment strategies to point the way. These are opportunities for educational leadership, teacher trainers, researchers, and classroom practitioners.

Conclusion

Today's information and communication saturated world, driven by digital technology, presents education with a pressing problem: what should we teach and how should we teach it so that our future citizens will appreciate life's context, ensure it is human-centred, and have what it takes to flourish? There are many assets we could and should try to develop, but one is surely a Personal Integrated Thinking proficiency to help people to appreciate that few things in life are simple, to guide what they do, and to produce better and wiser outcomes for the personal challenges they face. Not everyone will have the opportunity or inclination to address and solve global, existential challenges, but all will have

to meet the challenges of everyday living in a complex world where proficiency in Personal Integrated Thinking could be an asset and an antidote to simplistic thinking. But there needs to be a clearer view of what it means in the various phases of education, and what progression in proficiency would be. Potentially effective approaches need to be devised, tested, and made available in teaching materials that set out aims, illustrate what could be done, and show how the assessment of proficiency could be achieved. With this, Personal Integrated Thinking could help the next generation navigate their world and, at the same time, keep people in the bigger picture.

References

Abbot, W. & Nantz, K.A. (2012). Building students' integrative thinking capacities. *Issues in Integrative Studies*, *30*, 19-47.

Benson, J. & Dresdow, S. (2009). Common sense and integrative thinking. *Management Decision*, *47*(3), 508-517. https://doi.org/10.1108/00251740910946750

Blockley, D. (2020). Practical wisdom in an age of computerisation. *Civil Engineering and Environmental Systems*, *37*(4), 197-213. https://doi.org/10.1080/10286608.2020.1810675

Bruine de Bruin, W., Parker, A.M. & Fischhoff, B. (2012). Explaining adult age differences in decision-making competence, *Journal of Behavioral Decision Making*, *25*, 352-360. https://doi.org/10.1002/bdm.712

Bruya, B. & Ardelt, M. (2018). Wisdom can be taught. *Learning and Instruction*, *58*, 106-114. https://doi.org/10.1016/j.learninstruc.2018.05.001

Busco, C., Granà, F. & Quatrone, P. (2017). *Integrated Thinking.* Centre for Sustainability and Responsible Management.

Cruz, L., Stone, J.A., Chung, K.S., Sottile, B.J. & Slattery, M.J. (2023). Pulling it together. *Journal of General Education*, *70*(1-2), 62-84. https://doi.org/10.5325/jgeneduc.70.1-2.0062

Dorris, L., Young, D., Barlow, J., Byrne, K. & Hoyle, R. (2022). Cognitive empathy across the lifespan. *Developmental Medicine & Child Neurology*, *64*(12), 1524-1531. https://doi.org/10.1111/dmcn.15263

Giovannella, G. (2023). Learning by being: integrated thinking and competences to mark the difference from Ais. *Interaction Design and Architecture(s) Journal, 57*, 8-26.

Grossman, I. (2017). Wisdom and how to cultivate it. *European Psychologist*, *22*(4), 233-246. https://doi.org/10.1027/1016-9040/a000302

Hacker-Wright, J. (2023). Practical wisdom, extended rationality, and human agency. *Philosophies*, *8*(39), 1-13. https://doi.org/10.3390/philosophies8020039

He, Q., Huang, C., Feng, Z. & Shen, H. (2025). The relationship between ethical sensitivity, ethical decision-making ability, and ethical conflict among ICU Nurses. *Journal of Nursing Management*, *1*, 7756343. https://doi.org/10.1155/jonm/7756343

Hinchliffe, G. (2001). Education or pedagogy. *Journal of Philosophy of Education*, *35*(1), 31-45.

Hodgson, N. (2010). What does it mean to be an educated person? *Journal of Philosophy of Education*, *44*(1),

Homer-Dixon, T. (2011). Complexity science. *Oxford Leadership Journal*, *2*(1), 1-15.

Hua, S., Jin, S. & Jiang, S. (2024). The limitations of ethical considerations of ChatGPT. *Data Intelligence*, *6*(1), 201-239. https://doi.org/10.1162/dint_a_00243

Hurteau, M. & Gagnon, C. (2022). Contribution of practical wisdom to resolving ethical issues. *Evaluation*, *28*(2), 182-191. https://doi.org/10.1177/13563890221086306

Jeste, D.V., Graham, S.A., Nguyen, T.T., Depp, C.A., Lee, E.E., & Kim, H.C. (2020). Beyond artificial intelligence, *International Psychogeriatrics*, *32*(8), 993-1001. https://doi.org/10.1017/S1041610220000927

Kallio, E. (2011). Integrative thinking is the key. *Theory & Psychology, 21*(6), 785-801. https://doi.org/10.1177/0959354310388344

Kallio, E.K. (2020). From multiperspective to Contextual Integrative Thinking in adulthood. In E. Kallio (Ed.), *Development of Adult Thinking* (pp. 9-32). Routledge. https://doi.org/10.4324/9781315187464-2

Khan, S. & Shaheen, M. (2021). From data mining to wisdom mining. *Journal of Information Science*, *49*(4), 952-975. https://doi.org/10.1177/01655515211030872

Kokosaki, D. & Newton, D.P. (2015). Recognizing creativity in the music classroom, *International Journal of Music Education,* 33(4),1-18. https://doi.org/10.1177/0255761415607081

Kowalski, J.R., Lineweaver, T.T. & Novak, K.B. (2022). Developing integrated thinking in undergraduate students, *College Teaching, 70*(4), 493-505. https://doi.org/10.1080/875677555.2021.1982856

LaCroix, T. (2025). *Artificial intelligence and the value alignment problem*. Broadview.

Lappin, S. (2025) *Understanding the Artificial Intelligence Revolution*. CRC Press.

Lerner, J.S., Li, Y., Valdesolo, P. & Kassam, K.S. (2015). Emotion and Decision Making. *Annual Review of Psychology*, *66,* 799-823. https://doi.org/10.1146/annurev-psych-010213-115043

Li, Y. & Zhan, Z. (2022). Systematic review on design thinking integrated learning in K-12 education. *Applied Sciences*, *12*, 8077, https://doi.org/10.3390/app12168077
Lozano, J.F., Boni, A., Peris, J. & Hueso, A. (2012). Competencies in Higher Education. *Journal of Philosophy of Education*, *46*(1), 132-147.
Moseley, D., Baumfield, V., Elliott, J., Gregson, M. & Newton, D.P. (2005). *Frameworks for Thinking*. Cambridge University Press.
Newton, D.P. (2012a). *Teaching for Understanding.* Routledge.
Newton, D.P. (2014). *Thinking with Feeling.* Routledge.
Newton, D.P. (2016). *In Two Minds*. ICIE.
Newton, D.P. (2017). Choosing for yourself. *Archives of Psychology*, *1*(2), 1-16. https://www.archivesofpsychology.org/index.php/aop/article/view/1
Newton, D.P. (2022). *Living with Digital Teachers*. ICIE.
Newton, D.P. (2026). Competent thinking in a Challenging World. In K. M. Magro (Ed.), *The Emerald Handbook on Teaching Global Competencies* (pp. 133-150). Emerald.
Newton, L. (Ed.) (2012b). *Creativity for a new curriculum.* Fulton.
Newton, L.D. & Newton, D.P. (1998). *Coordinating science across the primary school*, Falmer.
Nussbaum, M. (2002). Capabilities and social justice. *International Studies Review*, *4*(2), 123-135.
OECD (2025). *Education for human flourishing*. OECD.
Pai, H-C. & Hwu, L-J. (2025). Development of the ethical decision-making competence scale. *Nursing Ethics*, *31*(1), 88-98. https://doi.org/10.1177/09697330241235300
Peters, M.A. & Green, B.J. (2024). Wisdom in the age of AI education. *Postdigital Science and Education*, 6, 1173-1195. https://doi.org/10.1007/s42438-024-00460-w
Rawls, J. (1971). *A Theory of Justice*. Harvard University Press.
Razzouk, R. & Shute, V. (2012). What is design thinking and why is it important? *Review of Educational Research*, *82*(3), 330-348. https://doi.org/10.3102/0034654312457429
Rinke, E.M. (2016). The impact of sound-bite journalism on public argument. *Journal of Communication*, *66*(4), 625-645. https://doi.org/10.1111/jcom.12246
Säntti, J., Hansen, P. & Saari, A. (2021). Future jamming: Rhetoric of new knowledge in Finnish educational policy texts. *Policy Futures in Education*, *19*(7), 859-876. https://doi.org/10.1177/1478210320985705
Sinha, A. & Lakhanpal, P. (2024). Can AI systems become wise? *AI & Society*, *39*, 2153-2154. https://doi.org/10.1007/s00146-023-01683-4
Songxing, S. & Guozheng, L. (1989). Integrative thinking is the essential characteristic of creative . *Chinese Studies in Philosophy*, *21*(2), 74-93. https://doi.org/10.2753/CSP1097-1467210274
Spencer, D.A. (2025). AI, automation and the lightening of work. AI & Society, *40*, 237–1247. https://doi.org/10.1007/s00146-024-01959-3
Sternberg, R.J. (2001). Why schools should teach for wisdom. *Educational Psychologist*, *36*(4), 227-245. https://doi.org/10.1207/S15326985EP3604_2
Toda, M. (1980). Emotions and decision making. *Acta Psychologica*, *45*, 133-155.
UN (2025). What is social justice and how is the UN helping make it a reality? https://news.un.org/en/story/2025/02/1160301
Vlieghe, J. & Zamojski, P. (2019). Education for education's sake. In J. Vlieghe & P. Zamojski (Eds.), *Towards an Ontology of Teaching* (pp. 11-28). Springer Verlag.
Williams-Ceci, S. & Williams, W.M. (2026). Bring wisdom into education. *Roeper Review*, *48*(1), 27-38. https://doi.org/10.1080/02783193.2025.2593014
Zhang, K., Shi, J., Wang, F. & Ferrari, M. (2023). Wisdom: Meaning structure, types, arguments, and future concerns. *Current Psychology*, *42*, 15030–15051. https://doi.org/10.1007/s12144-022-02816-6
Zheng, Y. (2023). The impact of technology on the brain. *World Scientific Research Journal*, *9*(11), 92-97. https://doi.org/10.6911/WSRJ.202311_9(11).0012
Ziegler, B. & Montplaisir, L. (2012). Examining integrative thinking through transformation of students' written reflections into concept webs. *Advances in Physiology Education, 36*, 307-312. https://doi.org/10.1152/advan.00057.2012

About the Author

Douglas P. Newton, Ph.D. DSc is in the School of Education of Durham University in the UK and a Senior Fellow of the Higher Education Academy. After teaching Physics in school he moved into academic life at Newcastle University, UK, where he taught science education, technology, psychology related aspects of education, and trained teachers. He was awarded a Chair in Education for his teaching and research, a second doctorate in recognition of his contributions to research on understanding (see e.g. *Teaching for Understanding,* Routledge) and became Director of the Newcastle Doctoral Studies programmes. After moving to Durham University, where he teaches and supervises Master and Doctoral students, his personal research and writing have had a consistent thread of enhancing teaching and learning, the fostering of thinking capabilities, like understanding, creative thinking, and integrated thinking, and their interaction with moods and emotions (e.g. *Thinking with Feeling*, Routledge), and the digital world (e.g. *Living with Digital Teachers*, ICIE). Over a long career, he has written many books and articles on educational matters, with some being tranlated into other languages. He also has an interest in the career mentoring of academic colleagues and he leads it in the School of Education. Again, this led to a book to support academic mentoring (*Mentoring Academics,* VU University Press). He also contributes to the scholarship work of the Durham Centre for Academic Development and supports its research. A biography was published in: *The International Journal for Talent Development and Creativity*, 6(1), August, 2018, pp. 211-220.

Address

Prof. Dr.Douglas P. Newton,
Durham University, School of Education, Confluence Building,
Lower Mountjoy, Stockton Road, Durham, DH1 3LE, UK.

e-Mail: d.p.newton@durham.ac.uk

Shaking up Shakespeare: A Reflective Essay on a Legacy of Playful and Relational Teaching Across K-12 and Post-Secondary Education

Harrison Campbell
St. Mary's University, Canada

Abstract

This reflective paper explores the ongoing evolution of my primary research by highlighting my graduate work and discussing how that work is adapting as I have transitioned into early career scholarship. I first reflect on my use of phenomenological methods, as they relate to the exploration of literacy in theatrical spaces in junior high schools. I then reflect on the case-study methods I undertook examining the movement of Shakespeare from the page to the stage in a high school setting. Finally, I highlight a developing study being created in partnership with the Stratford Festival of Canada that returns to phenomenology to explore dramatic approaches, and how they might be undertaken to teach Shakespearian content in pre-service teacher preparation programs across Canada. While that final study is still in development its inclusion is an important reflective piece when considering my primary research as a developing portfolio of work. I conclude these reflections with a look towards an edited book that I am publishing with Routledge entitled *Playful Approaches to Pedagogy in Universities, Colleges, and Polytechnics* which examines the role of playful approaches to teaching and learning in higher education settings. The book brings together fifty-two authors, from five countries, and seventeen academic disciplines spread across universities, colleges, and polytechnics. I truly hope that my legacy in the making is to be known as someone who encourages play, creativity, and imagination at all levels of education.

Keywords: Literacy education; play-based teaching & learning; curriculum design; drama-based pedagogies.

Literacy in a theatrical space

The evolution of my primary research has taken me in directions that I could not have anticipated. I began learning about research, for the first time, in my Masters of Arts (MA) wherein I engaged in a phenomenological inquiry exploring the question: *What is it like to experience literacy within a theatrical space?* (Campbell, 2021). I was driven to this inquiry because I wanted to know if literacy in an arts-based environment was more autonomous (skill-based: reading, writing, speaking, listening, viewing, and representing) or ideological (influenced by knowledge, identity, and being) (Street, 2006, p. 37) and if students would be able to see and articulate differences between the two approaches. The study combined phenomenological and performative (Norris, 2016) research methods to create what Cazden et al. (1996) calls a "multimodal, contextually responsive, and linguistically diverse literacy environment" (p. 71). I worked with junior high students (i.e., grades 8 & 9) in a process of interviewing, journaling, character creation, and performances to generate data about how students personified what literacy meant to them. An example of this is when I asked Petra, a student participant, "What does the term literacy mean to you?" and they began dancing in the school's administrative office while speaking about how they believed literacy was storytelling with "every part of your body." (Petra, personal communication, October 4, 2019).

The students that I worked with in my MA presented their understandings of literacy through various dramatic mediums that included monologues, original song compositions, paintings, shadow puppetry, dance, and ventriloquism. Across their work they defined aspects of literacy as being about ambition, freedom, hope, speech, trust, connection, unveiling, and understanding (Campbell, 2021). These types of personal connections reinforced that literacy is "a purposeful social activity" (Lenters &

Whitford, 2018, p. 122) and demonstrated that students create meaning through "lived experiences," including embodied and subjective engagements with "others" (Dreyfus & Wrathall, 2006).

Literacy in a K-12 classroom

I carried the lessons of my MA forward into my Doctor of Philosophy in Educational Research (Ph.D.) program wherein I employed a case study methodology and drama-based pedagogies to answer the question: *In what ways can drama be integrated into a secondary English Language Arts (ELA) classroom to enhance literacy by moving learning from the page to the stage?* (Campbell, 2024). My earlier research had shown me that literacy was a complex concept, that lives beyond the margins of a page, is impacted by the presence of and relationship to the reader, and possesses meaning that can, sometimes, be best explored by moving onto the stage (Gannaway, 2019; Jin et al., 2022; Parker, 2020; Perry, 2021). I worked with high school students (i.e., grade 12) and their teacher in a process of masking, script writing, and performances to increase the accessibility and their understanding of Shakespeare's *Othello* (Campbell, 2024). The use of dramatic approaches from conception to creation, of the students' work with *Othello* invited students to engage in meaningful instances of embodiment and relationality while also developing their identity and creativity in relation to texts (Cowan & Albers, 2006; Daniels & Downes, 2014).

However, the work also reinforced that there was a certain level of mysticism and ambiguity surrounding the use of drama-based approaches (Dunn, 2016), however, having a structure in which to work involving processes such as masking, scripting, and performances did better integrate drama into the classroom (Davis, 2008). The use of drama was worth this effort towards integration since it provided an experiential lens through which to view content (Norris, 2016) and it is informed by both process and product (Pascoe, 2002; Wells & Sandretto, 2016).

Literacy and play in higher education

Across higher education, active learning is being recognized as a valuable instructional approach focused on fostering engagement, creativity, meaning-making and critical thinking across disciplines (Dickson, et al., 2025; Misseyanni, et al., 2018; Padilla Rodriguez, 2021; Walker, 2021). I see playful approaches to pedagogy as the ways in which an active learning approach to teaching and learning can be actualized within the post-secondary classroom for instructors. I see my own work as playful, imaginative, and process-driven practices that move students beyond passivity towards increased participation and critical thinking.

My most recent collaboration, which is with, the Stratford Festival of Canada is going to employ theatrical phenomenology which Johnston (2017) describes as bringing together drama (the study of dramatic texts), theatre (the process of creating a production), and performance (the production itself) with phenomenological research (p. 21). We will be exploring the questions: *In what ways are Canadian faculties of education integrating dramatic approaches into their programs to support pre-service teachers in their understanding of, and ability to teach, Shakespeare? What has influenced the inclusion of these approaches, or lack thereof, and how else might drama pedagogy that is both relational and embodied be integrated?* This study will make use of interpretive phenomenological analysis in the analysis of data, including surveys, interviews, focus groups, and program reviews due to its effectiveness in establishing a "process between both participant and researcher" (Eatough & Smith, 2017, p. 5). It is my hope that this process will afford me the opportunity to engage in the "careful and systematic reflection on the lived experience of educational phenomena" (Van Manen & Adams, 2010, p. 449) to better understand how faculties of education are conceptualizing Shakespeare in classroom contexts.

This reflective essay will highlight my perspective that, playful pedagogies are, therefore, approaches to teaching and learning that consider imaginative and process-driven design as central to course structures and outcomes for the purposes of leveraging curiosity and engagement to foster creativity, innovation, and student agency throughout the learning process.

Theoretical grounding: Drama and Shakespeare in English classrooms

Dramatically teaching Shakespeare in the English classroom

I am one of a long line of educators who has seen the value in the relationship between drama and English in terms of supporting learning outcomes from engagement to empathy (Lathrop, 2021). Within the realm of Shakespeare McManus's (2020), who examined *Macbeth* in the seventh grade English classroom, taught vocabulary using, what they called, a throwing insults approach. This allowed students to employ Shakespearean language to insult one another – in so long as they used the language correctly. This incentivized students to decode the complex language present in the text to increase the possible repertoire of their insults. Both the accuracy and frequency of the student's language use was noted as a part of the study. In another study, Marlatt (2020) discusses sustained engagement with social and emotional learning as the pillar of an effective dramatic lesson. For both Marlatt (2020) and Hart et al. (2016) this type of ongoing dramatic work develops student participation and critical thinking. Hart et al. (2016) noted, however, that for lasting and increased participation and critical thinking that the use of drama cannot be a one off but must, instead, be a regular part of all forms of classroom instruction in the humanities. Relatedly, Lathrop (2021) examined what it is about drama that develops student interests and found that movements, gestures, and vocal inflections, the ability to become a part of the story, is what drew most students into the work.

Dramatic studies also, often, examine the potential for students to develop personal connections with texts and attribute these connections to the active nature of drama and how it can move texts onto their feet (Hart et al., 2016). When drama, and the arts more generally, are used to explore texts it has also been found that students and teachers work together to a greater degree in the formation of meaning surrounding that text (Beach and Beauchemin, 2019). This shift in relationship dynamic has to do with how text is viewed moving away from a code-based view of language and, instead, towards an emotive and embodied view of language – a shift which is called developing a languaging perspective (Beach and Beauchemin, 2019). This perspective was also developed in the work of Turchi and Christensen (2019) who created a teacher-artist mentorship model for their students when they were studying *Twelfth Night.* The model saw the teacher and teaching artist collaboratively create opportunities for the students to consider *Twelfth Night* using contemporary English, employing approaches such as table readings, to build student fluency. The focus of the work was to make Shakespeare accessible, and, for the students, this accessibility arose out of seeing and hearing the text come alive as opposed to just reading it independently. In an earlier study, Gritter, et. al., (2014) discussed the use of drama as a way in which to consider speaking and listening in a literacy focused classroom and this has also been taken up by Shakespeare's Globe Theatre London that often works with teachers and students to perform the works of the bard to increase their understanding of the stories and plays (Jasper, et. al., 2021).

The role of drama in teaching and learning complex literature

Drama and performance are mediums that are unique in each of their iterations, and this offers a lot of potential for research and the study of literature (Norris, 2016). Those who attend theatrical productions, as audience members, are seeing the product at the end of a much larger process-driven experience and may have a product-oriented view of drama and theatre (Lang, 2002; Marco, 2015; Medina et al., 2021; Pascoe, 2002; Wells & Sandretto, 2016). However, having a process-oriented space for theatrical research establishes commitments to, among other things, opportunities for an equal voice within the creative process for each of the creatives that works towards a performance (Lang, 2002). In my research, I explore this creative process in the context of English Language Arts (ELA) classrooms with a particular interest surrounding how drama can approach literature in ways that are reflective, relational, and embodied (Medina et al., 2021). Drama has helped me to see literacy in a more holistic fashion moving beyond the "completion of school grade levels or basic reading and writing skills"

(Burton, 2017, p. 45) towards a focus on student understanding and meaning making (Cole & Pullen, 2010).

Studies that have used drama in literacy classrooms, such as, Lenters and Whitford (2018), suggest that drama fosters textual engagement through complex, and embodied, actions, feelings, and thinking. Even among young students, in elementary, drama can be used to humorous effect to make students more willing to share and experiment with their textual understandings and see how "representational forms have increased well beyond the written word" (Cazden et al., 1996, p. 67). I would go so far as to argue, through my research, that without relational considerations connecting readers to texts we are no longer being reflective of 21st-century literacies and learning environments (Campbell, 2021). This is especially important when considering Shakespearean texts in classrooms since a traditional read, discuss, repeat model of instruction demonstrates that "the curriculum stalwarts of literacy and numeracy are no longer sufficient to equip students with the basics they need to operate in the innovation-oriented, digitally wired, twenty-first century" (Davis, 2008, p. 10). Instead, we should be moving our approaches to Shakespeare away from overt instruction alone (Cazden et al., 1996) to instead embody the text to better explore aspects of "character type, perspective, setting, story arc, and thematic development" (Beach & Swiss, 2011, p. 6).

This more active, and dramatic, exploration of text helps to develop "the reader in conjunction with text as opposed to just text independently" (Purves & Beach, 1972, p. 20) as well as support readers in "developing emphatic engagement with the text" (Wilhelm, & Edmiston, 1998). These forms of active textual engagement tend to increase "students' intrinsic and extrinsic motivation around engagement with text" (McMaster, 1998, p. 576). Moreover, the types of drama being used in the classroom do not have to be resource intensive to lead to these measured increases, indeed, many teachers make use of theatre sports and games to avoid the "elaborate, tedious, and time-consuming" process of staging a full production (p. 574). My classroom-based research tries to take these worries about the elaborateness of theatre and focus, instead, on activities and materials attainable in any classroom setting. I care most about students being able to layer their characters with motivations, traits, and personalities (Cowan & Albers, 2006) and this is what tends to best develop their identity and creativity as both readers and artists (Daniels & Downes, 2014).

Since drama has students, both reading and applying a text it can help to develop positive habits of mind such as an awareness of icons (direct representation of an object), indexes (implied representations with an object), and symbols (a convention representation of an object based on societal connections and considerations) in what they read (Cowan & Albers, 2006). Once students understand the structure and nature of language more deeply, they are able to discuss and embody stories that they are learning, helping them to develop a host of skills such as "fluency, comprehension, and oral reading confidence" (Peck & Virkler, 2006, p. 792). This comfort and willingness to engage with the content of the classroom is what, in turn, helps to foster "language growth, self-confidence, self-concept, self-actualization, empathy, and cooperation" (McMaster, 1998, p. 581) in the learning of complex literature.

The role and importance of relationality in the dramatically informed classroom

The study of literacy and literature has been considering the role of relationality over the past decade – with a great deal of attention paid more recently (Gannaway, 2019; Jin et al., 2022; Parker, 2020; Perry, 2021). This highlights how notions of what it means to be "literate" are quite fluid within contemporary settings and are often informed by the modalities that literacy or literature are being explored and developed through (Harste, 2003; Marco, 2015). What a relational view of literacy allows us to do is to see the concept of being "literate" as something existing in a state of flux so that "instead of thinking about literacy as an entity (something you either have or don't have), thinking about literacy as social practice can be revolutionary" (Harste, 2003, p. 9). This notion of fluidity aligns well with the creativity, responsiveness, embodiment, and relationality present within drama (Pascoe, 2002; Marco, 2015).As a result, dramatically informed literacy experiences allow students to better develop their "transliteracies" " – which speaks to the ability to connect meaning in a text to contextual factors (i.e., people, things, texts, media, and contexts) relationally (Stornaiuolo et al., 2017). Similar to theatrical improvisation, drama says "yes, lets!" to opportunities for expression, emotional development, and

social learning related to texts (Johnston, 2017; Pascoe, 2002; Vicars & McKenna, 2015). Research is clear that relational considerations of literature provide rich possibilities for student growth (Perry et al., 2013) and that the relationality present within dramatic conventions, allows students and teachers the opportunity to develop and articulate a deeper understanding of language and literacy concepts and practices (Nichols & Campano, 2017). My early career scholarship has focused deeply on meaningful instances of relationality and how drama helps to foster growth in relation to student and teacher identity as well as creativity as they study complex literature (Cowan & Albers, 2006; Daniels & Downes, 2014).

The role and importance of phenomenological research methods in my work

My work is suited to phenomenological inquiry since theatricality centres embodiment in the meaning-making process surrounding the understanding of lived experiences (Johnston, 2017). Moreover, Merleau-Ponty's (1962/2002) phenomenological account of, the body, its sensations, gestures, and affective responses, highlights the embodied self as a legitimate site of knowing. Since I see drama as literacy and literature on its feet these embodied sensitivities align well with a theatrical phenomenological inquiry (Johnston, 2017). Van Manen (2016) extends this notion of embodiment into a pedagogical sphere through his concept of pedagogical thoughtfulness – tying attentiveness to lived experiences directly to the process of teaching and learning. It is this notion of pedagogical thoughtfulness that is at the core of the work that I am currently engaging in.

A brief overview of my research portfolio

The three sections that follow outline two of my largest completed studies, both done as a part of my graduate work, as well as an outline for a national upcoming study inspired by my prior work. These sections are intended to show how my research has been building over the years as well as the lessons, approaches to methods, and forms of analysis that I have been learning about and applying as I take on the role of an educational researcher.

Literacy through the arts: A phenomenological inquiry into what it is like to experience literacy within a theatrical space

Research question:
***Primary question*:** What is it like to experience literacy within a theatrical space? (Campbell, 2021).

Methodology:

Number of participants and description (teachers, students): The arts-based junior high school where this study took place had a total of fifty-five grade eight students and forty-two grade nine students. From this possible recruitment pool, a total of nine students (two grade 9's and six grade 8's) participated in this study, however, one student dropped out in between the interview and journaling phases of data collection.

Method of data gathering: Data in this study was generated from semi structured one on one interviews, multi week journaling, the creation of monologues, and the performance of those monologues/performance reflections. Interviews were audio recorded and transcribed verbatim. Participant journals included a mix of their responses to interview questions as well as prompts regarding character creation incorporating textual, visual, and thematic responses. The resulting monologues and performances came to include varied art forms including text-based, embodied dance, and even music compositions.

Method(s) of analysis: My analysis process was structured according to the following principles (Pietkiewicz & Smith, 2014): (a) multiple read-throughs and detailed descriptive note taking, (b) adapting researcher and participant notes/data sets into emergent themes/patterns, and (c) both highlighting and examining relationships between themes that are recurrent, identifying themes that are outliers, and understanding data, as much as possible, both individually and collectively. During this process, I listened to all collected interview audio recordings, read or viewed each

participant's journal entries, took specific notes and memos during the rehearsal/performance stages, and reflected upon each post-performance reflection (Pietkiewicz & Smith, 2014, p. 10). These close, line-by-line read throughs allowed my coding process to be deeper and as I generated a thick and rich description of the data, I returned to the students to discuss my emerging findings with them as a form of respondent verification. This also allowed me to observe patterning between various participant's responses, highlighting instances of convergence and divergence at both the "personal and collective" level (Smith et al., 2009, p. 56).

The use of Interpretive Phenomenological Analysis (IPA) brought cases of convergence to students' attention while also highlighting their unique experiences of divergence. These instances allowed monologues to develop in ways that embodied the student's "essence" of literacy showing the ways in which that experience impacted their lives in school and beyond. IPA lent itself well to such an analysis since it is "concerned with the detailed examination of personal lived experience" and it looks for "an in-depth account of each case before moving to look for patterns of convergence and divergence across cases" (Eatough & Smith, 2008, p. 193). It is important within IPA to build "instances of reflection" within data sets prior to the drawing of any conclusions or recommendations (Smith et al., 2009, p. 80). It is during such moments of reflection that the researcher should be taking care to create "a comprehensive and detailed set of notes and comments on the data" (p. 83).

Findings (The experiences of literacy in a theatrical space):

Please note: All student names are pseudonyms

Literacy as freedom: The experience of literacy from Selina's perspective, within a theatrical space, had to do with freedom and self-expression. The theatrical space itself came to be defined through the community around it and the arts were seen as an overall enriching element of the literacy process. When connecting the performance to the wider questions of literacy Selina said that their understanding of art and literacy are "young and still evolving" (Selina, personal communication, October 5, 2019) implying that they hope to continue learning about literacy over the course of their life. Depending on how and where art is used Selina felt that it "can be a healing process" (Selina, personal communication, October 5, 2019) which again speaks to its power and relationship to the self. Selina also spoke to the importance of community within a literacy experience overall reflecting how freedom was central to the message of their monologue since "art and literacy can look different for different people" and so "you have to be free to pursue the experience right for you" (Selina, personal communication, October 5, 2019).

Literacy as unveiling: The experience of literacy from Petra's perspective, within a theatrical space, had to do with unveiling both the true meaning of subject matter content but also the true nature of yourself. The theatrical space itself came to be defined through community both at school and in Petra's personal life. For Petra dance was used as an overall enriching element of the literacy process. Petra created an original dance composition set to the song *Human* by Christina Perry. The song was meant to reflect how "no one is perfect but that does not mean that we can't work towards making ourselves better" (Petra, personal communication, October 4, 2019) which paired the idea of self-awareness with self-improvement. Dancing was Petra's chosen medium because of how it communicated meaning "your movements have to be sharp and clear to be understood with the right intentions and you have to follow a beat in such a way that the rhythm also becomes a part of the story" (Petra, personal communication, October 4, 2019). Petra also made use of an easel, with an original piece of art, which they interacted with during the song's chorus. This canvas was a self-portrait with a pair of eyes highlighted which were meant to symbolize Petra unveiling what literacy meant to them through dance and art as something living and evolving.

Literacy as ambition: The experience of literacy from Claire's perspective, within a theatrical space, has to do with ambition and the desire for self-improvement. The theatrical space itself came to be defined through Claire's own desires to grow as a young artist. Claire composed an original song where they sang of how "my sparks will turn into a flame" (Claire, personal communication, October 3,

2019) helping to show the role that ambition plays within their life journey. Outside of the chorus the song speaks of "my heart will tell when I break out of this shell" (Claire, personal communication, October 3, 2019) and how Claire wishes that someone she cares deeply about could see what will become of her. The song ends with their renewed determination to continue working towards their goals.

Claire conceptualized literacy as "a combination of movement, storytelling, understanding, adapting and performance" and "the creativity that goes into the teaching of an idea" (Claire, personal communication, October 3, 2019). For Claire, song writing was an example of these factors coming together in a way that helped them to "learn, create, and express" (Claire, personal communication, October 3, 2019). Outside of their own personal connection Claire also took the time, in post-performance reflections, to connect literacy to other subject areas through visual or concept mapping (social studies) for "examining connections", word problems (math) for "improving comprehension", and within diagrams and formulas (science) for "labeling, describing, and memorizing" (Claire, personal communication, October 3, 2019).

Literacy as connection: The experience of literacy from Erud's perspective, within a theatrical space, has to do with "the connections formed with others as they share stories, information, and learn from one another" (Erud, personal communication, October 6, 2019). The theatrical space itself then came to be defined by the community that surrounds it and by those connections Erud has established through her work in the arts. When connecting the performance to the wider questions of literacy in her post-performance reflections Erud created a visualization mind map that took the form of a tree. The tree's roots were centered on both "literacy and connection" (Erud, personal communication, October 6, 2019) and branched out into various examples of how Erud now thought of her literacy experience. Math was discussed in terms of "problem solving, communication, understanding, and visualizing". This was due to the fact that "problems create opportunities for critical thought and skill use" as long as "people communicate with one another to solve these problems". Science was discussed differently around concepts such as "wondering and collaboration". Wonder being defined as "the natural extension to curiosity and the process which drives scientific questioning" and collaboration as people "bringing together unique skills in order to properly test labs and to prove a hypostasis". Language arts was then spoken of in terms of "creativity and listening" since the "openness of language arts allows for many different answers" and "the importance of listening for feedback to improve your writing and reading". Finally, social studies was discussed in relation to "critical thinking" since much of the learning, from Erud's perspective, has to do with "larger global challenges that require critical thought and research to propose solutions to" (Erud, personal communication, October 6, 2019).

Literacy as understanding: The experience of literacy from Emilia's perspective, within a theatrical space, had to do with the quest for understanding as well as communicating that understanding to others. The theatrical space itself came to be defined through storytelling as the character she created used story as a means to reach their own form of understanding and personify the literacy process. When speaking to literacy more broadly Emilia included her previous accounts of "reading and writing" as well as making allowances for both "critical and creative thinking" (Emilia, personal communication, October 6, 2019). These varied thought processes allow people, in Emilia's view "to better process information they receive and put it into their own words" (Erud, personal communication, October 6, 2019). This ownership helps to lead to a measure of understanding which harkens back to the essence of Emilia's literacy experience. This post performance reflection was difficult for Emilia to put into words since she had come to see literacy "in so many different places and things" (Erud, personal communication, October 6, 2019) over the course of the study.

Literacy as hope: The experience of literacy from Samuel's perspective, within a theatrical space, had to do with hope and always making the best of whatever you are faced with. The theatrical space itself came to be defined through various ways of storytelling, communities, and connection with those around you. When speaking to literacy more broadly, within the post-performance reflections, Samuel broke down the experience of literacy into different subject areas and interests – and how being well rounded in the subject areas gave them hope for their future. The area with the most details of experience, however, were in relation to the school itself: "expressing emotion through movement in dance club, bonding with peers that share similar passions, communicating strategy in sports and games,

and passing knowledge onto others" (Samuel, personal communication, October 4, 2019). Within each subject area including "math, humanities, practical science and music" each and every point of reflection had to do with "furthering communication within a context specific way" (Samuel, personal communication, October 4, 2019).

Literacy as speech: The experience of literacy from Dwayne's perspective, within a theatrical space, had to do with speech and communication with others. The theatrical space itself came to be defined through this same communication and seen by Dwayne as a way of making meaning across subject areas. Within their post-performance reflections Dwayne made specific mention of how they "enjoy communicating the back story and motivations of my character to an audience" in order to best show them "the reason behind my actions" (Dwayne, personal communication, October 5, 2019). Within the realm of "math" Dwayne discusses what they call a "mathematical language" meaning "the symbols used in equations" (+, -, /, X, etc.), "notes/memos", "mathematical vocabulary" and "word problems since they involve reading to understand" (Dwayne, personal communication, October 5, 2019). Outside of "word problems" any specific mentions of "reading and writing" within these reflections are kept within the humanities connected to other previously discussed categories such as "communication and speech" and "critical thinking/analysis" (Dwayne, personal communication, October 5, 2019). Options classes add a new dimension to previous reflections in that Dwayne mentions "collaboration" in addition to a "communication" focus when talking about "the arts and production". Literacy as a lived experience, for Dwayne, was almost always connected to performances and arts immersion with "each of the different styles of performance creating new types of experiences, community, and learning" (Dwayne, personal communication, October 5, 2019) through adding both greater breadth and depth to the experience.

Literacy as trust: The experience of literacy from Raven's perspective, within a theatrical space, had to do with trust and emotional support. The theatrical space itself came to be defined through using the arts, and other modes of literacy, to develop "self-confidence, empathy, and understanding" (Raven, personal communication, October 6, 2019). Within their post-performance reflections Raven mentions how "trust is often a major factor in the lives of both my own original characters and those I read about" which helped to influence how they chose to communicate their literacy experience. They also took the time within post-performance reflections to reiterate instances where they still felt that literacy was "actively present" such as whenever they engaged in "critical thinking, problem solving, writing, and visualization" (Raven, personal communication, October 6, 2019) across various subjects and classes. However, it is "the trust and empathy gained through reading and writing" that truly help Raven to see "more of what could be than what is" (Raven, personal communication, October 6, 2019) as they continue to develop their own understandings of literacy into the future.

Recommendations:

- Literacy in a theatrical space affords a direct connection between arts immersion techniques and successful reading practices. So, an arts informed approach to reading should be used to better visualize, connect, question, infer, evaluate, analyze, recall, and self-monitor during the reading process (Daniels & Zemelman, 2014, p. 30).
- There is not just one literacy, or a single moment, where students become literate. Rather, it is the growth of various distinct literacies, as they exist in various discipline areas, that build literate habits of mind for students. Dramatic approaches to literacy can help foster a greater understanding of what it means to be literate since they are a more "active, social, and experiential process centred within critical inquiry and creative problem solving" (Barton and Baguley, 2014, p. 94).
- Greene (1995) discusses preparing students to be "multimodally literate" while also speaking about skill transference in relation to "effective problem-solving skills, creative and critical thinking, and ethical understanding" (p.41). Furthermore, both Greene (1995) and Pascoe (2002) speak about being "arts-literate" (p. 64) as dependent upon the art form itself. Meaning that students need a rich understanding of the conventions of drama to be considered dramatically literate with the same being said of other fine and performing art forms.

Literacy in-the-round: Examining the roles of dramatic embodiment and relationality in secondary English Language Arts classrooms

Research questions:

***Primary Question*:** In what ways can drama be integrated into a secondary ELA classroom to enhance literacy by moving learning from the page to the stage? (Campbell, 2024)

Sub questions:

- What kinds of dramatic activities enhanced student engagement with literary texts?
- How did students' affective responses influence their engagement with drama activities?
- What role did relationships with others in the class play in how students experienced drama in the classroom?
- How did students envision the role of writing in relation to performativity and how did this influence their engagement in the drama-based creative process?
- How did material considerations such as the use of space and props influence students' experience of drama and their learning?
- What were the ways in which drama-based pedagogies inspired considerations of embodiment within the classroom?
- To what extent and how did students experience drama as valuable to their learning?

Methodology:

Number of participants and description (teachers, students): This study involved eleven (11) students and their teacher formally participating – with a further nine students working on the interactive activities but opting to not have data collected about them. In this way the whole class could participate in all the planned dramatic activities.

Method of data gathering: Data in this study was gathered from interviews with students and the teacher, as well as masking, scripting, and performance-based activities that occurred within the classroom. Interviews were transcribed into textual formats, masks were captured in photographs, scripts were submitted as written documents, and both photographs and videos of the students' performances were captured. Conversations with the students and teacher also occurred both within the semi-structured interviews and throughout the study more informally – with the data captured as researcher memos and other anecdotal notes.

Method(s) of analysis: My analysis process involved the following iterative cycles: reading and reviewing the data (both at the onset and throughout analysis), the identification of codes and themes, scholarly writing, supervisory dialogues, and re-writing as well as revising. A large amount of time was spent on meaning making and organization of data given the amount of interview transcripts, students artifacts, and videos/recordings. The first month of analysis alone was spent just on reviewing transcripts, listening to interviews, looking at the masks, and re-watching performances.

Meaning making began as I examined the data for themes and commonalities (usually based around feelings or concepts brought up by the students or teacher). These themes and commonalities would later become more formalized codes (e.g., community, anxiety). I also coded moments of relationality, community, affect, and embodiment as additional categories. The video recordings of the performances, while not shared publicly, were extremely helpful in allowing me to reflect on embodiment while considering were students in character? Were they moving with confidence? And were the movements planned or improvised?

As I was reflecting, I wrote often working to communicate the data in an effective and direct way. I also spoke regularly with my supervisor and doctoral committee to integrate their feedback and

considerations throughout the writing. To ensure my own closeness to the data I personally transcribed all the collected audio recordings verbatim and read them through line-by-line as I was generating themes, commonalties, and codes. As these codes were coming together, I was also reviewing all the recorded video data and using that to generate an authentic thick and rich description alongside the codes. I attempted to generate codes that spoke to the experience of students, and teacher, on more of a collective level and then I made use of the recorded data and my researcher memos to highlight moments of individual experiences in my data sets.

Findings:

Dramatic activities enhance textual engagement: Dramatic modalities developed the ability among students to connect more personally and emotionally with texts, opportunities for reflection and peer-to-peer sharing, and students seeing themselves as authors in relation to the texts they were reading (Harding, 2023).

Dramatic activities inspire powerful affective responses: Rather than a single emotional response drama fosters ongoing stimulus that creates affective states (Harris & Jones, 2020; Kouppanou, 2022) as students explore and use dramatic conventions. It is important for teachers to be aware of students' emotional responses to drama as this creates positive resonance within practice (Dutton & Rushton, 2022).

Relationships are at the heart of drama-based literacy classrooms: Students noted that peer-to-peer relationality using drama led to more genuine overall connections between themselves and the text as well as the text and the world of the classroom (Harding, 2023).

Props, space, and material considerations create a dramatic elsewhere in classrooms: More-than-human elements have the potential to impact the meaning making process in relation to text by introducing or highlighting stimulus that the students could relate to as they work to generate meaning (Campbell, 2019).

Taking time for writing can positively impact the quality and scope of performances: Writing can act as a bridge and a source of comfort, as students get used to the expanded, and often new modalities, that performance offers a classroom. Students tended to discuss writing as something that they had a lot of experience doing and felt a level of comfort with – so teachers should allow students to return to writing while performing when possible.

Embodying literacy through drama makes texts come alive: Students felt better able to explore and gather within a relational assemblage once they were invited up out of their desks because the embodiment connected them well to one another as they made meaning (Shabtay, 2021; Taylor & Warner, 2006). They also spoke about caring about the text to a far greater degree once they were able to experience it beyond the page.

Recommendations:

- Drama invites literacy to explore embodiment (Medina et al., 2021) - given the positive impacts of this we should prioritize play for learning within secondary classrooms (Bacalja & Nash, 2023; Boehm & Franklin, 2023).

- The classroom can be a place to play with literacy without the need for a full show – we need to see the process of drama as even more valuable that the product (Blackledge & Creese, 2023; McManus, 2020).

- This study demonstrates that drama creates unique classroom environments that foster teaching and learning *artists* and that an awareness of their own emotions allows students to better connect with the *Othello* characters and their circumstances. Therefore, we must encourage personal and creative connections to text to build fluency and comprehension.

Shaking up the ways we teach Shakespeare in bachelor of education programs across Canada

Research questions:

***Primary question*:** In what ways are Canadian faculties of education integrating dramatic approaches into their programs to support pre-service teachers in their understanding of, and ability to teach, Shakespeare?

Sub question:

- What has influenced the inclusion of these approaches, or lack thereof, and how else might drama pedagogy that is both relational and embodied be integrated?

Methodology:

Number of participants and description (teachers, students): It is hoped that this study will involve faculties of education from across Canada with regional leads assisting in the collection and analysis of data including: British Columbia/Yukon, Alberta/Northwest Territories, Saskatchewan, Manitoba, Quebec, Ontario, and the Atlantic Region. It is hoped that we recruit between 15-25 programs with representation from one-year professional programs, two-year after-degree programs, four-year bachelor's programs, and five-year combined degree programs. We will be working with faculty (program coordinators, course instructors) and students (pre-service teachers) in both elementary and secondary education pre-service teacher programs.

Method of data gathering: This study will make use of surveys, semi-structured interviews, focus groups, and program reviews. The surveys will seek to understand the level of preparedness, or lack thereof, pre-service teachers feel surrounding the teaching of Shakespearean content, the importance, or lack thereof, that pre-service teachers place on Shakespearean content, and the ways in which pre-service teachers meet, or do not meet, curricular outcomes employing Shakespearean content. The focus groups will seek to expand on the survey's Likert scales and allow the pre-service teachers the opportunity to network and confer with others from across the country to learn ways of approaching Shakespearean content differently and across subject areas. There will also be faculty-oriented focus groups where faculty will be able to discuss the ways in which they are preparing, or not preparing, pre-service teachers to teach Shakespearean content, and the role they feel, if any, that Shakespearean content has in teacher preparation programs and curriculum more broadly. Based on the surveys and focus groups the research team will invite participants forward for individual interviews to examine moments of convergence and divergence across the data. Finally, high level program reviews identifying courses, across the participating bachelor of education programs, that both include and teach towards Shakespearean content will be preformed. Special attention will be paid to learning task structure within and across courses.

Method(s) of analysis: This study will make use of interpretive phenomenological analysis in the analysis of data and follow several iterative cycles: reading and reviewing the data (both at the onset and throughout analysis), the identification of codes and themes, and a thematic analysis. Based on prior research, I imagine that the identification of codes will lead to follow up questions and explorations within the later semi-structured interviews which will serve as a helpful member-checking verification step. To ensure my own closeness to the data I will continue with the line-by-line review of the data as I generate themes, commonalties, and codes. It is my hope to use my prior research experiences to generate an authentic thick and rich description alongside these codes. This study will take place over the next two to five years.

As you can see, my research has slowly focused on drama-based approaches to teaching and learning while also taking on more of a Shakespearean lens. However, I am also interested in the notion of play more broadly and have become increasingly enamored with playfulness, in an interdisciplinary sense, in higher education (Dickson, et al., 2025; Misseyanni, et al., 2018; Padilla Rodriguez, 2021; Walker, 2021). Across all of education I see play as a pathway to more active learning as well as a way to be more imaginative and process-driven in my own higher education teaching and learning.

Conclusions: A movement into higher education playful pedagogies

My ongoing work in playful pedagogies examines the role, structure, and impact of playfulness across multiple disciplines and institution types at the post-secondary level. I am partnering with dozens of diverse, international, collaborators to compile an edited volume entitled *Playful Approaches to Pedagogy in Universities, Colleges, and Polytechnics.* Within this work I am focusing on the lived perspectives of the authors to explore play as creativity and innovation; disruption of norms; embodied and experiential learning; a mode of inquiry; relationship building; resistance; and situated practice.

During this exploration we are developing evidence-based, experiential, case studies followed by reflective questions and invitations for readers to consider play as it relates to their own practices.

What I am most excited for in this developing research is its breadth and the sheer range of disciplines that we have begun to consider play within including, but not limited to, geoscience, biology, neuroscience, psychology, emergency medicine, philosophy, literacy and composition, teacher education, theatre and drama, hospitality and pastry arts, and partnership-based experiential learning. I am excited to showcase playfulness as a flexible and robust orientation to teaching that can be adapted to varied forms of disciplinary knowledge, professional preparation, and learner engagement.

References

Bacalja, A., & Nash, B. L. (2023). Playful literacies and pedagogical priorities: Digital games in the English classroom. *English Teaching: Practice and Critique*, *22*(4), 447–461. https://doi.org/10.1108/ETPC-01-2023-0002

Barton, G., & Baguley, M. (2014). Learning through story: A collaborative, multimodal arts approach. *English Teaching, 13*(2), 93.

Beach, R., & Beauchemin, F. (2019). *Teaching language as action in the ELA classroom*. Routledge. https://doi.org/10.4324/9780429398537

Beach, R., & Swiss, T. (2011). Literary theories and teaching of English language arts. In D. Lapp, & D. Fisher (Eds.), *Handbook of research on teaching the English language arts* (3rd ed.). Routledge.

Blackledge, A., & Creese, A. (2023). Translanguaging in performance: An ethnographic drama approach. *Journal of Multilingual and Multicultural Development*, *10*(1), 1–12. https://doi.org/10.1080/01434632.2023.2181965

Boehm, S., & Franklin, L. (2023). The Case for playful pedagogy in the high School English classroom. *English Journal*, *112*(3), 51–56. https://doi.org/10.58680/ej202332229

Burton, J. A. (2017). *Posthuman rap*. Oxford University Press.

Campbell, H. (2024). *Literacy in-the-round: Examining the roles of dramatic embodiment and relationality in secondary English Language Arts classrooms* [Doctoral thesis, University of Calgary]. PRISM. https://prism. ucalgary.ca/items/c0f0e9be-c3a3-4999-9a65- 9f4bdd58a6a6

Campbell, H. M. (2021). Finding what's real by making believe: Performing student literacy experiences. *English Journal*, *110*(3), 61–67. https://doi. org/10.58680/ej202131069

Cazden, C., Cope, B., Fairclough, N., & Gee, J. (1996). A pedagogy of multiliteracies: Designing social futures. *Harvard Educational Review, 66*(1), 60–92. https://doi.org/10.17763/haer.66.1.17370n67v22j160u

Cole, D. R., & Pullen D. L. (2010). *Multiliteracies in motion: Current theory and practice.* Routledge.

Cowan K., & Albers P. (2006). Semiotic representations: Building complex literacy practices through the arts. *The Reading Teacher, 60*(2), 124-137. https://doi.org/10.1598/RT.60.2.3

Daniels, H., & Downes, E. (2014). Identity and creativity: The transformative potential of drama lessons. *Journal of Modern Foreign Psychology*, *3*(2), 41-71.

Daniels, H., & Zemelman, S. (2014). *Subjects matter: Exceeding standards through powerful content-area reading* (Second ed.). ProtoView.

Davis, J. D. (2008). *Why our schools need the arts*. Teachers College Press.

Dickson, B. A., Woolford, D. G., Samuels, B., & Kotsopoulos, D. (2026). Active Learning in Post-Secondary Statistics and Data Sciences Teaching: Lesson-Level Moments and Course-Level Alternative Models. *Journal of Statistics and Data Science Education*, *34*(2), 223–238. https://doi.org/10.1080/26939169.2025.2539237

Dreyfus, H., & Wrathall, M. (2006). *A Companion to Phenomenology and Existentialism*. Williston: John Wiley & Sons, Incorporated.

Dunn, J. (2016). Demystifying process drama: Exploring the why, what, and how. *Drama Australia Journal, 40*(2), 127–140. https://doi.org/10.1080/14452294.2016.1276738

Dutton, J., & Rushton, K. (2022). Drama pedagogy: Subverting and remaking learning in the thirdspace. *The Australian Journal of Language and Literacy*, *45*(2), 159–181. https://doi.org/10.1007/s44020-022-00010-6

Eatough, V. & Smith, J. (2017). Interpretative phenomenological analysis. In Willig, C., & Stainton-Rogers, W. *The SAGE handbook of qualitative research in psychology* (pp. 179-194). London: SAGE Publications Ltd doi: 10.4135/9781848607927

Gannaway, J. (2019). Beyond either/or: Searching for relational literacy pedagogy. *English in Australia*, *54*(1), 12–19.

Greene, M. (1995). *Releasing the imagination: Essays on education, the arts, and social change* (1st ed.). Jossey-Bass Publishers.

Gritter, K., Schoon-Tanis, K., & Althoff, M. (2014). *Can pop culture and Shakespeare exist in the same classroom?: Using student interest to bring complex texts to life*. Routledge. https://doi.org/10.4324/9781315819815

Harding, L. (2023). Spaces, places & lines between teacher education and the community garden: A diffractive entanglement with posthumanism and feminist new materialist thinking. *Cultural and Pedagogical Inquiry*, *14*(2), 101–113. https://doi.org/10.18733/cpi29687

Harris, A., & Jones, S. H. (2020). Beautiful radiant things: Performance and its affects in applied theatre. *Research in Drama Education*, *25*(3), 320–334. https://doi.org/10.1080/13569783.2020.1779585

Harste, J. C. (2003). What do we mean by literacy now? *Voices from the Middle*, *10*(3), 8-10.

Hart, J., Onuscheck, M., & Christel, M. T. (2016). *Acting it out: Using drama in the classroom to improve student engagement, reading, and critical thinking*. Routledge. https://doi.org/10.4324/9781315559513

Jasper, J. J., Dvorak, L. L., Athanases, S. Z., & Sanchez, S. L. (2021). Embodiment, emotion, and reflection: Resources for learning through drama. *English Journal*, *110*(3), 40–47.

Jin, J., Polak, L., Georges, V., & Liu, Y. (2022). Literacy entanglements and relationality, time, place, space, and identity. *Language & Literacy*, *24*(1), 1–5. https://doi.org/10.20360/langandlit29620

Johnston, D. (2017). *Theatre and Phenomenology: Manual Philosophy*. Palgrave Macmillan.

Kouppanou, A. (2022). The posthumanist challenge to teaching or teaching's challenge to posthumanism: A neohumanist proposal of nearness in education. *Discourse*, *43*(5), 766–784. https://doi.org/10.1080/01596306.2022.2033534

Lang, L. L. (2002). Whose play is it anyhow? When drama teachers journey into collective creation. *Youth Theatre Journal*, *16*(1), 48–62. https://doi.org/10.1080/08929092.2002.10012540

Lathrop, B. (2021). From engagement to empathy: Performance in the ELA classroom. *English Journal*, *110*(3), 54–60.

Lenters, K., & Whitford, A. (2018). Failing with Grace: Kids, Improv and Embodied Literacies. *Literacy, 52*(3), 117-127.

Marco, K. (2015). Drama as literacy: Perceptions of an interactive pedagogy. *Research in Drama Education*, *20*(3), 337-339. https://doi.org/10.1080/13569783.2015.1059270

Marlatt, R. (2020). Revitalizing English language arts through social and emotional learning. *English Journal*, *109*(3), 44–49. https://doi.org/10.58680/ej202030460

McManus, E. (2020). Double, double, toil and success! Macbeth in seventh grade. *English Journal*, *109*(4), 109–111.

McMaster, J. C. (1998). Doing literature: Using drama to build literacy. *The Reading Teacher, 51*(7), 574-584.

Medina, C. L., Perry, M., Lee, B. K., & Deliman, A. (2021). Reading with drama: Relations between texts, readers, and experiences. *Literacy, 55*(2), 136–144. https://doi.org/10.1111/lit.12246

Merleau-Ponty, M. (2002). *Phenomenology of perception*. Routledge.

Misseyanni, A., Papadopoulou, P., Marouli, C., & Lytras, M. D. (Eds.). (2018). *Active learning strategies in higher education (1st ed.).* Emerald Publishing.

Nichols, T. P., & Campano, G. (2017). Posthumanism and literacy studies. *Language Arts*, *94*(4), 245-251.

Norris, J. (2016). Drama as research: Realizing the potential of drama in education as a research methodology. *Youth Theatre Journal, 30*(2), 122-135. doi:10.1080/08929092.2016.1227189

Padilla Rodriguez, B. (2021). *Cases on active blended learning in higher education*. IGI Global. https://doi.org/10.4018/978-1-7998-7856-8

Parker, L. (2020). Literacy in the post-truth era: The significance of affect and the ethical encounter. *Educational Philosophy and Theory*, *53*(6), 613–623. https://doi.org/10.1080/00131857.2020.1803834

Pascoe, R. (2002). Stretching the envelope for arts literacy: Arguing for multiple literacies through drama and the other arts. *Melbourne Studies in Education*, *43*(2), 64–76. https://doi.org/10.1080/17508480209556403

Peck, S. M., & Virkler, A. J. (2006). Reading in the shadows: Extending literacy skills through shadow-puppet theater. *The Reading Teacher, 59*(8), 786-795. doi:10.1598/RT.59.8.6

Perry, M. (2021). Pluriversal literacies: Affect and relationality in vulnerable times. *Reading Research Quarterly*, *56*(2), 293–309. https://doi.org/10.1002/rrq.312

Perry, M., Wessels, A., & Wager, A. (2013). From playbuilding to devising in literacy education: Aesthetic and pedagogical approaches. *Journal of Adolescent & Adult Literacy*, *56*(8), 649-658. https://doi.org/10.1002/JAAL.195

Pietkiewicz, I., & Smith, J. (2014). A practical guide to using Interpretative Phenomenological Analysis in qualitative research psychology. *Czasopismo Psychologiczne Psychological Journal, 20*(1). 1-12. doi:10.14691/cppj.20.1.7

Purves, A., & Beach, R. (1972). *Literature and the reader: Research on response to literature, reading interests, and the teaching of literature*. National Council of Teachers of English.

Shabtay, A. (2021), Ethical considerations in drama-based research with children and young people. In G. Spencer. (Ed.) *Ethics and integrity in research with children and young people*, Emerald Publishing Limited. 199-212. https://doi.org/10.1108/S2398-601820210000007018

Smith, J.A., Flowers, P., & Larkin, M. (2009). *Interpretative phenomenological analysis: Theory, method and research.* Sage.

Street, B. (2006). New Literacy Studies: Next Stages. *Orbit, 36*(1), 37-39.

Stornaiuolo, A., Smith, A., & Phillips, N. (2017). Developing a transliteracies framework for a connected world. *Journal of Literacy Research, 49*(1), 68-91. https://doi.org/10.1177/1086296X16683419

Taylor, P., & Warner, C. D. (2006). *Structure and spontaneity: The process drama of Cecily O'Neill*. Trentham Books.

Turchi, L. B., & Christensen, A. C. (2019). Teaching Shakespeare. *English Journal*, *108*(5), 101–103.

Van Manen, M. (2016). *Researching lived experience: Human science for an action sensitive pedagogy*. Routledge.

Van Manen, M., & Adams, C. (2010). Qualitative research: Phenomenology. In E. Baker, P. Peterson and B. McGaw (Eds.), *International Encyclopedia of Education*, Volume 6, pp. 449-455. Elsevier.

Vicars, M., & McKenna, T. (2015). In the thick of things: Drama as a qualitative methodology. *Qualitative Research Journal*, *15*(4), 416-429. https://doi.org/10.1108/QRJ-06-2015-0034

Walker, S. R. (2021). *Artmaking, play, and meaning making.* Davis Publications.

Wells, T., & Sandretto, S. (2016). I'm on a journey I never thought I'd be on: Using process drama pedagogy for the literacy programme. *Pedagogies: An International Journal*, *12*(2), 180-195. https://doi.org/10.1080/1554480X.2016.1245147

Wilhelm, J. D., & Edmiston, B. (1998). Imagining to learn: Inquiry, ethics, and integration through drama. Heinemann.

About the Author

Harrison Campbell B.Ed., M.A., Ph.D.: is a Assistant Professor of Literacy Education at St. Mary's University in Calgary, Alberta Canada. Prior to working in academia Dr. Campbell obtained a Bachelor of Education from the University of Alberta and taught English language arts and drama at a mix of elementary, junior, and high school levels. After teaching for several years Dr. Campbell pursued a Master of Arts (MA) with a specialization in Curriculum and Learning at the University of Calgary. Dr. Campbell's MA thesis was a phenomenological inquiry into what it is like to experience literacy in theatrical spaces. That research was undertaken at a junior high school and had grade eight and nine students participating in interviews, multimodal journaling, script and character creation, and performances to develop personal connections to the literacy content they were learning. Dr. Campbell's PhD dissertation was a post-humanist case study exploring how drama can be integrated into a secondary English language arts classroom to enhance literacy by moving learning from the page to the stage. That research had grade twelve students participating in observations, interviews, dramatic mask making, script creation, and performances to explore how performativity could enrich their understanding of the texts they were studying in class. Dr. Campbell is grateful for the support of provincial and national funding bodies, including: two Queen Elizabeth II Scholarships; a Social Sciences and Humanities Research Council of Canada (CGS-D); and being named a Pre-Doctoral Killam Laureate by The Killam Trusts.

Dr. Campbell has been a member of the Faculty of Education at St. Mary's University since 2020. At St. Mary's University, Dr. Campbell teaches in the Bachelor of Education program leading the classes: Disciplinary methods of teaching – English language arts; curriculum and instruction in literacy education and new literacies. Also, he teaches in the Master of Education program leading the class: Presentation of educational research and supervises several graduate students. Dr. Campbell's excellence in teaching, across more than seventy-five post-secondary courses, has been recognized by the Werklund School of Education Teaching Excellence Award and by St. Mary's University with the Terrence Downey Award for Teaching Excellence. His research explores how drama-based pedagogies can be used to better understand student literacy experiences in K-12 education and how playful pedagogical practices can enhance disciplinary knowledge, professional preparation, and learner engagement across universities, colleges, and polytechnics. Dr. Campbell's playful approaches to instruction and scholarship have recently inspired the creation of an educational trust and partnership with the Stratford Festival of Canada designed to prepare pre-service teachers to teach drama while also increasing access to Stratford's educational programing for local and regional schools. Dr. Campbell's publications include, but are not limited to, *Finding what is real by making believe: Performing student literacy experiences*, which was awarded the 2022 Arts Researchers & Teachers Society Outstanding Publication Award, *Affect & Collaboration Through Drama: Enlivening Shakespeare's Othello* with English in Texas and *Playing with Personas & Studying Shadows in Shakespeare's Othello with* Jeunesse: Young People, Texts, Cultures.

e-Mail: harrison.campbell@stmu.ca.

The Effects of Context-Based Learning on Gifted Students' Transformative Potential in Addressing Environmental Issues

Zekai Ayık
Harran University, Türkiye

Abstract

Gifted students have more of the potential society needs to deal with environmental problems like global warming, but this potential only makes a real difference when it is actually used. This kind of deployment does not happen on its own, however; it needs the right kind of task and learning experience to bring it out. To this end, this study examines Context-Based Learning (CBL), built around a portable mini rooftop greenhouse activity, as one such experience, and asks whether it can help gifted students move from simply understanding global warming to actually engaging with it. Using pre- and post-intervention interviews with gifted students at a Science and Art Center (BİLSEM), the study looked at how their conceptual understanding, problem-solving, creative thinking, and ethical reflection changed over the course of the activity. Students showed clear gains in understanding the greenhouse effect and the role of carbon emissions, along with more solution-oriented and ethically engaged responses; some of their proposed solutions were genuinely feasible, others more imaginative than practical. Taken together, the findings suggest that CBL can be more than a content-deepening enrichment activity for gifted students, it may be a promising approach for converting gifted students' potential into transformational, real-world action, particularly with respect to sustainability-related issues, although fully closing the gap between awareness and action will likely require more sustained, follow-up engagement.

Keywords: Gifted Education; Context-Based Learning; Sustainability; Global Warming; Transformational Giftedness.

Introduction

The 21st century is marked by interrelated global crises (ecological degradation, public health emergencies, socio-economic instability, and food insecurity) most of which are rooted in or triggered by climate change. Among these, global warming stands out as one of the most urgent threats to human and ecological systems, driving rising temperatures, glacial melting, shifting weather patterns, sea-level rise, and biodiversity loss, and intensifying extreme weather events, heatwaves, droughts, and forest fires (Alagoz & Akman, 2016; Glavič, 2020; UK. Met Office., 2025). Scientifically, global warming means to the gradual increase in Earth's average surface temperature caused by the trapping of solar radiation by greenhouse gases such as carbon dioxide, methane, and nitrous oxide-gases released overwhelmingly by human activities such as burning fossil fuels, industrialization, intensive agriculture, deforestation, and land-use change, which intensify the natural greenhouse effect and accelerate global warming, with profound impacts on climate, biodiversity, and ecosystem functioning (Abbass et al., 2022; Ibrahim et al., 2018; Tüzer & Doğan, 2021; WWF, 2015).

Since human activity lies at the core of the climate crisis, it can be seen equally essential to be educated to contribute to solutions. In this respect, education may play a crucial role in addressing the challenges and problemd caused by global warming (Bodur et al., 2023; Koçulu & Topçu, 2024), serving as a transformative tool that prepares individuals to become environmentally responsible, socially aware, and proactive citizens (Bakar et al., 2018; Külegel, 2020). Environmental education and education for sustainable development aim not only to enhance environmental knowledge but also to foster the skills, values, and attitudes needed for informed, responsible action (Bozkurt, 2024; Glavič, 2020), equipping people with competencies such as critical thinking, systems thinking, and the ability to conceive and

solve compelx real-world problems (UNESCO, 2017), and encouraging them to reassess their relationship with nature and commit to sustainable living (Yalçınkaya & Çetin, 2018).

Recent studies emphasize education's power to foster lasting behavioral and cognitive change when content is participatory, relevant, and contextually grounded. Koçulu and Topçu (2024), for instance, found that integrating the Sustainable Development Goals into middle school curricula helped students grasp global interdependence and see themselves as agents of change. Students engaged with environment-focused curricula come to recognize the connection between their daily choices and planetary outcomes, cultivating agency and environmental stewardship, while interactive, hands-on approaches—context-based videos, physical models, project-based learning- enhance problem-solving, ecological practice, and environmental awareness, alongside creativity and ethical thinking (Ceylan, 2022; Külegel, 2020; Skamp et al., 2013; Tamrin & Desnita, 2023). The purpose of environmental education, therefore, should not merely be to inform but to transform students into critical thinkers, responsible citizens, and creative problem solvers equipped to address today's and tomorrow's environmental problems and challenges. Yet this transformative aim does not land equally on everyone: while education raises awareness and imparts knowledge broadly, some individuals hold greater potential than others to turn that knowledge into solutions and leadership.

Gifted Students as Transformational Agents for Environmental Change

Gifted students are individuals who demonstrate exceptional intellectual abilities, creativity, and problem-solving skills, often excelling in analytical thinking, creativity, and the application of knowledge across domains (Renzulli, 2005; Sternberg, 2005; Subotnik et al., 2011). This heightened capacity for critical thinking and creativity may help them to make substantial contributions to complex global challenges such as climate change, environmental degradation, and systemic inequality (Akhan et al., 2022), particularly given their integration of analytical thinking, creativity, and practical intelligence with strong self-regulation and ethical reasoning (Ayık et al., 2026; Shavinina, 2012). Therefore, gifted students are especially expected tend to socio-scientific issues and intrinsically motivated to engage with complex problems, and their advanced cognitive and emotional development makes them not only more capable of solving complex societal problems but more likely to be driven by ethical considerations toward solutions promoting social justice and sustainability (Ayık et al., 2026; Sternberg, 2024b). It is therefore crucial that gifted education nurtures not only cognitive ability but its direction toward socially meaningful and sustainable outcomes.

Why should sustainability and environmental education prioritize gifted learners specifically? Sternberg's (Sternberg, 2024b, 2024a) work offers a direct answer: giftedness is not a static possession but a dynamic balance between the competence one holds and the performance, the deployment, one gives back to society. Gifted students, by definition, hold a disproportionately large reservoir of such competence compared to their peers (Ayık et al., 2026; Merello, 2024; Sternberg, 2020), so the societal return on deploying it is correspondingly greater: converting even a modest share of a gifted student's competence into real-world environmental problem-solving capacity yields a larger absolute benefit than doing the same for a less exceptional reservoir. This asymmetry is the central rationale for the present study's focus on gifted learners, global challenges such as climate change demand a disproportionate supply of the systems-level, creative, and ethically grounded problem-solving that gifted individuals are best positioned to provide.

Sternberg's (2024b) T-ACCEL model clarifies what form this deployment should take: gifted education has tended to remain transactional, rewarding individual academic achievement, rather than transformational, guiding gifted individuals toward Active, Concerned Citizenship and Ethical Leadership that benefits the world rather than the individual alone (Sternberg, 2024b). Applied here on the focus this study, sustainability should not solelt be content for gifted students to master, but a domain in which their competence is actively progressed into transformational, world/society-improving action (Sternberg, 2020, 2024b) as consistent with Merello's (2024) Non-Orthogonal Multidimensional Theory (NOMT), which likewise ties genuine talent development to social, not merely academic, contribution. For these reasons, gifted education must be designed to cultivate socially responsible, ethical leaders, not merely to accelerate academic achievement. Interdisciplinary, hands-on engagement with real-world

problems has been shown to help gifted students develop more creative, sustainable, and socially responsible solutions (Balaban, 2023; Bodur et al., 2023; Ozdeniz & Aktamis, 2025).

The intersection of gifted education and environmental issues has drawn growing attention, recognizing gifted students' unique potential to understand, analyze, and address challenges such as global warming e.g. (Ayık et al., 2026; Balaban, 2023; Ceylan, 2022; Mutlu & Nacaroğlu, 2019; Tolppanen et al., 2023). Özdeniz and Aktamış (2025), for instance, found a positive correlation between gifted students' scientific epistemological beliefs and their climate-change awareness, while Ayık et al. (2026) found that gifted students showed greater sustainable-living awareness than their non-gifted peers. Two related gaps remain, however. First, relatively few studies have examined the transformational or performance dimension of giftedness (that is, how gifted students' competence is actually deployed) as opposed to their awareness of or competence regarding environmental issues. Second, and more specifically, studies that operationalize this competence-to-performance transition through concrete educational tasks and situations remain scarce: while giftedness as a "person x task x situation" interaction (Sternberg, 2024b) and Sak's (2023) related notion of stimulus conditions suggest that gifted students' potential must be nurtured through appropriately designed learning experiences, few studies within gifted education have examined which such experiences actually achieve this. As established above, gifted students hold substantial potential for societal contribution to global warming specifically; what remains underexplored is how, in practice, gifted education can convert this potential into performance. The present study aims to contribute narrowing of these gaps by examining context-based learning (CBL), which is an established method in the broader literature, though not yet systematically applied to global warming within gifted education, as one such vehicle for this conversion.

Context-Based Learning as an Enrichment Activity for Transformative Gifted Education

Gifted education incorporates various teaching methodologies, with enrichment being one of the most widely applied approaches (Gül & Ayık, 2025). Enrichment is conventionally defined as providing students with opportunities that extend beyond the standard curriculum, offering advanced learning experiences that challenge their cognitive abilities and foster deep intellectual engagement (Reis et al., 2021). Sternberg (2024b) cautions, however, that enrichment as typically conceived is not so different from acceleration: both deepen or speed up students' engagement with academic content, but neither ensures that gifted students learn to deploy their abilities toward real-world, socially meaningful ends and profits. Too often, gifted students are taught only to accelerate toward individual academic success or to enrich and empower themselves. They are rarely given the situational conditions needed to translate their competence into transformational, world-improving action (Sternberg, 2024b).

The present study employs context-based learning (CBL) as an enrichment strategy which can contribute us addressing of this limitation. Rather than merely deepening students' engagement with theoretical content, CBL supplies the kind of appropriately structured task and situation, the stimulus conditions discussed above (Sak, 2023; Sternberg, 2024b), through which gifted students' elevated competence can be fostered and actually deployed toward a authentic and real-life problem. CBL connects abstract scientific concepts to real-world, socially relevant issues, encouraging students to engage with real-life problems while developing critical analytical and problem-solving skills (Pilot & Bulte, 2006). By embedding learning in authentic contexts, CBL helps students deepen their understanding while empowering them to apply this knowledge creatively to benefit society (King, 2009), that is, to move beyond the acquisition of content-based competence toward its active, socially oriented deployment, in the essence of T-ACCEL (Sternberg, 2024b). Studies have shown that CBL not only strengthens students' conceptual understanding but also develops fundamental abilities to address societal challenges: notably, it improves problem-solving skills (Tamrin & Desnita, 2023). When students explore authentic environmental issues, they synthesize knowledge from various disciplines resulting in innovative, practical solutions. In this way, CBL may nurture not only cognitive understanding but also may equip students with the abilities necessary to act as responsible problem-solvers in response to global crises (Balaban, 2023; Tamrin & Desnita, 2023). Therefore, it can be seen

as an enrichment activity that may reach toward the transformational level of deployment that Sternberg's T-ACCEL model envisions for gifted education.

The Importance, Rationale, and Aims of the Study

The importance of this study lies in addressing the gap identified above by applying a context-based learning approach to foster gifted students' deep understanding of global warming while simultaneously developing the concerning social competencies required for transformative action. In doing so, the study provides one of the situational conditions called for by Sak's (2023) fuzzy conception of giftedness and Sternberg's (2024b) "person x task x situation" framework: a concrete stimulus condition through which gifted students' potential can be evoked and deployed, rather than left as unrealized potential in Sternberg's (2024a) duplex-model approach. The rationale for the study is to contribute to the limited but growing body of research on environmental education for gifted learners, offering a model for integrating sustainability-focused pedagogy into advanced talent development programs that moves gifted education beyond conventional acceleration or enrichment toward the transformational deployment and by Merello's (2024) multidimensional talent development framework (NOMT).

The aim of this study is to explore how a CBL activity centered on a portable mini rooftop greenhouse affects gifted students' conceptual understanding of global warming, enhances their problem-solving and practical intelligence, and supports the deployment of their competence toward transformational action for societal benefits. By providing a structured, context-rich learning experience differentiated for gifted students, this research contributes to pedagogical strategies that promote not only academic excellence but also disposition in addressing complex global problems, through the lens of sustainability and socieatal well-being. In line with this aim, the research questions of the study are as follows:

1. How does the portable mini rooftop greenhouse activity as a context-based learning approach influence gifted students' conceptual understanding of global warming and sustainability?
2. In what ways does the activity enhance their problem-solving and practical intelligence?
3. To what extent does the experience support the deployment of transformational giftedness and align with the multidimensional talent development framework?

Method

This study adopted an interventive case study design to explore how a context-based learning activity involving portable mini rooftop greenhouses could support gifted students' conceptual understanding of global warming and enhance their analytical, creative, and practical thinking. The case study methodology was chosen due to its strength in capturing the complexity of real-life educational processes within a bounded system (Creswell & Poth, 2018; Yin, 2018). It allows for a rich, contextualized understanding of how the designed learning experience influences students' thinking and behavior, particularly when aiming to investigate multifaceted constructs such as ethical awareness, transformative potential, and integrated skill development (Merriam, 2013). As this study sought to trace shifts in cognitive and behavioral dimensions before and after the learning intervention, the case study approach offered an appropriate framework for collecting and analyzing qualitative, in-depth data.

Participants and Sampling

The study was conducted at a Science and Art Center (BİLSEM) in southeastern Turkey, a public institution affiliated with the Ministry of National Education, designed to provide enrichment-based education to gifted and talented students. BİLSEMs offer specialized programs that cater to the intellectual, creative, and social development of students identified as gifted. Admission to BİLSEMs follows a rigorous three-stage national identification process, which includes cognitive screening tests, ASIS IQ tests developed by the Ministry of National Education, and domain-specific performance assessments (Sak et al., 2019, p. 201). These centers aim to nurture students' advanced cognitive, social, and creative abilities through flexible, differentiated programming to support talent developement

(MEB, 2018). A total of nine students from grades 7 and 8 participated in this study. The participants were selected using convenience sampling, which involved recruiting individuals who were accessible and willing to participate (Patton, 2002). This approach was suitable for this study, as it allowed the researchers to access a specific group of students from BİLSEM who were highly motivated and capable of engaging with the complex environmental issues explored in the study. The educational environment at BİLSEM, with its emphasis on creativity, innovation, and leadership development, provides an ideal setting for investigating the role of gifted students in understanding and responding to sustainability challenges.

Participation in the study was voluntary, and informed consent was obtained from both the students and their legal guardians. Ethical approval for the study was given by the Social and Human Sciences Ethics Committee of Harran University with approval number E-76244175-900-444299. Prior to the implementation, a pre-intervention interview was conducted with each student to explore their baseline knowledge, misconceptions, and perspectives on global warming. Following the intervention, a post-interview was administered to assess shifts in understanding and the development of creative and practical solutions.

Table 1: Demographics Information of Participants

Name	Age	Gender	Grade
Hakan	13	Male	7
Ebru	14	Female	8
Can	13	Male	7
İlker	14	Male	8
Mert	14	Male	8
Sude	14	Female	8
Yavuz	13	Male	7
Cemil	13	Male	7
Sabri	14	Male	8

The Structure of CBL Activity: Portable Rooftop Greenhouse Simulation

The central learning activity was designed according to the principles of CBL, where scientific concepts are taught through their relevance to real-world situations. The activity used portable mini rooftop greenhouses (Zambrano-Prado et al., 2021) as analogical models to simulate the greenhouse effect and the role of carbon emissions in global warming. Two identical greenhouses were prepared, each containing:

- A small live plant,
- A shallow container with water (initial temperature: 25.2°C),
- Soil substrate, mimicking Earth's surface.

The key experimental manipulation involved ventilation:

- Greenhouse A had small openings (holes) to allow heat to escape, representing an atmosphere not yet affected by excessive carbon emissions.
- Greenhouse B was completely sealed, representing an atmosphere where carbon emissions have blocked natural ventilation, intensifying the greenhouse effect.

A desk lamp heater was positioned above both greenhouses, simulating solar radiation. The lamp emitted both light and heat and was turned on for 5 minutes. After this period:

- The temperature of the water in Greenhouse A (ventilated) rose to 29.0°C.
- In Greenhouse B (sealed), the temperature reached 33.0°C.

Students engaged with the simulation by referring to information cards that guided their interpretation of each system component and its real-world counterpart (e.g., water representing oceans, lamp representing the sun, greenhouse glass as the atmospheric layer). The researcher facilitated the

session, prompting students to reflect on the causal links between carbon emissions, atmospheric change, and global temperature rise. Figure 2 shows the activity setting. The activity's aim was to create an embodied, analogical experience that would help students understand global warming not just as an abstract scientific phenomenon, but as a complex, human-driven process with tangible environmental and ethical implications.



Figure 1: The activity setting,

Data Collection

The data collection process in this study was designed to capture rich, multidimensional insights into gifted students' conceptual, analytical, creative, and practical thinking related to global warming. Data were gathered using pre- and post-intervention written interviews, which allowed students to articulate their understanding in their own words. These interviews consisted of a series of open-ended questions, structured to elicit responses across four core domains:

1. Conceptual understanding of global warming mechanisms,
2. Analytical reasoning about cause-and-effect relationships within the global climate system,
3. Creative development of plausible and innovative solutions, and
4. Practical and ethical reflections regarding their personal and societal roles in environmental sustainability.

The development of the interview protocol was theoretically grounded. Question design was informed by Sternberg's Theory of Successful Intelligence (Sternberg, 2005) and Transformational Giftedness framework (Sternberg, 2020), which emphasize the integration of analytical, creative, and practical intelligences in real-world problem-solving for societal benefit. In addition, literature concerning students' understanding of climate change and global environmental issues provided further conceptual scaffolding for the questions (King et al., 2008; Mutlu & Nacaroğlu, 2019). To ensure the content validity of the interview questions, a domain expert in gifted education and science pedagogy was consulted. Following this, pilot interviews were conducted with two students who were not part of the main study sample. These pilot interviews helped refine the language and structure of the items to better suit the cognitive and linguistic levels of the target group (grades 7–8), ensuring clarity and reducing the risk of misinterpretation. The final question in the post-intervention interview was designed to tap into non-verbal, creative modes of expression. Students were asked to generate a drawing that visualized their proposed solutions to global warming. This task aimed to provide complementary data to the written responses and offered an alternative avenue for students to represent their understanding, particularly useful for those with strong visual-spatial abilities. These drawings were subsequently used to triangulate findings and to explore students' metaphorical and mental representations.

Data Analysis

A thematic analysis was employed to analyze the qualitative data obtained from students' written responses. The analysis followed the six-phase framework outlined by Braun and Clarke (2006),

widely regarded as a rigorous and flexible method for identifying, analyzing, and reporting patterns within qualitative data. These phases included: This process was both inductive and theory-informed, inductive in that themes emerged organically from the data, and theory-informed through the interpretive lens provided by the conceptual frameworks guiding the study. In addition to thematic analysis, the student drawings were subjected to summative content analysis, which involved the classification and interpretation of visual elements related to the causes, consequences, and solutions of global warming. Drawings were categorized based on representational content (e.g., greenhouse gases, melting glaciers, renewable energy solutions), visual metaphors, and system-level structures. This dual-layered analysis enabled a more nuanced understanding of how students internalized and expressed complex environmental phenomena.

To evaluate learning outcomes, a comparative analysis of pre- and post-intervention data was conducted. Changes in the depth, accuracy, and complexity of responses were noted, particularly focusing on students' ability to:

- Move from superficial to systemic explanations,
- Shift from individual actions to collective or policy-level solutions,
- Incorporate ethical and long-term considerations in their reflections and desgin solutions.

This comparative lens allowed the research team to assess not only cognitive gains but also evidence of transformational thinking, in alignment with the theoretical aims of the study. Furthermore, by integrating multiple data sources (written responses and visual representations), data triangulation enhanced the trustworthiness and credibility of the findings.

Findings

Thematic Analysis of Pre-Interview Responses

The pre-interview responses provided by the students offer valuable insights into their understanding of global warming, their ability to think analytically, creatively, and practically about environmental issues, and the extent to which they recognize the causes and consequences of climate change. The students' responses cover a range of cognitive and ethical dimensions, reflecting their current levels of environmental awareness and their readiness to engage in complex problem-solving activities related to global warming. In this thematic analysis, it will be examined around the major themes that emerged from the students' answers and how these relate to the key objectives of the study, which aim to foster conceptual understanding, problem-solving skills, ethical reasoning, and transformative thinking in gifted students. The thematic map of pre-activity interviews responses are demonstrated with Figure 2 below.

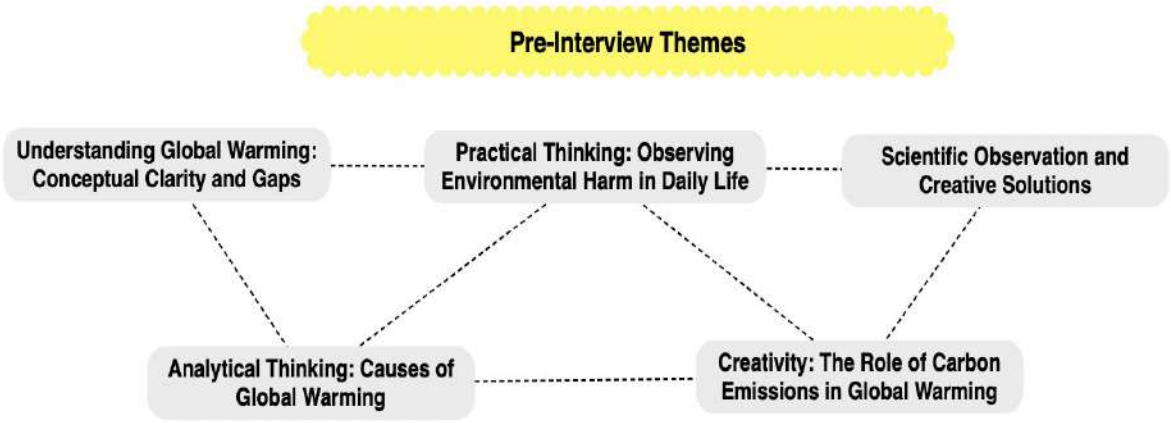


Figure 2: Pre-Activity Themes**.**

1. Understanding Global Warming: Conceptual Clarity and Gaps

The students' understanding of global warming varied significantly. Some students provided a somewhat general explanation of the phenomenon, whereas others displayed a limited or fragmented

understanding of the scientific mechanisms behind global warming. For example, Hakan described global warming as a disruption in natural events, stating that "summer rain is not common, but due to global warming, nature's events mix, and we may experience phenomena like thunderstorms during summer." His response reflects a recognition of unusual weather patterns associated with global warming, but it lacks the scientific explanation of the role of greenhouse gases and how they affect global temperature. Similarly, Ebru explained global warming as "the result of improper use of resources and the harmful gases released into the air," but did not clearly connect these actions to the accumulation of greenhouse gases and the heat-trapping effect they have on the atmosphere. In contrast, Can offered a more scientific explanation, relating global warming to "dirty air and gases that rise, causing the sun's heat to reflect back to Earth, increasing its temperature." This response suggests a more nuanced understanding of the greenhouse effect and its relationship to human activities. However, there were also clear gaps in knowledge, particularly around technical concepts like carbon emissions. İlker and Mert indicated they were unfamiliar with the term "carbon emission" and thus could not explain how it contributes to global warming. This highlights an area for growth, as understanding the role of carbon dioxide and other greenhouse gases is essential for fully grasping the mechanisms of climate change.

2. Analytical Thinking: Causes of Global Warming

When asked about the causes of global warming, the students provided a variety of responses, some of which demonstrated strong analytical thinking, while others remained rather superficial. Hakan identified several everyday human behaviors, such as "using gasoline cars, littering, and failing to install filters on factory chimneys," as contributing to global warming. These responses indicate an awareness of direct, human-induced actions that impact the environment, showing an understanding of the cause-and-effect relationship between human behavior and climate change. His answer illustrates a growing ability to think analytically about how human actions are interconnected with environmental consequences. Sude, too, listed behaviors such as "misuse of electricity, littering, and smoke from factory chimneys," aligning closely with the previous answer. While these responses reflect awareness of human responsibility, they are somewhat more general and do not delve into the underlying scientific mechanisms that link these behaviors to global warming. However, some responses were less clear. Can stated that "humans want to heat the world because they lived during the ice age," which reflects a misunderstanding of the cause of global warming. His answer seems to conflate historical climate events with contemporary human actions, indicating that he may not fully understand the anthropogenic (human-caused) nature of current climate change. Similarly, Ebru identified improper use of resources and factory emissions but did not clearly explain how these activities lead to global warming.

3. Practical Thinking: Observing Environmental Harms in Daily Life

Many students demonstrated practical thinking by identifying behaviors in their daily lives that contribute to environmental harm. For example, Hakan mentioned "littering" as a common practice that directly contributes to global warming, indicating a recognition of how seemingly small actions can aggregate to significant environmental impacts. This response shows that he is able to observe everyday behaviors and connect them to broader environmental issues. Sude echoed a similar sentiment by identifying littering as a harmful behavior, emphasizing its role in making "the Earth an uninhabitable place." This observation highlights an awareness of the long-term consequences of everyday actions on the planet's sustainability. Can provided a more unique observation, stating that "immature figs in school are destroyed and fall to the ground, leading to the spread of viruses like Covid-19." This response reflects a creative, albeit flawed, link between environmental degradation and public health, demonstrating the student's ability to connect environmental changes to broader societal problems. However, it is important to note that this connection is based on a misunderstanding, as global warming does not directly cause the spread of viruses like Covid-19.

4. Creativity: The Role of Carbon Emissions in Global Warming

When asked about carbon emissions and their relationship to global warming, many students acknowledged the idea that carbon emissions contribute to environmental harm but lacked a detailed understanding of the scientific connection. Ebru and Cemil both expressed uncertainty about carbon

emissions, with Zeynep stating, "I don't know, I have never heard of it." This lack of awareness indicates a gap in the students' environmental education, as understanding the role of carbon dioxide in the greenhouse effect is crucial for fostering a deeper understanding of climate change. On the other hand, Yavuz gave a somewhat more insightful response, saying that "if an area releases carbon emissions, it could increase the temperature of the atmosphere due to carbon dioxide." Although the explanation is not fully accurate, it shows an attempt to understand the link between emissions and temperature rise, reflecting a basic level of conceptual grasp.

5. Scientific Observation and Creative Solutions

When asked to design an experiment to observe the effects of global warming, students demonstrated varying degrees of creativity and scientific thinking. Hakan proposed creating a "pie chart showing the pollution levels of the world," which suggests a more conceptual and data-driven approach to understanding environmental harm, although it lacks the experimental element of direct observation. Can suggested using "special cameras to observe harmful gases in certain areas," which is a more innovative and technologically-oriented response, reflecting an inclination toward practical scientific inquiry. However, other seven responses were more abstract or generalized.

In terms of solutions to global warming, students offered a mix of practical and creative ideas. Hakansuggested "using electric cars" as a solution, a practical and feasible recommendation that aligns with current environmental policies aimed at reducing fossil fuel dependence. Sude proposed that "international agreements should be signed, and penalties should be imposed on those who harm the environment." This reflects an awareness of the importance of policy and collective action in addressing global warming, showing a more global perspective on the issue. In contrast, some responses were more imaginative. Ebru suggested enclosing the Earth in a giant fan to prevent global warming, a highly creative but impractical solution. Similarly, Yavuz suggested using robots to clean up space and Earth's debris, showcasing an inventive approach to addressing environmental issues.

In conclusion, the students' pre-interview responses demonstrate a range of understanding, from vague and incomplete conceptions of global warming to more scientifically informed and creative problem solving approaches. While many students recognize the link between human actions and environmental degradation, they often struggle with more technical concepts like carbon emissions and the scientific mechanisms behind global warming. However, their ability to observe environmental harm in everyday life and propose both practical and imaginative solutions highlights their potential to engage with environmental issues in meaningful ways. This thematic analysis reveals that while the students show promise, there is a clear need for further education on the scientific aspects of global warming, as well as support for developing their analytical, creative, and practical thinking skills in environmental contexts.

Post-Activity Interview Responses

The post-activity interviews provide critical insights into how students have processed their experiences with the greenhouse experiment. Through this analysis, we will explore the extent to which their conceptual understanding, practical thinking, and creativity have evolved following the context-based learning activity. The analysis will examine their grasp of climate change concepts, their ability to apply these concepts to real-world problems, and how their perspectives on environmental responsibility have shifted after the activity. The students' reflections on their experiences during the activity are indicative of both cognitive and emotional growth, as well as their potential to engage in transformative environmental actions. The thematic map of post-activity interviews responses are demonstrated with Figure 3 below.

1. Understanding of Atmospheric Processes: Conceptual Development

The post-activity interviews demonstrate a clearer understanding of atmospheric processes, particularly with regard to the role of carbon emissions in global warming. Many students were able to articulate the connection between carbon dioxide and the greenhouse effect after the hands-on activity.

For instance, Hakan stated, "I understood that in the past, there was less carbon dioxide, but now it has increased, and I think the holes in the atmosphere should be closed to prevent further damage." This reflects a more nuanced understanding of the accumulation of greenhouse gases and their role in trapping heat, even though he still uses the metaphor of "holes" in the atmosphere, which could be refined further in future discussions. Sude, similarly, connected carbon dioxide to global warming, explaining that "the more carbon dioxide there is, the more global warming increases." This response reflects a solid conceptual grasp of the relationship between greenhouse gases and climate change, enhanced by the experimental experience. On the other hand, İlker said, "The experiment showed me how the atmosphere works and what role it plays." Although he did not provide an in-depth explanation, this statement suggests that the activity gave him a practical understanding of the mechanisms behind global warming, even if he still lacks detailed scientific language. The hands-on activity seems to have made the concept of the atmosphere more tangible for him.

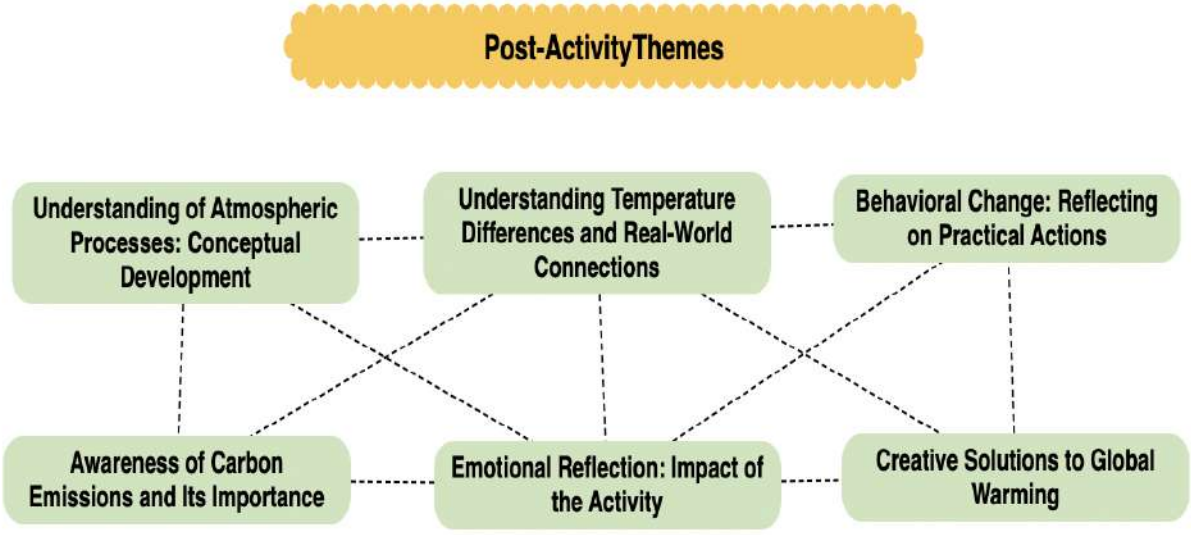


Figure 3: Post-Activity Themes.

2. Understanding Temperature Differences and Real-World Connections

The students showed a better understanding of the differences in temperature between the two experimental systems, and many could relate these differences to real-world environmental processes. For example, Hakan explained, "The hot substance, which was the heating lamb stove, represents the sun, while the small rooftop greenhouse represents the atmosphere, and inside the greenhouse, the cactus represents plants, and the water represents oceans." This explanation shows a clear understanding of the greenhouse effect, with the student recognizing the analogy between the experimental setup and real-world components like the atmosphere, plants, and oceans. Sabri made a similar connection, stating, "The two systems represent the greenhouse effect. The temperature difference was due to the presence of the greenhouse effect, where heat could not escape from the sealed system." This suggests that the student now understands the role of the greenhouse effect in trapping heat within the atmosphere. However, some students like İlker and Ebru focused primarily on the system's physical setup without fully relating the temperature differences to the greenhouse effect. Ebru said, "in one system, there were holes, and in the other, there were none. The heat couldn't escape in the system without holes," indicating a basic recognition of the experiment's dynamics, but without making a direct connection to the broader climate issues.

3. Behavioral Change: Reflecting on Practical Actions

Many students reflected on the ways in which they could alter their behavior to contribute to reducing global warming. Their answers indicate a growing sense of personal responsibility and an awareness of how individual actions can have an impact on the environment. For example, Hakan did

not immediately offer a specific behavior change, but Ebru indicated, "I will reduce the use of deodorants, as they contribute to the release of greenhouse gases." This response reflects an increased awareness of everyday products and their environmental impact, suggesting that the student has begun to make connections between individual behaviors and broader environmental consequences. Cemil also reflected on his own consumption patterns, stating, "I will not buy anything in excess. Everything produced contributes to carbon emissions. For example, I won't have too many sweaters, and I will eat only as much as I need." This indicates a shift towards mindful consumption, where the student has internalized the lesson about the environmental impact of overconsumption. İlker stated, "I will try to reduce my oxygen consumption and avoid producing too much carbon dioxide," which seems to reflect a somewhat abstract understanding of the behavior changes needed to address climate change.

4. Awareness of Carbon Emissions and Its Importance

The importance of reducing carbon emissions emerged as a central theme in the post-interviews, and many students discussed the urgency of addressing this issue. Sude said, "People are not knowledgeable enough about carbon emissions, and reducing them is crucial to prevent global warming." This statement suggests that the student now recognizes the broader societal need for education on climate change and carbon emissions. Similarly, Sabri noted that "if we don't reduce carbon emissions, we will exacerbate the greenhouse effect." This response demonstrates a clear understanding of the importance of mitigating emissions to prevent further damage to the environment. Hakan emphasized, "Reducing carbon emissions is important because it can decrease global warming, and we need to take measures to protect the atmosphere from harmful rays." This reflection indicates that the student has internalized the role of carbon emissions in global warming and is considering how to address it practically.

5. Emotional Reflection: Impact of the Activity

The students were generally reflective about the experiment, with several mentioning how the activity had made them think more deeply about the issues surrounding global warming. Hakan described a key moment when he realized that "the heat from the lamb stove could not pass through the holes of the greenhouse," which helped him understand the trapping effect of greenhouse gases. Sabri also reflected on the experience, stating, "The experiment made me think about how the carbon footprint is affecting the environment. I will be more careful from now on to reduce it." This emotional connection to the experiment indicates that the activity had a lasting effect on the students, helping them internalize the scientific concepts while also motivating behavioral change. İlker shared that the experiment made him think about his own carbon emissions, noting, "I was breathing in and out, and I realized I was contributing to carbon emissions." This moment of self-awareness reflects an emotional connection to the environmental issue, suggesting that the student now sees his own actions in relation to global warming.

6. Creative Solutions to Global Warming

The students' proposed solutions to global warming demonstrate both creativity and a practical understanding of how to address environmental challenges. Hakan proposed the development of a device to "capture carbon dioxide from the air," which would help reduce the levels of this gas in the atmosphere (See Figure 4). This innovative idea reflects a growing understanding of the technological solutions needed to mitigate climate change. Sabri also suggested a solution involving planting more trees, stating, "I want to design a machine that plants new trees, which will help reduce carbon dioxide levels" (See Figure 5). This solution is practical and reflects an understanding of how increasing green spaces can contribute to lowering carbon emissions. Yavuz suggested designing a robot that would collect trash and plant trees to help restore oxygen levels in the environment. This creative approach illustrates the student's ability to think about technological solutions that address both pollution and carbon sequestration.

To summarize, the post-activity interview responses reflect significant growth in the students' understanding of global warming, as well as an increased sense of personal responsibility for environmental issues. The students demonstrated a deeper understanding of the science behind global

warming, particularly the role of carbon emissions in the greenhouse effect. Their behavioral reflections show that they are beginning to internalize the concept of environmental responsibility, with several students suggesting concrete actions to reduce their carbon footprint. Moreover, the creative solutions they proposed highlight their ability to think innovatively about addressing climate change. Overall, the activity successfully enhanced their conceptual understanding and sparked meaningful reflections on how they can contribute to combating global warming.

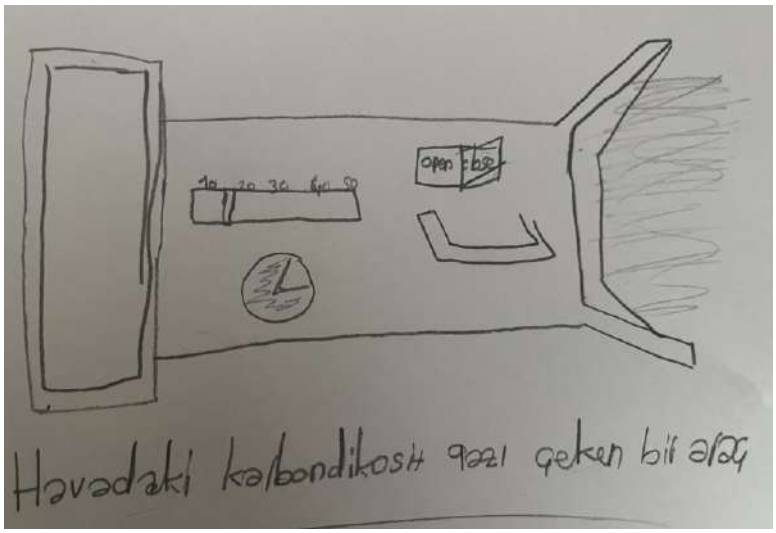


Figure 4: Hakan's design to struggle with greenhouse effect**.**



Figure 5: Sabri's design to struggle with greenhouse effect.

Discussion

This study explored the effectiveness of a CBL activity involving a portable rooftop greenhouse in supporting gifted students' conceptual understanding, problem-solving, ethical awareness, creative thinking, and practical engagement with global warming. The activity connected abstract environmental concepts to a tangible, hands-on exploration of the greenhouse effect. Drawing on pre- and post-intervention interview data, this discussion considers how the activity appeared to influence students' engagement with environmental issues, in light of relevant theoretical and empirical literature on context-based learning and gifted education.

Findings suggest that students showed noticeable growth in their understanding of the greenhouse effect and its relationship to global warming following the intervention. Before the activity, students' explanations were largely basic or incomplete, often relying on oversimplified or inaccurate metaphors such as holes in the atmosphere. After the intervention, most students showed an improved grasp of the underlying processes, such as the role of carbon dioxide in trapping heat. These findings align with Balaban (2023), who reported that CBL supports greater conceptual clarity in complex

environmental topics, global warming in this case. Some students, however, continued to rely on overly simplistic analogies, pointing to the persistent difficulty of fully bridging hands-on experience with abstract scientific theory, a pattern also reported by Mutlu and Nacaroğlu (2019), who found that misconceptions about climate change can persist even as conceptual understanding improves.

A key strength of context-based approaches is their emphasis on applying knowledge to real-world situations, and this appeared to be reflected in students' problem-solving. Before the activity, students' responses to global warming tended to be general, with few practical solutions offered. After engaging with the greenhouse activity, more students proposed tangible solutions, such as reducing carbon emissions or planting trees to capture carbon dioxide. This shift is consistent with prior research on CBL's role in fostering critical thinking and practical application (Ceylan, 2022). Some students proposed more technical solutions, such as devices to capture atmospheric carbon, reflecting both creative and analytical thinking; other proposed solutions, while inventive, were less feasible, suggesting a continued need for guidance in balancing creativity with practicality.

Before the activity, students were generally aware of global warming but showed limited personal sense of responsibility toward it. After the intervention, more students reflected on their own actions and how they might reduce their environmental impact—for example, through reduced consumption or raising awareness among peers. This is broadly consistent with research mentioned in the introduction part and suggesting that CBL can foster ethical awareness and a sense of responsibility toward societal issues. Ethical engagement nonetheless varied: some students made general statements about environmental responsibility without specifying concrete behavioral changes, suggesting that CBL can prompt ethical reflection but may require additional support to help students translate this into consistent action.

Students' creativity was one of the more striking aspects of the activity. Given that creativity is shaped by context and experience (Glăveanu, 2013), many students proposed inventive responses to global warming, from carbon-capture devices to large-scale tree-planting systems, consistent with literature emphasizing CBL's role in creative problem solving. Some proposed solutions, however, were highly imaginative but impractical (as one student, for instance, suggested sending robots into space to address global warming) illustrating a broader tension in gifted education between creative fluency and practical feasibility. Future interventions might help students refine creative ideas alongside a more realistic sense of what is achievable.

The activity aimed not only to raise awareness but to support practical behavior change, and here the results were more mixed. While many students expressed a wish to reduce their environmental impact, their responses often remained abstract; few offered concrete, actionable steps for daily life. This gap between awareness and action echoes prior research on the difficulty of translating environmental knowledge into behavior change (Boyes et al., 2009), and is consistent with the broader distinction, discussed above, between competence and its deployment (Sternberg, 2024a, 2024b): a single, well-structured learning activity may be sufficient to evoke conceptual and ethical growth, yet insufficient, on its own, to close the gap between what students understand and what they consistently do. This suggests that closing this gap may require structured follow-up activities, for example, tasks that ask students to track their own environmental impact or to design and carry out small sustainability projects over time.

The decision to focus this study on gifted students followed directly from the theoretical rationale developed above: because gifted students hold a disproportionately large reservoir of competence relevant to complex, systems-level problems such as climate change, the societal return on evoking and deploying that competence is correspondingly greater. This is not, however, to suggest that the portable mini rooftop greenhouse activity is of value only to gifted learners. Its core design—a concrete, manipulable comparison between two observable systems—is accessible across a range of ability levels and could readily be adapted for general education classrooms. For students who are not identified as gifted, the activity could be supported with more structured guiding questions, simplified vocabulary for the underlying atmospheric concepts, and additional teacher-led discussion, while retaining the same hands-on core that appeared effective here.

Future studies could usefully extend this work in several directions. Comparative studies involving both gifted and non-gifted students engaging with the same or a similarly adapted activity would help clarify which outcomes are specific to gifted learners' cognitive profiles and which generalize more broadly. Longitudinal designs, incorporating follow-up assessment weeks or months after the activity, would help determine whether the conceptual and ethical gains observed here are sustained over time, and whether they eventually translate into consistent behavior change. Future work might also examine how more structured scaffolding of the creative problem solving component affects the feasibility of students' proposed solutions.

Conclusion

This study suggests that a CBL activity centered on a portable mini rooftop greenhouse can support gifted students' understanding of global warming and related environmental issues. By offering a hands-on experience, the activity appeared to help students connect abstract scientific concept, such as the greenhouse effect and carbon emissions, to real-world environmental challenges. Findings point to improvements in students' conceptual understanding, problem-solving, and ethical awareness, with many students proposing inventive responses to global warming. At the same time, the study points to areas for further development: some proposed solutions were not fully feasible, students' grasp of the underlying scientific mechanisms was not always fully solidified, and the shift from awareness to concrete behavioral change was less pronounced than the shift in understanding. Together, these findings suggest that context-based learning is a promising tool for supporting key competencies in gifted students, while also suggesting that translating that competence into sustained, real-world performance-in Sternberg's (2024a, 2024b) sense-may require more than a single intervention. Future research could usefully explore how to strengthen the link between learning outcomes and real-world behavior, helping students not only think critically about global challenges but act on them over time.

Implications

This study points to the potential of context-based learning (CBL) as an enrichment activity within gifted education, though, as argued above, one that need not be confined to the conventional, content-focused sense of enrichment. By linking abstract environmental concepts to real-world application, CBL appeared to support students' critical thinking, creativity, and problem-solving, giving gifted students an occasion to direct their competence toward a genuine societal problem rather than academic content alone which is consistent with the transformational orientation of T-ACCEL (Sternberg, 2024b). Educators considering CBL for gifted learners may wish to extend it beyond the standard curriculum in this notion, using it not merely to deepen engagement but to occasion real, if modest, deployment of students' abilities. At the same time, this study also highlights the challenge of translating awareness into action: for the activity's impact to extend beyond the immediate learning experience, educators may need to guide students toward concrete behavioral steps and more feasible solutions, and to build in scientific follow-up where understanding remains incomplete.

Limitations

One limitation of this study is its relatively small sample size, which limits how far the findings can be generalized. With only a small number of participating students, the results may not fully capture the broader impact of CBL on gifted students across different contexts or educational settings. In addition, the study examined only the immediate effects of the activity and did not assess longer-term retention of knowledge or behavior. Future research could address these limitations with a larger and more diverse sample and follow-up assessments over time. Finally, while students' creative solutions were often inventive, they were not always feasible, suggesting that more structured guidance in balancing creativity with practicality could strengthen the impact of similar future interventions.

Note. A preliminary version of this study, based on general information and a limited portion of the data, was presented at the “15th International Başkent Congress”, held in Ankara, Türkiye, on May 15–17, 2025.

References

Abbass, K., Qasim, M. Z., Song, H., Murshed, M., Mahmood, H., & Younis, I. (2022). A review of the global climate change impacts, adaptation, and sustainable mitigation measures. *Environmental Science and Pollution Research International*, *29*(28), 42539–42559. https://doi.org/10.1007/S11356-022-19718-6

Akhan, N. E., Çiçek, S., & Kocaağa, G. (2022). Critical and creative perspectives of gifted students on global problems: Global climate change. *Thinking Skills and Creativity*, *46*. https://doi.org/10.1016/J.TSC.2022.101131

Alagoz, B., & Akman, O. (2016). A Study towards Views of Teacher Candidates about National and Global Environmental Problems. *International Journal of Research in Education and Science (IJRES)*, *2*(2), 483–493. www.ijres.net

Ayık, Z., Gül, M. D., & Usta, M. E. (2026). Transformational giftedness and sustainability: The role of critical thinking and self-regulation in sustainable-living awareness. *Frontiers in Psychology*, *17*, 1829418. https://doi.org/10.3389/fpsyg.2026.1829418

Bakar, F., Avan, Ç., & Aydinli, B. (2018). Üstün Yetenekli Öğrenciler ve Normal Akranlarının Geri Dönüşüm ve Çevresel Etkileri Üzerine Tutumlarının Karşılaştırılması. *Kastamonu Eğitim Dergisi*, *26*(3), 935–944. https://doi.org/10.24106/kefdergi.413389

Balaban, H. (2023). The Effect of Context-Based Approach on Gifted Students' Understanding the Topic of Global Warming. *Journal of Computer and Education Research*, *11*(22), 572–595. https://doi.org/10.18009/jcer.1313695

Bodur, C., Tüysüz, N., Deniz, C., & Turan, M. (2023). "Kutuplar: Keşfedilmeyi Bekleyen Topraklar" Etkinliğinin Özel Yetenekli 6.Sınıf Öğrencilerinin İklim Değişikliği Farkındalığına Etkisinin İncelenmesi. *Uşak Üniversitesi Eğitim Araştırmaları Dergisi*, *9*(3), 144–161. https://doi.org/10.29065/USAKEAD.1353824

Boyes, E., Skamp, K., & Stanisstreet, M. (2009). Australian Secondary Students' Views About Global Warming: Beliefs About Actions, and Willingness to Act. *Research in Science Education*, *39*(5), 661–680. https://doi.org/10.1007/s11165-008-9098-5

Bozkurt, O. (2024). *Çevre Eğitimi (Environmental Education)*. Pegem. www.pegem.net

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Ceylan, Ö. (2022). The effect of the waste management themed summer program on gifted students' environmental attitude, creative thinking skills and critical thinking dispositions. *Journal of Adventure Education and Outdoor Learning*, *22*(1), 53–65. https://doi.org/10.1080/14729679.2020.1859393

Creswell, J. W., & Poth, C. N. (2018). *Qualitative Inquiry & Research Design: Choosing Among Five Approaches*. Sage.

Demircioğlu, H., Dinç, M., & Çalik, M. (2013). The effect of storylines embedded within context-based learning approach on grade 6 students' understanding of 'physical and chemical change' concepts. *Journal of Baltic Science Education*, *12*(5), 682–691. https://doi.org/10.33225/JBSE/13.12.682

Glăveanu, V. P. (2013). Rewriting the language of creativity: The five A's framework. *Review of General Psychology*, *17*(1), 69–81. https://doi.org/10.1037/a0029528

Glavič, P. (2020). Identifying Key Issues of Education for Sustainable Development. *Sustainability*, *12*(16), 6500. https://doi.org/10.3390/su12166500

Gül, M. D., & Ayık, Z. (2025). Impacts of enrichment programs on cognitive and affective skills of gifted students: A meta-analysis. *PLOS ONE*, *20*(10), e0333714. https://doi.org/10.1371/JOURNAL.PONE.0333714

Ibrahim, A. A., Fahmy, H. D., & Mahmoud, R. (2018). Knowledge and Attitude regarding Global Warming Phenomenon among Assiut University Students. *Assiut Scientific Nursing Journal*, *6*(14), 1–11. https://doi.org/10.21608/ASNJ.2018.58596

King, D. (2009). Context-based Chemistry: Creating opportunities for fluid transitions between concepts and context. *Teaching Science*. http://www.asta.edu.au/resources/teachingscience

King, D., Bellocchi, A., & Ritchie, S. (2008). Making connections: Learning and teaching Chemistry in context. *Research in Science Education*, *38*(3), 365–384. https://doi.org/10.1007/s11165-007-9070-9

Koçulu, A., & Topçu, M. S. (2024). Development and Implementation of a Sustainable Development Goals (SDGs) Unit: Exploration of Middle School Students' SDG Knowledge. *Sustainability*, *16*(2), 581. https://doi.org/10.3390/su16020581

Külegel, S. (2020). *Çevre eğitimine dayalı fen, teknoloji, mühendislik, matematik temelli etkinliklerin üstün/özel yetenekli öğrencilerin 21. Yüzyıl becerilerini geliştirmesine yönelik araştırma*. Yıldız Teknik Üniversitesi.

MEB. (2018, January 2). *Özel Eğitim Hizmetleri Yönetmeliği*. Https://Www.Mevzuat.Gov.Tr/MevzuatMetin/Yonetmelik/7.5.24736.Pdf.

Merello, P. (2024). Three perspectives for assessing and monitoring talent development: A holistic theoretical approach with empirical applications. *Gifted Education International*. https://doi.org/10.1177/02614294241266244

Merriam, S. B. (2013). *Qualitative Research: A Guide to Design and Implementation*. John Wiley & Sons Inc.

Mutlu, F., & Nacaroğlu, O. (2019). Examination of Perceptions Of Gifted Students About Climate Change and Global Warming. *Journal of Baltic Science Education*, *18*(5), 780–792. https://doi.org/10.33225/jbse/19.18.780

Ozdeniz, Y., & Aktamis, H. (2025). The Relationship between Gifted Students' Scientific Epistemological Beliefs and Climate Change Awareness Levels. *Journal of Education in Science, Environment and Health*, *11*(1), 13–23. https://doi.org/10.55549/jeseh.758

Patton, M. Q. (2002). *Qualitative research & evaluation methods*. Thousand Oaks.

Pilot, A., & Bulte, A. (2006). Why do you 'need to know'? Context-based education. *International Journal of Science Education*, *28*(9), 953–956. https://doi.org/10.1080/09500690600702462/ASSET//CMS/ASSET/C8EB6F86-1B26-4D02-9180-3547D51BB5BC/09500690600702462.FP.PNG

Reis, S. M., Renzulli, S. J., & Renzulli, J. S. (2021). Enrichment and gifted education pedagogy to develop talents, gifts, and creative productivity. *Education Sciences*, *11*(10). https://doi.org/10.3390/educsci11100615

Renzulli, J. S. (2005). The three-ring definition of giftedness: A developmental model for promoting creative productivity. In R. J. Sternberg & J. E. Davidson (Eds), *Conceptions of giftedness* (pp. 246–280). Cambridge University Press.

Sak, U. (2023). Identification and Education of Students with Gifts and Talents Based on the Fuzzy Conception of Giftedness. *Education Sciences*, *13*(6), 562. https://doi.org/10.3390/educsci13060562

Sak, U., Sezerel, B. B., Dulger, E., Sozel, K., Ayas, & M. B., Sak, U., Sezerel, B. B., Kubra, E. D., & Ayas, M. B. (2019). Validity of the Anadolu-Sak Intelligence Scale in the identification of gifted students. In *Psychological Test and Assessment Modeling* (Vol. 61, Issue 3, pp. 263–283).

Schwartz, A. T. (2006). Contextualized Chemistry Education: The American experience. *International Journal of Science Education*, *28*(9), 977–998. https://doi.org/10.1080/09500690600702488

Shavinina, L. (2012). How to develop innovators? Innovation education for the gifted. *Gifted Education International*, *29*(1), 54–68. https://doi.org/10.1177/0261429412440651

Skamp, K., Boyes, E., & Stanisstreet, M. (2013). Beliefs and Willingness to Act About Global Warming: Where to Focus Science Pedagogy? *Science Education*, *97*(2), 191–217. https://doi.org/10.1002/sce.21050

Sternberg, R. J. (2005). The theory of successful intelligence. *Interamerican Journal of Psychology*, *39*, 189–202.

Sternberg, R. J. (2020). Transformational Giftedness: Rethinking Our Paradigm for Gifted Education. *Roeper Review*, *42*(4), 230–240. https://doi.org/10.1080/02783193.2020.1815266

Sternberg, R. J. (2024a). A Duplex Model for Giftedness. *Gifted Child Quarterly*, *68*(2), 91–106. https://doi.org/10.1177/00169862231217730

Sternberg, R. J. (2024b). A new model of giftedness for transformational active concerned citizenship and ethical leadership. *Gifted Education International*, *40*(2), 166–195. https://doi.org/10.1177/02614294241246497

Subotnik, R. F., Olszewski-Kubilius, P., & Worrell, F. C. (2011). Rethinking Giftedness and Gifted Education: A Proposed Direction Forward Based on Psychological Science. *Psychological Science in the Public Interest, Supplement*, *12*(1), 3–54. https://doi.org/10.1177/1529100611418056

Tamrin, H., & Desnita, D. (2023). The Effect of Using Context-Based Learning Videos on Global Warming Materials on Students' Problem-Solving Skills. *Physics Education Research Journal*, *5*(1), 21–28. https://doi.org/10.21580/perj.2023.5.1.13082

Tolppanen, S., Kang, J., & Tirri, K. (2023). Climate Competencies of Finnish Gifted and Average-Ability High School Students. *Education Sciences*, *13*(8), 840. https://doi.org/10.3390/educsci13080840

Tüzer, M., & Doğan, S. (2021). İklim Değişikliğinin Bilimsel Temelleri. *Social Sciences Research Journal*, *10*(3), 639–656. http://dergipark.org.tr/ssrjhttp://socialsciencesresearchjournal.com

UK. Met Office. (2025). *What is climate change? - Met Office*. https://weather.metoffice.gov.uk/climate-change/what-is-climate-change

UNESCO. (2017). *Education for Sustainable Development Goals. Learning Objectives.* https://unesdoc.unesco.org/ark:/48223/pf0000247444

WWF. (2015). *İklim ve Enerji | WWF*. https://www.wwf.org.tr/kesfet/iklim_ve_enerji/

Yalçınkaya, E., & Çetin, O. (2018). An Investigation of Secondary School Students' Environmental Attitudes and Opinions about Environmental Education (EE). *Review of International Geographical Education Online (RIGEO)*, *8*(1), 125–148.

Yin, R. K. (2018). *Case study research and applications: Design and methods*. Sage.

Zambrano-Prado, P., Orsini, F., Rieradevall, J., Josa, A., & Gabarrell, X. (2021). Potential Key Factors, Policies, and Barriers for Rooftop Agriculture in EU Cities: Barcelona, Berlin, Bologna, and Paris. *Frontiers in Sustainable Food Systems*, *5*, 733040. https://doi.org/10.3389/FSUFS.2021.733040/BIBTEX

About the Author

Zekai Ayık (Ph.D.) was born in Erzurum, Türkiye, in 1987 and is an associate professor on gifted and talented education. He completed his undergraduate education at Boğaziçi University, Faculty of Education, in 2015, and received his master's and doctoral degrees from Yıldız Technical University, in 2017 and 2021, respectively. His academic work focuses on gifted and talented education, talent development models, design-based learning, creativity, enrichment practices, and teacher education. He began his academic career in 2017 as a research assistant at Harran University and has served as a faculty member in the Department of Special Education at the same university since 2022. Ayık has worked as a researcher and coordinator on many national and international projects funded by Erasmus+ and TÜBİTAK, leading initiatives aimed at developing innovative practices for gifted students, enriching curricula, and supporting teachers' professional development. He continues to contribute to the field through his scholarly work published at both national and international levels.

Cultural Aspects in Motion and Arts as Staging: Arts-Based Pedagogy for Cultural Learning in Adult and Higher Education

Josie L. Andrews
The University of Tennessee, Knoxville, USA

Abstract

Adult learners increasingly encounter cultural differences, inequity, and competing ways of knowing across educational, professional, and civic settings. Arts-based pedagogy may create multimodal opportunities for learners to examine identity, lived experience, power, and community in ways that extend beyond text-based instruction. This qualitative content analysis examined how peer-reviewed scholarship used art-based pedagogy to facilitate cultural learning among adults in adult and higher education. Using database search and screening procedures, 88 articles published between January 2016 and January 2026 were identified. A deductive-inductive content analysis addressed two questions: the cultural dimensions emphasized in the literature and the arts-based modalities used to facilitate cultural learning. Findings indicate that culture was commonly represented as dynamic and negotiated through three interconnected dimensions: identity and belonging; power, coloniality, and culture-as-knowledge; and place-based heritage and community knowledge. Three recurring arts-based modalities were used to support cultural learning: visual arts, narrative and storytelling practices, and dialogic and performative staging. The review positions art-based pedagogy as a framework for cultural learning that can support reflection, dialogue, critical inquiry, and relational engagement in adult and higher education. The manuscript concludes with implications for practice and research.

Keywords: Adult learning; arts-based pedagogy; culturally responsive teaching; qualitative content analysis.

Across educational contexts, adult learners are increasingly expected to navigate cultural differences, engage diverse perspectives, and participate in societies shaped by globalization, migration, technological change, and ongoing struggles for equity and social justice. These realities present significant challenges for educators, who must move beyond depositing information about culture toward creating learning environments that support dialogue, critical reflection, and meaningful engagement with difference.

This article argues that arts-based pedagogy (ABP) offers one promising response. By engaging learners through multiple forms of artistic expression, ABP creates opportunities for exploring identity, community, power, and lived experience in ways that extend beyond traditional text-based instruction. Such approaches can invite learners to examine assumptions, share stories, engage multiple perspectives, and connect personal experience to broader socio-historical contexts. While ABP is well documented in post-secondary education, fewer studies have synthesized how these approaches support culturally responsive adult learning across disciplines and modalities. Examining how educators use artistic forms to facilitate cultural learning can provide insight into the types of experiences, interactions, and learning environments that support inclusion, intercultural understanding, and critical consciousness. As educational institutions continue to seek approaches that are equitable, engaging, and responsive to increasingly diverse populations, understanding these practices becomes particularly vital.

To contribute to this conversation, this study conducted a qualitative content analysis of 88 peer-reviewed articles published between January 2016 and January 2026. It examined (1) which cultural aspects were most frequently emphasized and (2) which artistic modalities were most used to facilitate cultural learning among adult learners. Overall, the analysis showed that culture was framed as dynamic and negotiated, shaped through adults' shifting identities and intercultural encounters, histories of

movement and belonging, and contested relations of power and place. Based on the data, three arts-based forms emerged as primary mediums for cultural learning: visual arts, dialogic and performative staging, and narrative and storytelling practices.

The synthesis traced how culture was represented, constructed, and examined through ABP across post-secondary education spaces, treating ABP not simply as a set of pedagogical techniques but as a framework for cultural learning. In doing so, the article foregrounds implications for both practice and research, clarifying how the reviewed approaches can inform culturally responsive teaching, intercultural education, and adult learning. The growing demand for educational practices that support inclusion, dialogue, and cultural responsiveness raises an important question: What makes ABP particularly effective for engaging culture in adult learning contexts? Existing adult learning scholarship offers several useful perspectives.

Literature Review

ABP and Adult Learning Theories

ABP is broadly defined as engaging learners in creating, interpreting, and reflecting on artistic forms to deepen understanding and connect knowledge to lived experience (Hunter & Frawley, 2023; Leavy, 2015). As such, it is strongly aligned with foundational and contemporary theories of adult learning that emphasize experience, meaning-making, and socio-cultural context. Adult education scholarship constantly frames learning as an interpretive process in which adults make meaning through reflection on lived experiences. Kolb's (1984) experiential learning theory is widely recognized as an influential framework for connecting theoretical concepts to real-world practice. At the same time, it has been criticized for its limited conceptualization of experiences, insufficient attention to socio-cultural contexts that shape learning (Dillard et al., 2024), and overly linear and simplistic view of learning, neglecting its dynamic and complex processes (e.g., Kayes, 2017).

For more interdisciplinary perspectives, experiential learning can be understood as a process in which learners' identities (e.g., social, cultural, political, professional) shape what is perceived as experience and how that experience is interpreted (Dillard et al., 2024). Arts-based approaches engage this process holistically by inviting learners to revisit experience through aesthetic forms that are sensory, emotional, and symbolic. Artistic practice can therefore create opportunities for reflection and reinterpretation that extend beyond purely cognitive engagement.

Transformative learning theory provides an additional lens for understanding the role of the arts in education, notably in adult education. Mezirow (1991) conceptualizes adult learning as a process of perspective transformation in which individuals critically examine and revise their assumptions. While Mezirow's framework has been criticized for its emphasis on rational discourse, later scholarship has emphasized affective, symbolic, imaginative, and embodied aspects of learning (e.g., Dirkx, 2001; Taylor & Cranton, 2013; Tisdell, 2003). From this perspective, the arts can function as a pedagogical approach that integrates cognition, emotion, and identity, dimensions that are especially salient in adult learning contexts.

Culture, Power, and Adult Learning

Conceptualizing art as a dynamic pedagogical force also requires situating it within broader conversations about culture, knowledge, and adult learning. In adult education scholarship, culture is often understood not as a peripheral influence but as a constitutive element of how knowledge is produced, interpreted, and internalized. Freire's (1970/2018) formulation of critical pedagogy positions learning as a dialogical process rooted in lived experience, where meaning emerges through interaction, reflection, and cultural expression. This emphasis on symbolic representation and collective dialogue highlights how artistic forms (e.g., images, narratives, and performances) can mediate critical engagement. Building on this foundation, hooks (1994/2014) advances an engaged pedagogy that emphasizes identity, voice, and embodiment, reinforcing learning as inseparable from the cultural, relational, and affective facets of experience. Likewise, Giroux (2001) positions pedagogy as a cultural

practice through which power, identity, and meaning are negotiated, framing art as a potential space for reflection and resistance.

Within this context, ABP extends these commitments by treating artistic practice as a legitimate mode of inquiry through which learners can explore lived realities, deepen critical consciousness, and bridge culture and identity (hooks, 1994/2014; Hunter & Frawley, 2023). Barone and Eisner (2012) describe art-based approaches as leveraging aesthetic forms to construct and communicate knowledge, emphasizing interpretation, ambiguity, and emotional resonance as integral to understanding. From this perspective, art does not merely illustrate learning; it shapes how knowledge is experienced and made meaningful. Furthermore, arts-based methods broaden the epistemological possibilities by engaging imagination and affect, enabling learners to grapple with complex social realities in ways that exceed purely textual or analytical approaches (Hunter & Frawley, 2023).

Taken together, adult learning theory and critical perspectives on culture suggest that meaningful cultural learning requires more than the transmission of information. Rather, it involves opportunities for learners to reflect on experience, engage multiple perspectives, examine power relations, and co-construct meaning through dialogic and embodied learning. ABP is well suited to these intentions because it creates spaces where cognitive, emotional, social, and cultural dimensions of learning intersect.

Method

To better understand how ABP was being used to engage culture in adult learning spaces, this study employed a qualitative content analysis of classroom-based practices described in peer-reviewed literature. The identification, screening, and inclusion processes were documented using a modified Preferred Reporting Items for Systematic Reviews and Meta-Analyses 2020 flow chart (Page et al., 2021). Figure 1 summarizes the number of records identified, screened, and included.

Identification

The search plan was defined by three parameters: (1) databases, (2) type of articles, and (3) publication dates. First, the searches were conducted across three electronic databases accessed through EBSCO host: Academic Search Complete, Education Source, and ERIC. For the second parameter, articles were limited to peer-reviewed journals (no dissertations and theses), to ensure that these articles reflected the rigorous process and disciplinary standards for academic publication. Search results were limited to peer-reviewed articles published between January 2016 through January 2026. The final searches were last executed on January 31, 2026. These specific publication dates were chosen to capture the contemporary scholarship over the most recent decade.

Search terms combined arts-related keywords (e.g., arts-based, cinema, storytelling) with pedagogical terms (e.g., instruction, teach*, pedagog*), cultural terms (e.g., cross-cultural, cultural awareness, cultur*), and educational context terms (e.g., adult education, adult learning, higher education). Searches targeted database metadata fields (keywords, subject terms, titles, and abstracts), yielding 693 records. After removing duplicates (n=253) using Microsoft Excel's "Remove Duplicates" function and manual review, 440 records remained for screening.

Articles were eligible if they (a) involved adult learners and were situated in higher education, adult education, and/or continuing professional education settings; (b) explicitly employed an arts-based modality as a pedagogical approach rather than referencing art only as a topic; (c) described teaching practices or instructional applications; and (d) explicitly framed culture as a focus of learning. Domestic and international studies were eligible. The abstract screening resulted in a review of 119 full-text articles.

Screening

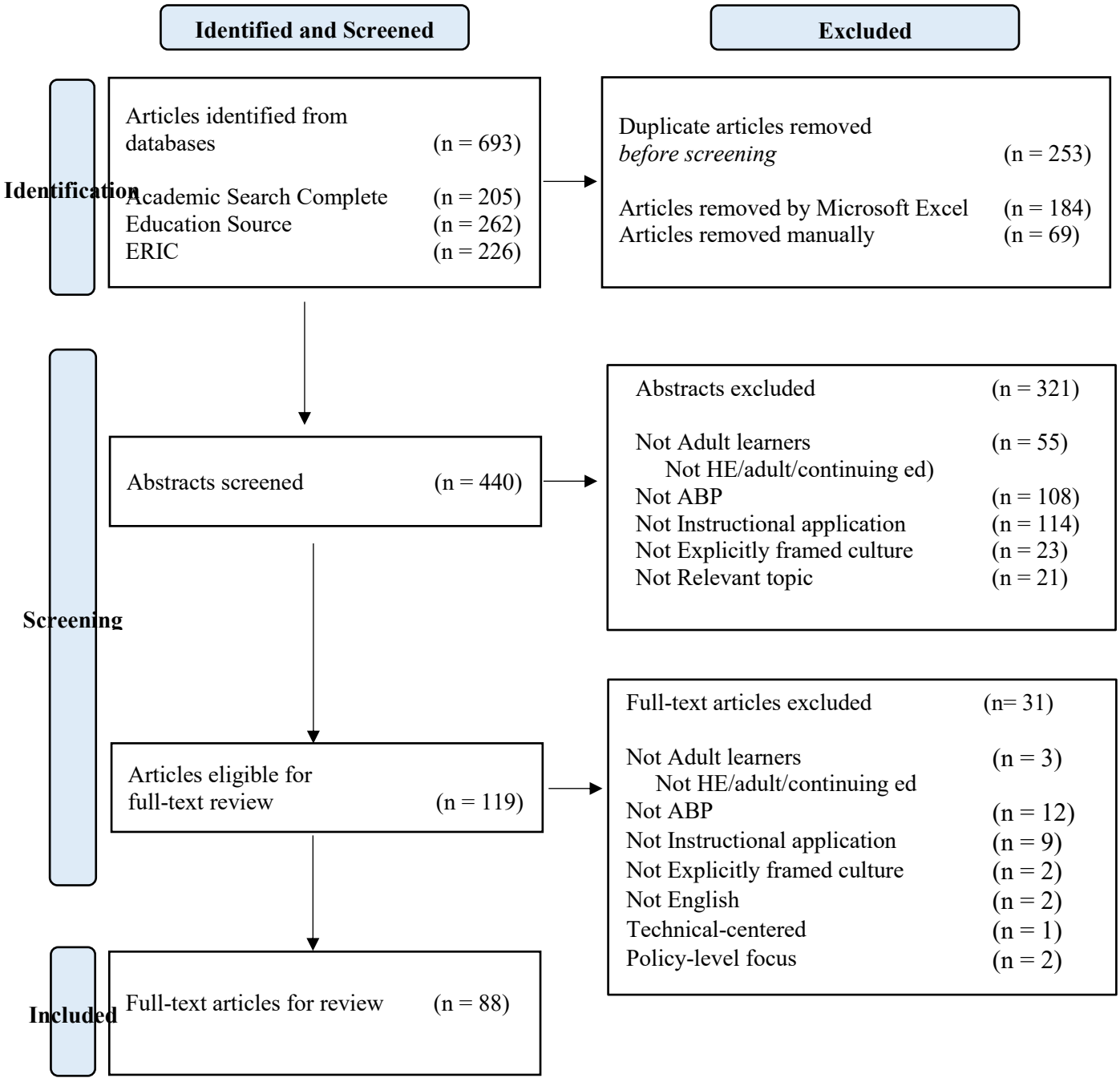


Figure 1: Flow Diagram of Selection Process of Peer Reviewed Articles

Included

After abstract screening, 119 articles were advanced to full-text review. The full texts were then examined using the study's four screening parameters as described above. In addition, articles were excluded if they were not published in English, focused primarily on policy-level issues, or technical/technology-centered. Following these exclusions, 88 full-text articles were included in the analysis.

Data Analysis

Coding followed a hybrid approach that combined deductive and inductive procedures. Initial coding categories were derived from the research questions (1) the cultural aspects emphasized and (2) the arts-based modalities used to facilitate cultural learning. Articles were reviewed multiple times, and relevant text was coded within these broad categories. Through constant comparison across studies, subcategories and patterns were identified and refined inductively, resulting in themes that captured recurring approaches to cultural learning and ABP.

Findings and Discussion

The findings and discussion are organized in relationship to the study's two research questions and major themes that emerged through the analysis. First, the section identifies the cultural aspects most frequently emphasized across the dataset. Second, it highlights the artistic modalities that commonly served as primary vehicles to facilitate cultural learning among adult learners.

Cultural Aspects in Motion: Identity, Power, and Place in Adult Learning

Cultural Aspects in Motion captures how culture was framed across the 88 full-text articles as dynamic and continually shaped through adults' shifting identities and intercultural encounters, histories of movement and belonging, and through contested relations of power and place. In this framing, cultural learning involved making meaning from lived experience while critically examining how culture is produced, challenged, and reinterpreted in social and educational contexts. Culture emerged not as a static attribute but as a continuing process of negotiation and interpretation. This theme is reflected in three primary dimensions: (1) identity and belonging, (2) power, coloniality, and culture-as-knowledge, and (3) place-based heritage and community knowledge.

Identity and Belonging. Across the analyzed articles, culture was most frequently emphasized through identity, belonging, and lived experience. Across studies, cultural learning was framed as emerging through learners' biographies and everyday realities, specifically through stories of migration, language, and self/other positioning, as salient points of meaning-making (Davaslioglu & Lizarazo, 2022; Shu, 2021). ABP provided opportunities for learners to represent, examine, and share experiences, creating spaces in which identity could be explored relationally rather than as a static characteristic. Consistent with prior literature, the analysis also indicated increased connection, agency, and willingness to engage across cultural differences (Morales et al., 2025). Taken together, these findings suggest that ABP can support culturally responsive adult learning by fostering voice, reflection, and dialogue across diverse perspectives.

Power, Coloniality, and Culture-as-Knowledge. The reviewed articles often framed culture as inseparable from power and inequity, emphasizing how socio-historical and institutional forces shape cultural meaning and educational experience. In this framing, cultural learning involved interrogating how knowledge is legitimized, contested, and valued differently across groups. Across the articles, ABP was used not only to *include* diverse cultural perspectives in the curriculum but also to *make visible* and examine the power relations that shape representation, voice, and participation, supporting critical reflection on culture as a political and historical construct (Bell, 2020). Consistent with critical adult learning scholarship (Freire 1970/2018; hooks 1994/2014), these findings suggest that ABP can support culturally responsive and decolonizing educational practices by creating spaces where learners examine whose knowledge is recognized, whose voices are marginalized, and how alternative ways of knowing might be represented and valued.

Place-based Heritage and Community Knowledge. The third dimension grounded culture as local and situated through place, land, community, and heritage. Rather than treating culture solely as individual identity, the reviewed articles framed cultural learning as intergenerational and communal, carried out through community relationships, cultural bearers, and locally rooted knowledge systems (Pamphilon et al., 2023). Across the reviewed articles, *place* functioned not only as a context for learning but also as a site where culture is remembered, enacted, and challenged, including through attention to

land, community histories, and Indigenous cultural knowledge (Bell, 2020). Overall, these findings suggest that ABP can connect cultural reflection to situated histories and relationships, supporting forms of cultural learning that extend beyond classroom-centered discussion toward greater relational accountability and engagement with communities and place.

Arts as Staging: Forms of Multimodal Cultural Meaning-making

Arts as Staging frames ABP not just as an isolated tool, but as multimodal staging spaces where culture is expressed, performed, negotiated, and critically examined. In this sense, artistic practice operates as both a mirror and a lens, making lived experience visible while also shaping how identities are understood. Across the reviewed articles, three arts-based forms most often functioned as primary stages for making culture visible, embodied, and dialogic: visual arts, dialogic and performative staging, and narrative and storytelling practices.

Visual Arts. Visual arts emerged as a prominent modality for facilitating cultural learning through activities such as drawing, collage, painting, photography/photovoice, and mural-making. The analysis revealed that learners used visual representation to externalize lived experience, identity, and cultural narratives, making complex meanings visible for shared interpretation. Across studies, visual artifacts frequently served as prompts for dialogue, supporting collective reflection on social context, cultural difference, and belonging, often combined with reflective discussion or writing (Emery & Moran, 2025; Jamiludin & Darnawati, 2022). In this way, visual arts functioned less as demonstrations of artistic skills and more as accessible multimodal entry points for cultural meaning-making.

Narrative and Storytelling Practices. Narrative and storytelling practices were another major modality through which cultural learning was facilitated. The reviewed articles frequently described the use of storytelling, life histories, digital stories, films, and oral narratives to connect personal biography with broader cultural and social contexts. Across these approaches, learners were invited to share experiences, examine cultural assumptions, and engage multiple perspectives through listening and dialogue (Massó Guijarro, 2021; Stewart & Gachago, 2016). These modalities positioned learners as interpreters and producers of cultural narratives, particularly through autobiographical storytelling, immigration narratives, and community-engaged documentary production, enabling them to situate personal experiences within larger socio-historical and cultural narratives. As a result, narrative and storytelling practices functioned as a bridge between individual experience and collective meaning, often serving as starting point for discussions of culture, identity, and belonging.

Dialogic and Performative Staging. Dialogic and performative approaches created participatory spaces where cultural meaning was explored through interaction, embodiment, and shared expression. Modalities, such as theatre, drama, dance, and performance-based practices, were used to engage learners in collective processes of dialogue and reflection. Several scholars point out that these practices frequently included enacting and revising scenarios, collaborative storytelling, and post-performance discussion (Calamoneri et al., 2019; Syler, 2021). Such approaches positioned learners as contributors to meaning making, engaging with cultural narratives, identities, and social issues. In several instances, dialogic and performative staging was used to examine social tensions, such as conflict, migration, or inequality, making power dynamics visible and open to critical examination. These approaches positioned learners as active contributors to meaning-making, using embodied practice and dialogue to explore cultural narratives and social relationships.

Taken together, this synthesis reveals a complementary relationship between culture and ABP in adult learning. While culture emerged as a dynamic process shaped by identity, power, place, and lived experience, ABP provided multimodal mechanisms through which these dimensions were explored and made meaningful. Together, these findings suggest that ABP offers more than an alternative set of activities. It creates opportunities for reflection, dialogue, critical inquiry, and relational learning that are increasingly important in diverse and interconnected educational contexts. The following section outlines implications for practice that extend beyond individual classroom practices and inform the future of culturally responsive teaching and learning.

Implications for Practice

The review indicates that ABP can serve as a practical infrastructure for culturally responsive adult learning by making identity, power, and place visible and more open to discussion through multimodal activity. To translate these findings into instructional practice, this section is organized around the six dimensions that emerged from the analysis (three cultural dimensions and three arts-based modalities). For each dimension, the discussion highlights pedagogical significance and offers illustrative, adaptable examples drawn from the literature and the author's practice as an instructor and faculty consultant in higher education.

Identity and Belonging

This study found that cultural learning frequently emerged through learners' biographies and lived experiences, particularly through experiences of language, identity, belonging, and the ongoing negotiation of self in relation to others. These findings suggest that learners benefit from opportunities to be recognized as culturally situated individuals whose experience shape how they engage with learning. For instructors, an important implication is that ABP can be used at the beginning of a course to support community-building and establish norms for dialogue across differences. Rather than positioning culture primarily as information to be learned about others, these activities can invite learners to reflect on how their experiences, backgrounds, and social locations shape perspectives and ways of knowing. Such opportunities may be particularly valuable in learning spaces that bring together learners from diverse cultural, linguistic, disciplinary, and professional backgrounds. With learner consent, instructors may choose to revisit these artifacts later in the course, as reflective touchpoints that help learners examine how experience and social location influence participation, learning, and relationships.

Illustrative ABP: Identity Artifact Reflection

- Learners select an image or artifact (e.g., photograph, object, or digital image) that represents an aspect of identity, belonging, or a meaningful influence.
- In pairs or small groups, learners share only what they feel comfortable disclosing using a prompt such as:
    - What is it?
    - Why did you choose it?
    - What does it help others understand about you as a learner, colleague, or community member?
- The class engages in a brief debrief focused on creating belonging and supportive learning conditions by discussing questions such as:
    - What norms would support meaningful learning and dialogue across differences?
    - What did you learn about the range of experiences represented in the class?

By intentionally integrating these conversations early in the course, instructors can establish shared expectations for participation, respectful dialogue, and perspective-taking. This foundation may help learners engage more thoughtfully with sensitive or complex topics later in the semester.

Power, Coloniality, and Culture-as-Knowledge

This study revealed that culture is inseparable from power, representation, and the legitimacy of knowledge. Across the dataset, questions of race, coloniality, marginalization, and institutional power highlighted how cultural learning is embedded within broader socio-historical structures. In these contexts, ABP was used to make visible the assumptions and power relations that shape whose knowledge is recognized and whose perspectives are marginalized. For instructors, these findings suggest that culturally responsive teaching extends beyond exposing learners to diverse perspectives. It also requires intentionally creating opportunities for learners to critically examine how knowledge is produced, represented, and legitimized. ABP can support this process by making visible the perspectives, assumptions, and omissions that often remain implicit in course materials. Such activities encourage learners to question dominant narratives, explore alternative ways of knowing, and reflect on issues of representation, voice, power, and equity.

Illustrative ABP: Making the Invisible Visible

- Learners create a simple sketch, collage, or digital image that represents a perspective, voice, or form of knowledge that is absent or minimized in a course text (e.g., reading, lecture, film, or discussion).
- Learners use a brief written or oral reflection addressing questions, such as:
    - What perspective or form of knowledge is missing?
    - Why does its absence matter for understanding or interpreting the topic?
    - What does this absence reveal about representation, voice, power, and inclusion?
- Learners share their work through a gallery walk (in-person or virtual) or an online discussion thread.
- Learners reflect on how legitimacy is constructed by considering questions, such as:
    - What counts as evidence in this context?
    - Who is positioned as a credible source of knowledge?
    - How might understanding change if this missing way of knowing was centered?

These findings also suggest that attention to representation should not be limited to isolated activities or discussions. Instructors can intentionally examine whose voices, examples, authors, and ways of knowing are represented throughout course materials, discussions, assessments, and learning activities. Embedding these considerations across the curriculum reinforces that knowledge is socially and culturally situated and creates ongoing opportunities for learners to critically engage with how knowledge is constructed and legitimized.

Place-based Heritage and Community Knowledge

The findings demonstrate that culture is often understood through relationships with place, community, and heritage. Across the reviewed studies, cultural learning was framed as intergenerational and communal, carried through community relationships, locally rooted knowledge systems, cultural traditions, and shared histories. For adult and higher education practice, these findings suggest designing learning experiences that intentionally connect course content to learners' local communities, lived environments, and cultural histories, recognizing that cultural understanding is constructed through relationships with place, community, and shared experience. Such approaches encourage learners to understand culture as situated, relational, and connected to collective experience while also recognizing individual perspectives and identities.

Illustrative ABP: Cultural Time Capsule

- Learners create a “cultural time capsule” at the beginning of the course by selecting two to four local, place, community history, heritage artifacts (e.g., photographs, song lyrics, images, short narratives, objects, or news headlines) that represent their current understanding of a course concept and how they relate to their lived experiences and communities.
- Learners include a brief written or audio reflection addressing questions, such as:
    - Why did you select these artifacts?
    - What do they reveal about your current understanding of the topic?
- At the end of the course, learners reopen their time capsules and compare their initial understandings with their current perspectives.
- Learners reflect on their learning by considering questions, such as:
    - How has your understanding of the topic changed over the semester?
    - Which artifacts still represent your thinking, and which no longer do?
    - How did course experiences, dialogue, or engagement with others influence your perspective?

This example is designed as a low-stakes reflective assignment that unfolds across the semester. Learners create and upload their artifacts to a designated folder in the course LMS at the beginning of the semester and revisit their artifacts near the end of the semester. Comparing their initial and final reflections provides opportunities to examine how course experiences, dialogue, community engagement, and exposure to multiple perspectives have influenced their understanding of the topic.

Visual Arts

Visual modalities emerged as one of the most frequently used approaches for engaging culture in adult learning contexts. Across the reviewed studies, photographs, drawings, collages, paintings, and other visual representations enabled learners to externalize experiences, communicate cultural meanings, and engage in collective interpretation. For instructors, these findings suggest that visual approaches can expand opportunities for participation and reflection by validating multiple forms of expression and ways of knowing. Visual representations may help learners communicate experiences, perspectives, and insights that extend beyond traditional academic discourse.

Illustrative ABP: Visual Artifact Dialogue

- The instructor provides a visual artifact (e.g., photograph, artwork, advertisement, or historical image) related to the course topic.
- Learners individually interpret the image and reflect on questions, such as:
    - What do you notice about this image?
    - What meanings, messages, or perspectives does this image communicate?
    - What cultural values, experiences, or histories are represented?
    - What assumptions or prior knowledge influenced your interpretation?
- In a small group, learners discuss their interpretations and consider questions, such as:
    - How did interpretations of the image differ across learners?
    - What perspectives or experiences shaped these different interpretations?
    - What cultural meanings may be visible, overlooked, or contested?
    - How does examining multiple interpretations deepen your understanding of the course concept?

While visual arts can be particularly useful for engaging culture in learning spaces, they can create a buffer or space between the learner and the topic. Visual arts allow learners to explore complex issues through visual artifacts without requiring immediate personal disclosure. Using shared artifacts can reduce pressure for personal disclosure while still encouraging learners to examine assumptions, cultural meanings, and multiple perspectives.

Narrative and Storytelling Practices

The analysis identified narrative and storytelling practices as a prominent means through which culture was explored and understood. Across the reviewed studies, storytelling, life histories, digital narratives, oral histories, and film-based approaches connected personal experience to broader cultural and social contexts. For adult and higher education instructors, these findings highlight the pedagogical value of storytelling as a bridge between individual experience and collective learning. Narrative approaches encourage learners to examine how personal experiences are shaped by cultural, historical, and social contexts while fostering dialogue across diverse perspectives.

Illustrative ABP: Proverb Reflection

- Learners share a proverb, saying, or expression from their family, community, cultural tradition, workplace/professional context, or media that relates to a course topic.
- Learners share a reflection (written or oral) addressing questions, such as:
    - What cultural value, belief, or lesson does this proverb communicate?
    - How does this proverb connect to the course?
    - In what context is this proverb used and by whom?
    - What assumptions does it reinforce or challenge?
- Using a think-pair-share or small group discussion (in-person or online), learners compare their proverbs to identify similarities, differences, and shared themes across proverbs and the contexts in which they are used.

In addition to serving as a discussion activity, Proverb Reflection can be adapted as a low-stakes assignment that encourages learners to examine how cultural values and lived experience shape their understanding of course concepts. Learners may submit a brief written, audio, or video reflection explaining the proverb's significance and its connection to course content.

Dialogic and Performative Staging

This study revealed that dialogic and performative approaches created participatory spaces in which cultural meaning was explored through interaction, embodiment, and shared expression. These approaches (e.g., theatre, drama, performance, dance, and role-play) encouraged learners to engage in cultural issues through participation rather than observation alone. For adult and higher education instructors, these findings suggest that cultural learning can be strengthened when learners actively examine how cultural identities, values, experiences, and social contexts shape interpretation and decision-making. Dialogic and performative approaches create opportunities for collaborative inquiry, perspective-taking, and critical engagement with complex social issues. Such approaches may be particularly valuable for helping learners recognize that cultural understanding is often relational, negotiated, and shaped through interaction with others.

Illustrative ABP: Cultural Perspectives in Context

- Instructor provides a brief, course-relevant scenario (e.g., a text vignette, case excerpt, image, or short video) in which interpretation and decision-making depend on context and stakeholder perspectives.
- Learners examine the scenario from an assigned or selected stakeholder perspective (e.g., community member, practitioner, family member) and respond through small-group discussion, a brief written dialogue, or role-play.
- Learners debrief addressing reflection questions, such as:
  - How did the stakeholder's context (e.g., values, experiences, social position) shape their interpretation or priorities?
  - What assumptions shaped your own interpretation of the scenario?
  - Where is power located in the scenario, and what constraints shape what actions are possible?

This activity can be adapted across various disciplines by selecting course-related scenarios that encourage learners to examine how cultural contexts shape interpretation, communication, and decision-making. Such experiences may prepare learners to navigate diverse professional, community, and civic contexts, where engaging across cultural perspectives is salient for effective communication, collaboration, and informed decision-making.

The pedagogical value of these arts-based examples lies in their adaptability rather than their complexity. Across adult and higher education contexts, they can be integrated at multiple points within a course, including introductory activities, reflective prompts, discussion activities, formative assessments, or graded assignments. Because many require limited preparation and can be implemented across in-person, online, and hybrid learning environments, they offer accessible entry points for instructors seeking to support culturally responsive teaching and learning. Regardless of modality or delivery mode, the goal is to engage learners in critical reflection, dialogue, and the exploration of culture through multiple ways of knowing and expression.

Considerations for Large Enrollment Adult and Higher Education Courses

Although some arts-based pedagogical practices are often associated with small-group or discussion-based learning environments, many of the approaches identified in this study can be adapted for large-enrollment courses. Activities (e.g., Identity Artifact Reflection, Making the Invisible Visible, and Proverb Reflection) may be implemented through learning management systems, discussion boards, collaborative documents, polling tools, or structured peer-response activities. Instructors can facilitate participation through think-pair-share activities, small-group discussions, online discussion boards,

shared digital workspaces, or LMS assignment submissions. These approaches allow learners to engage in reflection, dialogue, and creative expression without requiring every learner to share with the full class. Designing arts-based activities like brief in-class exercises or low-stakes assignments can further support implementation while maintaining opportunities for cultural engagement and critical reflection.

Implications for Research

Based on this study, several opportunities for future research emerged. First, future reviews could expand the database and index coverage to better capture professional fields in which arts-based learning is conceptualized and published in discipline-centered ways (e.g., social work, teacher education, nursing and allied health, STEM). Second, empirical research should examine how visual, narrative, and dialogic-performative modalities differentially support cultural learning and professional development outcomes (e.g., reflective practice, intercultural communication, ethical reasoning, and perspective-taking) as well as how such outcomes are assessed and sustained over time. Additionally, given the applied nature of higher education, additional inquiry may be especially valuable outside formal classroom settings, including professional development, workplace training, and community or organizational learning contexts, where cultural learning and decision-making often occur under conditions that differ from classrooms (e.g., time pressure, hierarchy, risk, and real clients or stakeholders). Finally, future studies could examine ABP implementation across delivery modes and course structures, including large-enrollment contexts, to further clarify the conditions under which ABP is most feasible and consequential.

Conclusion

This qualitative content analysis examined how culture was emphasized in adult and higher education classroom-based practices described in peer-reviewed literature and which arts-based modalities were commonly used to facilitate cultural learning and dialogue. Across 88 articles, culture was represented not as a fixed set of content but as a dynamic process shaped by identity and belonging, relations of power and coloniality, and connections to place, heritage, and community knowledge. Visual arts, narrative and storytelling practices, and dialogic and performative staging emerged as recurring modalities through which learners could make cultural meanings visible, share and interpret lived experience, and engage complex questions of representation, voice, and social relationships.

The synthesis suggests that the value of arts-based pedagogy lies not simply in adding creative activities to existing instruction. Rather, it can create conditions for multimodal reflection, dialogue, critical inquiry, and relational learning that are central to culturally responsive adult education. Effective use benefits from intentional facilitation, attention to learner consent and disclosure, and ongoing consideration of whose knowledge, histories, and cultural expressions are represented and valued.

These findings should be interpreted considering the review's database, language, publication-type, and contextual limits. Future research could examine how specific arts-based modalities influence cultural learning outcomes across disciplines and delivery modes, particularly in professional, workplace, community, and large-enrollment settings. By treating artistic practice as a mode of cultural inquiry and meaning-making, educators can expand the ways adult learners encounter difference, question assumptions, and participate in more equitable learning communities.

References

Barone, T., & Eisner, E. (2006). Arts-based educational research. In J. L. Green, G. Camilli, & P. B. Elmore (Eds.), *Handbook of complementary methods in education research* (pp. 95-109). Lawrence Erlbaum Associates Publishers.

Bell, C. (2020). Unsettling existence: Land acknowledgement in contemporary Indigenous performance. *Performance Research, 25*(2), 141-148. https://doi.org/10.1080/13528165.2020.1752587

Calamoneri, T., Dunagan, C., & McCarthy-Brown, N. (2020). Ethical dance pedagogy: Bodies as sites of social change. *Journal of Dance Education, 20*(2), 55-64. https://doi.org/10.1080/15290824.2019.1566607

Davaslioglu, T. M., & Lizarazo, T. (2022). Learning with Maryland's immigrant communities: Digital storytelling as community engagement. *Journal of Community Engagement and Higher Education* 14(1). https://scholars.indianastate.edu/jcehe/vol14/iss1/4

Dillard, N., Sisco, S., & Collins, J.C. (2024), Expanding experiential learning in contemporary adult education: Embracing technology, interdisciplinarity, and cultural responsiveness. *New Directions for Adult and Continuing Education, 2024*(184), 30-38. https://doi.org/10.1002/ace.20539

Dirkx, J. M. (2001). *The power of feelings: Emotion, imagination, and the construction of meaning in adult learning*. New Directions for Adult and Continuing Education, 2001(89), 63-72. https://doi.org/10.1002/ace.9

Emery, A., Moran, J. (2025). Mural-making, multimodality, and a palimpsest in a Spanish language classroom. *International Journal of Education and the Arts, 26*(28). https://doi.org/10.26209/ijea26n28

Freire, P. (2018). *Pedagogy of the oppressed* (4th ed). Bloomsbury Publishing.

Giroux, H. (2001). *Theory and resistance in education: Towards a pedagogy for the opposition.* Bergin & Garvey. hooks, b. (1994/2014). *Teaching to transgress* (2nd ed.) Routledge.

Hunter, L., & Frawley, E. (2023). Engaging students using an arts-based pedagogy: Teaching and learning sociological theory through film, art, and music. *Teaching Sociology*, *51*(1), 13-25. https://doi.org/10.1177/0092055X221096657

Jamiludin, J., & Darnawati , D. (2022). Project-based digital photovoice: Teaching local history through the visual method. *Social and Education History, 11*(3), 245-274. https://doi.org/10.17583/hse.10444

Kayes, (2017). Experiential learning and its critics: Preserving the role of experience in management learning and education. *Academy of Management Learning & Education, 1*(2), 137-149. https://doi.org/10.5465/amle.2002.8509336

Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development.* Prentice-Hall.

Massó Guijarro, B. (2021). Social education through cinema: Conversations about a pedagogical experience with pre-service educators. *The International Journal of Interdisciplinary Educational Studies, 16*(1), 121-134. https://doi.org/10.18848/2327-011x/cgp/v16i01/121-134

Mezirow, J. (1991). *Transformative dimensions of adult learning*. Jossey-Bass

Morales, A. R., Catalano, T., & Bock Thiessen, C. (2025). Rehearsing a revolution: Boal's forum theater as a "4 trans+" approach to bi/multilingual teacher preparation and development. *International Journal of Multicultural Education*, *27*(1), 116-142. https://doi.org/10.18251/ijme.v27i1.4515

Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson,

E., McDonald, S., McGuinness, L. A., & Moher, D. (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *BMJ, 372*(71). https://doi.org/10.1136/bmj.n71

Pamphilon, B., Mikhailovich, K., & Simeon, L. (2023). Showing our story our way: Exploring the learning processes of gender awareness videos in Papua New Guinea. *Development in Practice, 33*(4), 475–488. https://doi.org/10.1080/09614524.2022.2123451

Shu, J. (2021). The reflective lenses on forum theatre about marriage: Negotiation of identities within multicultural community practice. *Youth Theatre Journal, 35*(1-2), 49-64. https://doi.org/10.1080/08929092.2021.1891163

Stewart, K., & Gachago, D. (2016). Being human today: A digital storytelling pedagogy for transcontinental border crossing. *British Journal of Educational Technology, 47*(3), 528-542. https://doi.org/10.1111/bjet.12450

Syler, C. (2021). Directing "The Performance of Possibilities" within whiteness: Casting, staging, and interaction in postperformance discussions. *Qualitative Inquiry, 27*(2), 255-264. https://doi.org/10.1177/1077800420912795

Tisdell, E. (2003). *Exploring spirituality and culture in adult and higher education*. Jossey-Bass.

About the Author

Dr. Josie L. Andrews is Associate Director for Curriculum Development and Design with Teaching & Learning Innovation at the University of Tennessee, Knoxville (USA). She partners with instructors, academic units, and graduate teaching assistants to design equitable, evidence-informed learning experiences across in-person, hybrid, and online settings, with particular emphasis on alignment among learning outcomes, learning activities, and assessment. Her work also includes the design and facilitation of teaching evaluation and reflective practice, including peer observation, mid-semester feedback, and structured approaches to instructor self-reflection.

Dr. Andrews holds a doctorate in Educational Psychology and Research, with scholarly work grounded in adult education. Her research interests include adult learners and meaning-making, curriculum design, educator professional learning, and identity as a dimension of participation and learning. She is especially interested in how learning environments can support dialogue and critical reflection across differences and foster welcome and belonging. She also brings extensive experience in online teaching, including six years as an asynchronous instructor at Tennessee Technological University (Tennessee, USA).

Address

Josie L. Andrews, PhD
Associate Director of Curriculum & Development Design
Teaching & Learning Innovation
The University of Tennessee, Knoxville
123 N. Concord Street, D109
Knoxville, TN, 37919 USA

e-Mail: jandre21@utk.edu

AH-HA Moments: Remembering the Way Forward – Creating the Way Back

Christine Boyko-Head
Mohawk College of Applied Arts and Technology, Canada

Abstract

Using metaphor and poetry, drama and prose, this paper explores the threads that have woven a life of teaching and learning. Seeing education as a labyrinth, a circuitous, meandering conduit to an invisible, uncertain centre, the author examines this special edition's invitation to reflect and inquire as a paradox both circular in space and linear in time. The paper artistically, reflectively and analytically discusses what it means to enter the educational labyrinth. Discussing tools, creative mindsets, 3D-Briefing, sense of belonging, co-creativity and AI, the author weaves these disparate yet complimentary threads into a story where endings are beginnings as she advocates for AH-HA moments to define our position as learners and humans. In response to the diverse challenges of teaching and learning and in the wake of major technological disruption, the author suggests we go in search of AH-HA moments, those authentically human – humanized actions as a unique value proposition for an educational future in flux.

Keywords: Arts-based practices; AH-HA pedagogy; belonging; creativity; co-creative facilitation, 3D-briefing.

.

Introduction

The path is defined and confined, yet a route to liberation and vulnerability. Following two movements – one in, one out, the traveler gropes their way through the unknown, the uncertain, perhaps even the dark, in seek of clarity, vision, purpose. Upon reaching the labyrinth's centre only our own steps will lead us to the beginning that is an end, an end that is a beginning.

This special edition of IJTDC focuses on intellectual reflection and creative inquiry – reflection and inquiry, or, inquiry and reflection? Does order matter? Does time play a part? Taken together, the terms present a paradox while crystalizing the essence of Ariadne's advice to Theseus in the labyrinth: freedom comes from the synchronized, simultaneous movement in and out: one must enter the labyrinth to escape it; one escapes the labyrinth only by entering it, reaching its core then retracing one's own steps out. Yet, what if one is not ready to leave, to move outside, to escape into . . . what? Another labyrinth? What if the Minotaur, like so many other wicked things, has been misunderstood, misrepresented, mistaken?

Since entering a lush, carpeted, toy-filled classroom at age five, I have never left the labyrinth of learning; I have reflected and inquired, inquired and reflected until the uncertainty of the centre has become commonplace; the improbability of simultaneous inward/outward movement has become a possibility of passage transcending transcribed narratives to new stories where linearity and logic intertwine with divergence and pulsating half-thoughts. In this space paradoxes, ironies, absurdities, uncertainties present possibilities of clarity, conviction, creativity. Like a *trompe l'oeil,* the experience is an authentically human – humanized action (AH-HA) experiment where past/present, background/foreground merge into a palimpsest of multiple, though not identical, labyrinths leading to futures excitingly unknown.

My experience in and with education has been a walking through labyrinths. Hold these threads with me and contemplate your own journeys.

AH-HA Thread #1: A Scenario

The scene: A bustling line of people settling into economy-class seating on an Air Canada flight to Europe. A woman, once young, finds her aisle seat in the plane's middle section. She sits down and

squishes an overloaded book bag under the seat in front of her. She puts a half-filled journal, lose pages, four pens, plus a yellow high lighter into the seat pocket. Almost settled, she reaches into the bookbag and pulls out more sheets and places them in her lap. A man, woman and child are in the seats beside her. They watch her. She offers them gum. They smile.

Flight Attendant: Please buckle your seat belt.

Woman: Sorry. So sorry. (*as she fumbles for her belt, the papers on her lap fall to the floor*) Oh, sorry. Sorry. I'm so sorry. I really should travel lighter. I usually just watch the movies, anyways.

Man: It's fine. Here. (*he hands her a sheet of scribble that landed in his lap*). Looks interesting. What do you do?

Woman: (*without looking at him and still fumbling with the belt and papers*) I'm a space engineer. (T*he man and woman make a surprised sound. The first woman looks at them, then winks at the child*). I make space for important conversations based on curiosities and wonderings. I'm also a DNA designer. (*pause*). I take deficit, negative attitudes and transform them into confident, positive, hopeful thoughts. I am also a prospector mining people's stories, wishes and dreams, helping them retrieve treasures and build them into anything and everything.

(Silence as the man and woman glance at each other and begin pressing the television screens on the back of the seats in front of them)

Child: (*excited and laughing*) I know what you do! You're a teacher!

The End (Which is also a beginning)

AH-HA Thread #2: Tools

The expectations of life depend upon diligence; the mechanic that would perfect his work must first sharpen his tools." — Confucius

Reflecting upon my career in teaching and learning, I am amazed by the amount of AH-HA moments where the perfect tool for the situation was near at hand. When mentoring and teaching new educators, we tell them to stock their tool belt, build their repertoire, outfit their knapsack. But, as we all know, learning and teaching requires more than a belt, kit. It requires a mansion stocked from floor to ceiling with resources meeting the growing needs of today's learners. Adamson (2012) states:

> The systems under which the world operates and the ways that individual businesses operate are vast and complex – interconnected to the point of confusion and uncertainty. The linear process of cause and effect becomes increasingly irrelevant, and it is necessary for knowledge workers to begin thinking in new ways and exploring new solutions (para 3).

Classrooms have always been challenging domains. They contain individuals of difference: fluid genders, diverse socio-economic backgrounds, multiple ethnicities, numerous abilities, assorted interests and dissimilar learning and pedagogical experiences and expectations. As unique as snowflakes, these distinct learners are pushed into uniform snowbanks by a system unable to deal with education's volatile, uncertain, complex, ambiguous (VUCA) scenarios (Adamson, 2012). Dealing with diversity with a one-size-fits-all shovel, the education system becomes static, uncreative and unresponsive to changing learner demographics and needs. Thus, according to Hammond (2015), the cognitively rich get richer while the cognitively poor get poorer as conventional tools that privilege linguistic and logical thinking are unable to cut through the maze of differentiation. Much has been written on the values and challenges of differentiation (Reis & Renzulli, 2018; Tomlinson, 2003, Armstong, Boyko-Head). While differentiation relies on the alignment of the learning content, process and task to the student's profile, Ries & Renzulli (2018) admit to differentiation's Herculean challenge in trying to connect with, speak to and teach each, individual student in their learning preference. However, Ries & Renzulli's fifth dimension of differentiation, the teacher and her ability to model, mentor and match student needs is the key, especially when coupled with Armstrong's (2009) multi-modal examples and Eisner's (2002) centrality of the arts to education. The educator, the examples and the expressive communication of the arts may provide a tri-coloured thread that minimizes the focus on tools and maximizes the mindset one has when using any tools. Thus, navigating education's wicked labyrinth may require that we sharpen the mindset that enables educators to see *anything* as a tool rather than hoarding specific tools that may become dulled, obsolete and ineffective.

AH-HA Thread #3: Creative Mindset

My most cherished AH-HA moments have been moments of failure. I can recount these experiences as if I were still in those classrooms, sweating under the gaze of questioning learners my mind racing to find a way to retrieve the situation. For years, I marvelled at my good fortune of always having the necessary tools with me. I felt like Jonathan Swift's absurd professors from the Grand Academy of Lagado who carried worldly objects with them to sidestep verbal communication. They always had what they needed on hand. Likewise, a humungous suitcase filled with scarves, balls, ropes, balloons, streamers, paper clips (of course) and more accompanied me on my teaching adventures and saved many a lost lesson. An uncanny occurrence, lucky coincidence, psychic intuition, or a neurological forced connection? When this suitcase was stolen from a rental car in the coastal city of Caesarea, Israel I was frantic with worry over what I would do now that I had lost the objects I used to communicate with my students. Oh, whatever shall I do? Not wanting to leave the story unended: I went to class with no idea on what to tell them – so instead I showed them through music, mime and mask. We bonded over their, and my, unspoken experience which was told through our shared imaginations.

According to Reis & Renzulli (2018), differentiation requires that teachers accept freedom, flexibility, and creativity. Eisner tells us that the imagination, not objects and items, allows us to try things out and envision the possible (2002). Couros (2015) discusses how an innovative approach to teaching nurtures learning environments marked by empathy, engagement, motivation and autonomy. While a paper clip can become oh so many wonderful things, it is an imaginative, flexible and fluid mindset that becomes the supreme tool when one's suitcase has gone missing and one is faced with unanticipated AH HA moments. The main thread guiding educators into parts unknown may not be comprised of specific tools, games and activities, but is instead woven with the attitudes, attributes and characteristics of creativity, innovation and possibility.

Teaching and learning twists provoke three conventional choices: fight, flight or freeze. However, the educator who has a creative mindset has another option defined by Amabile's (1989) definition of creativity where the paradoxical movement *in* and *out* of chaos emerges as the appropriate 'tool' toward new beginnings and possibilities. Courageous curiosity rather than containment provides the flexibility and fluidity to engage discomfort. Genuine questions rather than forced answers provides the elaboration and exploration to receive diverse perspectives. Authentic humility rather than fake authority provides a transformative and restorative context to generate a collective and co-creative social presence, instructional presence, curious presence and a cognitive presence (Garrison, Anderson & Archer, 2000). Those with a creative mindset can sit with uncertainty, discomfort and awkwardness because they see these moments, in a world full of inauthentic, unhuman encounters, as 'authentically human – humanized action' (AH-HA) experiences reminding us of who we are as a species.

Ironically, for years, maybe even decades, I carried with me a copy of Goldberg's (1983) description of the creative classroom. While the physical page might be considered a tool, his words convey the essence of the type of mind needed to address educational challenges, past and future:

> If students could see their teachers make guesses and wild stabs, run up blind alleys and chase after fugitive hunches, their own uncertain intuitions and meandering images would gain legitimacy. Of course. This would require teachers who were, in fact. inquisitive and took joy in pursuing knowledge.
> It would also require teachers who were willing to make mistakes in front of their students. This may be asking a lot, but we nevertheless ought to realize that teachers are not only the dispensers of information, they are models of how to use the mind (1983, n.p.).

A student in 2002 gave me the Blob Tree (image 1). Combining this image with the Goldberg quotation provides ways into and out of discomfort while recognizing and prioritizing learners' diverse, shifting experiences and positionalities.

Which child are you at this moment? So what is the significance of this standpoint to you, your learning, your creating? Now what action steps does this posture encourage you to take in the future? Undoubtedly, each educator accumulates individualized teaching and learning tools that fit comfortably in the palm and feel smooth and warm to their touch. Yet, as Reis & Renzulli (2018) tell us, educational tools are of little use if the mind that uses them is closed. Goldberg and the Blob Tree function as portals

to dialogue, reflection and inquiry if, and only if, an open, flexible, curious, humble mindset presents this thread as such and embraces uncertainties as opportunities. Still, this thread needs to be shared with learners so they can carry this line into their own AH-HA moments going forward.

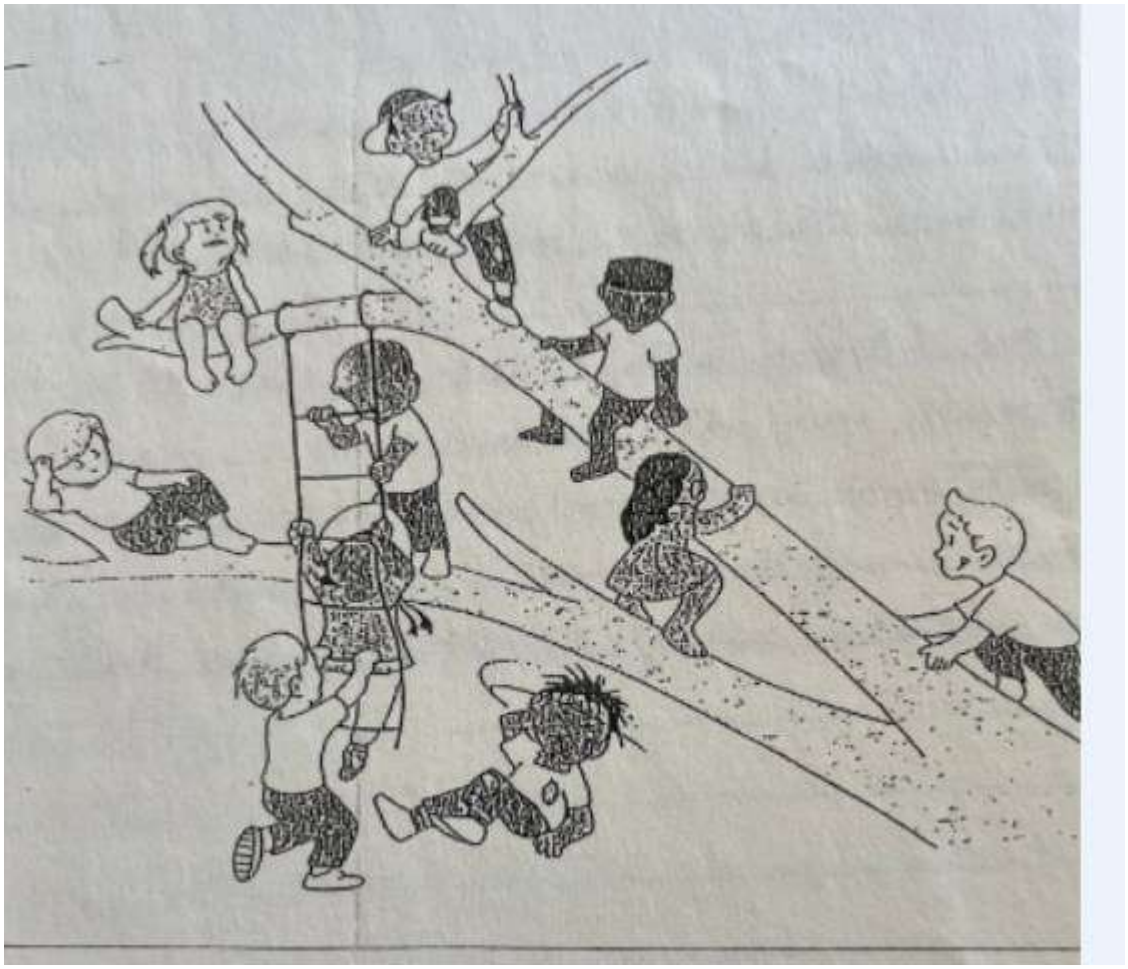


Image 1: Wilson, P., & Long, I. (2008). *Blob Tree* [Illustration]. In *The Big Book of Blob Trees*. Routledge.

AH-HA Thread #4: 3D-Briefing.

A creative mindset can be developed among educators, learners, society, in general. Eisner (2002) says the arts can play a role in this development. Other scholars attribute experiences such as a growth mentality, sense of belonging and cultural responsiveness to a creative mindset (Dweck, 2016; Strayhorn 2018; Amabile, 1993; Hammond, 2019). My own action research with various post-secondary learners across diverse disciplines shows that a consistent, thinking, feeling, doing framework can also transfer the attributes of a creative mindset to learners and turn any awkward situation into a learning opportunity despite cognitive ability, social experience and emotional competency.

Originating from paramedic training and adapted by business as a feedback mechanism, 'What, so what, now what' is elegant in its simplicity and powerful in its reach. Initially, I used this debriefing method for post-task feedback: what happened, so what was the significance, now what did you learn for next time? But, for the past twenty years, learners and I have been pushing what, so what, now what boundaries beyond its conventional application so that I renamed it 3D-Briefing to reflect its multi-dimensional uses. Since 2002, these three simple questions have been a bold thread weaving through AH-HA moments, my teaching and learning experiences and supporting the transfer of creative mindset characteristics to diverse learners

Making thinking, feeling and acting transparent, 3D-Briefing appears simple – and it is. But, attention must be paid to its three distinct components and, at least initially, in its exact order. Too often,

we demand good questions, quality questions, excellent questions which are often considered why questions. But, until we identify 'what' we are dealing with, how can we, and especially learners who are often not expert questioners, adequately, critically, empathetically and ethically explore issues and hope for positive future actions? Following the brain's natural, inquisitive process, 3D-Briefing practices the habits of mind that develops thinking, feeling and acting in an accessible, natural problem-solving process. 3D-Briefing invites learners to begin with identification questions and fact-based answers. Then, they advance to analytical questions and responses taking multiple perspectives, assumptions, beliefs and values into account. Finally, based on these two foundational levels of inquiry, learners evaluate and create future action steps that will stop, start or continue the situation for preferred futures. I have never formally measured the impact of 3D-Briefing through quantitative research, yet, thousands of learners have been exposed to its potential, applied its framework as an evaluating tool of other concepts and used it as a thinking, feeling, acting guide for personal and professional development. Learners have reported feeling more confident and capable as writers, speakers and thinkers. Significantly, it's accessibility and acceptance of diverse perspectives despite education, experience and ability encourages learners to provide AH-HA responses, as shown in Image 2, rather than forcing them toward the HO-HUM (Human Outsourcing to Heuristic Unhuman Mediators). Ironically, I used a HO-HUM format to enliven for you my learners' AH-HA feedback. Here, HO-HUM is my description of systemic, habitual work where the authentic (though bored, unconfident, or overburdened) human consistently and deliberately outsources their cognitive, operational or creative work to adaptive machine agents (heuristic mediators) on their behalf. Although learner work that is HO-HUM is the current threat to the educational ecosystem, it is a symptom of long-festering pedagogical weaknesses attacking learner-centric practices that value AH-HA moments building voice, connection and belonging in the classroom. The learner reflections in Image 2 shows me who they are through *their* word choice, *their* writing style, *their* perception of 3D-Briefing as a tool they will use in different social, critical and educational context, while the HO-HUM format helps distinguish these voices.

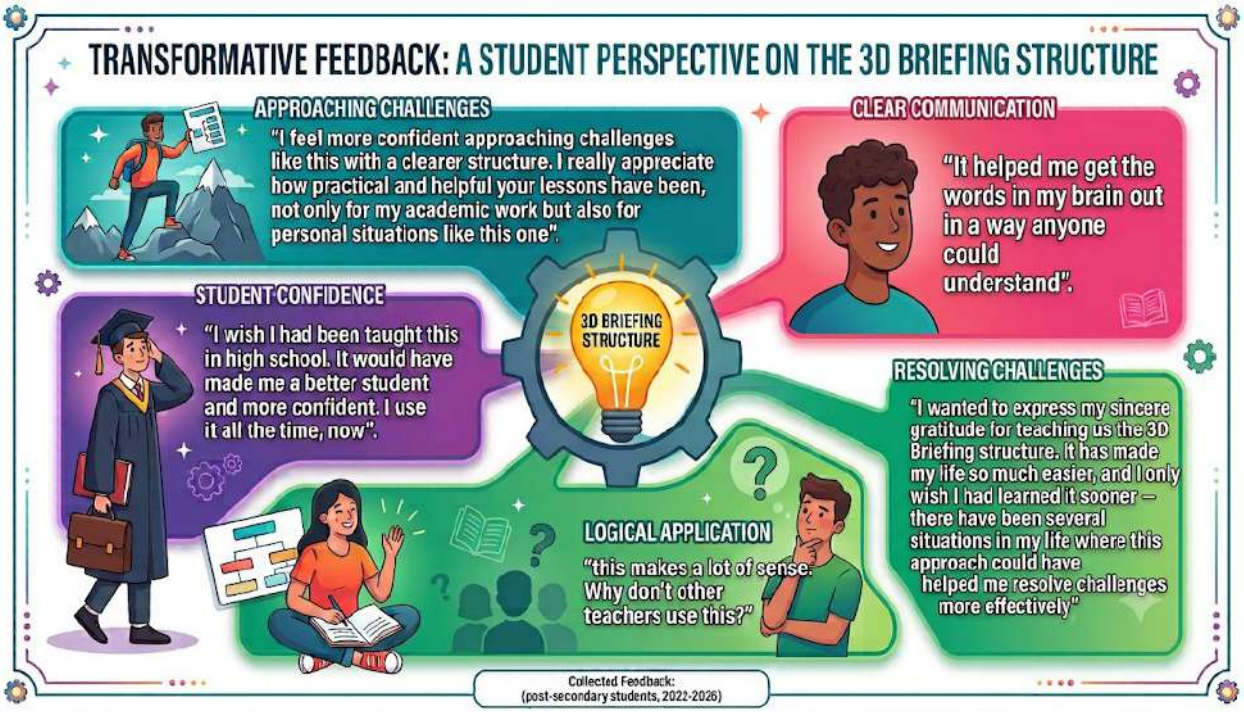


Image 2: Gemini-generated infograph of student feedback on 3D-Briefing

As indicated by these sample quotations, 3D-Briefing is accessible for content development and as a formatting structure. Although it may seem like I am advocating for that one-size-fits-all snow shovel from thread #2, a 3D-Briefing session celebrates diverse perspectives and introduces differentiation as a personal choice based on the distinct needs of each learner. It addresses past, present and future reflection and anticipation: What happened, what is happening, what will happen? It honours diversity and brings equity and empathy to the communication, collaboration and critical thinking process. Since it aligns with other critical thinking models (see image 3), it provides a universal and

accessible structure for all AH-HA occasions meaning learners and educators can focus on content and contextual depth rather than struggle with whether or not they are applying the appropriate model too the experience.

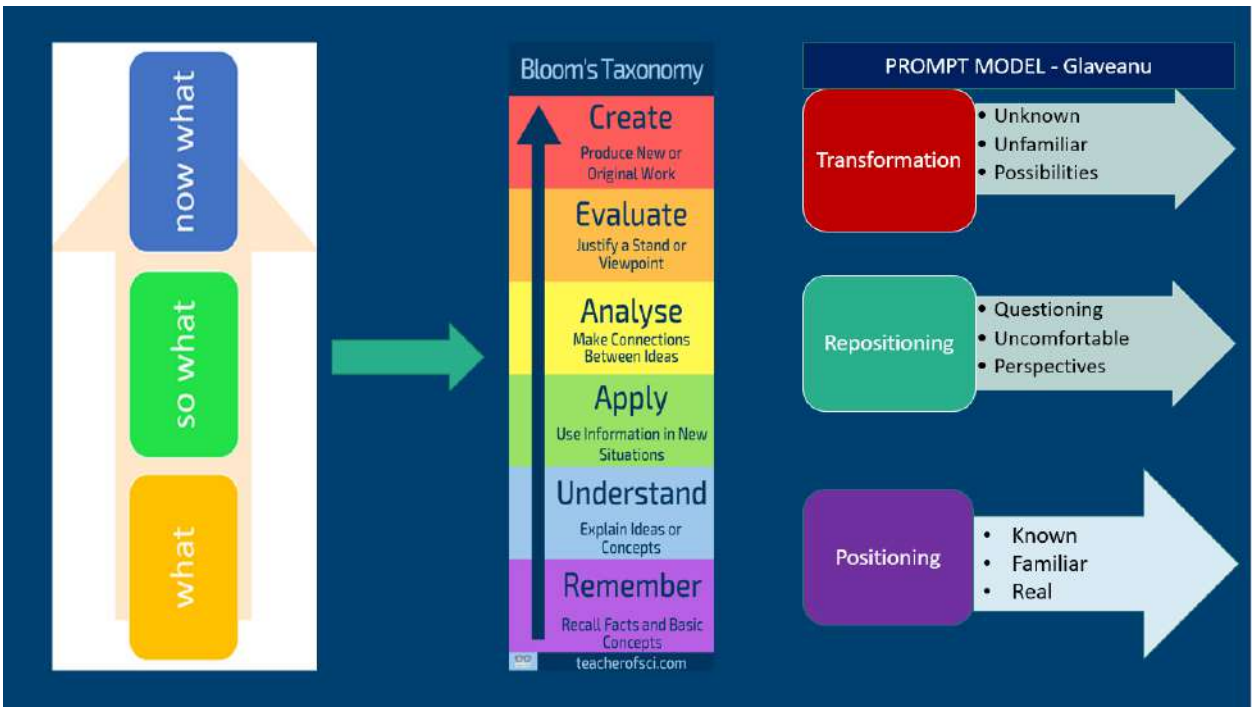


Image 3: 3D-Briefing, Bloom and Glaveanu.

While its questions are commonplace, its process and application *is* an innovation in education democratizing learning by tapping into the human need to tell stories and be understood (Boyd, 2009). As predictive anticipation, it minimizes surprises by uncovering bias, stereotypes and assumptions that can lead to conflict, frustration and anxiety. During a task it invites the individual's agile participation to adjust and modify *in media res*, thereby maximizing present potentiality. After a task it encourages deep reflection leading to future action that can be transformational and regenerative. Finally, it is another example of a *trompe l-oeil* within teaching because its own process can be 3D-Briefed thereby turning potential learning resistance, failure, disruption into opportunities, potentials, possibilities (Boyko-Head, 2022).

AH-HA Thread #5: Belonging

Another thread running through our educational research and ecosystems is the colonializing and inequitable scenarios based on ability, background, gender, ethnicity and other distinctions that marginalize learners (Hammond, 2015; Strayhorn, 2019). Although we are living in a time of hyper-connectivity through technology, learners' physical and emotional alienation is increasing (UN, IDG, 2025). This crisis of belonging has been recognized by many (Freeman, Anderman, & Jensen, 2007; Dweck, 2006; Strayhorn, 2019) and raises the question of how educators might nurture learners' responsiveness to themselves, each other and the future needs of the planet and its inhabitants? Learners who have a deficit mindset, think their stories don't matter, or that they don't have the language to articulate their thoughts and ideas struggle with belonging.

A creative mindset can find the courage to deal with this situation while 3D-Briefing can position every person in the classroom as a contributing member of the learning ecosystem without resorting to HO-HUM answers. These two threads can work together to strengthen the importance of making learners feel connected to each other, the classroom and the world. According to OECD (2019), "when students feel a sense of belonging at school, their engagement is often enhanced; when they don't, behavioural problems often follow". A sense of connection and belonging in schools leads to empowered and effective educational systems based on learners' engagement, motivation, collaboration, self-

awareness and empathy (OECD, 2019). Thus, a sense of belonging is significant to learner engagement, motivation and success, and can be more significant than cognitive proficiency (OECD, 2019; Gregory, & Kaufeldt, 2015; Yuhas, 2014). Learners academically thrive when they feel a sense of autonomy over their learning, the learning is relevant to their futures, and they believe they have the capacity to build the skills and competencies they need even when things are challenging (Yuhas, 2014). This belief also stems from a feeling that people care about them, and that they are needed in the learning environment, have a role to play and something to contribute to the group experiences (Strayhorn, 2019).

For the reasons mentioned in Thread #4, 3D-Briefing provides an inclusive and accessible framework by reducing learners' cognitive overload of wondering what questions to ask, whether they are 'good' enough, 'quality' enough, 'smart' enough. Instead, they just ask thereby countering a teacher-centric pedagogy or what Haberman (1991) entitled a 'pedagogy of poverty' where learners are expected to stay quiet, complacent and uncritical. 3D-Briefing's reliable and ritualized framework makes every voice and perspective accountable, relevant and significant with the potential to build belonging as empathetic understanding grows between learners.

AH-HA Thread #6: Arts-based Modalities

Minimizing familiar modes of expression and maximizing diverse modes of expression levels the playing field for marginalized voices and disenfranchised learners. Boyd, (2009) stresses that humans are storytelling creatures and their narratives reflect their cognitive systems. But not everyone uses the same system equally as "the structural inequities in our school systems negatively influence the academic mindset of many of our culturally and linguistically diverse students" (Hammond, 2015, p119). Inequities are further accentuated by deficit mindsets (Dweck, 2016), restrictive pedagogical expectations of what learning should be and a bias against serious play as a learning strategy (Brown, 2009).

Arts-based practices are a positive, responsive approach to learning and teaching and an empathetic equitable way of reflecting the changing characteristics, attitudes and needs of diverse learners (Boyko-Head, 2022). Since "some knowings cannot be conveyed through language" (Dunn & Mellor, 2017, p294), arts-based activities create a "supernormal stimulus" (Boyd, 2009, p94) for the safe exploration of skills and competencies and have the potential to remove barriers, reduce inequalities and provide more equitable access to capacity building activities. As evidenced in my own research (2018, 2022) and my life, arts integration across the curriculum challenges the colonizing and read/write/repeat learning model "asking learners to regurgitate somebody else's ideas through rigidly structured essays and reports" (McKenney, 2018, p33). By privileging gaps, exploring multiple perspectives and using multiple modes of expression learners play in scenarios that "deal critically and creatively with their reality and discover how to participate in the transformation of the world" (Freire, 1993, p34). Since arts integration minimizes familiar learning structures by introducing play into the equation, it has the potential of maximizing inclusion by opening space for under-represented and under-articulated perspectives. Here is where AH-HA moments can be amplified through ethical, transparent HO-HUM use as in image 2. Still, applying arts-based strategies into the classroom, 3D-Briefing those approaches and modeling a creative mindset that co-creates AH-HA artifacts, happenings and experiences, the creative classroom, even if augmented by HO-HUM means, has the potential to establish effective interdisciplinary communities of belonging, equity, empathy and caring.

AH-HA Thread #7: Co-Creativity

UNESCO Chairs state that research can no longer be carried out in academic isolation from non-academic knowledge holders and those who will be most impacted by research outcomes (Tandom & Hall, 2021). This is also the case with education. Learner input needs to be valued, prioritized and integrated into the curriculum fostering an anti-colonial, restorative, reciprocal experience contrasting past, unidirectional teaching methods that often fail to inspire change among stakeholders (Bouregeois-Doyle, 2021). The threads already mentioned have the potential to inspire such change and the thread of co-creation and co-design weaves well into this discussion.

Reciprocal knowledge mobilization and co-creative practices have the potential to further open dialogue and create accountable spaces to rehearse new thinking, feeling and acting that can generate

ethical, preferable futures (Riedy, 2009, Inayatullah, 2014). Co-creativity includes a consensus of intention and direction, shared responsibility for learning agency and a deeper connection, relationship and sense of belonging. This scene is characterized by educators and learners investing as co-explorers, co-designers of learning, and agreeing to shift hegemonic roles of teacher/student to distribute responsibility, ownership and authori(al)ity across the classroom. In this epoch of rapidly changing technological advances, no one person can ever expect to be an expert anymore and sharing this role relieves the pressure associated with this 'old' persona. Similarly, co-Creativity advocates an unscripted, improvisational attitude toward learning and unlearning positions of power reflecting an "intentional inclusion of participants with intersecting social positions and differing historic oppressions" (Mulvale, et. Al., 2024). When modeling a creative mindset, employing multi-modal articulation devices, arts-based strategies and 3D-Briefing, co-creativity has the potential to build belonging and empower learners' inner capacity for outer engagement. This tapestry, then, has the potential to generate transformational – regenerative spaces for preferred possibilities that challenge restrictive, dominant modes of thinking, feeling and doing.

AH-HA Thread #8: The Question

Answering "what do you do?"
Brings a pause –
Should always bring a pause.

I teach – you teach?
You learn – I learn?
Understatements abound.
Inadequate, ineffective, inaccurate:
What are we talking about?

I teach – I learn
You teach – I learn
New ways of thinking,
New ways of being.
Who is at the front?
Where is the front?
Windows opening to everywhere.

What, so what, now what?
Radical conditions emerge
Hooking the bell
So conscientiousness erupts
On the playground
We build castles in sand
Minds drifting to futures unknown
Where x marks
The spot without failure
Without shame
Without remorse.

"What do you do?"
It's complicated.

AH-HA Thread #9: The Detour

During a recent trip to Europe I had three unique experiences. A hotel in Copenhagen had a 24 hour front desk where I could tell the reception about my broken toilet, ask them about breakfast and return my key at the end of the stay. A second accommodation in Saeby consisted of a room in a widow's house. While she made breakfast she told me about her life, shared local tourist gems and raged at current political craziness. A third stay in Aarhus consisted of online interactions, except for the maintenance person who provided fresh towels and emptied the garbage can.

Three distinct experiences. All were functionally efficient and effective straightforward. All had advantages and disadvantages; none negatively impacted my journey. But, they made me wonder about

the future of the hospitality industry, specifically, and the educational ecosystem, generally. Since there was no going back from technology's take over of my booking experience, what if . . . authentically human – humanized action became a value proposition the way home-made bread, hand-made clothing, and home-grown vegetables has managed to survive markets? Could, should, would AH-HA experiences be a unique value proposition satisfying market demands?

New Booking: One bedroom, shared bath, breakfast included, authentically human, humanized action, mobile price special.

New course: opensource text, hybrid delivery, 3 credits, AH-HA experiences.

AH-HA Thread #10: AI

In 2012, the former chair of India's Central Board of Secondary Education stated that while the external world was changing rapidly, the education system was remaining static (cited in Stewart, 2012). In 2013, Postman said "we should be asking ourselves not just how to do school better, but how to do it decidedly differently (cited in Richardson, 2013, p 12). Johnson (2014) suggested that "technology can be used to improve traditional teaching practices as well as to create new means of helping students learn, and that both uses are legitimate" (p 85). Further, technology gives learners, "the tools, skills and resources they need to continue learning on their road to mastery" (Tucker, 2013, p60). Friedman (2007) sees technology as "a platform permitting individual customers to sense themselves in their own way, their own pace, in their own time, according to their own tasks" (p 455). In 2018, I advocated for a synthesizing of teacher and learner experience to (re)shape technologically enhanced educational ecosystems as a stage in the educational continuum toward democratization (Boyko-Head). At that time, I stated that technological applications within the classroom should encourage a collaborative framework harkening back to what Freire called a "robust class(less) democratized learning space where people educate each other through the mediation of the world" (1993, p 32). The prevalence of technological tools in education made educator expertise a frantic situation. Thus, dismantling teacher-centric classrooms would create reciprocal learning relationships where new and continuous technological learning flows both ways between educator and learner and learner and educator (Boyko-Head, 2018).

In 2026, AI is creating major disruptions, anxiety and uncertainty in education to the point where it is impossible to discuss any other educational issue without mentioning AI as an overshadowing cloud. To summarize the situation is to say it is complicated. It is also not the point of this paper, but what is the point are the threads of survival that lead us into and out of the 'wicked problems' of educational labyrinths. Like Covid-19, the AI revolution and its impact on educations' futures is an opportunity to define what we value in learning and teaching and to adjust and modify, if not entirely change our practices to do learning better.

The current AI scene may be another of those moments to do learning better. While we can ask learners to identify when, where, how and why they are using AI, we can also highlight and value authentically human – humanized actions (AH-HA) activities that harkens back to Goldberg's quotation. Give me those mistakes so that I can *see* you. While, AI is the dispenser of information, humans are still the models of how to be humble, empathetic, curious, forgiving, creative. As a result of all these tremendously human qualities, we can create ethical possibilities for preferred futures that prioritize and celebrate authentically human – humanized action (AH-HA) experiences.

Weaving the threads: AH-HA Pedagogy

There are always only questions, said the spider to the fly.

What are the AH-HA threads that weave themselves into beautiful baskets holding our lives and our work? Which threads have remained, which have frayed? Which are bold and wide? Which are strong and invisible? This special issue is a reflection and an inquiry – an inquiry and a reflection. Teaching since 1995, many say I am nearing an end; I feel I am only beginning. The things I valued as a student – the arts, belonging, creativity are coming back as my way of navigating the current labyrinth of educational disruption.

What makes an experience an AH-HA moment? You know them as your own threads guiding you in the darkness. For me, they are those moments when the agenda is tossed aside to be responsive to the needs of learners. They are those moments when time is suspended because more attention and intention is required before moving forward. It is when movement replaces words, images supersede sentences, mistakes override machine perfection. They are the laughable, humbling, shifting moments when content and context relevancy, user motivation and competency-building transform the dynamics. It is when communication is empathetic, collaboration is equitable and critical thinking is ethical. AH-HA pedagogy builds belonging through co-creation and reciprocal engagement and kindness and caring turns classrooms into social spaces of shared humanity.

None of this is new. All of this is "authentically human – humanized action", or AH-HA experiences. And, if we aren't careful AH-HA experiences could disappear into the labyrinth if we don't draw attention to their value proposition. Like the rotary phone, authentically human – humanized action (AH-HA) experiences might be a reality for some, a fading memory for others and possibly a myth for future generations. But, there is another option: weave the threads you find truthful and provide an alternative to (un)humanized and (de)humanized learning environments. After years of trial and error, running through mazes with dead ends, divergent crossroads and convergent openings, I end where I began and I begin where I ended. To find the way forward means following the threads back, but this time with a kaleidoscopic vision enhanced by authentically human – humanized action (AH-HA) experiences that provide a unique brand to an educational ecosystem in flux.

References

Adamson, C. (2012). Learning in a VUCA world. Online Educa Berlin News Portal.

Amabile, T. (1989). *Growing up creative: Nurturing a lifetime of creativity*. Creative Education Foundation.

Armstrong, T. (2009). *Multiple Intelligences in the classroom*. ASCD.

Beghetto, R. A., & Kaufman, J. C. (2007). Toward a broader conception of creativity: A case for mini-c creativity. *Psychology of Aesthetics, Creativity, and the Arts*, 1, 73–79.

Boyko-Head, C. (2018). Reciprocal learning and learners: (re)framing the post-secondary experience to meet a complex future. *Transformative Dialogues: Teaching and Learning Journal 11*(2).

Boyko-Head, C. (2022). *Mind the Gap: Ideas for enhancing creative-critical thinking, authentic communication & empathetic collaboration*. ICIE.

Brown, Stuart. (2009). Play: How it shapes the brain, opens the imagination, and invigorates the soul. Penguin.

Couros, G. (2015). *The innovator's mindset: Empower learning, unleash talent and lead a culture of creativity.* Dave Burgess

Drapeau, P. (2014). *Sparking student creativity: Practical ways to promote innovative thinking and problem solving*. ASCD.

Dweck, C. (2016). *Mindset: The new psychology of success*. Ballantine Books.

Eisner. E. (2002). *Arts and the creation of mind*. Yale UP.

Freeman, T., Anderman, L., & Jensen, J. (2007). Sense of belonging in college freshman at the classroom and campus levels. *Journal of Experimental Education, 75*(3), 203-220.

Friedman, T. (2007). *The world is flat.* Picador.

Freire, P. (1993). *Pedagogy of the Oppressed*. Continuum.

Gardner, H. (1993). *Multiple Intelligences*. Perseus Group.

Garrison, R., Anderson, A., & Archer, W. (2000). Critical inquiry in a text-based environment:

Goldberg, P. (1983). *The intuitive edge*. Crucible.

Gregory, G., & Kaufeldt, M. (2015). *The motivated brain: Improving student attention, engagement and perseverance.* ASCD.

Haberman, M. (1991). The pedagogy of poverty versus good teaching. *Phi Delta Kappan 73*(4).

Hammond, Z. (2015). *Culturally responsive teaching and the brain: Improving student attention, engagement and rigor among culturally and linguistically diverse students*. Corwin.

Inayatullah, S. (2014). Casual layer analysis defined. *The Futurist, 48*(1), 26.

Johnson, D. (2014). Power up! Teaching above the line. *Educational Leadership, 71*(4), pp84-87.

Mulvale, G., Abelson, J., Goertzen, M., et al. (2024). Co-creating a new Charter for equitable and inclusive co-creation. *BMJ Open*, 14(3).

Organization of Economic and Cooperative Development. (2014). Student engagement at school: A sense of belonging and participation results from PISA 2000. OECD.

Riedy, C. (2009). The influence of futures work on public policy and sustainability. *Foresight, 11*(5), 40-56.
Reis, S. & Renzulli, J. (2018). Five Dimensions of Differentiation. *International Journal for Talent Development and Creativity – 6*(1), August, 2018; and *6*(2), December, 2018.
Richardson, W. (2013). Students first, not stuff. *Educational Leadership, 7*(6), 10-14.
Strayhorn, T. (2019). *College students' sense of belonging: A key to educational success for all students.* Routledge.
Stewart, V. (2012). *A world-class education: Learning from International models of excellence innovation.* ASCD.
Tomlinson, C.A. (2003). *Fulfilling the promise of the differentiated classroom: Strategies and tools for responsive teaching.* ASCD.
Yuhas, D. (2014). So you want to be a genius. *Scientific American Mind*, Winter, 19.

About the Author

Christine Boyko-Head (Ph.D. McMaster University) is an interdisciplinary scholar, researcher, educator and artist. She is a UN Inner Development Goals Ambassador and certified facilitator in FourSight, Design Thinking, Creative Problem Solving, Restorative Practices and Lean-In. She has taught educators in the Middle East, Europe and Asia and taught over 80 cohorts in Lesley University's Masters of Education Integrating the Arts Across the Curriculum program. Her eclectic experiences include television production, creating and operating a social issues theatre company (1989-2002), co-founding an arts magazine for and by young people (1990-1995), creating a community mentoring four-year curriculum for youth (2001-2004), designing and implementing a $1.3m fundraising community campaign (2011-12), and researching applied theatre strategies increasing learner self-efficacy and connection in diverse contexts (2021-26). She has published nationally and internationally and in 2022, International Centre for Innovation in Education published her project *Mind the Gap: Ideas for enhancing creative-critical thinking, authentic communication & empathetic collaboration*. She minimizes the familiar and maximizes the diverse stretching the boundaries of the possible. This has led her to gamification, women's alternative metaphors, co-creative facilitation, daily creativity practices in youth and seniors through technological partnerships. She lives and teaches in Southern Ontario, Canada. She attributes her energy for pedagogy and possibilities to her family and the amazing educators, facilitators and creators she has met over the years, especially those associated with ICIE.

Global Competencies: Fostering Creative Learning and Critical Thinking Through Artificial Intelligence, Promises and Perils

Abel Ebiega Enokela
Federal College of Education, Ofeme-Ohuhu, Nigeria

Abstract

This article explores the potentials of transmitting global competencies to learners using AI-powered technology. AI pedagogy could create an enabling virtual environment for creativity, critical thinking and collaborative learning to enhance global competencies. Educators need to adopt innovative pedagogical approaches to engage learners with AI learning experiences that can enhance creativity, critical thinking and problem-solving skills inside and outside the classroom. However, there are potential challenges AI pedagogy can pose to creativity and originality if its integration in teaching and learning contexts are not carefully handled. Challenges of ethical issues, algorithm bias, privacy and security threats and more must be addressed for AI to continue to be relevant as a suitable technology for engaging learners. This article also provides suggestions for addressing some of the challenges, aiming at reducing AI pedagogical disruptions.

Keywords: Global competencies; AI Pedagogy; Creativity; Critical Thinking; Educators; Learners.

Introduction

As the world has become a global village, especially as a result of digitalization, global competencies are becoming more nuanced requiring higher levels of understanding of sociocultural diversities for individuals to function as global citizens. The core concepts of global competencies reflect that world events and global issues are complex and interdependent; one's own culture and history are key to understanding one's relationship to others; multiple conditions fundamentally affect diverse global forces, events, conditions, and issues; and the current world system is shaped by historical forces. These core concepts form the basis for strategic pedagogy to help learners acquire necessary skills that can foster global competencies. Learners should understand matters of global relevance to be creatively ready for the modern global economy (Mansilla & Jackson, 2013). Incorporation of cross-cultural education in curriculum could enhance cultural awareness and sensitivity (Yu & Duchin ,2022; Jiaxin et al., 2024). Global competencies prepare learners with the appropriate learning outcomes to cope with challenges and opportunities of global professional contexts (Jiaxin et al., 2024). These competencies invoke the 6 Cs: character, citizenship, communication, collaboration, creativity, and critical thinking However, this article concentrates on creativity and critical thinking components of the six competencies.

Creative learning relates to the development of impactful, novel contributions that add to one's previous knowledge and enhance other's learning. Yeh (2018), citing the work of Wallas (1926) posited that creative thinking involves a four-step process leading from problem to possible solution. This process involves: preparation, a stage where a problem is identified and attempts are made to proffer solutions; incubation, a break period in the process, though the mind keeps working on the problem; illumination, a stage of sudden insight of a solution to a problem and verification, a stage where a creative individual ensures the solution works. Creative thinking skills can be developed and increased through constant and conscious efforts (Ritter & Mostert, 2017). Ellerton (2022) postulated that critical thinking could foster inferences leading to constructive reasoning based on available evidence. Creative learning and critical thinking can facilitate learners' openness to new opportunities and create the desire to engage with others (Beghetto, 2021).

Artificial Intelligence (AI) is a subfield of computer science concerned with developing programs that can mimic human intellectual processes like speech or physical recognition, and decision-making. AI is also seen as "an engineering to create intelligent machines" (McCarthy et al., 2006); as the ability of machines to perform tasks that are usually traceable to human intelligence (Howard,2019; Venkatasubramanian, 2018); and as machine-based techniques with algorithms that have the ability to predict, make decisions, or recommendations (Herrmann & Weigert, 2024). Virtual Reality can enrich students' immersive learning engagement and potentially increase understanding and learning outcomes (Chang et al., 2020; McFaul & FitzGerald, 2020; Mallillin, 2022); and AI tools like ChatGPT can simulate human interactions and generate text-based information in response to input transmitted to it in a human language (Azamatova et al., 2023; Karaman, 2024). Chen et al. (2020) approached the definition of AI from a cognitive perspective in relation to education, positing that AI is the act of emulating human intelligence to simulate learning processes and enable Intelligent Tutoring Systems. Countries like Nigeria could leverage AI technology to guarantee access to education because of its wide geographical area and diverse socio-economic settings (Okunade, 2024).

AI-powered education seems to have created a pathway for educators to strategically teach learners creative and critical thinking skills. Integration of AI in educational processes is desirable as traditional pedagogy may be inadequate (Parissi et al., 2023), especially to engage learners with learning experiences that can arouse their creativity and critical thinking skills. AI-enabled technologies like Machine Learning, Intelligent Tutoring Systems and Chatbot are educationally transforming technologies that can improve traditional pedagogy by increasing learning experiences and outcomes (Sari et al., 2024; Alam, 2023). Specifically, Oseghale (2025) posited that AI-assisting tools like ChatGPT, Gemini and Duolingo enhance learning experiences and provide personalized engagement among learners in Nigeria.

Creativity and critical thinking are necessary ingredients to increase learners' potential to attain educational heights that are transformative, progressive and global. They are essential tools for lifelong intellectual, social and economic growth. AI, undoubtedly, is a major force influencing creativity and critical thinking because of its ability to enhance personalized learning through AI-powered tools, such as Virtual Tutors and Adaptive Learning Systems, can make learning more robust. AI innovations could reduce access challenges to stimulating learning environments since educators can facilitate personalized learning experiences provoking students' creativity and critical thinking. Thus, educators need to be digitally literate and AI-compatible to raise a generation of learners that will be creative, critical and globally competent to engage with technological advancements and thrive in a multicultural, transcultural and intercultural world.

Scholarly contributions on AI integrations in the educational system have gained ground substantially. However, contributions on AI-powered education in the context of global competencies with special reference to creativity and critical thinking components seem to have been neglected, thereby creating a knowledge gap that needs to be filled. Hence, this paper relying on philosophical reasoning and existing literature, attempts to look at the place of AI-powered education in fostering creativity, collaboration, critical thinking and problem-solving skills that can bolster global competencies. Strategic AI pedagogy is necessary for global citizens in an age where AI has sparked a major paradigm shift in different walks of life. It is also essential to examine the promises and perils of using AI for engaging learners creative and critical skills.

AI's Transformative Potentials In Creative And Critical Thinking Processes

Artificial Intelligence transformation in the educational system has been consistently and overwhelmingly impactful (Salas-Pilco, 2020), making it an important tool to be strategically used by educators to teach creativity and critical thinking skills both inside and outside the classroom. AI algorithms can predict individual learners' needs and suggest learning contents and strategies that could motivate them to learn (Aggarwal, 2023; Pramesworo et al., 2023; Holmes & Tuomi, 2022). AI-driven Intelligent Tutoring Systems can provide individualized learning and increase creative and critical learning engagements (Hsiao et al., 2018). It can offer prompt feedback to both students and teachers, facilitating quick intervention and adaptation of teaching tactics (Ross & Kim; 2018; Hsiao et al., 2018).

Studies indicate the transformative potentials of AI in fostering creative and engaging teaching and learning processes among educators and learners. Okunade (2024) examined and evaluated the influence of AI on science education in secondary schools in Nigeria. Results from using AI-powered Adaptive Learning Systems (ALS), Intelligent Tutoring Systems (ITSs), Virtual Laboratories and Simulations revealed that ALS personalized the learning process, ITS provided interactive and individualized instruction, and Virtual Laboratories offered immersive digital experiences. Abubakar, Aliyu and Nur (2024) also investigated the impact of AI tools (ChatGPT, Google Bard) on the creative writing skills of 80 Nigerian undergraduates. The results revealed significant changes in creative writing. In addition, Ejeh and Igbokwe (2025) investigated the impact of AI on teaching methods and learning and reported that AI provided personalized learning, and skill enhancement.

Baez et al. (2025) conducted research involving urban high school students in New Jersey, where the students uploaded geometric drawings originally made by them to Gemini. The feedback the students received from the AI tool enhanced creative revisions of their drawings. Anonymous feedback from teachers also indicated a positive impact of AI on creativity and critical thinking of students who participated in the study. Pont-Niclòs et al. (2024) explored the creative potential of 42 students in relation to storytelling using AI generative tools. The results confirmed the potential of AI in self-assessment and co-evaluation processes in the creative tasks of the participants in Spain. Ali Elfa and Dawood (2023) posited that AI expanded the creative process, overcame the shortcomings of the human brain, created new compositions from existing images, analyzed artwork, and improved accuracy and efficiency of users. Treve (2024) also explored AI integration in educational contexts related to students' engagement, academic success, and creativity. Results revealed significant improvement in students' engagement (20–23%), GPA (9% to 14%), and innovative thinking skills (44% to 57%).

Lulla, Rajpurohit and Vidani (2024) examined the impact of artificial intelligence (AI) on creative thinking among 178 Generation Z students in Ahmedabad, with emphasis on perceptions of the impact of AI on creativity and revealed that AI tools enhanced the students' creativity. Similarly, Sangeetha (2023) investigated the impact of AI tools in enhancing students' creativity and confirmed that AI tools provided real-time feedback, and improved creativeness. Teachers also reported that AI interactive storytelling tools improved students' engagement, motivation, and creative processes.

These studies suggest that AI pedagogical tools could foster creativity, critical thinking and engagement within classrooms for both teachers and students.

AI Technologies And Innovative Creative And Critical Thinking Pedagogy

Through AI-learning environments, educators could engage learners' cognitive processes to create reflective learning outcomes that can harmonize both local and global learning contexts. AI-driven personalized learning strategies could help teachers engage learners with creative learning and critical thinking skills to shape their worldviews and learning outcomes (Rafiq et al., 2024; Obi, 2022). AI-powered tools can reduce teachers' grading time, allowing them to provide more timely feedback to students (Bulmer & Wojcik, 2024).

AI tools like ChatGPT, Perplexity and Duolingo can be utilized for AI-powered pedagogy processes and generate content that could enhance creativity, critical thinking and problem-solving skills. We shall look at some of the practical methods of using AI to maximize creative learning and critical thinking in the context of teaching and learning global competencies. Educators can make use of a number of AI tools to enhance learners creative and critical skills in relation to global competencies. For instance, teachers can make use of Perplexity, an AI tool, to generate useful tips to develop their teaching strategies, since the technology can generate themes and subthemes that could help teaching and learning processes. Below in figure 1 is a screenshot of what Perplexity generated when it was asked to define the term 'global competencies.' After defining the concept, it provided a number of themes that could be taught under global competencies to enrich the teachers' pedagogical approach.



Figure 1: Response of Perplexity to the Question: "What is global competence?"

Generated by Perplexity

From the response above, Perplexity AI has provided a number of areas that could make the class more engaging by providing tips for teachers. Learners could through personalized or collaborative learning engage this tool to learn the subtle difference between global competencies and global competence and further learn the six global competencies as they continue to engage the tool. Perplexity also generated the following image when it was asked to generate an image explaining the term critical thinking.



@Source: **Generated by Perplexity**

Figure 2: Response of Perplexity to create a diagram explaining Critical Thinking.

The above image generated by Perplexity is an infographic explaining the components of critical thinking. This infographic could make a class engaging as learners could prompt the AI tool to explain further each of these components of critical thinking for them to get more details.

Below is also an image generated by ChatGPT when prompted to create an image about people discussing global competencies.



@Source: **Generated by Perplexity**

Figure 3: Image Generated by ChatGPT was asked to Create an Image of People Discussing Global Competencies

This image is thought provoking and could be useful for developing creativity and critical thinking among learners. It presents four people representing the world explaining key elements of global competencies shown in the background: teamwork, critical thinking and cultural awareness. It also suggests the importance of racial and gender inclusion to global competencies. Images like this could provide pedagogists with opportunity of exploring learners' potentials. On the part, of the learners the image could lead to fruitful and engaging discussions to foster peer teaching and learning process.

With the help of AI tools educators can adopt blended learning pedagogical approaches to deliver learning experiences. Blended Learning is the use of both traditional face-to-face and digital learning methods within the classroom experience and could show the importance of an AI partnership with teachers to support learning related to emotional literacy, critical thinking, collaboration, and transcultural understanding, boosting learners' global competencies. Machine Learning algorithms can help assess responses and provide results of learning outcomes (Ramesh & Sanampudi, 2022), thereby assisting teachers to adjust instructional strategies. Flipped Classrooms are a good example of Blended Learning. This method entails that the teacher introduces learning contents to learners outside of class time. AI-driven technologies like Chatbots, Virtual Reality (VR), Augmented Reality (AR) and Intelligent Tutoring Systems (ITSs) could be used to engage learners' creative and critical learning as they are strategically exposed to global issues promoting global competencies outside of class time. Then, during class time the teacher can follow up based on what the students have learned through AI virtual experiences outside of class. Flipped Classrooms can improve active learning and give educators time for individualized support during class time (Bergmann & Sams, 2012).

Distruptive Impact Of AI On Creative Learning, Critical Thinking

AI is a proven tool for enhancing creativity and critical thinking which are essential components of global competencies that are needed to make learners globally competent. However, studies show challenges posed by its integration in teaching and learning processes. In Nigeria, specifically, Okunade (2024) noted infrastructural limitations, teacher preparation and competence, and ethical considerations as barriers to AI pedagogy. Ihejirika et al. (2023) found negative effects of digital divide on rural populations and regions with socio-economic or infrastructural limitations, and Ejeh et al (2025) posited

that infrastructural deficits, policy gaps, and ethical concerns were major challenges to AI-pedagogy in the country. Treve (2024) reported AI ethical issues in Thailand; Sangeetha (2023) observed that participants in a study noted that over-reliance on AI could hinder originality, and Pont-Niclòs et al. (2024) noticed indifference, guilt, fear and concern about accuracy and cheating among participants.

Some of the challenges with the utilization of AI to engage learners inside and outside the classroom setting could limit creativity and critical thinking potentials of learners. Ethical compliance issues have been notably cited by education scholars and practitioners. AI ethics are guidelines put in place to govern the development, deployment, and utilization of artificial intelligence (Hagendorff, 2020). Uneven access to digital tools can amplify educational inequalities (Lutz, 2019). This means that educators could be limited in using AI-learning environments in certain contexts, especially among learning communities where AI tools are not available for all learners. Thus, in developing countries like Nigeria, the use of AI tools to engage learners with creative and critical thinking contents can be relatively hampered by uneven access to AI tools.

Again, algorithm bias poses challenges to AI utilization as a teaching technology. AI technology creators may infuse their sociocultural biases in AI tools, creating technologized inequity among users (Noble, 2018). Algorithmic bias can also lead to restricted benefits of AI-driven learning platforms for learners within disadvantaged populations (Shelton & Lanier, 2023). This development has implications for creative learning as algorithmic bias itself does not promote globalization and equity. Another challenge of using AI as a pedagogical approach for creative and critical learning is that over-dependence on AI for personalized learning can underserve learners with specific learning difficulties (Wang, 2020). AI-powered learning approaches also pose challenges of privacy and security concerns. There may be fears that learners' data collected through AI tools may be used to monitor them (Sharma et al., 2023). This fear may force some learners to be reluctant about enrolling for AI educational programs.

Furthermore, challenges of accuracy, especially in mathematics has become a major source of concern, particularly with the use of ChatGPT. Variant solutions in complex geometry equations have emerged (Wardat et al., 2023). Accuracy of data or information is critical to teaching and learning process. This identified shortcoming of ChatGPT may pose a challenge to its utilization for engaging learners' creativity and critical thinking inside and outside the classroom.

The Way Forward For AI, Creative Learning And Critical Thinking

AI literacy is the ability of individuals to critically examine AI technologies and use them to share content effectively and ethically (Long & Magerko, 2020; Hidalgo et al, 2020). Educators must be conscious of the ethical principles governing the use of AI to teach. Okunade (2024) suggested among other things, adequate funding and professional development for teachers as solutions to the problems of AI pedagogy in Nigeria. Ihejirika et al. (2023) opined that government should address the digital divide in the rural areas in Nigeria to boost the integration of AI teaching and learning processes. Pont-Niclòs, et al. (2024) posited that AI should not replace the traditional critical thinking and collaborative approaches to learning. In support of this view, Lulla et al. (2024) observed that students believed AI should complement and not replace human creativity. Sangeetha (2023) also suggested careful integration of AI in education to preserve the creative instincts of learners, emphasizing the importance of a balance between AI assistance and human creativity.

Since overdependence on AI for personalized learning has been found to be harmful to marginalized learners with specific learning difficulties (Wang, 2020), a way to address this challenge is for educators to be mindful of learners' learning diversities and tailor learning strategies to meet all learners' creative, critical thinking and problem-solving needs. Algorithmic bias has been noted as a possible challenge for AI teaching and learning processes (Noble, 2018; Shelton & Lanier, 2023). Moving forward, it is incumbent for international bodies to monitor AI developers/creators ensuring they follow ethical practices and avoid biases that can impede the goals of education, specifically, global competencies.

AI-powered learning approaches have been found to pose challenges of privacy and security concerns (Sharma et al., 2023). This challenge can be minimized by educators ensuring that students'

personal data are properly monitored and protected to allay the fear of some learners who may be skeptical about AI tools. Challenges of accuracy on mathematically generated data by ChatGPT should be verified by educators for accuracy of information. This means that teachers still have work to do, despite AI's transforming potentials.

Conclusion

This paper has explored global competencies within the context of the transformative and disruptive influence of AI pedagogy as a tool for creativity, critical thinking and collaborative learning. The contribution emphasizes the importance of creativity and critical thinking for the 21st century learners in order to be globally competent. Educators have to be strategic about the use of AI tools for engaging learners with learning experiences to develop their global competencies - creative and critical thinking in particular.

Questions for Readers to Reflect Upon:

This article provides an invitation for educational practitioners and theorists to think more critically about the positive and negative aspects of AI in education, in the context of global competencies. It might be helpful to explore some of the following questions (and add your own):

1. Explain the concept: "global competencies." To what extent do you think that it is important to integrate global competencies across disciplines?
2. How can AI-powered technology help in the transmission of global competencies?
3. Why are ethical issues crucial to the use of AI-learning tools to teach global competencies?
4. Why may it be necessary for AI not to replace teachers' roles in teaching global competencies?
5. How can educators reduce the disruptive influence of AI on creativity and critical thinking?
6. Explain the advantages and disadvantages of AI in global competencies education.
7. What does it entail to be globally competent?
8. Why are creative learning and critical thinking important to global citizens?
9. How can educators help learners who are not benefitting from AI enhanced learning environments due to some specific learning difficulties?
10. How can we address the challenges of algorithm bias in AI tools?

References

Abubakar, S. Aliyu, M.M., & Nur F. N. (2024). Impact of Artificial Intelligence (ChatGPT and Google-Bard) on Undergraduates' Creative Writing Skills at a University in Northeastern Nigeria, *Education Journal*, *7*(2), 257-273.

Aggarwal, D. (2023). Integration of innovative technological developments and AI with education for an adaptive learning pedagogy. *China Petroleum Processing and Petrochemical Technology*, *23*(2),709-714.

Alam, A. (2023). Harnessing the power of ai to create intelligent tutoring systems for enhanced classroom experience and improved learning outcomes. *Intelligent Communication Technologies and Virtual Mobile Networks*, 571–591. https://doi.org/10.1007/978-981-99-1767-9 42

Ali Elfa, M. & Dawood, M. (2023). using artificial intelligence for enhancing human creativity, *Journal of Art, Design and Music*, *2*(2), 106-120 https://doi.org/10.55554/2785-9649.1017

Azamatova, A., Bekeyeva, N., Zhaxylikova, K., Sarbassova, A., & Ilyassova, N. (2023). The effect of using artificial intelligence and digital learning tools based on project-based learning approach in foreign language teaching on students' success and motivation. *International Journal of Education in Mathematics, Science and Technology*, *11*(6), 1458–1475. https://doi.org/10.46328/ijemst.3712

Baez, R., Sanchez, H., Sandeep, N., & Pllana, D. (2025). Creativity and critical thinking in the AI age: A high school perspective. *International Journal of Research in Education and Science (IJRES), 11*(2), 448-477. https://doi.org/10.46328/ijres.1290

Beghetto, R. A. (2021). Creative learning in education in M. L. Kern and M. L. Wehmeyer (eds.), *The Palgrave Handbook of Positive Education*, https://doi.org/10.1007/978-3-030-64537-3_19

Chang, S.-C., Hsu, T.-C. and Jong, M. S.-Y. (2020). Integration of the peer assessment approach with a virtual reality design system for learning earth science. *Computers & Education*, *146*: 103758. https://doi.org/10.1016/j.compedu.2019.103758

Bergmann, J., & Sams, A. (2012). Flip your classroom: Reach every student in every class every day (pp.120-190). International Society for Technology in Education. Washington DC.

Bulmer, E. & Wojcik, E (2024). AI in education; The challenges and opportunities of using AI in teaching and learning. *Annals of Social Sciences & Management Studies 10*(5), 1-3

Chen, L., Chen, P., & Lin, Z. (2020). Artificial Intelligence in Education: A Review. *IEEE Access*, *8*, 75264–75278. https://doi.org/10.1109/access.2020.2988510

Ejeh, P.C. & Igbokwe, A. (2025). Artificial Intelligence and the Future of Nigerian University Students, *OCHENDO: An African Journal of Innovative Studies, 6*(1), 45-56.

Ellerton, P. (2022). On critical thinking and content knowledge: A critique of the assumptions of cognitive load theory. *Thinking Skills and Creativity*, *43*, 1-7 https://doi.org/10.1016/j.tsc.2021.100975

Hagendorff, T. (2020). The Ethics of AI Ethics: An Evaluation of Guidelines. *Minds and Machines*, *30*(1), 99-120

Hidalgo, P.F.J., M.E., Parra, G.M.E. & Abril, A. C. A. (2020). Digital and media competences: Key competences for EFL Teachers. *Teaching English with Technology, 20*(1), 43-59.

Hsiao, I. H., Chen, C. C., & Chung, C. J. (2018). The impact of artificial intelligence in education: A systematic review. *International Journal of Distance Education Technologies*, *16*(3), 58-78.

Herrmann, L., & Weigert, J. (2024). AI-based prediction of academic success: Support for many, disadvantage for some? *Computers & Education: Artificial Intelligence*, *7*, 100303. https://doi.org/10.1016/j.caeai.2024.100303

Holmes, W., & Tuomi, I. (2022). State of the art and practice in AI in education. *European Journal of Education*, *57*(4), 542–570. https://doi.org/10.1111/ejed.12533

Ihejirika, N. O., Ogana, M. and Uzezi, E. O. (2023). Impact of Artificial Intelligence on the Transformation and Development of Educational Sector in Nigeria. *Direct Res. Soc. Sci. Edu. Studies*, *11*(7), 88-94

Jiaxin G, Huijuan Z and Md Hasan H (2024) Global competencies in higher education: a ten-year systematic literature review. *Front. Educ. 9*:1404782. doi: 10.3389/feduc.2024.1404782

Karaman, M. R. (2024). Are lesson plans created by ChatGPT more effective? An experimental study. *International Journal of Technology in Education*, *7*(1), 107–127.

Long, D., & Magerko, B. (2020). *What Is AI literacy? competencies and design considerations*. In Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems, 1-16. April 2020.

Lulla, M., Rajpurohit, S. & Vidani, J. (2024). the impact of ai on creative thinking among Gen Z in Ahmedabad, *Melas Journal of Education*, *1*(2), 155-182DOI: https://doi.org/10.55927/melas.v1i2.12506

Lutz, C. (2019). Digital inequalities in the age of artificial intelligence and big data. *Human Behaviour and Emerging Technologies*, *1*(2), 141-148.

Mallillin, L. L. D. (2022). Teaching and learning intervention in the educational setting: Adapting the teacher theory model. *International Journal of Educational Innovation and Research*, *1*(2), 99–121. https://doi.org/10.31949/ijeir.v1i2.2493

Mansilla, V. B. & Jackson, A. (2013) In H. Jacobs (eds.) *Mastering Global Literacy, Contemporary* Perspectives. New York.

McCarthy, J., Minsky, M. L., Rochester, N., & Shannon, C. E. (2006). *A proposal for the Dartmouth summer research project on artificial intelligence, August 31, 1955*. AI Magazine, *27*(4). https://doi.org/10.1609/aimag.v27i4.1904, 12-12.

McFaul, H. & FitzGerald, E. (2020). A realist evaluation of student use of a virtual reality smartphone application in undergraduate legal education. *British Journal of Educational Technology*, *51*(2): 572-589.

Noble, S.U. (2018). Algorithms of oppression: How search engines reinforce racism. New York: NYU Press.

Obi, M. N. (2022). Ethical Considerations in the Use of Artificial Intelligence in Nigerian Education. *Ethics in Education Quarterly, 38*(1), 45-62.

Okunade, A.I. (2024). The Role of Artificial Intelligence in Teaching of Science Education in Secondary Schools in Nigeria*, European Journal of Computer Science and Information Technology*, 12 (1), 57-67, 2024

Oseghale, J. (2025). The future of online learning in Nigeria https://nileuniversity.edu.ng/the-future-of-education-in-nigeria-embracing-online-learning-ai-and-virtual-reality-in-nigeria/

Parissi, M., Komis, V., Dumouchel, G., Lavidas, K., & Papadakis, S. (2023). How does students' knowledge about information-seeking improve their behavior in solving information problems? *Educational Process International Journal*, *12*(1). https://doi.org/10.22521/edupij.2023.121.7

Pont-Niclòs, I., Echegoyen-Sanz, Y., Orozco-Gómez, P., & Martín-Expeleta, A. (2024). Creativity and artificial intelligence: A study with prospective teachers, *Digital Education Review 45*, 91-97 https://doi.org/ 10.1344/der.2024.45.91-97

Pramesworo, I.V., Sembiring, D., Sarip, M., Lolang, E. & Fathur-rochman. I. (2023). Identification of new approaches to information technology-based teaching for successful teaching of millennial generation entering 21st century education. *Jurnal Iqra': Kajian Ilmu Pendidikan*, *8*(1), 350–370. https://doi.org/10.25217/ji.v8i1.2722

Rafiq,S., Iqbal, S. & Afzal, A. (2024). The Impact of Digital Tools and Online Learning Platforms on Higher Education Learning Outcomes. *Al-Mahdi Research Journal*, *5*(4): 359-369.

Ramesh, D., & Sanampudi, S. K. (2021). An automated essay scoring system: a systematic literature review. *Artificial Intelligence Review*, *55*(3), 2495–2527. https://doi.org/10.1007/s10462-021-10068-2

Ritter, S. M., & Mostert, N. (2017). Enhancement of creative thinking skills using a cognitive-based creativity training. *Journal of Cognitive Enhancement*, *1*, 243–253.

Salas-Pilco, S. Z. (2020). The impact of AI and robotics on physical, social-emotional and intellectual learning outcomes: An integrated analytical framework. *British Journal of Educational Technology*, *51*(5), 1808–1825. https://doi.org/10.1111/bjet.12984

Sangeetha, N. R. (2023). Do Artificial Intelligence Enhance Creativity of Students? :An Exploratory Study, *Gurujyothi Research and Reflections*, *17*(2), 50-55

Sari, R.C., Warsono, S., Ratmono, D., Zuhrohtun, Z., Hermawan, H.D. (2023). The effectiveness of teaching virtual reality-based business ethics: is it really suitable for all learning styles? *Interactive Technology and Smart Education*, *20*(1), 19-35.

Sharma, A., Khan, S., & Dar T.A. (2023). Challenges and issues privacy of student education record in USA, *Privacy Matters*, 235

Shelton, K., & Dee, L. (2023). *The Promises and Perils of AI in Education*. Lanier Learning Treve, M. (2024). Integrating Artificial Intelligence in Education: Impacts on Student Learning and

Innovation, *International Journal of Vocational Education and Training Research 10*(2) 61-69. https://doi.org/10.11648/j.ijvetr.20241002.14

Yeh, C.S.H. (2018) Creative learning and learning creativity: Scrutinising the nature of creativity and developing strategies to foster creativity in Education. In C. O'Siochru (ed.) *Psychology and the Study of Education: Critical Theoretical Perspectives*, London: Routledge.

Wang, M. (2020). The impact of learning management systems on student learning outcomes. *Journal of Educational Technology*, *22*(4), 289–305.

Wardat, Y., Tashtoush, M. A., AlAli, R., & Jarrah, A. M. (2023). ChatGPT: A revolutionary tool for teaching and learning mathematics. *Eurasia Journal of Mathematics, Science and Technology Education*, *19*(7), em2286. https://doi.org/10.29333/ejmste/13272

Yu, Y., & Duchin, F. (2022). Building a curriculum to Foster global competence and promote the public interest: social entrepreneurship and digital skills for American community college students. *Commun. College J. Res. Prac. 48*, 164–174. doi: 10.1080/10668926.2022.2064374

About the Author

Abel Ebiega ENOKELA is a senior lecturer and the dean school of Languages at Federal College of Education, Ofeme-Ohuhu, Umuahia, Abia State, Nigeria. He is a registered teacher and counsellor. He obtained his PhD in Guidance and Counselling from Ambrose Alli University, Ekpoma, Edo State, Nigeria. He is an experienced scholar and educational administrator who has published widely in many academic journals and books, including contributions in Scopus indexed journals and edited books. He has to his credit publications with internationally recognized publishers namely: Springer, Routledge, Cambridge University Press, Palgrave Macmillan, IGI Global and Apple Academic Press. Dr. Enokela, has attended many professional conferences and presented papers. He is a member of many learned societies such as: International Society for Policy Research and Evaluation in School-Based Counselling (ISPRESC), Association of Professional Counsellors in Nigeria (APROCON), English Language Teachers Association of Nigeria (ELTAN), and Nigerian Institute of Management as a chartered manager. Dr. Enokela is on the editorial board of Journal of School-Based Counselling Policy and Evaluation (JSCPE), on the review board of International Journal of Cyber Behavior, Psychology and Learning (IJCBPL), and a member of reviewers' community of Vernon Press, USA.

Address

e-Mail: abelenokela2020@gmail.com

Engaging K-12 Students in STEM via Planetary Exploration

Michael Paul Lukie[1]; Edward A. Cloutis[2]; Andrea Misner[3]; Jesse Kuik[4]; Amanda Ziegler[5]

[1] University of Winnipeg, Faculty of Education, Canada
[2] University of Winnipeg, Department of Geography, Canada
[3] Maples Collegiate, Seven Oaks School Division, Canada
[4] Department of Geography, University of Winnipeg, Canada
[5] Department of Geography and Faculty of Education, University of Winnipeg, Canada

This paper presents creative educational resources and activities in planetary science as a method for enriching and engaging the talent development of K-12 students in Science, Technology, Engineering, and Mathematics (STEM). These activities were developed through a Cross-Disciplinary Synthesis between a university geography and education department that was supported by the Canadian Space Agency (CSA) as part of their Space Awareness Element - Space STEM Initiative. We have developed a range of educational materials, resources, and hands-on activities that have been piloted in the classroom with teachers and pre-service teachers for future adoption and use. The educational materials were initially targeted to high school level concepts in physics, mathematics, chemistry, and Earth sciences but can be easily adopted for use with lower grade levels. We also developed an innovative field-based set of activities involving a planetary rover-like exploration of a planetary analogue environment that can engage a classroom of students. Collectively, these resources may engage a wide range of students and grade levels using diverse activities.

Keywords: Astronomy; Earth & Planetary Science; STEM; Science Education; Space Education; Student Engagement; Physics Education**.**

Introduction

Space and planetary exploration are seen as creative, engaging, and effective ways to motivate the teaching of K-12 students in Science, Technology, Engineering, and Mathematics (STEM). The STEM acronym is used by educators and stakeholders who promote the call to better prepare K-12, college, and university students to compete globally in the new technologically based economy (Breiner et al., 2012; Martín-Páez et al., 2019). With the historic Artemis II seven-hour lunar flyby on Apr. 6, 2026, marking humanity's first return to the Moon since Apollo 17 in 1972 (NASA, 2026a), this paper builds upon current student increased awareness of space science through current media attention.

K-12 education refers to primary through to secondary education in both Canada and the United States and includes kindergarten through the12th grade before tertiary education such as college and university (post-secondary education). In Canada, primary school education refers to kindergarten to grade four, middle school refers to grades five to eight, while secondary school refers to grades nine to twelve. The educational resources and activities we developed to promote planetary science when engaging K-12 students in STEM are based on a Western Canadian province's educational curriculum but could be adapted to other provincial jurisdictions. Although the educational resources have been developed in English, there is an ongoing plan to have them translated and made available online through our university's Department of Geography and *The Manitoba Lunar and Planetary STEM Network* (MLaPS). The MLaPS network is designed to engage K-12 students in STEM via a wide-ranging series of diverse engagement materials focusing on lunar exploration, particularly Canadian efforts in this realm.

The advantages of including space exploration in the classroom include its inherently interdisciplinary nature and availability of educational materials targeted to K-12 students that have been developed by a number of space agencies and other organizations, such as the Canadian Space Agency (CSA) (https://www.asc-csa.gc.ca/eng/youth-educators/), the National Aeronautics and Space

Administration (NASA) (https://www.nasa.gov/learning-resources/), and the European Space Agency (ESA) (https://www.esa.int/Education). All of these agencies have developed funding mechanisms to promote education and STEM engagement via planetary and space exploration (Athanasopoulos, 2019; Morrow et al., 2006; Viotti, 2021).

Our team consisted of a geography professor with graduate students who is directly involved with space science research, a science education professor who teaches pre-service teachers mathematics, physics, and science curriculum and instruction courses, two secondary school (grades 9-12) science teachers, a middle school science teacher (grades 5-8), and an undergraduate education student training to be a science teacher. We used a grant from the Canadian Space Agency's Space Awareness Element – Space STEM Initiatives to develop a range of educational materials and hands-on activities focusing on planetary exploration to engage K-12 students in STEM through the MLaPS project to enrich the teaching of science in schools.

The geography professor from our team wrote the CSA grant and developed the MLaPS project to capitalize on Canadian planetary and lunar exploration activities currently being undertaken in our province. MLaPS also takes advantage of existing and nascent interests in lunar and planetary exploration present as exemplified by The Manitoba Association of Physics Teachers (MAPT). MAPT is a provincial group of physics teachers who meet monthly to discuss the development of hands-on and classroom-based activities to engage science students. The MLaPS project was conceived by the geography professor from our team to incorporate ongoing space research activities at our university into the classroom. In this way, students would be exposed to what space scientists do in the laboratory in the hopes of inspiring these students to pursue STEM fields at university through the hands-on and engaging classroom activities we developed.

The importance of including such STEM based initiatives into science education has recently been identified by Hernandez de-Menendez et al. (2020) who stressed the need for students to acquire the competencies and knowledge necessary to compete in the fourth industrial revolution. This revolution, Industry 4.0, is defined as "the integration of information and communication technology" (Hernandez de-Menendez et al., 2020, p. 789) and requires innovative pedagogical strategies such as experiential and project-based learning (PBL). PBL is

an instructional method in which students learn through teacher facilitated problem solving and learn through the experience of solving problems (Hmelo-Silver, 2004).

Students can act on their own interest when engaged with PBL and develop their own learning (Smith, 2002; 2011).

Indeed, the CSA promotes K-12 STEM learning through activities such as the 'Lunar Explorer' (CSA, 2024), the European Space Agency promotes STEM learning through activities such as 'satellite in a can - CanSat' (Contente & Galvão, 2022), and NASA promotes STEM learning through 'Teach: STEM Activities' (NASA, 2024a). The CSA, NASA, and the ESA all promote STEM education with activities for students and teachers. The CSA has described that these STEM activities should focus on the following: 1) to increase awareness about space and interest in STEM with students, 2) to provide hands-on experience to students with engaging STEM activities, 3) to support educators with activities that promote STEM, 4) to support post-secondary space research, and 5) to involve K-12 students in CSA projects and activities (CSA, 2024).

Our project developed engaging and hands-on STEM based activities for K-12 students that are directly related to our university's ongoing projects and research with upcoming Moon/Mars missions and instruments. These projects included involvement in some of the following: 1) mission Startup Phase 0 to Closeout Phase F (the start of the mission to the end of the mission), 2) Assembly, Test, and Launch Operations (referred to as Aerospace, Assembly, Test, and Launch Operations-ATLO), 3) Societal Readiness Levels 1-9 (a way of assessing the level of societal adaptation of a particular technology derived from space research), and 4) Technology Readiness Levels 1-9 (a way of assessing the readiness for a new technology associated with a space program). The engagement activities and materials

developed during this project have been hosted by our university, to ensure availability to other jurisdictions and long-term access.

Our team sought to develop engaging STEM based activities to potentially increase student interest, knowledge, and experience in STEM using space-related disciplines. As Willms et al. (2009) suggests, student engagement represents the extent to which students identify with and value their schooling, have a sense of belonging while at school, their participation in both non-academic and academic activities, the ability of students to meet the formalized requirements of schooling, and for students to make a personal investment in their learning. Student engagement refers not only to their active involvement in learning but their appraisals of their own ability to succeed in a subject, their emotional relationship with the subject, and their motivation to learn (Pekrun, 2006).

Therefore, in designing the STEM based activities, we focused on fostering student social, academic, and intellectual engagement (Willms et al., 2009). According to Willms et al. (2009), student social engagement represents student participation in school life and a sense that they belong at school, student academic engagement represents the participation of the student in the formal requirements of schooling such as when learning the specific learning outcomes mandated in our provincial science curriculum, while student intellectual engagement represents student investment in their learning using higher order thinking skills such as evaluation and analysis when solving complex problems or when constructing new knowledge.

The activities we have designed incorporate student group work as a way of fostering the students' social engagement and team building, much like how scientists work in a team to complete a goal. The academic engagement of students is fostered through our activities as they are linked to the formalized specific learning outcomes of the mandated provincial science curriculum. Student intellectual engagement is fostered throughout our activities as students are required to analyze and evaluate data during student participation in the activities.

The hands-on activities we developed meshed with the criteria of the CSA's call for planetary science STEM based classroom materials (CSA, 2024) and we were mindful to design activities that engaged students socially, academically, and intellectually (Sinatra et al., 2015, Willms et al. 2009). Additional support for this initiative was obtained through the Manitoba Teacher's Idea Fund, which had the same essential goals as the CSA.

The goals of our project (Cloutis et al., 2022) included the following:

- Increase *interest*, *knowledge*, and *experience* in STEM amongst youth and educators using space-related disciplines.
- Develop promotion and activities to increase impact and reach.
- Develop and deliver activities, materials, information, events, and products that use the Canadian Space Program as a context to expand the scientific literacy of educators and/or youth in Canada.
- Produce, present, and distribute information related to space to promote Canadian awareness.
- Produce materials in visual, written, and other formats to promote Canadian awareness about space science.
- Design and deliver educator and/or youth space focused hands-on activities and workshops (CSA, 2024).
- To determine the viability of the activities moving from the pilot stage to classroom implementation stage of curriculum development.

Development of Education Resources and Curriculm

Within this broad MLaPS mandate, we undertook several initiatives to develop resources targeted to K-12 students in the realm of planetary exploration, with a focus on lunar exploration. Development was also undertaken with an eye toward availability, expansion, and adoption for different

educational levels and jurisdictions. The interdisciplinary curriculum activities we developed specifically link to the Manitoba grade 9 science curriculum Cluster 4: Exploring the Universe (Manitoba Education & Training, 2000) and the grade 10 geography curriculum Cluster 1: Geographic Literacy (Manitoba Education, Citizenship & Youth, 2006a), see Table 1.

Table 1: Curriculum Developed with the Theme of Lunar Exploration.

Lesson Title	Lesson Description
1: Canadian Involvement in Lunar Endeavors	Canada's planetary science sector has seen renewed vigor as we begin a new era of planetary exploration. Canada has seen an uptick in planetary science-based endeavors that will push Canadians to the Moon and beyond. Students investigate what the CSA is and what projects they are involved with now and in the future.
2: Crater Morphology	Canada's return to the Moon requires a more comprehensive understanding of the Moon. There is no better place to start than craters, the most prominent features of the Moon's surface. This lesson walks students through a hands-on demonstration of crater formation.
3: Lunar Sampling	How is a sample of the lunar surface taken with a rover on the Moon's surface? For this lesson, students explore the difference between how a rover takes soil samples on the surface of the Moon as opposed to how astronauts have done this in the past. The following missions are explored: Perseverance (Mars), Curiosity (Mars), and VIPER (Moon).
4: Getting a Rover to the Moon	In this lesson students build a payload that protects a lunar rover (egg) on its descent to the lunar surface. Engineering and design are emphasized through student collaboration, teamwork and critical thinking.
5: Canadians in Space	In this lesson students learn about Canadians in space, the CSA Canadarm, and the role of Canadians in the Artemis 2 Moon mission.

These five curricular lessons promote an inquiry-based pedagogy where students are engaged in student-centered, hands-on, and open-ended learning (Colburn, 2000). In an inquiry-based classroom, students learn in ways that are similar to the different ways that scientists work (Artigue & Blomhøj, 2013). In addition, these activities promote a constructivist epistemology. In a constructivist classroom, students are provided the opportunity to actively construct knowledge through their social interactions and individual experiences rather than passively taking in information (Biggs, 1996).

Hands-On Curricular Activities

The following section describes the four hands-on curricular activities we developed for our project: 1) Planetary Rover Field Trials, 2) Schoolyard Activities, 3) Stonewall Quarry Park Activity, and 4) Crater Simulation Activity. The first activity engaged K-12, undergraduate, and graduate students with a Mars rover-like investigation at Gypsumville, Manitoba that had some geological similarities to Mars. The Gypsumville rover field trials served as a pilot project and the insights gained were later applied to the Stonewall Quarry Park activity. The second activity engaged grades 7-9 students in investigating Moon landing sites in the schoolyard using radio-controlled (RC) cars as analogous Moon rovers. The third activity engaged grade 11-12 astronomy students at Stonewall Quarry Park with a Mars rover simulation. The fourth activity engaged grade 9 students with a lunar crater laboratory.

A summary of the links between the four activities and five curriculum lessons can be seen in Table 2. Each activity is listed, the lessons that relate to the activity are given, and information is provided about the activity target audience, number of participants, and estimated activity time duration is provided.

Table 2. A Summary of the Links Between the Four Activities and the Five Curriculum Lessons.

Activity Number and Name	Links to Curriculum Lesson	Description	Target Audience	Number of Participants	Duration
1. Planetary Rover Field Trials	3: Lunar Sampling 4: Getting a Rover to the Moon	1) Students select geological samples to analyze at the Lake St. Martin impact crater using specific spectrographic instruments. 2) Students determine regions of interest to explore with a drone.	Grade 10 science students.	8	2 classes
2. Schoolyard Activities	1: Canadian Involvement in Lunar Endeavors 4: Getting a Rover to the Moon 5: Canadians in Space	1) students learned about the history of space flight, 2) students investigated Moon landing sites in the schoolyard using radio-controlled (RC) cars as analogous Moon rovers 3) students participated in an egg drop where they designed a payload with a parachute to model the safe return of the payload to Earth.	Grade 7,8,9 science students.	13	3 classes
3. Stonewall Quarry Park Activity	3: Lunar Sampling 4: Getting a Rover to the Moon	1) Students select geological samples to analyze at the Stonewall Quarry using specific spectrographic instruments. 2) Students determine regions of interest to explore with a drone.	Grade 11&12 Astronomy students.	17	2 classes
4. Crater Simulation Activity	2: Crater Morphology	1) Students drop marbles from different heights into a pan of flour covered with cocoa powder to determine the relationship between crater width and drop height. 2) To provides students with the scientific vocabulary necessary to understand crater formation and crater morphology on the moon.	Grade 9 science students.	24	2 classes

Planetary Rover Field Trials

Since 2018, we conducted three rover-like field campaigns across Canada. We describe the first one as an example of how it and subsequent campaigns were conducted and engaged K-12, undergraduate, and graduate students. In June 2018, we went into the field with a group of students to investigate a Mars terrestrial analogue (defined as a place with some geological relevance and similarities to Mars). The site was the Lake St. Martin impact crater, located near Gypsumville, Manitoba. This site is a large, nearly completely buried impact crater (Bannatyne & McCabe, 1984; McCabe & Bannatyne, 1970) and served as an analogue for similar-sized craters on Mars (Cloutis et al., 2011; Squyres et al., 2012; Wray et al., 2011).

This investigation involved several graduate students, undergraduate students, and eight grade 10-12 students from two high schools in Winnipeg, Manitoba over 2 days. The major goal of this deployment was to provide operational experience in exploring Mars using a rover. The team deployed several scientific analytical instruments in the field that emulated those found on the NASA Curiosity and Perseverance rovers (Bogue, 2012; Farley et al., 2020; Vasavada, 2022).

The investigation of the Lake St. Martin crater had several science goals associated with it where students determined the geological diversity of the crater and identified a number of prioritized targets of interest. These targets of interest included targets associated with habitability (highest priority), surface and near surface water, crater impact event, and biology (lowest priority) (Cloutis et al., 2021). To identify these targets of interest, students used a simulated rover based upon the methods developed from a number of previous field explorations (Francis et al., 2018; Groemer et al., 2014; Osinski et al., 2019; Qadi et al., 2015; Stoker et al., 2001; Stromberg et al., 2019). Importantly, the Lake St. Martin crater investigation was undertaken with a compressed time frame to simulate a rover-like mission while still preserving a high-fidelity mission (Cloutis et al., 2021).

The Lake St. Martin crater investigation consisted of two student groups, a 'field group' and a 'science group'. Each group consisted of graduate students and embedded grade 9-12 high school students. The field group was assigned to take ground level images of the site and deployed scientific instruments based upon instructions from the off-site science team located at the University of Winnipeg. The field group and the science group considered trafficability limitations for the on-site rover and these limitations included: 1) no traversing of boulders greater than 20 cm. in height and 2) no traversing of terrain with a slope greater than 20 degrees (Cloutis et al., 2021).

Images from the on-site rover field trials at the Gypsumville crater are shown in Figures 1-3. Figure 1 shows the Google Earth location of Landing Site 1 and Landing Site 2. Figure 2 shows the panoramic view of Landing Site 1 and the Regions of Interest (ROI) selected by the science group for the rover to investigate and include L1-R1a, L1-R1b, L1-R2, L1-R3, L1-R4, L1-R5 where L refers to the landing site and R refers to the region. Figure 3 shows a close-up view for the region of interest L1-R1b selected by the science group for further analysis with scientific instruments and include 1B1, 1B2, and 1B3 (Cloutis et al., 2021).



Figure 1: Google Earth Location of Landing Site 1 and Landing Site 2 (Cloutis et al., 2021).

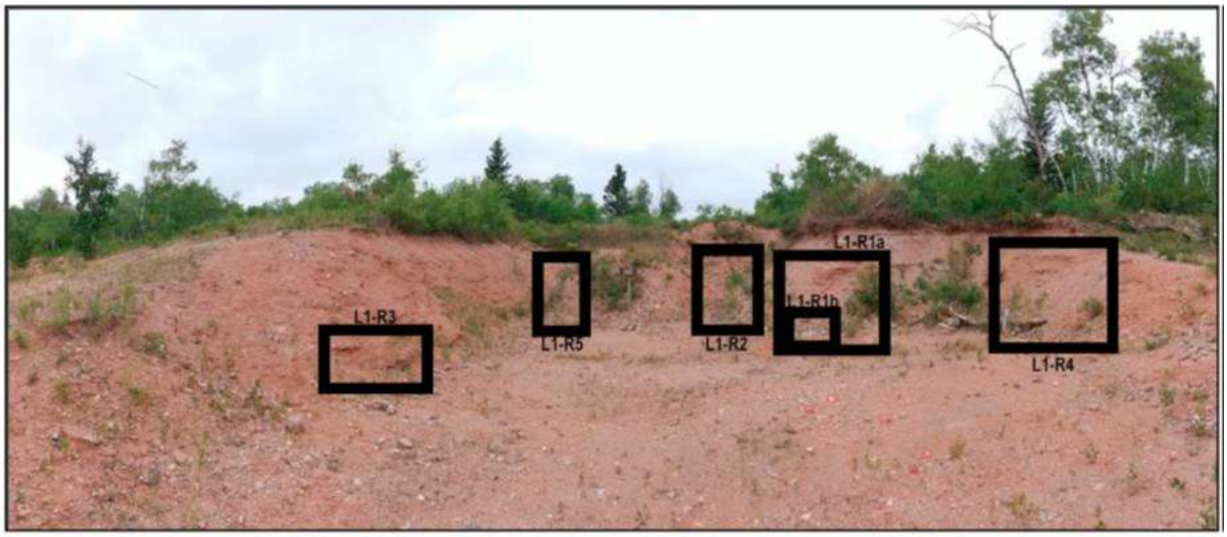


Figure 2. Landing Site 1 Regions of Interest Selected for Investigation (Cloutis et al., 2021).

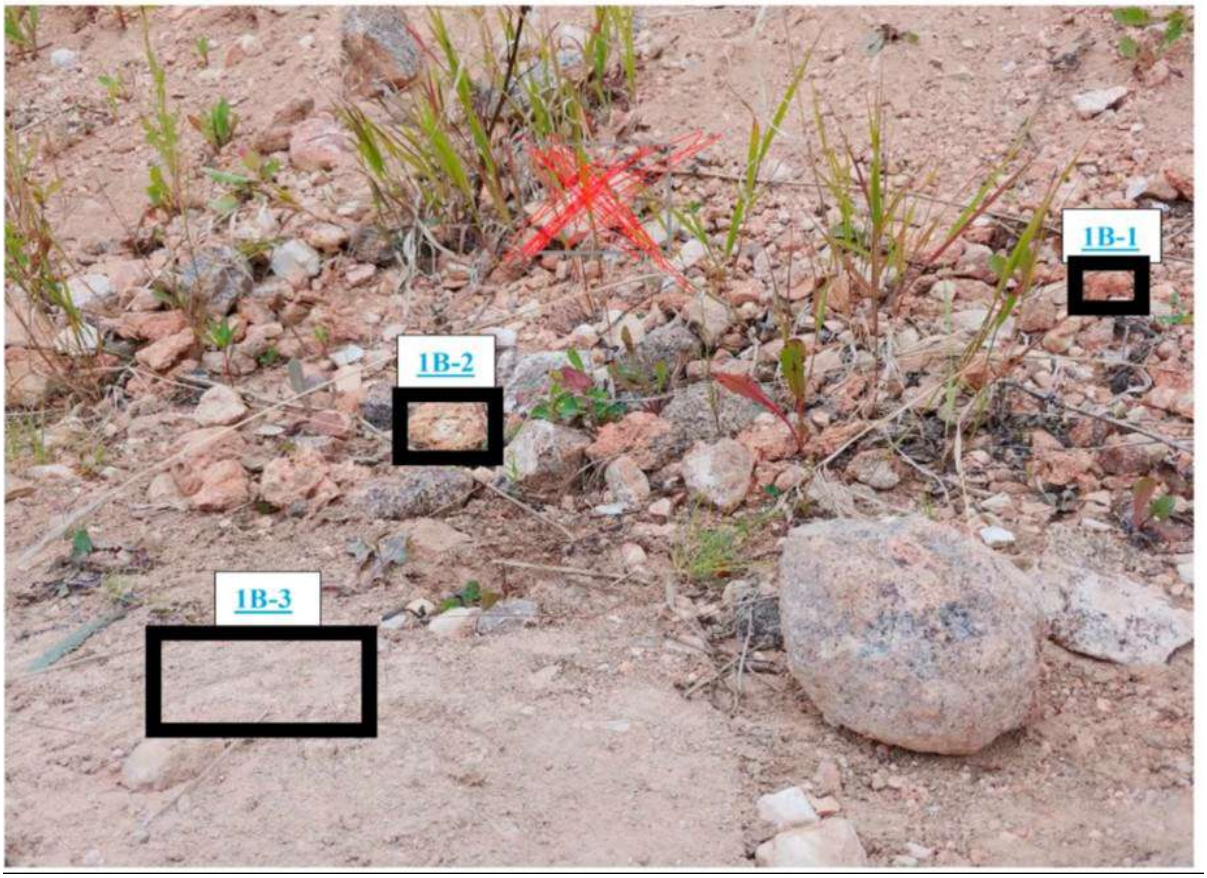


Figure 3. Close-up View for the Region of Interest L1-R1b (Cloutis et al., 2021).

Once the field group and the science group identified a region of interest to investigate, the groups identified Targets of Interest (TOI) for sampling and prioritized these targets as high, medium, and low. A downselect process (narrows the field of choices) was used to identify the target of interest based upon the following criteria: 1) color imagery for the panoramic view, 2) color imagery for the region of interest, and 3) color imagery for the target of interest. If a target of interest survived the first 3 steps of the downselect process, then the reflectance and Raman spectra was analyzed for this target (Cloutis et al., 2021). Table 3 presents some of the analysis for the four targets of interest the student groups identified from landing site 1, region of interest 1a.

Table 3: The Characteristics and Analysis of the Targets of Interest (Cloutis et al., 2021).

Landing Site	ROI	TOI	Target of Interest Description	Selection and Analysis Rationale	Close-up Image Analysis and Sample Priority (high, medium, low)
1	1a	1	The conglomerate top portion contains a red pebble.	The pebble is redder than the surrounding material indicating a different state of iron oxidation.	A medium priority.
		2	The conglomerate contains a green pebble.	The color is different from the outcrop; analyze sample to determine the petrology range for the site; the sample may contain iron.	The closeup image did not appear green; not prioritized or sampled.
		3	The resistant layer contains a red stained round pebble	Possibly a carbonate.	Spectral data analysis revealed that the sample contained carbonate and rust stains; textures of interest appeared in the close-up image; medium priority.
		4	A sample of the resistant layers from the outcrop	The sample from the resistant layer contains a light tone of color; remove the surface weathering and examine the composition.	There is interest in the cementing material; high priority.

The grade 9-12 students that were embedded in the science group identified targets/regions of interest from the panoramic images and then ranked selected targets of interest for further investigation and scientific analysis. The students individually ranked and selected targets of interest and then their choices were justified with the group through collaborative discussions (Cloutis et al., 2021). It is important to note that most of the students identified the same regions and targets of interest.

The field team also had embedded grade 9-12 students. The field campaign involved using several scientific instruments to identify and analyze regions of interest and targets of interest, including multispectral cameras, reflectance and Raman spectrometers. Each instrument was overseen by a graduate/undergraduate student, and largely operated, after some initial training, by 1-2 high school students (Cloutis et al., 2021).

Schoolyard Activities

Throughout the winter and fall of 2022, we worked with two groups of grades 7, 8, and 9 students from a Manitoba inner-city school. These students were identified as having special learning needs and exhibited a wide spectrum of academic and behavioral levels. Of the students who participated in the schoolyard activities, the following are the percentages for the target stakeholder groups: 95% Indigenous, 16% Newcomer, and 83% Special Learning Needs. The small class size and diverse classroom profile presented a unique learning environment ideal for determining the effectiveness and inclusivity of the MLaPS project.

The classes initially spent time each week inquiring about various aspects of lunar exploration, rover operations, and sample return missions. The initial objective was to develop an essential/guiding question to pique students' interest in space exploration and STEM fields. The class reviewed previous and current space missions by NASA, CSA, ESA, and Roscosmos (a state corporation of the Russian Federation). The class also reviewed previous and current space missions by The China National Space Administration (CNSA).

The students were introduced to historical events related to space exploration, including: 1) the Cold War and the space race, 2) the contributions of Katherine Johnson and other Black female mathematicians to NASA, 3) the Apollo missions (such as the Apollo 1 disaster, the first space flight by

Alan Sheppard, the Apollo 11 landing on the moon, the Apollo 13 complications and recovery, and the Apollo 14 golfing demonstration), and 4) the Challenger and Columbia space shuttle disasters.

Students focused on the Canadian involvement in three key areas of space exploration: 1) rover missions, 2) sample return, and 3) lunar habitats. These missions included: 1) Mars Perseverance, 2) OSIRIS-Rex asteroid sample return (the first U.S. mission to collect a sample from an asteroid), 3) the CSA Cable mission concept (lunar orbiter) (Kruzelecky et al., 2015), 4) Volatile Moon Mineralogy Orbiter (Kruzelecky et al., 2022), 5) Manitoba Sat-1 (Connell et al., 2024), and 6) the Artemis II NASA space mission with Canadian astronaut Jeremy Hansen that captureded images of the far side of the moon and traveled 400,171.432 kms (248,655 miles) from Earth, surpassing the record for the farthest human distance spaceflight previously set by the Apollo 13 mission in 1970 (Creech et al., 2022, NASA, 2026b).

The activity effectively catered to the students with diverse interests. The project sparked high levels of student engagement and provided multiple entry points for learning. For instance, some students were drawn to the technical aspects of space missions, while others were captivated by the cultural and social dimensions, thereby showcasing the ability of our project to meet diverse learning needs.

After reviewing a wide range of space-related content, the students were tasked with developing an essential question to guide the inquiry. Students collectively decided to focus on the question, Why is the Moon still interesting? This question, aligned with our goal of project-based learning (Henderson, 2019; Lenz et al., 2015), allowing each student the autonomy to explore and discover for themselves the reasons the Moon remains intriguing.

Once the essential guiding question was established, the initial activities involved students learning about the criteria for selecting Moon landing sites, identifying potential issues, and using the school field as an analogue site for mission operations. The students defined the criteria for suitable landing sites, which included low slopes, freedom from debris and obstructions, and accessibility for rovers. Students were then challenged to use Google Maps and direct observation to assess the suitability of landing sites in the school field. The varying weather conditions at the time provided diverse landscapes and challenges, thereby enriching the learning experience of the students. Students learned about aerial photography and remote sensing and how to use these tools to make informed decisions about landing sites. In the field, the students discussed and recorded their observations regarding the topography and landscapes. Based on the student data collected, they had to reach a consensus on the most suitable landing area.

The second activity involved students designing a parachute and landing system that would cushion the landing of an egg dropped from a height. Eggs are an effective analogue for a planetary payload and are easy to assess post-drop (Kehr, 2009). This activity demonstrated the complexities of spacecraft landing and how various weather conditions could impact the landing process. Many students wanted to try multiple techniques and were keen on refining their parachute systems.

The third activity focused on rover operations and deployment. The students began by exploring RC vehicles, their components, and user manuals. The students learned about the various components of RC cars and their function, including the chassis, transmission, motor, suspension, shocks, wheels, and tires. Students also investigated previous rover missions and some issues these missions encountered such as the damaged wheels on the Curiosity Rover (Rankin, 2022).

After reviewing the RC vehicles, the students were tasked with learning how to operate them. This learning was accomplished by setting up various obstacle courses for students to navigate within the classroom and the gymnasium. Each student had multiple attempts and opportunities to familiarize themselves with the relevant technology and were engaged throughout the process.

For the final activity, students used the school field with RC cars to simulate a Moon/Mars rover mission. The essential components of the rover operations were discussed and included communication,

target selection, and data acquisition. The objective was for one group of students to act as the eyes of the rover in the field and to relay this information back to their peers in the command center through video conferencing using Zoom. The students in the command center analyzed the visual information and were responsible for remotely operating the vehicles. The challenge involved the field team providing directions to the remote operators to navigate the RC vehicles to various regions of interest. After completing the tasks, the students switched roles and repeated the activity.

Through formative observations and direct student feedback, the students reported that the activities were enjoyable, engaging, and informative. The students operated the equipment respectfully and carefully, approaching the operations with maturity and interest. Additionally, the students demonstrated a keen understanding of the purpose behind using RC cars as analogues for rovers to explore planetary surfaces.

Stonewall Quarry Park Activity

For this activity, the MLaPS group hosted 17 grade 11 and 12 astronomy students at Stonewall Quarry Park for a Mars Rover Mission simulation. This mission was designed to simulate the operations of a rover on Mars, and the Stonewall Quarry was selected because it has some geological similarities to Mars. The mission goals for the activity included students identifying Stonewall Quarry geology and several areas of interest for the rover to explore. The students were presented with the following three questions as mission goals:

1. If it looks like there are pits and hills then are there geological differences with elevation?
2. What causes some of the color and brightness differences we see across the site?
3. For example, some areas are reddish, some are grey-beige, and some are very white.
4. For a target of interest, what is its priority for returning it to Earth?

Identify the priority as high, medium, or low?

The rover simulator the MLaPS group brought to the site was equipped with 3 science instruments and a drone imager to take pictures, see Figure 4.

Students were instructed about how the scientific instruments functioned, the kind of data they produced, and they analyzed the real-time data produced by the instruments. The instruments and technology the students engaged with are as follows:

- A drone imager used to take pictures, select targets of interest, and provide rover path planning.
- A reflectance spectrometer to determine minerals present at the site.
- A Raman spectrometer to determine minerals present at the site.
- An X-ray diffractometer to determine what crystalline minerals are present.

As with the Planetary Rover Field Trials at Gypsumville, Manitoba, the students were organized into a Mission Control and Rover group. Once the Mission Control group analyzed the photos taken for potential sites to explore, targets were selected, and students analyzed the target sample spectrographs to determine the chemical constituents of each sample. In addition, students identified samples to bring back to Earth based upon weight restriction criteria. The two landing sites that students chose for investigation can be seen in Figure 5 as Landing Site 1 (LS1) and Landing Site 2 (LS2).



Figure 4: Mars Rover Simulator.



Figure 5: Stonewall Quarry Park Landing Site 1 (LS1) and 2 (LS2).

All the students had an opportunity to participate in what it is like to be a team scientist at mission control during the Mars Rover simulation. Students made decisions using limited data, time, and resources, while being part of a mission control team or the Rover team. Students were fully engaged in the collaboration process that saw them work together as a team to make decisions and solve problems for their rover simulation. From this unique hands-on activity, the students had the opportunity to experience what scientists go through in their day-to-day work and the importance of having to apply critical thinking, rely on teamwork, and apply their scientific knowledge to solve problems.

Crater Simulation Activity

For this activity, two sections of grade 9 students explored "celestial objects" (Manitoba Education & Training, 2000, p. 4.2), asteroid impacts, and other celestial bodies from the grade 9 science astronomy unit. To engage students with a context for the activity, they imagined a scenario where the Earth was in jeopardy from an asteroid that was on a collision course with the Earth. The teacher discussed recent scientific news such as the Double Asteroid Redirection Test (DART) undertaken by NASA. The DART test "is the first planetary defense mission to demonstrate the kinetic deflection technique" (Nakano et al., 2022, p. 1) and was the first attempt by NASA at moving an asteroid in space. The students discussed the following questions: 1) How could the asteroid be stopped or redirected before impacting Earth? 2) How much damage would an asteroid inflict on the surface of the Earth? and 3) How would an asteroid impact affect life on Earth?

Using a crater simulation lab that was modified from a NASA "Impact Crater" (NASA, 2024b, p. 61) activity, the grade 9 students dropped a 1.7 cm. diameter marble from different heights (10 cm. to 100 cm.) into a pan of flour covered with a thin layer of sprinkled cocoa powder. The cocoa powder served to reveal the ejecta and rays of the impact crater. Students measured the diameter of the craters resulting from the dropped marble to determine how increasing the height of the marble affected the size of the crater.

Students collected drop height (cm.) vs. crater diameter (cm.) data, plotted their data, and discovered a linear relationship. Students predicted what the lab results would reveal prior to the lab, observed the data through the lab activity, then explained their results. The predict, observe, explain (POE) pedagogical strategy was employed and is easy for students to understand and provides a framework for the teacher to conduct the lab activity through (Haysom & Bowan 2010; Lukie, 2023; Lukie, 2024a). The crater apparatus is depicted in Figure 6 and in Figure 7, a 3.5 cm. crater is depicted that resulted from a marble drop height of 60 cm.



Figure 6: Crater Simulation Apparatus.

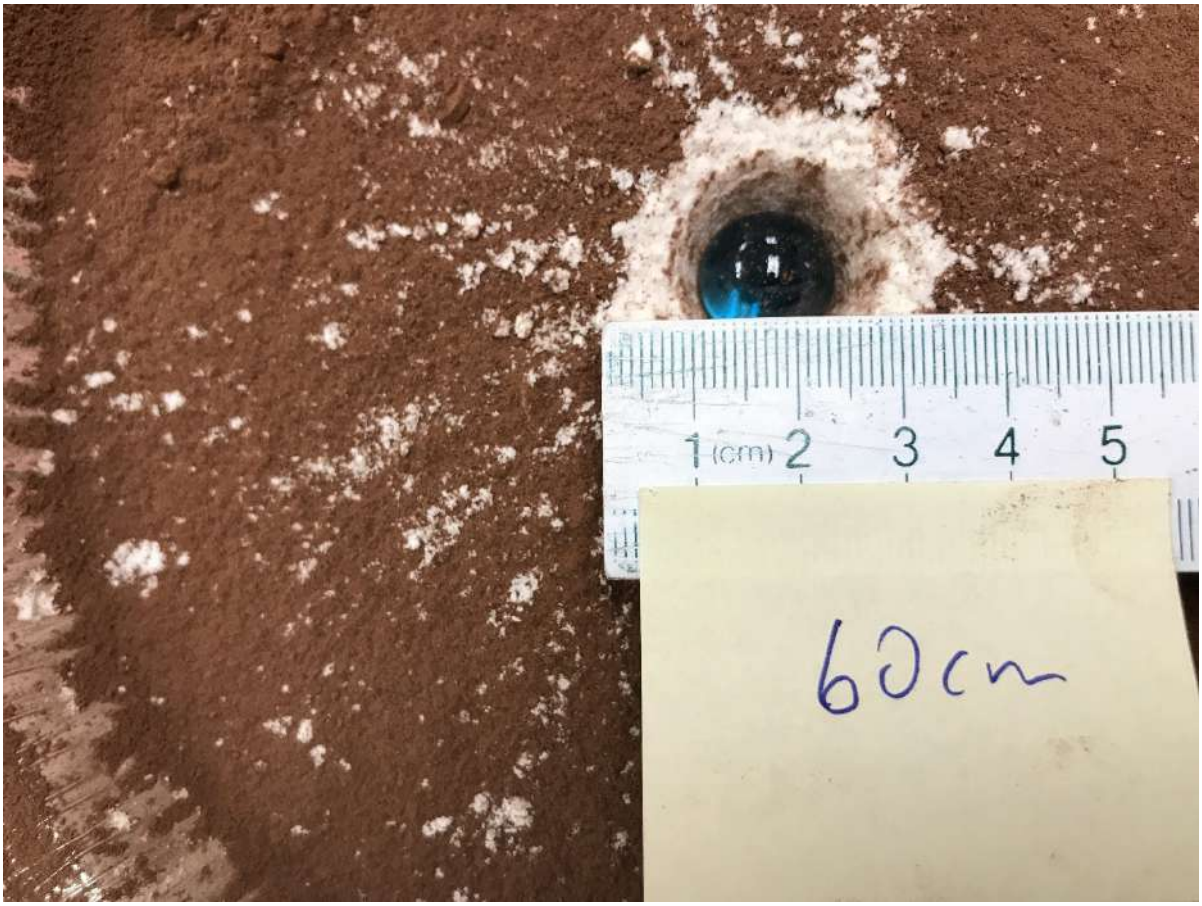


Figure 7: An Example 3.5 cm. Crater Resulting from a 60 cm. Marble Drop Height.

Students plotted the average crater diameter (calculated from the average of 3 trial measurements) as a function of drop height and plotted the data using Excel, see Figure 8. The plot of the trendline suggests that the average crater diameter varies linearly with the drop height since the coefficient of determination $R^2 = 0.96$ reflects a high degree of correlation. The correlation coefficient $R = 0.98$ is very close to 1 and suggests a very strong linear relationship.

The equation of the trendline, $y = 0.03x + 2.02$ is linear since as the drop height increases, the average width of the crater also increases. From the plot of the data the students recognized that for a 0 cm. drop height or no drop height, the average crater diameter equaled the y-intercept or 1.7 cm., which is the diameter of the marble hving coordinates (0, 1.7) or (x = drop height in cm., y = crater diameter in cm.). Students compared their prediction of the trendline before the collection of data and after. Many of the students predicted that the trendline would increase but did not predict a linear function and this served as a learning experience for students about the prediction and interpretation of experimental data.

The students were surveyed about how engaged they were with the crater activity using a Likert (Joshi, 2015) scaled questionnaire. The Likert scale was ranked from zero (not engaged) to five (very engaged) and revealed that for n = 24, 80% of the students self-reported a four and were therefore engaged with the activity. Through the crater activity, students practiced their science inquiry skills of teamwork, communication, recording data, analyzing, and interpreting results to formulate a conclusion.

Significance to Education

STEM education and the activities that have been presented in this paper are important in helping to develop the core STEM competencies of students. According to Jang (2016) and Sánchez Carracedo et al. (2018), these core STEM competencies include: 1) the solving of problems through critical thinking, reading comprehension, and complex problem solving, 2) working with people through

active listening, speaking, and writing, 3) working with technology, and 4) working with resources through time management, learning strategies, and active learning.

The STEM based activities allow the teacher to dwell in the zone between the mandated 'curriculum as plan' and 'curriculum as lived' (Aoki, 2005). Teaching 'curriculum-as-lived' means including the lived experiences of students within a given context, such as space science, and is supported by Roth (2013) who contended that student understanding benefits from a science curriculum that is lived. In contrast, teaching the 'curriculum-as-planned' is often decontextualized from students' lived experience and means teaching the prescribed curriculum mandated by the government curriculum writers.

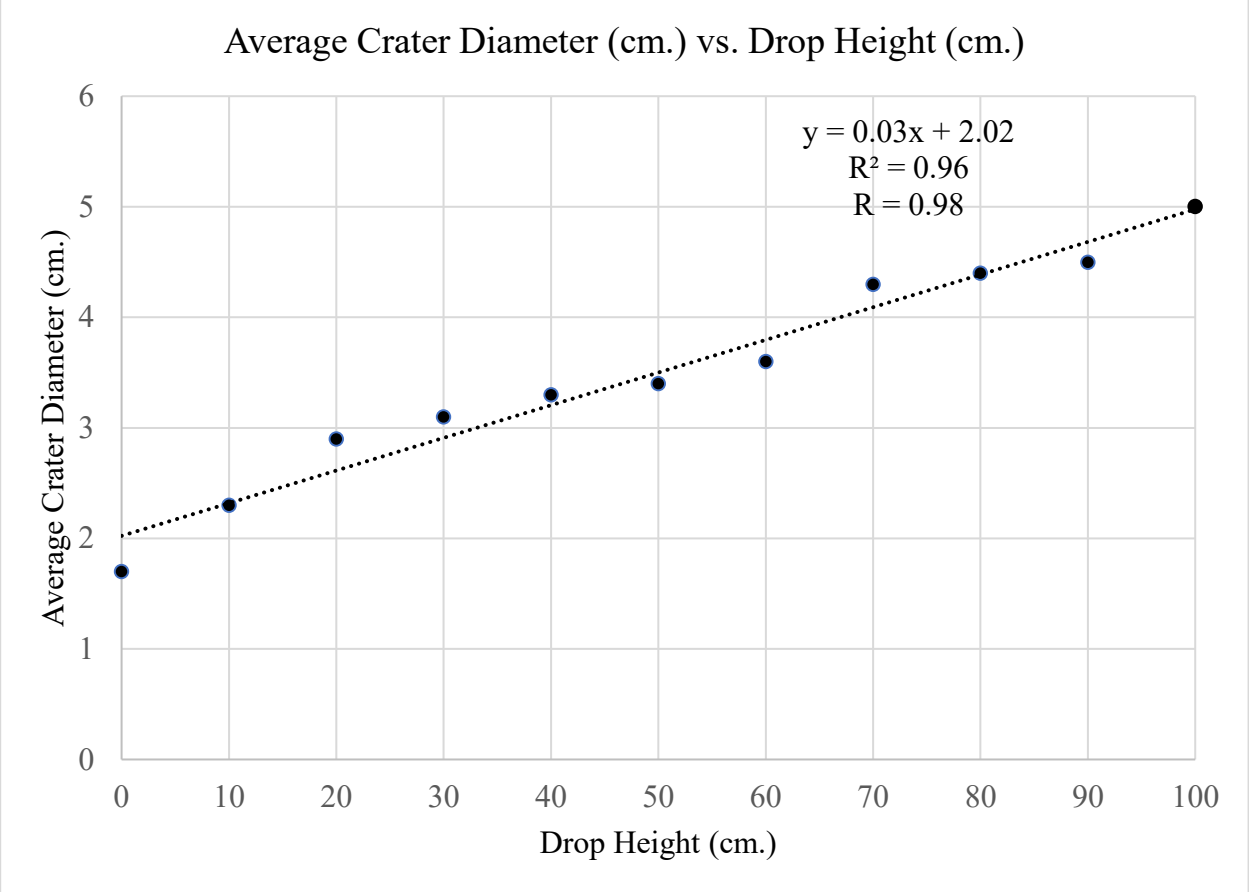


Figure 8: Plot of the Average Crater Diameter as a Function of Drop Height.

The study of historical events related to space exploration through the schoolyard activity and the unit developed about 'Canadians in Space' each promote the teaching of the history of science (HOS) in the K-12 science classroom. Including such historical events related to the exploration of space and space science adds understanding to the science classroom (McKinney & Michalovic, 2004) and fosters students' deeper understanding of the nature of science (Rudge & Howe, 2004).

Some of the activities that have been presented for the Rover Field Trials promote an inquiry approach to teaching. Fostering such an inquiry-based teaching approach in the classroom is important because according to the National Research Council (1996), inquiry-based teaching and learning helps to develop students' understanding about how scientists study the natural world and helps students develop their understanding and knowledge of scientific ideas. Colburn (2000) contended that inquiry-based instruction is "equal or superior" (p. 44) to other instructional methods resulting in increased student achievement. Indeed, Hattie (2023) recently reported the effectiveness of inquiry-based teaching because it involves students learning to analyze and reason through the process of observing, posing questions, and engaging in experimentation. The inquiry teaching approach or 'discovery teaching'

fosters students' concept understanding, critical thinking skills, and understanding of inquiry skills, and "meets the goal of scientific literacy proposed to be a major goal by many science curricula, science education scholars, and policy documents" (Ozdem-Yilmaz & Bilican, 2020, p. 185).

When students engage in learning about science through the context of space and the Rover Field Trials, they also learnin about the nature of science (NOS). Stinner (1994, 2006) suggested that there is strong evidence indicating that learning methods that are contextually embedded in the classroom are useful and essential for student understanding. The STEM curriculum and activities that have been presented in this paper promote the following nine key elements of the NOS as described by McComas (2004) and include: 1) science relies on empirical evidence, 2) there exists a tentative but durable nature to scientific knowledge, 3) the scientific method does not rely on prescribed steps, 4) the process of science is creative, 5) theories and laws are related but represent distinct forms of scientific knowledge, 6) science is subjective, 7) scientific knowledge develops in the context of social influences, history, and culture, 8) technology and science are influence each other, and 9) science cannot answer all questions humans have.

For example, when students were in the field using scientific instruments to analyze collected samples, they collected empirical evidence and observed that data is important to science and scientists. When students collaborated to decide targets of interest based upon visual data, they experienced the social aspects of working in a science team and students were exposed to the importance of creativity when designing their egg drop activity as part of the school yard activity.

The Planetary Rover Field Trial activities we developed involved an external educational resource or field trip component where students had the opportunity to learn about space science 'out-of-classroom' at Stonewall Quarry Park and Gypsumville, Manitoba. According to Kisiel (2006), these 'out-of-classroom' student learning experiences may potentially benefit students by promoting their increased understanding of science and their increased appreciation for science. Through the hands-on activities at these locations, students may become more engaged with their learning and may potentially help them to understand that space science is more than a subject studied at school. Student engagement is important because to be engaged with and in their learning, students must recognize that the topics they learn about in the classroom should relate to and mean something to their lives (Lukie 2015, 2021, 2024b; Lukie & Thomas, 2026; Willms et. al., 2009).

Limitations

The transferability of research findings depends on the transparency of the limitations for the study (Kuper et al., 2008). Therefore, we present two key limitations to guide considerations regarding the transferability of the research findings.

Firstly, as part of our project, we wanted to measure the student engagement for each of the activities to determine if these activities would be effective in a classroom context. According to Azevado (2015), engagement has been described as follows: 1) student academic achievement and performance, 2) student classroom behaviors, 3) student approaches to interacting with instruction and instructional materials, 4) teacher practices in the classroom, 5) students' self-perceptions of their beliefs in managing individual and contextual aspects of their learning, 6) students' enactment of cognitive, affective, metacognitive, motivational, and social processes in academic contexts such as in the classroom, and 7) features of instructional and learning contexts designed to initiate, sustain, and foster learning.

However, there are some general concerns in the literature that create challenges for the measurement of engagement and include: 1) the lack of agreement on a definition for engagement, 2) the developmental and individual differences of the participants for whom engagement is being measured, and 3) problems with identifying the sources of student engagement (Sinatra et al., 2015). There exists in the literature many instruments that claim to measure student engagement but each of these instruments has both their strengths and their weaknesses (Fredricks & McColskey, 2012).

Therefore, to determine student engagement for each of our project activities, we relied on the teacher's observation of their students to determine levels of student engagement. Azevado (2015) contended that by using observational methods "researchers can gather detailed data about what learners are actually doing as they engage in an activity, and these data can augment self-reported data" (p. 87). These types of teacher observational markers may include student facial expressions, student emotions, student summaries of work products (e.g. lab reports), student self-reports through questionnaires, student knowledge construction through notetaking and drawing, and the quality of student discourse with the teacher and other students.

For the Planetary Rover Field Trials, Schoolyard Activities, Stonewall Quarry Park Activity, and Crater Simulation the teachers all reported that students were engaged with the activities based upon observational markers. These markers included: 1) positive student facial expressions, 2) positive student emotions, 3) positive student knowledge construction through notetaking during the activities, and 4) the positive quality of student discourse with their peers and teachers. Importantly, all the teachers indicated an increase in students' social engagement as students worked in groups much like research scientists do in practice. We used a Likert scale to survey student engagement only with the Crater Simulation where 80% of the students self-reported a high engagement with the activity. Future research may include incorporating Likert engagement surveys for the other activities and there are plans to interview teachers and students about their engagement for subsequent space science activities.

Secondly, the students who participated in our project were only recruited from schools located within one large metropolitan city in one province in Western Canada that used a standardized science curriculum. Therefore, a limitation is that the findings may not reflect the experiences of students studying science internationally and for other Canadian students in other jurisdictions. Further studies are required across countries and internationally to determine the transferability of our findings and the implications the space science activities have for pedagogy. However, for teachers using an international science curriculum the activities may be easily integrated into local context space science and astronomy curriculum as the activities are easily modified for teaching and enrichment purposes. Bassey (2001) suggests there are difficulties with generalizing qualitative research, and it may be the case that our study may only be unique to a Canadian school science perspective with limited generalizability to other jurisdictions.

Conclusion

This project has demonstrated that planetary exploration can serve as an effective context for engaging K-12 students in STEM and the positive potential benefits of an interdisciplinary collaboration between university geography and education departments to engage science students. Within this theme, a range of activities and resources can be developed that are appropriate and engaging for K-12 students that are both scalable and adaptable to different education levels.

The educational lessons and activities we developed to promote planetary science when engaging K-12 students in STEM are available online through our Department of Geography and the Manitoba Lunar and Planetary STEM Network. We encourage K-12 teachers to incorporate our lessons and activities into their classrooms to inspire students and foster their interest in space science.

Acknowledgement of Funding:

This study was supported by the Canadian Space Agency STEM grant #21STEMG27.

References

Aoki, T. T. (2005). Ch.6. Teaching as indwelling between two worlds (1986/1991). In W. F. Pinar & R. L. Irwin (Eds.), *Curriculum in a new key: The collected works of Ted T. Aoki* (pp. 159-165). Lawrence Erlbaum Associates.

Artigue, M. & M Blomhøj (2013). Conceptualizing inquiry-based education in mathematics. *ZDM Mathematics Education, 45*(6), 797–810. https://doi.org/10.1007/s11858-013-0506-6

Athanasopoulos, H. K. (2019). The Moon Village and Space 4.0: The 'open concept' as a new way of doing space? *Space Policy*, *49*(2019), 101323. https://doi.org/10.1016/j.spacepol.2019.05.001

Azevedo, R. (2015). Defining and measuring engagement and learning in science: Conceptual, theoretical, methodological, and analytical issues. *Educational Psychologist*, *50*(1), 84-94.

Bannatyne, B. B. & McCabe, H. R. (1984). Manitoba crater revealed. *Geos, 13*, 10–13.

Bassey, M. (2001). A solution to the problem of generalisation in educational research: Fuzzy prediction. *Oxford Review of Education*, *27*(1), 5-22. https://doi.org/10.1080/03054980123773

Biggs, J. (1996). Enhancing teaching through constructive alignment. *Higher Education*, *32*, 347–64. https://doi.org/10.1007/BF00138871

Bogue, R. (2012) Mars Curiosity: Sensors on the red planet. *Sensor Review*, *32*(3), 187-193. https://doi.org/10.1108/02602281211233151

Breiner, J. M., Harkness, S. S., Johnson, C. C., & Koehler, C. M. (2012). What is STEM? A discussion about conceptions of STEM in education and partnerships. *School Science and Mathematics*, *112*(1), 3-11. https://doi.org/10.1111/j.1949-8594.2011.00109.x

CSA (2024). *CSA's STEM activities*. https://iseb.space/member/csa/

Cloutis, E. A., Berard, G., Mann, P., Stromberg, J. (2011). The Gypsumville – Lake St. Martin Impact structure: Shocked carbonates, intracrater evaporites, and cryptoendoliths. Analogue Sites for Mars Missions: MSL and beyond. March 5-6, 2011. Houston, TX, USA, abstract #6009.

Cloutis, E. A., Stromberg, J., Applin, D., Connell, S., Kubanek, K., Kuik, J., Lechowicz, A., Parkinson, A., Ramirez, M., Turenne, N., Cieszecki, J., Germinario, M., Kum, R., Parson, R., Walker, R., Wiens, E., Wiens, J. & Mertzman, S. (2021). The Lake St. Martin impact structure (Manitoba, Canada): A simulated rover exploration of a sulfate-bearing impact crater. *Planetary and Space Science*, *208*(2021), 105336. https://doi.org/10.1016/j.pss.2021.105336

Cloutis, E., Kiddell, C. B., Misner, A., Lukie, M., Ferguson, P. (2022). The Manitoba Lunar and Planetary STEM Network (MLaPS): A K-12 Stem Initiative. *53rd Lunar and Planetary Science Conference*, held 7-11 March, 2022 at The Woodlands, Texas. LPI Contribution No. 2678, 2022, id.1663. https://www.hou.usra.edu/meetings/lpsc2022/pdf/1663.pdf

Colburn, A. (2000). An inquiry primer. *Science Scope, 23*(6), 42–44. www.jstor.org/stable/43180086

Connell, S. A., Applin, D. M., Turenne, N. N., Cloutis, E. A., Kiddell, C., Sidhu, S., Mann, P., Ferguson, P., Driedger, M., Campos, J., Barari, A., May, M., Reddy, V., Mertzman, S. A, & Trang, D. (2024). The Iris CubeSat mission: Science payload description for a pathfinder geological space weathering investigation. *Acta Astronautica, 216*(2024), 381-394. https://doi.org/10.1016/j.actaastro.2024.01.009

Contente, J. & Galvão, C. (2022). STEM education and problem-solving in space science: A case study with CanSat. *Education Sciences*, *12*(4), 251. https://doi.org/10.3390/educsci12040251

Creech, S., Guidi, J., & Elburn, D. (2022). *Artemis: An Overview of NASA's Activities to Return Humans to the Moon*, 2022 IEEE Aerospace Conference (AERO), Big Sky, MT, USA, 2022, 1-7. https://doi.org/10.1109/AERO53065.2022.9843277

Farley, K. A., Williford, K. H., Stack, K. M., Bhartia, R., Chen, A., de la Torre, M., Hand, K., Goreva, Y., Herd, C. D. K., Hueso, R., Liu, Y., Maki, J. N., Martinez, G., Moeller, R. C., Nelessen, A., Newman, C. E., Nunes, D., Ponce, A., Spanovich, N., Willis, P. A., Beegle, L. W., Bell III, J. F., Brown, A. J., Hamran, S. -E., Hurowitz, J. A., Maurice, S., Paige, D. A., Rodriguez-Manfredi, J. A., Schulte, M., & Wiens, R. C. (2020) Mars 2020 mission overview. *Space Science Reviews*, *216*(142), 1-41. https://doi.org/10.1007/s11214-020-00762-y

Francis, R., Williford, K., Stack, K. M., Spanovich, N., Milkovich, S., Calef, F. (2018). The ROASTT-2017 training exercise for the Mars 2020 science team. *49th Annual Lunar and Planetary Science Conference, 49*, abstract #2083.

Fredricks, J. A., & McColskey, W. (2012). The measurement of student engagement: A comparative analysis of various methods and student self-report instruments. In S. L. Christenson, A. L. Reschly, & C. Wylie (Eds.), *Handbook of research on student engagement* (pp. 763–782). Springer.

Groemer, G., Soucek, A., Frischauf, N., Stumptner, W., Ragonig, C., Sams, S., Bartenstein, T., Häuplik-Meusburger, S., Petrova, P., Evetts, S., Sivenesan, C., Bothe, C., Boyd, A., Dinkelaker, A., Dissertori, M., Fasching, D., Fischer, M., Fo€ger, D., Foresta, L., Fritsch, L., Fuchs, H., Gautsch, C., Gerard, S., Goetzloff, L., Gołębiowska, I., Gorur, P., Groemer, G., Groll, P., Haider, C., Haider, O., Hauth, E., Hauth, S., Hettrich, S., Jais, W., Jones, N., Taj-Eddine, K., Karl, A., Kauerhoff, T., Khan, M.S., Kjeldsen, A.,

Klauck, J., Losiak, A., Luger, M., Luger, T., Luger, U., McArthur, J., Moser, L., Neuner, J., Orgel, C., Ori, G.G., Paternesi, R., Peschier, J., Pfeil, I., Prock, S., Radinger, J., Ramirez, B., Ramo, W., Rampey, M., Sams, A., Sams, E., Sandu, O., Sans, A., Sansone, P., Scheer, D., Schildhammer, D., Scornet, Q., Sejkora, N., Stadler, A., Stummer, F., Taraba, M., Tlustos, R., Toferer, E., Turetschek, T., Winter, E., Zanella-Kux, K. (2014). The MARS2013 Mars analog mission. *Astrobiology*, *14*(5), 360–376. https://doi.org/10.1089/ast.2013.1062.

Hattie, J. (2023). *Visible learning: The sequel: A synthesis of over 2,100 meta-analyses relating to achievement*. Routledge.

Haysom, J, & Bowen, M. (2010). *Predict, Observe, Explain: Activities enhancing scientific understanding*. NSTA Press.

Henderson, M. (Ed.) (2019). *Catch a fire: Fuelling inquiry and passion through project-based learning*. Portage & Main Press.

Hernandez-de-Menendez, M., Escobar Díaz, C. A., & Morales-Menendez, R. (2020). Engineering education for smart 4.0 technology: A review. *International Journal on Interactive Design and Manufacturing*, *14*, 789-803. https://doi.org/10.1007/s12008-020-00672-x

Hmelo-Silver, C. E. (2004). Problem-based learning: What and how do students learn? *Educational Psychology Review*, *16*(3), 235-266. https://doi.org/10.1023/B:EDPR.0000034022.16470.f3

Jang, H. (2016). Identifying 21st century STEM competencies using workplace data. *Journal of Science Education and Technology*, *25*, 284-301. https://doi.org/10.1007/s10956-015-9593-1

Joshi, A., Kale, S., Chandel, S., & Pal, D. K. (2015). Likert scale: Explored and explained. *British Journal of Applied Science & Technology*, *7*(4), 396-403. https://doi.org/10.9734/BJAST/2015/14975

Kehr, L. (2009). Designing payloads. *Science and Children*, *46*(*9*), 22-26.

Kisiel, J. (2006). Making Field Trips Work: Strategies for creating an effective learningmexperience. *The Science Teacher*, *73*(1), 46–48. http://www.jstor.org/stable/24139117

Kruzelecky, R. V., Latendresse, V., Lavoie, J., Nakhaei, A., Jamroz, W., Cloutis, E., Lappas, V., Underwood, C., Gao, Y., Sweeting, M., Sorensen, T., & Mouginis-Mark, P. (2015). Lunar dust in-situ experiment and operational considerations for the potential CABLE Canadian American British Lunar Explorer. *Proceedings of ICES 45: 45th International Conference on Environmental Systems;* July 12-16, 2015; Bellevue, WA, USA; paper ICES-2015-334.

Kruzelecky, R., Murzionak, P., Peng, Q.-Y., Sinclair, I., Corriveau, M., Cloutis, E., Parkinson, A., Dagdick, B., St-Amour, A., Gao, Y., Bridges, C., Baresi, N., Fabris, A. L., Rowe, S., Silva, N., Rosa, P., Gameiro, M., Walker, R. & Vennekens, J. (2022). Lunar Volatiles and Mineralogy Mapper (LVMM) payload for the lunar Volatile and Mineralogy Mapping Orbiter (VMMO). *SPIE Optics & Photonics Conference*; August 21-25, 2022; San Diego, CA, USA; paper OP22O-OP424-7.

Kuper, A., Lingard, L., & Levinson, W. (2008). Critically appraising qualitative research. *British Medical Journal*. https://doi.org/10.1136/bmj.a1035

Lenz, B., Wells, J., & Kingston, S. (2015). *Transforming schools using project-based learning, performance assessment, and common core standards*. John Wiley & Sons.

Lukie, M. P. (2015). Fostering student metacognition and personal epistemology in the physics classroom through the pedagogical use of mnemonic strategies. *Alberta Science Education Journal*, *44*(1), 25-31.

Lukie, M. P. (2021). *High school physics students', high school physics teachers', and university physics professors' conceptions about what it means to understand physics: A phenomenographic study*. [Doctoral dissertation, University of Alberta]. Education and Research Archive. https://ualberta.scholaris.ca/server/api/core/bitstreams/01a1f095-a929-4767-a282-22c519b67629/content

Lukie, M. P. (2023). Jumping aluminum foil strip demonstration. *Alberta Science Education Journal*, *49*(1), 5-11.

Lukie, M. P. (2024a). Smartphone inquiry activity investigating the inverse square law of light. *Alberta Science Education Journal*, *50*(1), 15-26.

Lukie, M. P. (2024b). My doctoral journey. A story from a high school physics teacher turned assistant professor in science education: Chapter 4. In B. Bradford (Ed.), *The Doctoral Journey (Volume 2),* (pp. 45-64). Brill.

Lukie, M. P. & Thomas, G. P. (2026). What does it mean to understand physics? A phenomenographic study across high school physics students, high school physics teachers, and university physics professors. *Research in Science Education*, (May 11, 2026), 1-26. https://doi.org/10.1007/s11165-026-10346-5

Manitoba Education & Training (2000). *Senior 1 science: A foundation for implementation*. Government of Manitoba.

Manitoba Education, Citizenship & Youth (2006a). *Senior 2 social studies: Geographic issues of the 21st century: Manitoba curriculum framework of outcomes and a foundation for implementation*. The Government of Manitoba.

Martín-Páez, T., Aguilera, D., Perales-Palacios, F. J., & Vílchez-González, J. M. (2019). What are we talking about when we talk about STEM education? A review of literature. *Science Education*, *103*(4), 799-822. https://doi.org/10.1002/sce.21522

McCabe, H. R. & Bannatyne, B. B. (1970). Lake St. Martin crypto-explosion crater and geology of surrounding area. *Geological Survey of Manitoba*, *3*(70), 79.

McComas, W. F. (2004). Keys to Teaching the Nature of Science: Focusing on NOS in the science classroom. *The Science Teacher*, *71*(9), 24–27. http://www.jstor.org/stable/24155554

McKinney, D., & Michalovic, M. (2004). Teaching the stories of scientists and their discoveries. *The Science Teacher*, *71*(9), 46–51. http://www.jstor.org/stable/24155559

Morrow, R., Dixon, M., Thirsk, R., & Steinberg, M. (2006) Tomatosphere – To Mars and beyond: An education outreach project for primary and secondary schools. 57th International Astronautical Congress, October 2-6, 2010; Valencia, Spain. https://doi.org/10.2514/6.IAC-06-E1.3.03

Nakano, R., Hirabayashi, M., Agrusa, H. F., Ferrari, F., Meyer, A. J., Michel, P., Raducan, S. D. & Zhang, Y. (2022). NASA's Double asteroid redirection test (DART): Mutual orbital period change due to reshaping in the near-earth binary asteroid system (65803) Didymos. *The Planetary Science Journal*, *3*(7), 1-16.

NASA (2024a). *Teach: STEM Activities*. https://www.nasa.gov/stem-content/teach-stem-activities/

NASA (2024b). *Exploring the moon -- A teacher's guide with activities, NASA EG-1997-10-116-HQ*. https://www.nasa.gov/wpcontent/uploads/2009/07/58199main_Exploring.The_.Moon_.pdf?emrc=2135d0

NASA (2026a). *Artemis II Flight Day 6: Crew Wraps Historic Lunar Flyby*. https://www.nasa.gov/blogs/artemis/

NASA (2026b). *NASA's Artemis II Crew Eclipses Record for Farthest Human Spaceflight*. https://www.nasa.gov/news-release/nasas-artemis-ii-crew-eclipses-record-for-farthest-human-spaceflight/

National Research Council. (1996). *National science education standards. National Committee on Science Education Standards and Assessment*: National Academic Press.

Osinski, G. R., Battler, M., Caudill, C. M., Francis, R., Haltigin, T., Hipkin, V. J., Kerrigan, M., Pilles, E.A., Pontefract, A., Tornabene, L.L., Allard, P., Bakambu, J.N., Balachandran, K., Beaty, D.W., Bednar, D., Bina, A., Bourassa, M., Cao, F., Christoffersen, P., Choe, B.-H., Cloutis, E. A., Cote, K., Cross, M., D'Aoust, B., Draz, O., Dudley, B., Duff, S., Dzamba, T., Fulford, P., Godin, E., Goordial, J., Galofre, A.G., Haid, T., Harrington, E., Harrison, T., Hawkswell, J., Hickson, D., Hill, P., Innis, L., King, D., Kissi, J., Laughton, J., Li, Y., Lymer, E., Maggiori, C., Maloney, M., Marion, C.L., Maris, J., Mcfadden, S., McLennan, S.M., Mittelholz, A., Morse, Z., Newman, J., O'Callaghan, J., Pascual, A., Patel, P., Picard, M., Pritchard, I., Poitras, J. T., Ryan, C., Sapers, H., Silber, E. A., Simpson, S., Sopoco, R., Svensson, M., Tolometti, G., Uribe, D., Wilks, R., Williford, K. H., Xie, T., Zylberman, W. (2019) The CanMars Mars sample return analogue mission. *Planetary and Space Science, 166*, 110–130. https://doi.org/10.1016/j.pss.2018.07.011

Ozdem-Yilmaz, Y., & Bilican, K. (2020). Discovery Learning—Jerome Bruner. In B. Akpan, & T. J. Kennedy (Eds.), *Science education in theory and practice: An introductory guide to learning theory* (pp. 177-190). Springer.

Pekrun, R. (2006). Students engagement in science. Contextual framework for PISA 2006, 19-32. https://www.acer.org/files/pisa2006_context_framework.pdf#page=19

Qadi, A., Cloutis, E. A., Samson, C., Whyte, L., Ellery, A., Bell III, J. F., Berard, G., Boivin, A., Haddad, E., Lavoie, J., Jamroz, W., Kruzelecky, R., Mack, A., Mann, P., Olsen, K., Perrot, M., Popa, D., Rhind, T., Sharma, R., Stromberg, J., Strong, K., Tremblay, A., Wilhelm, R., Wing, B., Wong, B. (2015) Mars methane analogue mission: mission simulation and rover operations at Jeffrey mine and Norbestos mine Quebec, Canada. *Advances in Space Research, 55*(10), 2414–2426. https://doi.org/10.1016/j.asr.2014.12.008

Rankin, A., Patel, N., Graser, E., Wang, J. K. F., & Rink, K. (2022, March). Assessing mars curiosity rover wheel damage. In *2022 IEEE Aerospace Conference (AERO)* (pp. 1-19). IEEE.

Roth, W. M. (2013). *What more in/for science education: An ethnomethodological perspective (Vol. 1)*. Sense Publishers.

Rudge, D. W., & Howe, E. M. (2004). Incorporating history into the science classroom. *ThenScience Teacher*, *71*(9), 52–57. http://www.jstor.org/stable/24155560

Sánchez Carracedo, F., Soler, A., Martín, C., López, D., Ageno, A., Cabré, J., Garcia, J., Aranda, J. & Gibert, K. (2018). Competency maps: An effective model to integrate professional competencies across a STEM curriculum. *Journal of Science Education and Technology*, *27*, 448-468. https://doi.org/10.1007/s10956-018-9735-3

Sinatra, G. M., Heddy, B. C., & Lombardi, D. (2015). The challenges of defining and measuring student engagement in science. *Educational Psychologist*, *50*(1), 1-13. https://doi.org/10.1080/00461520.2014.1002924

Smith, G. A. (2002). Place-based education: Learning to be where we are. *Phi Delta Kappan*, *83*(8), 584–594. https://www-jstor-org.uwinnipeg.idm.oclc.org/stable/20440205

Smith, G. A (2011). Linking place-based and sustainability education at Al Kennedy High School. *Children Youth and Environments*, *21*(1), 59–78.

https://www-jstor-org.uwinnipeg.idm.oclc.org/stable/10.7721/chilyoutenvi.21.1.0059

Squyres, S.W., Arvidson, R. E., Bell III, J.F., Calef III, F., Clark, B. C., Cohen, B. A., Crumpler, L. A., de Souza Jr., P. A., Farrand, W. H., Gellert, R., Grant, J., Herkenhoff, K. E., Hurowitz, J. A., Johnson, J. R., Jolliff, B. L., Knoll, A. H., Li, R., McLennan, S. M., Ming, D. W., Mittlefehldt, D. W., Parker, T. J., Paulsen, G., Rice, M. S., Ruff, S. W., Schr€oder, C., Yen, A. S., Zacny, K., (2012) Ancient impact and aqueous processes at Endeavour crater, Mars. *Science*, *336*(6081), 570-576. https://doi.org/10.1126/science.1220476.

Stinner, A. (1994). Providing a contextual base and a theoretical structure to guide the teaching of high school physics. *Physics Education*, *29*(6),375–81. https://doi.org/10.1088/0031-9120/29/6/007

Stinner, A. (2006). The large context problem (LCP) approach. *Interchange*, *37*, 19–30. https://doi.org/10.1007/s10780-006-8398-9

Stoker, C. R., Cabrol, N. A., Roush, T. R., Moersch, J., Aubele, J., Barlow, N., Bettis III, E. A.,Bishop, J., Chapman, M., Clifford, S., Cockell, C., Crumpler, L., Craddock, R., De Hon, R., Foster, T., Gulick, V., Grin, E., Horton, K., Hovde, G., Johnson, J. R., Lee, P. C., Lemmon, M. T., Marshall, J., Newsom, H. E., Ori, G. G., Reagan, M., Rice, J. W., Ruff, S. W., Schreiner, J., Sims, M., Smith, P. H., Tanaka, K., Thomas, H. J., Thomas, G., Yingst, R. A. (2001). The 1999 Marsokhod rover mission simulation at Silver Lake, California: mission overview, data sets, and summary of results. *Journal of Geophysical Research: Planets*, *106*(E4), 7639–7663. https://doi.org/10.1029/1999JE001178

Stromberg, J. M., Parkinson, A., Morison, M., Cloutis, E., Casson, N., Applin, D., Poitras, J., Moreras Marti, A., Maggiori, C., Cousins, C., Whyte, L., Kruzelecky, R., Das, D., Leveille, R., Berlo, K., Sharma, S.K., Acosta-Maeda, T., Daly, M., Lalla, E. (2019). Biosignature detection by Mars rover equivalent instruments in samples from the CanMars Mars sample return analogue deployment. *Planetary and Space Science*, *176*(2019), 104683. https://doi.org/10.1016/j.pss.2019.06.007

Vasavada, A. R. (2022). Mission overview and scientific contributions from the Mars science laboratory curiosity rover after eight years of surface operations. *Space Science Reviews, 218*(14), 1-65. https://doi.org/10.1007/s11214-022-00882-7

Viotti, M. A. (2021) Chapter 1 – A space to explore: Mars public engagement strategies for a spacefaring society. In K. P. Kaminski (Ed.), Space science and public engagement: Space science and public engagement: 21st Century Perspectives and Opportunities (pp. 1-28). Elsevier. https://doi.org/10.1016/B978-0-12-817390-9.00012-9

Willms, J. D., Friesen, S. & Milton, P. (2009). *What did you do in school today? Transforming classrooms through social, academic and intellectual engagement*. Canadian Education Association.

Wray, J. J., Milliken, R. E., Dundas, C. M., Swayze, G. A., Andrews-Hanna, J. C., Baldridge, A. M., Chojnacki, M., Bishop, J. L., Ehlmann, B. L., Murchie, S. L., Clark, R. N., Seelos, F. P., Tornabene, L. L., Squyres, S. W., (2011). Columbus crater and other possible groundwater-fed paleolakes of Terra Sirenum, Mars. *Journal of Geophysical Research: Planets*, *116*(E1), E01001. https://doi.org/10.1029/2010JE003694

About the Authors

Dr. Michael Paul Lukie is an Associate Professor in the Faculty of Education at the University of Winnipeg. He teaches secondary education curriculum and instruction courses in physics, science, mathematics, and advanced curriculum inquiry. He previously taught high school physics for 15 years and was the treasurer for the Jungian Society for Scholarly Studies (JSSS). In conjunction with the Canadian Space Agency, he is currently designing physics activities to engage K-12 students in STEAM education, an approach to learning that uses science, technology, engineering, the arts and mathematics as access points for guiding student inquiry, dialogue and critical thinking. These activities include a wide-ranging series of diverse engagement materials focused on lunar exploration, particularly Canadian efforts in this realm. His research interests include phenomenography, physics and science education, student understanding and engagement, analytical psychology, and metacognition.

Address

Dr. Michael Paul Lukie
Faculty of Education; The University of Winnipeg; 515 Portage Avenue; Winnipeg, Manitoba; R3B 2E9, Canada. **e-Mail**: m.lukie@uwinnipeg.ca

Dr. Edward A. Cloutis is a Professor in the Department of Geography at the University of Winnipeg and has over 25 years of expertise in Earth and planetary remote sensing. His research focuses on developing new applications of remote sensing to exploring the surface of the Earth and planets in the solar system, both for geology and the search for extraterrestrial life. He is the founder and Director of

the University of Winnipeg's Planetary Spectrophotometer Facility, a state-of-the-art lab dedicated to advancing planetary exploration and The Manitoba Lunar and Planetary STEM Network (MLaPS). Dr. Cloutis is a member of science teams associated with a number of planetary exploration missions, including the NASA-led Dawn asteroid rendezvous mission, the NASA Mars Science Laboratory (Curiosity) rover, the NASA-CSA OSIRIS-REx asteroid sample return mission, and the European Space Agency's ExoMars Trace Gas Orbiter and ExoMars rover. He has over 150 peer-reviewed publications.

Address

Dr. Edward Cloutis
Department of Geography; The University of Winnipeg;
515 Portage Avenue; Winnipeg, Manitoba; R3B 2E9, Canada.

e-Mail: e.cloutis@uwinnipeg.ca

The Multilevel Criticality Framework: A Pedagogical Guide for Developing Global Competencies, Critical Literacy, and Democratic Agency in Adult Education

Hussein Chaitani

School of Business, Southern Alberta Institute of Technology (SAIT), Canada

Abstract

This theoretical article introduces the Multilevel Criticality Framework (MCF) as a pedagogical guide for developing global competencies, critical literacy, and democratic agency in adult education. The framework synthesizes insights from critical pedagogy, communicative action theory, critical discourse analysis, intercultural competence scholarship, and critical being to examine how ideology, culture, discourse, and power operate across macro, meso, and micro levels of educational practice. Drawing on interdisciplinary literature, the article argues that adult learning must move beyond functional literacy and workforce preparation toward the cultivation of critical awareness, intercultural understanding, and ethical participation in democratic societies. Attention is given to the influence of neoliberal governance, institutional discourse, digital technologies, and the global dominance of English on learners' opportunities for participation and agency. The article concludes by presenting the Multilevel Criticality Framework as an integrated analytical and pedagogical framework for designing transformative learning environments that support critical reflection, learner empowerment, and socially responsible global citizenship.

Keywords: Adult education; critical literacy; global competencies; democratic agency; multilevel criticality.

Introduction

Reclaiming Criticality in Adult Education for Global Competencies, Critical Literacy, and Democratic Agency

Aldous Huxley's *Brave New World* provides a metaphorical critical lens for the sociopolitical forces shaping contemporary education. Its use of psychological manipulation, consumerist conditioning, and engineered pleasure reflects hegemonic structures (Senduk, Lolowang, & Kumayas, 2025) consistent with Chomsky's (1989) critique of ideological institutions that preserve privilege through illusion and deceit. These themes highlight adult education's challenge of fostering critical consciousness and democratic agency amid neoliberal governance and algorithmic control. Rather than engaging in literary analysis, this article uses *Brave New World* as a symbolic framework to highlight how adult education can serve as a counter-hegemonic space. I draw on interdisciplinary theories, including Hofstede's cultural dimensions, Habermas's social systems, Freire's pedagogy, and Fairclough's Critical Discourse Analysis, to explore how educators can cultivate global competencies and critical literacy. The adult educator is positioned as a facilitator of evolving criticality, enabling learners to navigate ideological structures and reclaim agency through dialogic and reflexive practice. In doing so, I advocate for a human-centered Multilevel Criticality Framework for critical adult education, that, when applied, restores agency to learners and supports the development of a more global and ethical citizenship. The article proceeds through six sections that establish the need for criticality in adult education, examine the cultural and ideological conditions of adult learning, connect critical being with democratic and global citizenship, present the Multilevel Criticality Framework, illustrate its pedagogical applications, and consider its implications for global competencies, critical literacy, and democratic agency.

Understanding How Culture, Ideology, Discourse, and Power Shape Adult Learning

Ideology plays a foundational role in shaping adult learning contexts, particularly how learners interpret their social realities and engage with educational systems. Althusser (2006) conceptualized ideology as the imaginary relationship individuals have to their real conditions of existence, underscoring its role in shaping subjectivity. This perspective is critical in adult education, where learners' perceptions of their lived experiences influence their engagement with learning and capacity for critical reflection. Thompson (1990) framed ideology as the mobilization of meaning to legitimize and reproduce asymmetrical power relations, emphasizing domination through discourse in ways particularly relevant to adult education settings seeking to challenge systemic inequities and empower marginalized learners.

Hofstede defined culture as the "collective programming of the mind" (2001, p. 1), a learned and shared system of beliefs, values, and norms that conditions individuals' responses to their environments and distinguishes members of one group or category from another, thereby reinforcing social boundaries and identity (Hofstede, 2001, p. 9). In adult education, these perspectives illuminate how cultural norms, values, and ideologies shape learners' expectations, behaviors, and openness to transformative learning, while providing a multidimensional lens for examining power across personal, institutional, and cultural domains and reinforcing the need for reflexive, critical pedagogy.

As Hofstede et al. (2010) describe culture as "shared mental programs that condition individuals' responses to their environment" (p. 6), this conditioning reflects how individuals' lifeworlds at the micro level are shaped by institutional structures at the meso level, which are themselves guided by dominant ideologies at the macro level. This recursive influence results in the programming of cultural norms and individual cognition, reinforcing ideological conformity and limiting critical reflection. Hegemonic power functions by presenting ideologically constructed beliefs and attitudes as natural and self-evident. Because such beliefs are often internalized as common sense rather than recognized as socially constructed, they may remain largely invisible to individuals and therefore difficult to question. When an ideology becomes embedded in the shared consciousness of a group and gains social significance, it becomes increasingly resistant to critique. In adult education, this dual role of culture underscores the importance of culturally responsive pedagogy, where educators must account for learners' cultural orientations to foster inclusive and transformative learning environments. Recognizing culture as both mental programming and a dynamic social process enables adult educators to better understand learner diversity and support intercultural competence development (Brewer & Leask, 2023).

Multilectics provides the epistemological foundation of the Multilevel Criticality Framework. In educational contexts, multilectics emphasizes a dialogic engagement with multiple literacies, the Multilevel Criticality Framework extends this perspective by situating these interactions within interconnected macro, meso, and micro levels of analysis. In this sense, multilectics explains how diverse meanings, voices, and forms of knowledge interact, while the Multilevel Criticality Framework explains where these interactions occur and how they are shaped by culture, ideology, discourse, and power across social, institutional, and individual contexts. The framework therefore incorporates and operationalizes multilectics as a critical pedagogical approach for examining and transforming adult learning environments. The multilevel framework (Figure 1) is particularly effective when applied across three analytical levels: macro, meso, and micro.

At the macro level, multilectics interrogates large-scale social structures and ideologies, such as neoliberal education reforms and global discourses that shape literacy ideologies and policy (Lipman, 2004; Au, 2007). The meso level focuses on institutions and communities, examining how curriculum design, school systems, and teacher practices mediate macro-level policies and micro-level learner experiences (Compton-Lilly, 2004; Cope & Kalantzis, 2000; Barton, Hamilton, & Ivanič, 2000). At the micro level, multilectics centers on individual experiences, classroom discourse, and community literacies, valuing learners' cultural knowledge and lived experiences as foundational to literacy learning (Gutiérrez & Rogoff, 2003).

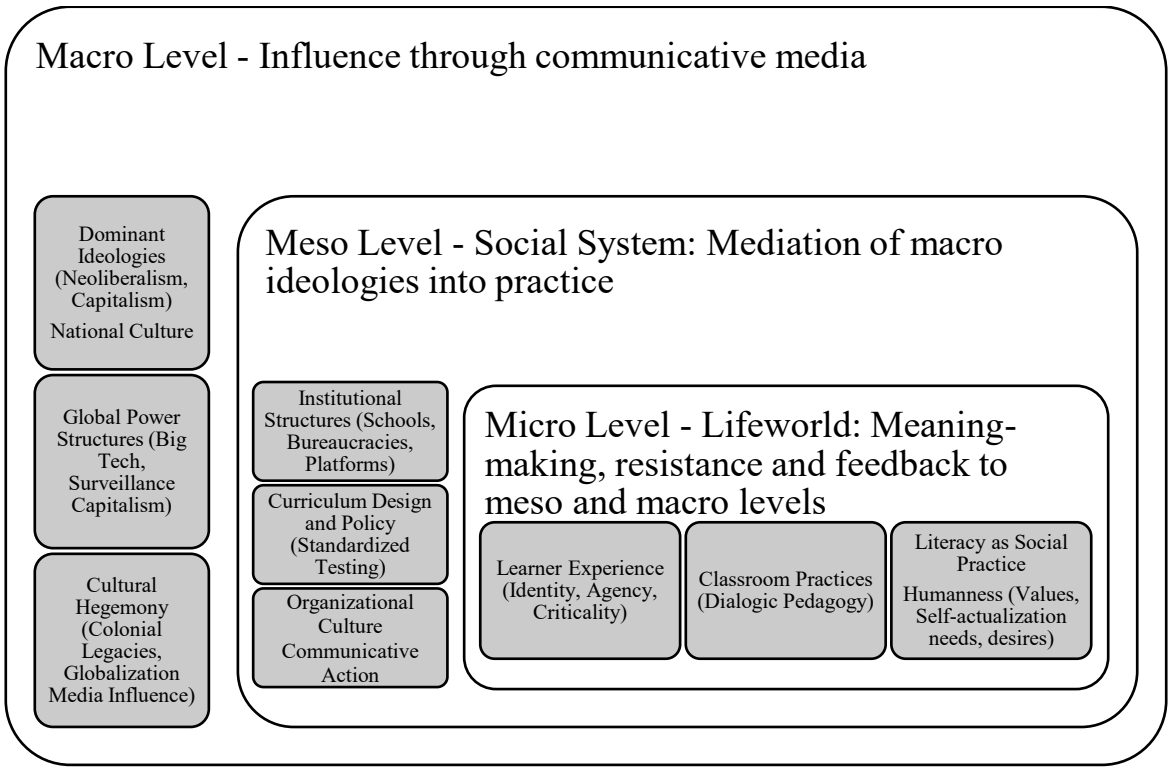


Figure 1: The Multilevel Criticality Framework: Conceptual Relationships Across Macro, Meso, and Micro Levels (Adapted from Chaitani, 2026)

At the macro level, ideology is embedded in global structures such as neoliberal capitalism, colonial legacies, and surveillance technologies that shape educational priorities and social norms. Media systems, from print to digital platforms, disseminate these ideologies and influence public discourse and institutional practice (Habermas, 1987; Kress, 2003). By privileging strategic action over communicative understanding, media can reinforce neoliberal hegemonic narratives. Barker (2004) and Gramsci (1971) argue that ideology normalizes exploitative social relations, generating a "false consciousness" (p. 97) that masks structural inequalities. In adult education, this highlights the importance of critically examining how global discourses influence curriculum, access, and learner identities, often privileging dominant cultural and linguistic norms.

The meso level focuses on how institutions—such as schools, bureaucracies, and digital platforms—mediate macro-level ideologies into everyday educational practices. Hofstede's (2001) notion of culture as "collective programming of the mind" illustrates how institutions embed shared values and norms that guide behavior and interaction. These cultural codes influence curriculum design, assessment practices, and organizational culture, often reproducing dominant ideologies through standardized models and banking education approaches (Freire, 1970; Flores, 2017). As Freire critiques, such models treat learners as passive recipients, stifling critical consciousness and reinforcing hierarchical power structures. Chomsky (1989a) similarly warns that institutional discourse often constrains debate within "proper limits," limiting transformative potential. For adult educators, the meso level highlights the importance of relational learning and contextualization, as emphasized by Kawalilak and Groen (2021), to resist institutional colonization and foster inclusive pedagogical spaces.

At the micro level, ideology manifests in individual meaning-making processes, classroom discourse, and learner agency. This level centers on the lifeworld—personal experiences, identities, and cultural knowledge—that learners bring to educational settings (Habermas, 1987). Digital media have transformed literacy into participatory and multimodal practice, enabling learners to co-create meaning across global contexts (Lankshear & Knobel, 2011). However, deeply ingrained ideological assumptions often go unrecognized, shaping learners' perceptions and limiting critical engagement (Bloor & Bloor, 2007). Freire's (1970) emphasis on *conscientização* calls for dialogic pedagogy that challenges these

assumptions and fosters transformative agency. Exposure to diverse cultural discourses can disrupt internalized ideologies, prompting learners to re-evaluate their beliefs "with a fresh and open mind" (Bloor & Bloor, 2007, p. 19). For adult educators, the micro level is a critical site for cultivating reflexivity, intercultural competence, and ethical participation in a pluralistic society.

Understanding the structural dynamics of ideology, culture, and discourse across macro, meso, and micro levels reveals how meaning-making is both socially situated and ideologically mediated. As communicative media and institutional practices shape learners' experiences, they also embed dominant narratives that influence perceptions of identity, agency, and knowledge. This underscores the importance of critically examining the discursive mechanisms through which power operates in educational contexts. Taken together, these perspectives demonstrate that ideology, culture, and power are mediated through discourse. Examining language as a site of social struggle therefore provides a critical lens for understanding how hegemonic meanings are reproduced, negotiated, and transformed within adult education.

Within adult education, the global prominence of English as a lingua franca reflects interconnected historical, political, economic, and technological forces that shape access to knowledge, educational opportunity, and participation while also reproducing unequal linguistic and cultural power relations. Seidlhofer (2011) attributes this linguistic ascendancy to the enduring legacy of British colonialism and the geopolitical rise of the United States following World War II, which established English as the principal language of administration, education, and diplomacy across numerous regions. These historical foundations were further reinforced by globalization and the expansion of digital technologies, positioning English as a dominant medium in computing, scientific discourse, and international commerce. Although this dominance can reproduce linguistic hierarchies and unequal access to knowledge and opportunity, adult learners may also appropriate English as a resource for transnational communication, professional mobility, intercultural exchange, and participation in global networks.

However, the widespread adoption of English does perpetuate asymmetrical power relations. Rooted in colonial histories and sustained by neoliberal globalization, English is frequently framed as a gateway to economic mobility and global participation. This framing privileges English-speaking nations and institutions, creating structural barriers in academia and governance that reproduce linguistic and cultural hierarchies (Jenkins & Panero, 2024). Within this context, language and literacy are deeply interwoven, functioning as tools for meaning-making, identity formation, and power negotiation. As Gee (2015) emphasizes, literacy extends beyond technical proficiency; it is a socially situated practice shaped by language ideologies, cultural norms, and institutional structures. For adult educators, this underscores the importance of critically examining how English-language dominance influences access, equity, and pedagogical design in global learning environments.

Critical Discourse Analysis (CDA) positions language as inherently ideological and never neutral; it functions as a site of power negotiation and contestation (Cheek, 2008; van Dijk, 2015). Institutional texts—such as policies, legal frameworks, and media—play a central role in shaping public consciousness by embedding dominant ideologies and marginalizing dissenting voices. As Bloor and Bloor (2007) argue, language is instrumental in maintaining institutional authority and social order, a view echoed by Buck-Morss (2003), who highlights the appropriation of language and imagery by dominant discourses to reinforce control.

Foucault (1972) conceptualizes power as diffuse and embedded within institutional practices, where legal and political language delineates the boundaries of rights and governance (Foucault et al., 2017). Chouliaraki and Fairclough (1999) extend this critique by illustrating how universities, once centers of critical inquiry, are increasingly subordinated to market-driven imperatives, thereby undermining their democratic potential. CDA reveals that discourse is not a passive reflection of reality but a constitutive force shaping social relations, institutions, and values. Six interrelated elements constitute the discursive moment: language, power, social relations, material practices, institutions and rituals, and values. Their interaction can sustain hegemonic structures while also creating avenues for resistance (Chouliaraki & Fairclough, 1999; Said & Viswanathan, 2001).

Reflexivity is central to resisting hegemonic forces. Chouliaraki and Fairclough (1999) argue that because social practices are inherently reflexive, individuals can critically reassess their actions and identities within evolving power structures. Hegemony operates through the normalization of discourse and the internalization of ideology, making dominant assumptions appear natural and unquestionable. Resistance therefore emerges through critical pedagogy and reflexive engagement that enable learners to interrogate dominant narratives and power relations. As Macedo (2006) cautions, educational systems that suppress critical inquiry risk reinforcing authoritarian ideologies. Adult education thus becomes an important site for cultivating critical consciousness, reclaiming discursive agency, and challenging systemic inequities.

Language is not merely a communicative tool but a central mechanism through which power, ideology, and social relations are constructed and contested. Critical Discourse Analysis (CDA) demonstrates how institutional discourses shape public consciousness, reproduce hegemonic norms, and marginalize alternative perspectives (Chouliaraki & Fairclough, 1999; van Dijk, 2015). These insights highlight the need for educational spaces that foster critical reflection and resist ideological closure.

Building on this understanding of discourse and power, Habermas's theory of communicative action and the colonization of the lifeworld offers a deeper account of how systemic forces shape everyday meaning-making. For adult educators, the Habermasian framework provides a valuable lens for examining how institutional logics constrain democratic participation and how education can help restore communicative rationality and learner agency.

Connecting Lifeworld, Critical Being, and Global Citizenship Through Democratic Learning

The Habermasian framework provides a multidimensional lens for understanding the relationship between societal structures, institutions, and everyday experience through the concepts of the lifeworld and the system. The lifeworld, defined by Habermas (1987) as the background of shared cultural knowledge, social norms, and personal identities, is sustained through communicative action oriented toward mutual understanding and social integration (Sitton, 2003). In contrast, the system, comprising institutions such as markets, bureaucracies, and educational structures, is coordinated through strategic action and instrumental rationality, often mediated by money and power (Habermas, 1987). Although analytically distinct, the lifeworld and system are interdependent, and tensions emerge when systemic imperatives intrude upon communicative processes and displace opportunities for meaning-making and democratic engagement. Maintaining an appropriate balance between these domains is therefore essential to ensuring that systemic efficiency does not undermine communicative rationality and democratic participation (Fraser, 1990).

The colonization of the lifeworld occurs when systemic imperatives infiltrate and distort communicative spaces, subordinating individual agency to institutional logics. This process is evident in various sectors: in healthcare, where administrative protocols and insurance policies shape medical decisions; in education, where standardized testing overrides critical pedagogy; and in the public sphere, where commercial media prioritize ratings over deliberative discourse (McCarthy, 1990). These intrusions compromise the lifeworld's capacity for meaning-making and social integration, leading to a loss of autonomy and reflexivity.

Meaning-making within the lifeworld is a continuous, dialogic, and reflexive process. Through dialogue, individuals co-construct meaning, interpret experience, and critically examine their assumptions and positionalities (Freire, 1970). Merriam and Bierema (2014) emphasize that learning is a lifelong process embedded within personal and social contexts and continually evolves through reflection and interaction. Reflexive practices enable individuals to generate representations of their actions, engage in social critique, and contribute to the transformation of hegemonic structures (Chouliaraki & Fairclough, 1999). Consequently, reflexivity is essential for shifting the locus of control from the system back to the lifeworld, thereby supporting communicative rationality and democratic participation.

Adult education is well-positioned to resist colonization by fostering critical reflection and enabling individuals to reclaim agency. In adult education and critical pedagogy, reflexivity is essential for fostering critical consciousness. It enables learners and educators to reflect on how their experiences are shaped by broader social structures, power relations, and ideologies. Reflexivity supports transformative learning by encouraging individuals to question taken-for-granted assumptions and engage in meaningful dialogue about their roles in society (Brookfield, 2017; Chouliaraki & Fairclough, 1999).

Building on Habermas's distinction between the lifeworld and system, it becomes evident that adult education must not only resist the colonization of communicative spaces but also cultivate deeper interpretive engagement with learners' lived experiences. The lifeworld, as a site of meaning-making and cultural reproduction, requires pedagogical approaches that prioritize reflexivity, relationality, and dialogic understanding (Habermas, 1987; McCarthy, 1990). This calls for a hermeneutic orientation, one that recognizes the interpretive nature of learning and the importance of contextualizing knowledge within diverse sociocultural frameworks.

Cultivating critical being in adult education requires a multidimensional pedagogical approach that integrates hermeneutic inquiry, reflexive practice, and transformative engagement. Barnett (2015) conceptualizes critical being as the convergence of critical thought, self-reflection, and transformative action, emphasizing the holistic development of autonomous and socially engaged learners. This framework aligns with hermeneutic principles of iterative interpretation, contextual understanding, and the co-construction of meaning (Meyer, 2001), while also resonating with Habermas's (1987) concept of the lifeworld and Chouliaraki and Fairclough's (1999) critical discourse framework, both of which underscore the importance of communicative rationality and the role of discourse in shaping identity and agency.

Within adult education, these complementary perspectives position learning as a dialogic and transformative process through which learners interpret experience, connect personal concerns to broader sociocultural and ideological structures, challenge dominant assumptions, and enact meaningful change. In this way, Barnett's (2015) model of critical being provides a robust pedagogical foundation for fostering learner agency, critical consciousness, and democratic participation.

Although CDA encompasses diverse theoretical and methodological traditions, some approaches draw on hermeneutic principles to emphasize interpretation, contextual understanding, and reflexive inquiry. Within these perspectives, the hermeneutic circle illustrates how understanding develops through the ongoing interplay between parts and wholes, allowing learners to connect individual texts and experiences to broader social, cultural, and ideological contexts (Chouliaraki & Fairclough, 1999). This orientation supports reflexive pedagogy by encouraging learners to examine their assumptions, positionalities, and the influence of institutional discourses on their lifeworlds (Habermas, 1987; McCarthy, 1990).

By integrating hermeneutic inquiry into educational practice, adult educators can foster criticality across macro, meso, and micro levels, supporting ideological critique, institutional reflection, and personal transformation (Lipman, 2004; Barton, Hamilton, & Ivanič, 2000). In turn, learners develop the capacity to navigate power relations, engage in intercultural dialogue, and exercise ethical agency. As Kawalilak and Groen (2021) observe, learning within complex social systems requires a pedagogical stance that is both critically reflective and contextually responsive. Adult education thus becomes a transformative space for developing knowledge, agency, and purposeful action.

Mapping Barnett's (2015) model onto the multilectic structure further clarifies how adult learners engage across macro, meso, and micro levels. At the macro level, learners critically examine ideological systems and global discourses; at the meso level, they reflect on institutional constraints and pedagogical practices; and at the micro level, they enact agency through dialogic learning and personal transformation (Lipman, 2004; Barton, Hamilton, & Ivanič, 2000). Integrating hermeneutics with critical discourse analysis and communicative rationality enables adult education to resist systemic colonization and foster emancipatory learning that is both contextually grounded and personally meaningful.

Barnett's model aligns with the article's broader theoretical lens, integrating hermeneutics, critical discourse analysis, and communicative rationality to support reflexive and emancipatory learning.

From a pedagogical standpoint, Barnett's model implies that adult educators must move beyond content delivery to become facilitators of criticality. This involves creating learning environments that encourage epistemological questioning, personal reflection, and socially responsive action (Brookfield, 2017). Educators must design curricula that challenge dominant ideologies, foster dialogic engagement, and support learners in connecting personal experiences to broader sociopolitical contexts (Chouliaraki & Fairclough, 1999). Such practices are essential for cultivating learner agency, particularly in globalized and culturally diverse settings where power dynamics and identity formation are complex and fluid.

Learner agency, in this framework, is not merely the ability to make choices but the capacity to act critically and ethically within systems of power. By embedding Barnett's domains into instructional design—through critical text analysis, reflexive writing, and intercultural dialogue—adult education can empower learners to become active participants in shaping their lifeworlds and contributing to democratic society (Habermas, 1987; Kawalilak & Groen, 2021). This pedagogical orientation positions adult education as a transformative space where knowledge, self, and world are integrated through critical being.

Critical being naturally extends to intercultural competence as adult learners navigate increasingly globalized and culturally diverse learning environments. Ethical and reflective engagement across difference requires more than exposure to diversity; it demands intentional pedagogical approaches that cultivate intercultural competence as a dynamic combination of knowledge, skills, and attitudes (Guo, 2019). Brewer and Leask (2023) argue that learner-centered, competence-based curricula should incorporate global competencies frameworks that are adaptable to diverse contexts. Their tripartite model provides a practical foundation for embedding intercultural learning outcomes, while Deardorff and Jones (2023) caution against applying such models without paying attention to sociocultural and geopolitical differences. They note that Latin American, African, Asian, and Middle Eastern perspectives often emphasize identity, relationality, and historical power dynamics, highlighting the need for curricula that are both inclusive and critically responsive to global inequities and epistemological pluralism.

In practice, culturally responsive curricula can validate diverse knowledge systems through co-created learning, multilingual resources, and intercultural dialogue. When combined with inclusive teaching and digital technologies, competence-based approaches can strengthen learners' problem-solving, critical thinking, and global engagement (Catacutan et al., 2023). Adult educators therefore require flexible and reflective practices that help diverse learners navigate cultural complexity and develop ethical global citizenship.

Developing critical literacy in adult education extends beyond functional reading and writing to the capacity to interrogate the ideological dimensions of texts, discourses, and institutional practices. As Hamilton, Tett, and Crowther (2012) emphasize, learners must be able to "detect and handle the inherently ideological dimension of literacy, and the role of literacy in the enactment and production of power" (p. 5). In globalized learning environments, the absence of dialogic educational practices can contribute to the internalization of unexamined beliefs and constrain critical engagement with social structures. Education therefore remains a vital force for democracy, citizenship, and social justice (Gadotti, 2017).

As Clifford and Montgomery (2015) note, it can serve as a "radical force for personal and societal change" (p. 50), yet market-driven approaches increasingly marginalize the reflective, imaginative, and civic dimensions of learning. Krull (2016) identifies a growing emphasis on technical disciplines, while Nussbaum (2010) warns that such trends risk producing "generations of useful machines rather than complete citizens" (p. 2). Together with Habermas's theory of communicative action and critical traditions that emphasize historical consciousness, ideological critique, and awareness of power relations (Kincheloe, McLaren, Steinberg, & Monzó, 2018), these perspectives position critical literacy as central to democratic agency and global citizenship.

In practice, these aims require pedagogical approaches that promote critical text analysis, media deconstruction, participatory curriculum development, and dialogic learning. Humanistic principles such as self-actualization, purpose, and equity should inform curriculum design and learning environments that support both individual transformation and collective empowerment (Weber, 2014). Dialogic formats, including study circles and tutorial-based discussions, create opportunities for learners to question dominant narratives, engage in reflective dialogue, and co-construct meaning (Groen & Kawalilak, 2014). Technology can further expand access and participation when paired with inclusive pedagogies that address systemic inequities and promote ethical engagement.

A democratic public sphere depends upon openness to diverse perspectives and the capacity to challenge hegemonic assumptions. Buck-Morss (2003) identifies tolerance, freedom, and political trust as foundational conditions, while Kincheloe and Steinberg (2010), Asad (2003), and Sayyid (2003) caution that public discourse can be constrained by dominant interests that marginalize alternative voices and forms of knowledge. Chouliaraki and Fairclough (1999) therefore emphasize critique as essential to democratic life, a position echoed by Said, who advocates engagement with diverse lived experiences and resistance to singular narratives (Said & Viswanathan, 2001). In this context, adult education must cultivate reflective, inclusive, and dialogic learning environments that empower learners to challenge systemic inequities and participate critically in local and global communities.

The Multilevel Criticality Framework as an Integrated Approach to Understanding Learning, Literacy, and Power

This section synthesizes the theoretical foundations explored in the article into a practical framework for adult educators. Drawing on critical literacy, global citizenship, and hermeneutic inquiry, it guides actionable strategies for navigating the ideological dimensions of literacy and power in diverse educational contexts.

The Multilevel Criticality Framework (Table 1) organizes adult learning across macro, meso, micro, and cross-cutting dimensions. Each level connects a Habermasian domain with cultural and ideological dynamics, CDA-informed attention to discourse and power, Barnett's conception of criticality, and corresponding pedagogical strategies. The framework is designed to show how global structures, institutional practices, and learner experiences interact in the development of critical literacy, global competencies, and democratic agency. Table 1 presents these relationships as an integrated pedagogical guide for adult educators.

Table 1 demonstrates that criticality develops through the interaction of structural, institutional, and individual dimensions of adult learning. At the macro level, criticality involves examining dominant ideologies, policy discourses, and cultural assumptions that shape educational opportunities and citizenship. At the meso level, institutions mediate these forces through curriculum, governance, organizational culture, and communicative practices. At the micro level, learners interpret experience, negotiate identity, engage in dialogue, and enact agency.

The cross-cutting dimension highlights that digital literacy, multimodality, and professional development operate across all levels rather than belonging to one domain alone. In this way, the framework positions critical literacy, global competencies, and democratic agency as outcomes of sustained engagement with culture, ideology, discourse, power, and pedagogy across interconnected contexts.

Table 1: The Multilevel Criticality Framework for Navigating Culture, Ideology, Literacy, and Power Across Macro, Meso, and Micro Levels of Adult Education.

Level of analysis	Habermasian domain	Cultural and ideological dynamics	CDA and power focus	Criticality focus	Pedagogical strategy and educational outcome
Macro	**System**	Cultural layers include human nature, culture, and personality. Hofstede's dimensions, such as power distance, individualism, and uncertainty avoidance, help explain how large-scale cultural assumptions shape educational systems. Ideological concerns include dominant ideologies, neoliberalism, globalization, cultural hegemony, and policy discourses.	Analysis focuses on discourse, power structures, ideology, and social relations at societal and policy levels. CDA helps reveal how dominant narratives shape literacy, citizenship, educational access, and public consciousness.	Criticality involves critique of assumptions, traditions, systems, and dominant knowledge structures.	**Critical Text Analysis:** examination of policy documents, media texts, curriculum statements, workplace texts, and dominant narratives to uncover ideological assumptions and power relations. **Outcome:** critical awareness of cultural and ideological influences on literacy, education, and citizenship.
Meso	**Interface between system and lifeworld**	Cultural analysis focuses on organizational and community cultures, including how institutions interpret and mediate cultural values. Ideological concerns include institutional norms, curriculum policies, organizational practices, educational governance, and local implementation of broader policy agendas.	Analysis focuses on institutional discourse, policy implementation, organizational power relations, and communicative practices. CDA helps examine how schools, colleges, workplaces, and community programs reproduce or challenge dominant assumptions.	Criticality involves reflexive evaluation of professional, organizational, and educational practices.	**Culturally Responsive Pedagogy:** integration of community knowledge, cultural perspectives, relational learning, and inclusive curriculum design within educational settings. **Outcome:** responsive, inclusive, and equitable educational practice.
Micro	**Lifeworld**	Cultural analysis focuses on individual identities, values, beliefs, lived experiences, and culturally situated meaning-making. Ideological concerns include negotiation, interpretation, agency, identity formation, and resistance in everyday learning contexts.	Analysis focuses on classroom discourse, social interaction, identity construction, learner voice, and resistance. CDA supports examination of how learners interpret, contest, and reshape meanings in local learning spaces.	Criticality involves critical skills, reflexivity, critique, transformative learning, and agency.	**Dialogic Learning Spaces:** collaborative inquiry, shared meaning-making, learner agency, reflective dialogue, and critical engagement with experience. **Outcome:** critical consciousness, learner empowerment, and transformative action.
Cross-cutting dimensions	**System-lifeworld connections across contexts**	Cultural analysis focuses on interactions among culture, identity, and social structures across levels. Ideological concerns include the dynamic relationships among ideology, literacy, and power as they move between policy, institutions, and lived experience.	Analysis focuses on discursive practices that shape and are shaped across levels, including digital texts, algorithmic governance, multimodal communication, and institutionalized knowledge systems.	Criticality involves the integration of critical reflection, cultural responsiveness, discourse awareness, educator reflexivity, and transformative practice across educational contexts.	**Digital Literacy and Multimodality:** critical engagement with digital texts, algorithmic governance, and multimodal meaning-making. **Professional Development:** building educator capacity to integrate criticality, cultural responsiveness, and reflective practice across levels. **Outcome:** enhanced capacity to navigate complexity, support global competencies, and promote socially just adult education.

Applying the Multilevel Criticality Framework Through Transformative Pedagogical Practices

To integrate critical literacy and global competencies into adult education, educators can adopt the following five practical strategies:

1. Critical Text Analysis. Encourage learners to use CDA to examine institutional texts, media, and policy documents for ideological assumptions, power relations, and implications for educational equity and social justice. Chouliaraki and Fairclough (1999) emphasize that discourse is not merely a reflection of reality but a constitutive element of social relations and institutions through which language can legitimize authority and sustain hegemonic norms. Adult educators might ask learners to analyze national education standards, standardized testing policies, institutional mission statements, local education policies, or workplace training manuals by considering whose interests are served, which values are presented as neutral, and whose voices or literacies are excluded. For example, examining standardized testing policies can reveal how market-oriented priorities and dominant norms marginalize culturally diverse literacies (Au, 2007). Such analysis connects local educational practices to broader ideological structures, helping learners recognize the sociopolitical dimensions of literacy and develop agency in navigating institutions (Merriam, Caffarella, & Baumgartner, 2007).

2. Dialogic Learning Spaces. Create environments that support open dialogue, mutual understanding, and collaborative meaning-making. Study circles, peer discussions, and reflective writing can foster critical consciousness and democratic engagement. Freire (1970) advocates dialogic education as a means of resisting oppressive structures and cultivating critical awareness. Groen and Kawalilak (2014) describe study circles as safe spaces in which learners can reflect, question, and co-construct meaning. Here, safety does not imply freedom from disagreement or intellectual challenge; rather, it refers to relational trust, respectful participation, and equitable opportunities for learners to express and critically examine differing perspectives. Educators can establish shared discussion norms that encourage evidence-based questioning, attentive listening, constructive disagreement, and reflection on discomfort without permitting personal attacks or the marginalization of participants. For example, a study circle might examine English as a global lingua franca and its implications for educational equity (Jenkins & Panero, 2024), using guided discussion and reflective journaling to help learners interrogate assumptions and consider competing perspectives. Such dialogic spaces enable learners to articulate their experiences, challenge dominant narratives, develop intercultural understanding, and participate actively in shaping their educational and societal roles.

3. Culturally Responsive Pedagogy. Design curricula that reflect learners' cultural knowledge, languages, and epistemologies. Avoid standardized models that marginalize diverse perspectives and instead promote inclusive and relational learning. Barton and Hamilton (2000) argue that literacy is a situated social practice shaped by cultural and institutional contexts. Kawalilak, Groen, and Rocco (2021) emphasize the importance of relational learning in adult education, particularly in diverse and complex social systems. Educators can co-design curricula with learners, incorporating Indigenous knowledge systems, multilingual resources, and community-based literacies. For example, rather than relying solely on Western theories, educators might draw on intercultural competence perspectives that emphasize relationality, community engagement, historical context, and diverse understandings of identity found in different sociocultural traditions and educational contexts (Deardorff & Jones, 2023). This approach challenges the dominance of standardized models and promotes equity by validating multiple ways of knowing. It also enhances global competencies by fostering respect for cultural diversity, historical experience, and contextual variation. By embracing culturally responsive pedagogy, adult educators create inclusive spaces that support transformative learning and global citizenship. Drawing on examples from Merriam et al. (2007), educators might integrate storytelling traditions from African American or Indigenous communities into literacy instruction, recognizing oral traditions as legitimate and powerful forms of learning. This approach supports the development of global competencies by fostering respect for cultural diversity and historical context.

4. Digital Literacy and Multimodality. Integrate digital tools and multimodal resources to support participatory learning. Encourage learners to create and critique digital content, fostering agency and critical engagement with media and technology. Lankshear and Knobel (2011) highlight how digital

media foster collaborative, networked, and multimodal forms of communication, reshaping literacy into a socially situated and technologically mediated practice. Educators can incorporate digital storytelling, podcast creation, or multimedia presentations into their courses. For example, learners might produce digital narratives that reflect their cultural identities and critique dominant media representations, thereby practicing multimodal literacy and critical analysis. Drawing from Merriam et al. (2007), educators should also help learners develop higher-order thinking skills to assess the credibility of online information and resist the commodification of knowledge. For example, learners might analyze social media campaigns or corporate websites to uncover ideological messaging, thereby enhancing both digital literacy and global awareness. These practices promote learner agency and challenge traditional hierarchies of knowledge production. They also support the development of global competencies by enabling learners to engage with diverse audiences and perspectives. Digital and multimodal literacies empower adult learners to become co-creators of knowledge, fostering critical engagement and intercultural dialogue.

5. Educator Professional Development. Provide ongoing training for educators in critical pedagogy, intercultural competence, and inclusive teaching practices. Support reflective practice and encourage educators to examine their own positionality and assumptions. Brookfield (2017) emphasizes the importance of critically reflective teaching, which involves examining one's assumptions, positionality, and pedagogical choices. Kincheloe et al. (2018) advocate for critical pedagogy that empowers educators to resist systemic oppression and support transformative learning. Institutions can offer workshops on CDA, intercultural competence, and inclusive curriculum design. Educators might engage in peer mentoring or reflective practice groups to explore how their own cultural backgrounds influence their teaching. Professional development enhances educators' capacity to create equitable and responsive learning environments. It also supports the cultivation of critical being by integrating knowledge, self-reflection, and action. Investing in educator development strengthens the foundation for critical and globally competent adult education. Merriam et al. (2007) recommend that educators build connections with information access specialists, such as librarians and computer experts, to enhance their own digital fluency and better support learners. Additionally, educators must consider the ethical implications of information access, ensuring that marginalized learners are not excluded from digital learning opportunities.

Advancing Global Competencies, Critical Literacy, and Democratic Agency Through Adult Education

The Multilevel Criticality Framework translates the article's theoretical foundations into a practical guide for adult educators seeking to foster critical literacy, global competencies, and democratic agency. The framework can inform curriculum design, assessment, professional reflection, and pedagogical decision-making by connecting macro-level ideological critique, meso-level institutional analysis, and micro-level learner experience. For example, an educator designing a media literacy unit might integrate analysis of corporate media ownership, institutional policies governing digital access, and learners' personal media narratives to promote critical awareness across levels of inquiry. By aligning cultural dimensions, discursive practices, and levels of criticality, the framework supports the development of intercultural competence, critical being, and transformative learning.

More broadly, the framework demonstrates how culture, ideology, discourse, and power shape adult learning across interconnected contexts. By linking pedagogical strategies to macro, meso, and micro levels of analysis, educators can design learning experiences that foster critical reflection, ethical engagement, and democratic participation. The reflective questions that follow are intended to support the application of the framework in curriculum design, teaching practice, professional learning, and future inquiry.

1. How can adult educators use Critical Discourse Analysis (CDA) to help learners identify and challenge ideological assumptions in institutional texts or media? Reflect on a specific text (e.g., a policy document or curriculum guide) and apply CDA principles to uncover embedded power structures.

1. In what ways can the Table 1guide curriculum design across macro, meso, and micro levels? Choose a topic you teach and map it onto the model's dimensions (e.g., Hofstede's cultural layers, CDA elements, levels of criticality) to support holistic learning.
2. How can dialogic learning spaces be structured to promote critical consciousness and intercultural competence among adult learners? Consider how study circles or peer-led discussions can be used to explore themes such as linguistic justice or global citizenship.
3. What strategies can educators use to integrate culturally responsive pedagogy in diverse adult learning environments? Reflect on how you might incorporate learners' cultural knowledge and epistemologies into your teaching practice.
4. How can digital and multimodal literacies be used to foster learner agency and global competencies? Provide an example of a digital project (e.g., podcast, digital story) that enables learners to critique dominant narratives and express cultural identity.
5. What role does professional development play in supporting educators' ability to resist systemic colonization of communicative spaces? Reflect on your own professional learning and how it has influenced your capacity to implement critical pedagogy.
6. How can Nussbaum's capacities—critical examination, world citizenship, and narrative imagination—be embedded into adult education curricula? Design a learning activity that fosters ethical participation and global awareness.
7. How does the dominance of English as a global lingua franca impact educational equity in your context? Discuss how language policies or practices in your institution may privilege certain learners and marginalize others.
8. How can educators balance the use of technology with human-centered pedagogy to avoid reinforcing educational inequalities? Reflect on how digital tools can be used inclusively and critically in adult education.
9. In what ways can adult education reclaim its transformative potential in the face of neoliberal pressures? Consider how curriculum and pedagogy can be reoriented toward social justice, democratic engagement, and learner agency.

Conclusion: Adult Education as a Site of Democratic Renewal

This article has critically examined the transformative potential of adult education in cultivating global competencies, critical literacy, and democratic agency amid intensifying neoliberal and technocratic pressures. Drawing on interdisciplinary frameworks—including Habermas's lifeworld/system theory, Critical Discourse Analysis (CDA), Hofstede's cultural dimensions, and Barnett's model of critical being—it has argued for a hermeneutic and multilectic approach to curriculum and pedagogy. The dominance of English as a global lingua franca, the ideological function of language, and the colonization of communicative spaces were explored as key challenges to equitable and inclusive adult learning.

To address these challenges, I propose a set of practical strategies for adult educators, including critical text analysis, dialogic learning spaces, culturally responsive pedagogy, digital multimodal literacy, and sustained professional development. These strategies were synthesized into the Multilevel Criticality Framework, which offers a comprehensive framework for navigating macro-level ideologies, meso-level institutional practices, and micro-level learner experiences. By aligning cultural, ideological, and educational dimensions, the model supports the development of critical being and intercultural competence.

Ultimately, adult education must reclaim its role as a space for ethical participation, reflexive inquiry, and transformative learning. Human-centered pedagogies empower learners to challenge inequities and engage democratically.

Acknowledgement

Generative AI tools, CoPilot and ChatGPT, were used to support drafting and editing of this manuscript. All conceptual framing, claims, and final wording were reviewed and revised by the author, who takes full responsibility for the content.

References

Althusser, L. (2006). Ideology and ideological state apparatuses (notes towards an investigation). In *The anthropology of the state: a reader*.

Asad, T. (2003). *Formations of the secular: Christianity, Islam, modernity*. Stanford University Press

Au, W. (2007). High-stakes testing and curricular control: A qualitative metasynthesis. *Educational Researcher, 36*(5), 258–267. https://doi.org/10.3102/0013189X07306523

Barker, C. (2004). *The SAGE dictionary of cultural studies*. SAGE.

Barnett, R. (2015). A curriculum for critical being. In M. Davies & R. Barnett (Eds.), *The Palgrave handbook of critical thinking in higher education* (1st ed., pp. 63–80). Palgrave Macmillan. https://doi.org/10.1057/9781137378057

Barton, D., & Hamilton, M. (2000). Literacy practices. In D. Barton, M. Hamilton, & R. Ivanic (Eds.), *Situated literacies: Reading and writing in context* (1st ed., pp. 7-15). Routledge.

Bloor, M., & Bloor, T. (2007). *The practice of critical discourse analysis: An introduction*. Hodder Arnold

Brewer, E., & Leask, B. (2023). Internationalizing the curriculum, teaching, and learning. In *The handbook of international higher education* (pp. 242-264). Routledge.

Brookfield, S. D. (2017). *Becoming a critically reflective teacher*. John Wiley & Sons.

Buck-Morss, S. (2003). *Thinking past terror: Islamism and critical theory on the left.* Verso.

Catacutan, A., Kilag, O. K., Diano Jr, F., Tiongzon, B., Malbas, M., & Abendan, C. F. (2023). Competence-based curriculum development in a globalized education landscape. *Excellencia: International Multi-disciplinary Journal of Education (2994-9521)*, *1*(4), 270-282.

Chaitani, H. (2026). Artificial Intelligence, Ideology, and Literacy: A Multilectal Framework for Empowering Criticality in Adult Education. In *Artificial Intelligence in Education - Creating an Equitable, Creative, and Effective Learning Environment.* IntechOpen. https://doi.org/10.5772/intechopen.1013545

Clifford, V., & Montgomery, C. (2015). Transformative learning through internationalization of the curriculum in higher education. *Journal of Transformative Education, 13*(1), 46–64. https://doi.org/10.1177/1541344614560909

Compton-Lilly, C. (2004). *Confronting racism, poverty, and power: Classroom strategies to change the world*. Portsmouth, NH: Heinemann.

Cope, B., & Kalantzis, M. (Eds.). (2000). *Multiliteracies: Literacy learning and the design of social futures*. Psychology Press.

Cheek, J. (2008). Foucauldian discourse analysis. In L. M. Given (Ed.), *The SAGE encyclopedia of qualitative research methods* (pp. 845–846). SAGE Publications Inc. http://dx.doi.org/10.4135/9781412963909

Chomsky, N. (1989). The culture of terrorism. In Chomsky, N. (1999), *Essential classics in politics Noam Chomsky*. Electric Book: Pluto Press.

Chomsky, N. (1989a). *Necessary illusions: Thought control in democratic societies*. South End Press.

Chouliaraki, L., & Fairclough, N. (1999). *Discourse in late modernity: Rethinking critical discourse analysis* (Critical discourse analysis series). Edinburgh University Press.

Deardorff, D. K., & Jones, E. (2023). Intercultural competence as a core focus in international higher education. In *The handbook of international higher education* (pp. 223-241). Routledge.

Fraser, N. (1990). Rethinking the Public Sphere: A Contribution to the Critique of Actually Existing Democracy. *Social Text*, *25/26*, 56–80. https://doi.org/10.2307/466240

Flores, Y. (2017). *The pedagogy of violent extremism*. Peter Lang, International Academic.

Foucault, M. (1972). *The archaeology of knowledge and the discourse on language*. Pantheon Books.

Foucault, M., Simon, J., & Elden, S. (2017). Danger, crime and rights: A conversation between Michel Foucault and Jonathan Simon. *Theory, Culture & Society, 34*(1), 3–27.

Freire, P. (1970). *Pedagogy of the oppressed*. New York, NY: Herder and Herder.

Gadotti, M. (2017). The global impact of Freire's pedagogy. *New Directions for Evaluation, 2017(155)*, 17–30. https://doi.org/10.1002/ev.20253

Gee, J. (2015). *Social Linguistics and Literacies: Ideology in Discourses* (5th ed.). Routledge. https://doi.org/10.4324/9781315722511

Gramsci, A. (1971). *Selections from the prison notebooks*. Q. Hoare & G. Nowell Smith, (Eds.). Continuum International Publishers.

Groen, J., & Kawalilak, C. (2014). *Pathways of adult learning: Professional and education narrative*. Canadian Scholars' Press.

Guo, Q. (2019). Competency in globalization and intercultural communication. *The Wiley handbook of global workplace learning*, 277-299.

Gutiérrez, K. D., & Rogoff, B. (2003). Cultural ways of learning: Individual traits or repertoires of practice. *Educational researcher*, *32*(5), 19-25.

Habermas, J. (1987). *The theory of communicative action: Vol. 2. Lifeworld and system: A critique of functionalist reason* (T. A. McCarthy, Trans.). Beacon Press.

Hamilton, Tett, & Crowther. (2012). More powerful literacies: An introduction. In L. Tett, M. Hamilton, & J. Crowther (Eds.), *More powerful literacies* (1st ed., pp. 1-12). National Institute of Adult Continuing Education.

Hofstede, G. (2001). *Culture's consequences: Comparing values, behaviors, institutions and organizations across nations* (2nd ed.). Sage Publications.

Hofstede, G., Hofstede, G. J., & Minkov, M. (2010). *Cultures and organizations: Software of the mind* (3rd ed.). McGraw-Hill.

Jenkins, J., & Panero, S. M. (2024). *Global Englishes: A resource book for students*. Routledge.

Kawalilak, C., Groen, J., & Rocco, T. S. (2021). Adult Learning. In *The Handbook of Adult and Continuing Education* (1st ed., pp. 73–80). Routledge. https://doi.org/10.4324/9781003447849-10

Kincheloe, J., & Steinberg, S. (2010). Why teach against Islamophobia: Striking the empire back. In J. Kincheloe, S. Steinberg, & C. Stonebanks, C. (Eds.), *Teaching against Islamophobia* (Counterpoints 346). Peter Lang Publishers.

Kincheloe, J., McLaren, P. Steinberg, S., & Monzo, L. (2018). Critical pedagogy and qualitative research. In N. Denzin, & Y. Lincoln (Eds.), *The Sage handbook of qualitative research.* SAGE Publications Inc.

Kress, G. (2003). *Literacy in the new media age*. Routledge.

Krull, W. (2016). The integrative capacity of the humanities in a globalized world. *European Review, 24*(2), 232. https://doi.org/10.1017/S1062798715000587

Lankshear, C., & Knobel, M. (2011). Part 2 - New Literacies: Some Everyday Practices. In *New Literacies: Everyday Practices and Social Learning*. McGraw-Hill Education.

Lipman, P. (2004). *High stakes education: Inequality, globalization, and urban school reform*. New York, NY: Routledge.

Macedo, D. (2006). *Literacies of power: What Americans are not allowed to know*. Westview Press.

McCarthy, T. (1990). Lifeworld and system in Habermas's theory of modernity. *Philosophy & Social Criticism*, *16*(3), 1–19.

Merriam, S. B., & Bierema, L. L. (2014). *Adult learning: linking theory and practice* (First edition.). Jossey-Bass.

Merriam, S. B., Caffarella, R. S., & Baumgartner, L. M. (2007). *Learning in adulthood: A comprehensive guide* (3rd ed.). Jossey-Bass.

Meyer, M. (2001). Between theory, method, and politics: Positioning of the approaches to CDA. In R. Wodak & M. Meyer (2001). *Methods of critical discourse analysis*. SAGE Publications Inc.

Nussbaum, M. C. (2010). Not for profit: *Why democracy needs the humanities*. Princeton

Said, E. W., & Viswanathan, G. (2001/2002). *Power, politics, and culture: Interviews with Edward W. Said* (1st ed.). Pantheon Books.

Sayyid, S. (2003). *A fundamental fear: Eurocentrism and the emergence of Islamism* (2nd ed.). Zed Books

Seidlhofer, B. (2011). *Understanding English as a Lingua Franca*. Oxford University Press.

Senduk, J. S., Lolowang, I., & Kumayas, T. A. (2025). The Dystopia Characteristics in Aldous Huxley Brave New World. *Journal of English Culture, Language, Literature and Education, 13*(2), 199-217

Sitton, J. (2003). *Habermas and contemporary society*. Palgrave Macmillan US.

Thompson, J. B. (1990). *Ideology and modern culture: Critical social theory in the era of mass communication*. Stanford University Press.

Van Dijk, T. (2015). Critical discourse analysis. In D. Tannen, H. E. Hamilton, & D. Schiffrin, (Eds.), *The handbook of discourse analysis* (2nd ed.). John Wiley & Sons, Inc.

Weber, J. E. (2014). Humanism within globalization. *Adult Learning*, *25*(2), 66-68.

About the Author

Hussein Chaitani, DBA, Ph.D., is a faculty member in the School of Business at the Southern Alberta Institute of Technology (SAIT). He holds a Doctor of Business Administration and a PhD in Educational Research. His research focuses on adult education, critical literacy, global competence, critical discourse analysis, meaning-making, sociocultural learning theory, and emerging technologies in education. His scholarly work examines the intersections of ideology, culture, discourse, power, and learner agency in adult learning environments. He has taught across undergraduate, graduate, professional, and continuing education programs in Canada and internationally.

Address

Dr. Hussein Chaitani,
Faculty, School of Business
Southern Alberta Institute of Technology, 1301 – 16 Avenue NW, Calgary AB, T2M 0L4, Canada.
e-Mail: hussein.chaitani@sait.ca

Incorporating Inquiry-Based Learning and Analytical Psychology into the High School Classroom

Michael Paul Lukie[1]; **Kathleen Zawaly**[2]
[1] University of Winnipeg, Faculty of Education, Winnipeg, Canada.
[2] University of Manitoba, Rady Faculty of Health Sciences, Winnipeg, Canada.

Abstract

This paper describes how the theories of Carl Jung may be used in a creative way in high school social studies and history classrooms to help students learn about analytical psychology and the projective dynamics involved in world conflicts. Rather than teaching students using a fact-based approach, pre-service teachers learn how to frame the curriculum around an inquiry approach to teaching that places students' questions, ideas, and observations at the centre of the learning experience that includes an analytical psychology perspective. A pedagogical example is presented focusing on the psychodynamics of the Euromaidan uprising that occurred in Ukraine 2013-2014. The psychodynamics investigated in the conflict include the myth of the scapegoat, the myth of the island, the good-evil archetype, predator anxiety, and archetypes where Jung's 'mother archetype' and the image of the mother is presented as a potential healing solution. By examining world conflicts through this interdisciplinary example, pre-service teachers may begin to transform their high school pedagogy as they understand the psychodynamics of such conflicts and the ways they may be depotentiated using concepts from analytical psychology.

Keywords: Analytical psychology; archetypes; creativity; inquiry-based learning; peace and conflict studies; projective dynamics; scapegoating; teacher education.

Introduction

Our university provides a course in advanced curriculum inquiry (ACI) to after-degree education students in a Faculty of Education in Western Canada. The background of the students is diverse and includes students with arts and science degrees in various disciplines. In the course, students engage with the concept of teacher-as-professional inquirer, they learn about advanced pedagogical theories, and the implementation of these theories into practice through class lectures, seminars, and in class student-teacher discussions.

The pedagogical theories students learn about during the lectures include: 1) inquiry-based learning (IBL), where students' questions, ideas, and observations are placed at the centre of their learning experience (e.g., Dana et al., 2011; Hammer & Schifter, 2001; Higgins, 2018; Pedaste et al., 2015), 2) problem-based learning (PBL), where a problem drives the student learning (e.g., Padmavathy et al., 2013; Savin-Baden, 2003; Widyatiningtyas et al., 2015), 3) ethnomathematics, the relationship between mathematics and culture (e.g., d'Ambrosio, 2001; Kenschaft, 2011; Nicol et al., 2024), and 4) analytical psychology, a branch of psychotherapy in the tradition of Carl Gustav Jung that examines the unconscious and conscious elements of the human psyche (e.g., Dobson, 2008, 2009; Mayes, 1999, 2003, 2005, 2007; Moore, 1991; Moore & Gillete, 1992, Sharp, 2010).

After the pre-service teachers learned about the advanced pedagogical theories mentioned above, their course assignment was to select a high school grade level curriculum topic from arts or science, develop a research question based on the topic, investigate it through one or more of the advanced pedagogical theories, and develop a pedagogical activity to be used in the classroom thereby putting the course theory into practice.

For example, students have investigated the grade nine mathematics topic of line and rotation symmetry through ethnomathematics (d'Ambrosio, 2001) that presents mathematics at an intersection with the culture of India. In this case, students investigated the traditional folk art of India called Rangoli

where colorful geometric and symmetric patterns are created on a flat surface using colored rice flour, sand, or chalk. The symmetrical designs were then analyzed by students for their rotational symmetry and geometric patterns. To illustrate another example, students applied PBL by investigating how to demonstrate the inverse square property of light as the problem that facilitated their learning (Padmavathy et al., 2013). For this PBL example, students designed a grade 12 physics activity that used a cellular phone light meter app to collect quantitative data to graphically demonstrate that light intensity decreases by perfect squares when moving away from a light source (Lukie, 2024).

For this paper, and to specifically highlight how IBL could potentially be used in conjunction with analytical psychology in the high school classroom, the authors have chosen to describe an example presented to pre-service teachers in the ACI course. For this example, pre-service teachers were presented with how to use IBL (Dana et al., 2011) with their classroom students to analyze the psychodynamics of a world conflict such as the 2013-2014 Ukrainian Euromaidan uprising that precipitated the current war with Russia. In this case, analytical psychology was used as a lens to analyze how to depotentiate the conflict and bring the conflict to a peaceful resolution.

Firstly, the pre-service teachers learned about the stages of the IBL cycle to investigate the Euromaidan conflict through and these inquiry stages included: 1) develop a wondering, 2) collect data, 3) analyze data, 4) take action, and 5) share with others (Dana et al., 2011), (see Figure 1). Figure 1 graphically represents the IBL cycle and its five stages with the actions attended to by students at each stage of the inquiry cycle.

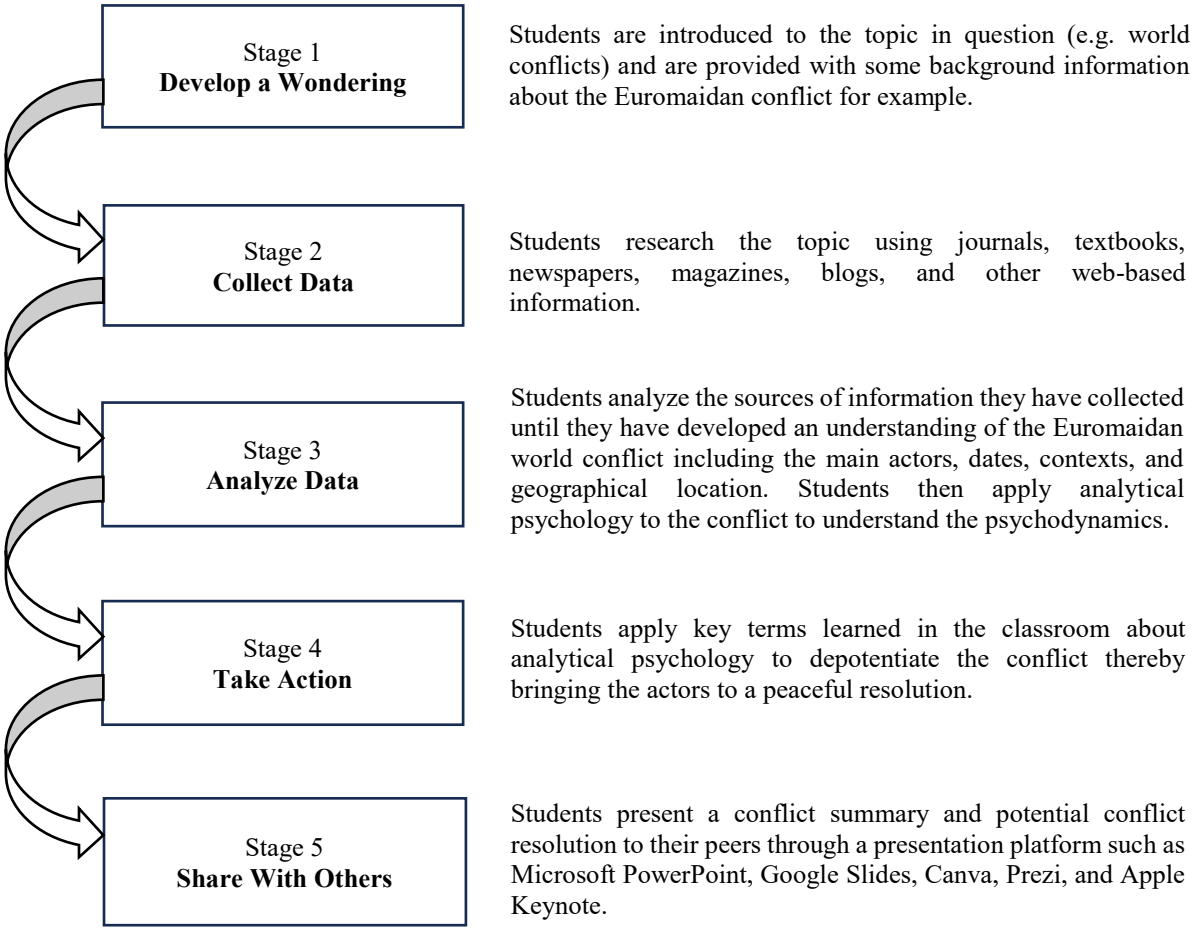


Figure 1: The Inquiry-Based Learning Cycle (Dana et al., 2011).

Secondly, the pre-service teachers in the ACI course learned about some analytical psychology concepts that could be applied to the conflict at stage 3 and stage 4 of the inquiry cycle (see Figure 1), thereby providing a basis through which students would have the necessary background information to formulate a resolution to the conflict and depotentiate it. It is hoped that the pre-service teachers take these analytical psychology terms into their classrooms and apply them to other world conflicts or situations requiring a conflict resolution.

The analytical psychology terms are being described now to foreground them for the reader. However, these terms and their application at stage 3 and stage 4 of the inquiry cycle are explained in detail subsequently in the paper when the conflict is analyzed in more depth. The analytical psychology terms the pre-service teachers learned about during the ACI course illustrating concepts to analyze the Euromaidan world conflict through included:

- The myth of the scapegoat:
  - Scapegoating occurs when a 'scapegoat' is perceived by some group to be different from the rest of the group and must be excluded from the group to remain whole (Colman, 1995).
- The myth of the island:
  - The 'myth of the island' suggests that an island group is self-sufficient, strong, and can control its own destiny without outside help (Coleman, 1995).
- The good-evil archetype:
  - The primordial mental image or 'archetype' inherited by all of us as recurrent symbols and motifs for the battle between good and evil. (Corbett, 2009).
- Predator anxiety:
  - The fear that we may become prey, is an important source of human aggression, increases paranoia towards others, and adds to our intolerance of people different from us (Corbett, 2009).
- Archetypes/mother archetype:
  - Archetypes represent the primordial structural elements of the human psyche (Sharp, 2010). These primordial mental images are inherited by all of us as recurrent symbols and motifs such as Jung's 'mother archetype' (Jung, 1959/2014c) representing maternal solicitude and sympathy.

The study of the Euromaidan world conflict using IBL and analytical psychology could apply to different high school disciplines including social studies, history, and psychology and is therefore interdisciplinary in nature. Specifically in the Canadian western province of Manitoba, the new grade twelve social studies curriculum deals with topics such as peace and conflict, armed conflict, conflict resolution, negotiation, peace building, and peacemaking (Manitoba Education and Training, 2026a). In addition, the new Manitoba psychology curriculum deals with topics such as variations in individual and group behaviour (Manitoba Education and Training, 2026b), which are applicable to the analytical psychology concepts of scapegoating, the myth of the island, predator anxiety, and archetypes. Therefore, many curricular outcomes from high school social studies and psychology may be met when students investigate and study world conflicts through analytical psychology.

2. Inquiry in the Classroom

An inquiry approach to teaching and learning places students' questions, ideas and observations at the centre of the learning experience (Contant et al., 2018) where they are provided with the opportunity to become self-directed and reflective learners. In an inquiry classroom, students explore, investigate, and conduct student directed research during the learning process rather than answering teacher directed questions to get to the correct answer. The benefit of an inquiry-based pedagogy is that it facilitates the creation of a classroom where students are engaged in "open-ended, student-centered, hands-on activities" (Colburn, 2000, p. 42) or a constructivist pedagogy.

Such a constructivist pedagogy includes classroom lessons where students are provided the opportunity by the teacher to actively construct knowledge through their social interactions and individual experiences rather than passively taking in information (Biggs, 1996). In North American schools, Roth and Roychoudhury (1984) suggested that the default epistemology in classrooms is

objectivism where students passively accept knowledge from their teacher in the form of note-taking and teacher centered lectures (Duit & Treagust, 2003). However, with the increased use of constructivist pedagogies such as inquiry-based learning, today's classrooms are moving away from the lecture and note-taking objectivist paradigm.

Interestingly, Kinchin (2004) has reported that when students are provided a choice between a constructivist classroom where they are active builders of understanding using inquiry-based learning and an objectivist classroom where they are passive receivers of information through lectures and note taking, that students had an "overwhelming preference" (p. 301) for a constructivist learning environment. Therefore, IBL is being presented in this paper as a way for teachers to engage students with the curriculum through a constructivist pedagogy where students are active builders of their knowledge rather than through the traditional lecture-based objectivist pedagogy where students are passive receivers of information.

Using an inquiry cycle (Dana et al., 2011) in a social studies, history, psychology, English or other related subject areas to investigate a given world conflict through, may result in pre-service teachers thinking 'historically' and there are benefits to a teacher's pedagogy when they think 'historically' (Andrews & Burke, 2007; Neumann, 2012). These benefits are expressed by Neumann (2012) when he writes that an inquiry approach to learning and studying history "suggests that teachers have more success with their students when they frame course content around meaningful questions, employ disciplinary habits of mind, and take students' thinking seriously" (p. 383). For example, the questions students develop when researching a world conflict using an inquiry approach represent the framing of meaningful questions into the course content that Neumann (2012) is referring to.

The inquiry approach to teaching can be extended to teaching historical content in the curriculum and may "counter the typical fact-based approach to history that makes it one of students' least favorite subjects" (Neumann, 2012, p. 283). Andrews and Burke (2007) also argued for the pedagogical advantages when using an inquiry approach in the history and social studies curriculum and suggested that this approach may help students care more about history rather than simply seeing it as "a list of facts to memorize" (p. 35).

Recently, Hattie (2023) has suggested that inquiry-based teaching methods have a medium effect size, d = 0.50 (where Cohen's d is a standardized measure of effect size). This effect size helps educational researchers compare the effectiveness of different teaching strategies and when compared to inquiry teaching, the effect size for these other teaching strategies include: 1) homework d = 0.28, 2) direct instruction d = 0.58, and 3) formative assessment d = 1.01. Therefore, inquiry-based teaching has an effect size similar to direct instruction or lecture-based instruction and less than formative assessments like unit tests or exams.

3. Analytical Psychology in the Classroom

By including analytical psychology into an education course on advanced curriculum inquiry, an attempt is being made to stimulate pre-service teachers' engagement with topics that Gitz-Johansen (2016) refers to as "the Other of education" (p. 379), topics that include the unconscious, personal relations, emotions, imagination, intuition, working with symbols, meaning, and spirituality. Indeed, by providing the theories of Jung's analytical psychology in an education course, where pre-service teachers analyze the psychodynamics of a world conflict from a high school social studies context, the authors are attempting "to create a context wherein this noteworthy psychology might be applied to maximum effect" (Shaker, 1982, p. 243).

Creating a context for students with their learning is important because there is strong evidence indicating that teaching and learning methods that are embedded in a context are useful and essential (Stinner, 1994, 2006). Willms et al. (2009) also stressed the importance of student engagement in the classroom and argued that to be engaged in learning, students must find what they are learning in the classroom to be meaningful and relatable to their own lives.

The pre-service teachers in the ACI course who are seeking a second degree, may have a greater capacity to reflect upon their teaching practice and may be more psychologically ready to consider the significance of Jungian scholarship. Dobson (2008) suggested that the dominant approaches to educational psychology have long overlooked the unconscious dimensions of the mind. Therefore, to inspire pre-service teacher self-reflection about their teaching practice, it is important for education programs to include the four images of maturity outlined by Moore (1991) and the work of Dobson (2009) who extended this work about archetypes in the context of education through the Royal, Warrior, Magician, and Lover images of maturity. Faculties of Education would also be wise to consider including in education programs the work of Mayes (1999, 2003, 2005, 2007) who examined analytical psychology in the context of teacher education, Fidyk (2017) who examined the influence of cultural and familial complexes in the classroom, and Lukie (2021) who examined the psychodynamics of conflicts that may arise between pre-service teachers and their cooperating teachers as a result of differing worldviews and ontological perspectives.

Although Jung's analytical psychology has provided considerable thought to the methods for assisting adults in their psychic growth, Jung cautions us when he writes "I must warn you again most emphatically that it would be very unsound to apply these methods directly to children" (Jung, 1954/2014a, par. 111, p. 58). Therefore, teachers and pre-service teachers should be cautious when incorporating Jung's theories in the classroom. Although teachers and pre-service teachers may be psychologically ready to comprehend the complexities of analytical psychology, the young students in their care may not be as psychologically ready. Importantly, when integrating analytical psychology into the high school classroom, it is recommended that teachers and pre-service teachers use their professional judgement about what analytical psychology topics to introduce and when.

The inclusion of analytical psychology using an inquiry approach to teaching social studies and history "may invite education students to reflect on the totality of the psyche, both unconscious and conscious, further informing their professional knowledge and practice" (Lukie, 2021, p. 93) and has the potential to "open learning to unimagined practices and potentialities" (Fidyk, 2017, p. 97). Dobson (2009) argued that Jungian-based perspectives study the totality of psychic processes, both conscious and unconscious, and this holistic approach to the psyche would complement the educational psychology as well as curriculum theory presently being taught in current education programs. However, Fidyk (2017) stressed that it is "unlikely that teachers will turn to analytical psychology as a way to understand themselves or their pupils" (p. 90), so it is important that Jung, Jungian, and post-Jungian scholars are included in the curriculum of teacher education programs.

4. The Inquiry-Based Learning Cycle

For the IBL cycle presented to pre-service teachers during the ACI course, pre-service teachers were presented with the Euromaidan uprising of 2013-2014 as an example world conflict to apply the IBL cycle to and they were shown how to us the following inquiry cycle stages: 1) develop a wondering, 2) collect data, 3) analyze data, 4) take action, and 5) share with others (Dana et al., 2011), see Figure 1.

When students 'develop a wondering' at stage 1 of the inquiry cycle, they are formulating a question to investigate that interests them and falls within the scope of the curriculum outcomes being studied in the classroom at the time. At this stage of the inquiry cycle the teacher can choose to provide students with a specific question to investigate rather than have the students develop a question themselves. For example, How could analytical psychology be applied to a given world conflict such as the Euromaidan uprising to understand and learn about the psychodynamics of this conflict to help depotentiate it? However, when the teacher provides students with a question to inquire about such as with the analysis of the Euromaidan uprising, this is called 'guided inquiry', where the teacher provides the "problem to investigate and students devise their own procedure to solve the problem" (Colburn, 2000, p. 42).

When students 'collect data' at stage 2 of the inquiry cycle, they engage in a literature review to collect relevant sources of information about the conflict and to understand the facts involved in the conflict. An effort is made to guide students to academic journals and textbooks rather than relying on 'grey literature' such as internet sources and mainstream media, but students are encouraged to research the question through newspapers, magazines, blogs, and other web-based sources that may be vetted by the teacher.

When students 'analyze data' at stage 3 of the inquiry cycle, they are analyzing their research sources to help them understand the Euromaidan uprising through the lens of analytical psychology that may include: 1) the myth of the scapegoat, 2) the myth of the island, 3) the good-evil archetype, 4) predator anxiety, and 5) archetypes.

At stage 4 of the inquiry cycle, 'take action', students propose a solution to depotentiate the conflict that may include universal archetypes (Jung,1959/2014b) such as the 'mother' archetype. At stage 5 of the inquiry cycle, 'share with others', students present their analysis and conflict resolution of the conflict to the class. The teacher facilitates classroom discussion between presentations to ensure further student learning and understanding.

5. The Inquiry Based Learning Cycle Applied to the Euromaidan Conflict

For the remainder of this paper, an overview of the Euromaidan conflict is provided and then the conflict is analyzed through the analytical psychology concepts of the myth of the scapegoat, the myth of the island, the good-evil archetype, and predator anxiety. Finally, a solution based upon Carl Jung's image of the mother (Jung, 1959/2014c) is presented that may have potentially assisted in depotentiating the conflict. This example was presented to the pre-service teachers in the ACI course as a way to illustrate how analytical psychology and the theories of Carl Jung could be applied to a world conflict through an IBL approach. The pre-service teachers had no input into the analysis of the Euromaidan conflict as the analysis was presented in the ACI course as an example of what students would be expected to do during the IBL cycle.

The IBL cycle applied to the Euromaidan conflict is presented in Table 1 and the student and teacher activities are described for further clarification. Table 1 describes the five stages of the IBL cycle and what the teacher and students are engaged with during the five stages of the inquiry cycle.

Table 1: Student and Teacher Activities During the IBL Cycle.

Inquiry Cycle Stages			
Stage	**Title**	**Student Activities**	**Teacher Activities**
1	Develop a Wondering	Students formulate a question to investigate that is of interest to them but falls within the bounds of the curricular outcomes being studied. In the case of the Euromaidan conflict, the teacher provided the inquiry question to the students. How could analytical psychology be applied to a given world conflict such as the Euromaidan uprising to understand and learn about the psychodynamics of this conflict to help depotentiate it?	If the teacher provides students with a question to inquire about then this is called 'guided inquiry'. The teacher provides the inquiry question, but students devise their own procedure and find their own sources of information and methods to answer the question.
2	Collect Data	Students collect sources of information to help answer the inquiry question. After reading and collecting information about the conflict, students should have a good idea about the conflict, the circumstances leading to the conflict, and the actors involved.	An effort is made to guide students to academic journals and textbooks rather than relying on 'grey literature' such as internet sources and mainstream media. The teacher may provide guidance and vet the veracity of the sources for the students.
3	Analyze Data	Students read through and analyze their research sources to help them understand the inquiry question and the actors and dynamics involved. At this stage of the inquiry cycle students analyze the conflict using analytical psychology and the theories of Carl Jung presented to them by the teacher.	The teacher familiarizes students with the analytical psychology terms so that they can apply them to the conflict including: the myth of the scapegoat, the myth of the island, the good-evil archetype, predator anxiety, and archetypes.
4	Take Action	Students apply the key concepts from analytical psychology to provide a conflict resolution. In the case of the Euromaidan conflict, the lens for student analysis was analytical psychology but other ways to analyze the conflict could equally be applied.	As students develop a conflict resolution with the application of analytical psychology, the teacher may provide suggestions to move the analysis along. The teacher ensures that the students are applying the concepts of analytical psychology correctly.
5	Share with Others	Students present their analysis and conflict resolution about the Euromaidan uprising to their peers.	The teacher facilitates classroom discussion between the students after each presentation to promote discourse between the students.

5.1. Stage 1 of the Inquiry Cycle: Develop a Wondering

At stage 1 of the inquiry cycle 'develop a wondering', students formulate a question to investigate that is of interest to them but falls within the bounds of the curricular outcomes being studied. In the case of the Euromaidan conflict, the teacher provided the inquiry question to the students; How could analytical psychology be applied to a given world conflict such as the Euromaidan uprising to understand and learn about the psychodynamics of this conflict to help depotentiate it? Students now devise their own procedure and find their own sources of information and methods to answer the question.

5.2. Stage 2 of the Inquiry Cycle: Collect Data

At stage 2 of the inquiry cycle 'collect data', the students collect sources of information to help answer the inquiry question. After reading and collecting information about the conflict the students should have a good idea about the conflict, the circumstances leading to the conflict, and the actors involved. An effort is made to guide students to academic journals and textbooks rather than relying on 'grey literature' such as internet sources and mainstream media. However, students can research the topic using journals, textbooks, newspapers, magazines, blogs, and other web-based information. The teacher may provide guidance and vet the veracity of the sources for the students.

A complete summary of the Euromaidan conflict is now presented as it precipitated the current war with Russia. This detailed analysis is being included in this paper because the authors contend that it is important to have a complete summary of the Euromaidan conflict since the war between Ukraine and Russia is in the news daily and has not yet been resolved. The hope is that other social studies and history teachers may use this Euromaidan analysis when teaching about world conflicts and conflict resolution using IBL.

The conflict began in Kyiv, Ukraine November 2013 when a series of large-scale protests were sparked by Ukrainian President Viktor Yanukovych's "abrupt, almost demonstrative postponement of signing the agreement" (Shevsky, 2022, p. 857) on increasing Ukraine's political association and free trade with the European Union (EU). Instead, Yanukovych chose to accept a Russian deal that would bring Ukraine's economic ties closer with Russia. This decision led to financial crisis and street protests in the Maidan Nezalezhnosti central square of Kyiv, and these protests were referred to as the Maidan Revolution or Euromaidan (Shevsky, 2022). One of the main reasons for the sudden change in Yanukovych's policy was the Western media's accusation that Russia had exerted pressure on Yanukovych to change course because Russian leadership was opposed to Ukraine's economic and political integration with the West and the possibility of its membership in the North Atlantic Treaty Organization (NATO) (Bebler, 2015).

The Euromaidan protests were fueled by some Ukrainians' perception of widespread government "corruption, nepotism, distrust of power, the use of influence to seize businesses" (Shevsky, 2022, p. 857) and Yanukovych's perceived authoritarianism with his restrictions on press freedom. The protests were also fueled by the distinct socioeconomic division between East and West Ukraine. In the West, where the protests originated, the population predominantly spoke Ukrainian, focused on agriculture, and had an average annual per capita income in 2013 of 4,705 United States dollars (USD). By contrast, the East predominantly spoke Russian, focused on heavy industry from Soviet investment, and had an annual per-capita income of 12,690 USD (Shevsky, 2022). Therefore, it is not surprising that "the main participants in the protest movement on Maidan Square came largely from the western regions" (Shevsky, 2022, p. 852) who wanted to secure their economic future with the EU.

As the protests progressed, the role of social media played an important part in Ukraine's Euromaidan uprising by amplifying the protesters' message and helping organize many activities to sustain the movement. Facebook became the main online tool for the protests and an 'official' Euromaidan Facebook page called 'Euromaidan SOS' was organized by human rights defenders to provide "the continuous need for legal assistance and accumulated information about victims of government repression" (Bohdanova, 2014, p. 137). Other crowdsourcing was achieved through Twitter, YouTube, and Ustream and these internet platforms served to sustain Euromaidan in helping track Ukrainians who were detained and had gone missing during the protests (Bohdanova, 2014).

In January 2014, the conflict was further exacerbated when 'dictatorial' laws were passed that increased the penalties against the members of the protest movement. However, the culmination of the Euromaidan uprising was the shooting of the "heavenly hundred" (Shevsky, 2022, p. 858) on February 20, 2014, when snipers opened fire on protesters and police officers. The killing of these 100 Ukrainians became the turning point of the conflict when Yanukovych fled the country and Oleksandr Valentynovych Turchynov was appointed as acting president of Ukraine the following day. After Yanukovych fled, Turchynov was elected president of Ukraine on February 23, 2014, and the former Ukrainian Prime Minister Yulia Tymoshenko, who was imprisoned by Yanukovych on politically motivated charges of corruption, was freed from custody (Shevsky, 2022). As the tensions intensified, Euromaidan entered its second phase when on February 27, 2014, heavily armored military units without markings (later identified as Russians) took over the Crimean parliament in Simferopol (Marples & Mills, 2014). The Ukrainians responded peacefully to the Russian show of force, and on March 16, 2014, a referendum was held to annex the Crimean Peninsula "during which it was reported that over 96% supported the peninsula joining the Russian Federation" (Marples & Mills, 2014, p. 16).

Finally, the world community reacted to the annexation of Crimea when the United Nations (UN) general assembly "adopted a resolution on Ukraine's territorial integrity" (Bebler, 2015, p. 48) on March 27, 2014. The resolution condemned the annexation of Crimea and appealed to the international community to condemn the aggression. The UN vote on the resolution saw a majority of one hundred UN members supporting the resolution with eleven members voting against it, resulting in Russia's diplomatic isolation (Bebler, 2015).

5.3. Stage 3 of the Inquiry Cycle: Analyze Data

The following four sections, The Myth of the Scapegoat, The Myth of the Island, The Good-Evil Archetype, and Predator Anxiety, represent step 3 of the inquiry cycle 'analyze data' (Dana et al., 2011). At this stage of the inquiry cycle students analyze the Euromaidan conflict through analytical psychology and the theories of Carl Jung presented to them by the teacher.

5.3.1. The Myth of the Scapegoat

Scapegoating occurs when a 'scapegoat' is perceived by some group to be different from the rest of the group and therefore, must be sacrificed or excluded so that the group can remain whole and survive (Colman, 1995; Perera, 1986). The scapegoat myth suggests that the group is not to blame for its pains and problems and as a result, the group will use the process of scapegoating to remove 'the scapegoat' or the unworkable and dissident parts from the group (Montero & Colman, 1995). Colman (1995) contended that the process of scapegoating is used by the group to detoxify and reject negative elements from its consciousness and if the group does not face the problem of its scapegoats, then there is little group development. In the conflict, Russia was the scapegoat for Ukraine and because Crimea consisted of a predominantly Russian speaking majority among the Crimean population who "generally favoured Crimea's secession from Ukraine and rejoining Russia" (Bebler, 2015, p. 43), Crimea was also scapegoated.

Yanukovych was the personified scapegoat for the Ukrainian people because he was aligned with Russia and Ukrainians could project all their group unconscious shadow elements onto him. These shadow elements included that Yanukovych wanted closer ties with Russia when Ukraine desired closer ties with the EU. In Ukraine's group unconscious, Yanukovych was scapegoated because sacrificing him preserved Ukrainian social cohesion and the potential for economic security with the EU. Yanukovych was sacrificed because as Corbett (2009) explained, "the ritual sacrifice both serve the purpose of channelling outward aggression that might otherwise cause conflict within society" (p. 92). The Ukrainian population symbolically projected their sins onto Yanukovych and were able to purify themselves of the Russian contagion by eliminating him. In addition, since the conflict was resulting in the innocent killing of Ukrainians where "over a hundred protestors were shot dead by the security forces" (Reid, 2023, p. 17) on February 2014, there was a need to find socially acceptable targets for their aggression instead of killing each other (Corbett, 2009).

Ukraine's group shadow was projected onto Russia and Crimea and their group shadow contained elements of fear that Ukraine may be taken over by Russia, including the loss of their

Ukrainian language and culture. At the time of the Euromaidan protests, Ukrainian society was divided into pro-Western and pro-Russian parts (Shevsky, 2022). In 2013-2014, the pro-Western portion of Ukraine was mainly in the Western part of the country, spoke Ukrainian as their first language, and had historical contacts with Poland and central Europe. By contrast, the pro-Russian portion of Ukraine was mainly in the East, spoke Russian as their first language, and was the site of Soviet investment in heavy industry and armaments production (Shevsky, 2022).

Therefore, the fear for the loss of the Ukrainian language resulted in the Ukrainian Parliament proposing a law on minority languages in 2014 that abolished the official status of the Russian language (Bebler, 2015). The law was vetoed by the interim President and never went into effect but was used by Russian mass media propaganda to scare Russians in Crimea, further explaining why Russia invaded Crimea on February 2014 (Shevsky, 2022; Reid, 2023).

5.3.2. The Myth of the Island

Coleman (1995) writes that beyond the scapegoating phase is a common dynamic of isolation that may develop within a group, and he refers to this as the 'myth of the island'. The 'myth of the island' suggests that an island group can control its own destiny without outside help and is self-sufficient and strong. A group experiencing the 'the myth of the island' attempts to gain strength by integrating any differences into the group collective rather than relying on the outside world (Colman, 1995). However, this integration of any differences within the group can lead to isolationism from the world community and the isolated island is therefore unable to benefit from changes in technology, new ideas, and cultural diversity. An example of such an isolated island is Cuba because it did not rely on the West for goods and services but instead relied on the Union of Soviet Socialist Republics (USSR) (Spenser, 2005). The USSR could also be considered an island as it was isolated from the West prior to 1991 during the Cold War.

Prior to Ukraine's independence from the USSR in 1991 (Kuzio, 2016; Reid, 2023), it was an island of the USSR and after the fall of the USSR in August 1991, Ukraine did not want to become an island of the new Russian Federation. During the Euromaidan uprising, Ukraine wanted to join the EU island and all the benefits it could provide, but Ukrainian politicians such as President Viktor Yanukovych wanted to remain part of the Russian island. To entice Ukraine onto the Russian island, on December 2013, Russia "announced that it would provide Ukraine with a package of multi-billion-dollar loans and discounts on natural gas prices" (Shevsky, 2022, p. 853). However, the Ukrainian population recognized that the Russian deal would lead to their 'island' being isolated from the EU, may lead to less control of its economy, and may be a threat to Ukraine's self-determination. Therefore, in November 2013, after Yanukovich abandoned the trade deal with the EU (Reid, p. 17), mass demonstrations and protests began in Kyiv's Maidan Square to preserve the Ukrainian 'island'.

5.3.3. The Good-Evil Archetype

Archetypes represent the primordial structural elements of the human psyche (Sharp, 2010) and these primordial mental images are inherited by all of us as recurrent symbols and motifs. The great archetypal battle of good against evil (Corbett, 2009) is represented in the conflict between Ukraine and Russia where the evil enemy becomes the heretic or heathen.

Russia perceived Ukraine as the 'evil' heathen and considered themselves to be on the side of 'good'. Ukraine represented the archetypal manifestation of the historical battle between the USSR and the West. Since Ukraine wanted to align itself with the West through an economic deal with the EU and desired membership in NATO (Marples & Mills, 2014; Shevsky, 2022), Russia perceived Ukraine as the 'evil' manifestation of its Western hatred and distrust.

The Russians were concerned that the Euromaidan protests in Ukraine may escalate and could threaten the stability of the Russian Federation. The Russians perceived their nationalism as a kind of religion and by threatening to invade Ukraine via Crimea, its leaders perceived the subsequent necessary killing of Ukrainians as a 'sacred task' (Corbett, 2009). The Crimean people, "in which a majority voted for the unification with Russia" (Shevsky, 2022, p. 859), perceived themselves as belonging to a noble

cause and larger whole (Corbett, 2009). This noble 'good' cause was the reintegration of Crimea with Russia.

Ukraine perceived Russia as 'evil' and in the 'goodness' of its cause for economic autonomy from Russian control. Since Ukraine declared independence in 1991 (Kuzio, 2016; Reid, 2023) and became an independent country, it has been fighting the 'good vs. evil' archetypal battle against Russian domination. Ukraine perceived their cause for closer ties with the West and EU through economic measures and a potential membership in NATO as its continued 'good vs. evil' fight with Russia. The Ukrainian 'good' cause represented a fight between the light and the dark and they did not want to be drawn into the Russian darkness. Ukraine was aware of the Russian 'darkness' having faced a genocide at the hands of Stalin from 1932-1933 (Bilinsky, 1999) and through the Euromaidan protests, Ukrainians mounted their 'good' cause.

5.3.4. Predator Anxiety

Another psychodynamic consequence of the Euromaidan conflict is what Corbett (2009) describes as predator anxiety. Corbett (2009) explained that predator anxiety is the fear that we may become prey, is an important source of human aggression, increases paranoia towards others, and adds to our intolerance of people different from us.

Russia seems to have been concerned about Ukraine's Euromaidan revolution spreading into its borders (Marples & Mills, 2014; Shevsky, 2022) and they feared that they may become prey to the sweeping global democratic changes that swept through the Middle East as with the Arab Spring in the early 2010's (Bayat, 2013; Campante & Chor, 2012; Goodwin, 2011; Stephan & Linz, 2013). In addition, Russians appeared to have become intolerant to people of difference including the homosexual communities and ethnic minorities within its borders (Gulevich et a., 2018; Kon & Riordan, 1993; Morris & Garibyan, 2021). Mölder (2021) suggested that Russians feared the West and as Corbett (2009) writes, cultural fears may be transmitted from generation to generation and are implanted during childhood.

Therefore, in the unconscious psyche of Russians, they may have come to understand that the West and the Ukrainian Euromaidan revolution became the container into which they could project the 'bad parts' of themselves and by annexing Crimea, rid themselves of these 'bad parts' represented by Ukraine. As a result of Russia's collective predator anxiety, their government invaded Crimea and sent troops to Ukraine to restore order before the situation could further escalate and threaten the autonomy of the Russian Federation (Marples & Mills, 2014; Shevsky, 2022).

5.4. Stage 4 of the Inquiry Cycle: Take Action

The following section represents a detailed analysis of step 4 of the inquiry cycle 'take action' (Dana et al., 2011) where students would be expected to apply analytical psychology to depotentiate the conflict and to provide their solutions to the conflict to bring about a peaceful resolution. As students develop a conflict resolution with the application of analytical psychology, the teacher may provide suggestions to move the analysis along and the teacher would ensure that the students are applying the concepts of analytical psychology correctly.

5.4.1. A Solution Based Upon the Image of Two Mothers

Jung (1959/2014b) suggested that archetypes are "universal images that have existed since the remotest of times" (par. 5, p. 5) and an example of one of these universal images is the image of the mother. The image of the mother, or the mother archetype, has been described as a universal image of nourishment and security "because of the protection it implies" (Jung, 1959/2014c, par. 156, p. 81) and represents "cherishing and nourishing goodness" (par. 158, p. 82). Jung (1959/2014c) proposed that the primordial figure of the mother is "more or less universal" (par. 159, p. 82) and represents a place beyond the skies where "there is a prototype or primordial image of the mother that is pre-existent and supraordinate to all phenomena in which the 'maternal,' in the broadest sense of the term, is manifest" (par. 149, p. 75).

The image of the mother is an appropriate image to be used when determining a potential resolution to the conflict between Ukraine and Russia because of the universal qualities the mother image possess for all the stakeholders involved. These universal qualities of the mother archetype are described by Jung (1959/2014c) in the following way:

> The qualities associated with it are maternal solicitude and sympathy; the magic authority of the female; the wisdom and spiritual exaltation that transcend reason; any helpful instinct or impulse; all that is benign, all that cherishes and sustains, that fosters growth and fertility. The place of magic transformation and rebirth, together with the underworld and its inhabitants, are presided over by the mother (par. 158, p. 82).

According to Swan-Foster (2016) "Jung found that image, metaphor, and symbol offered the most profound healing for himself and for his patients" (p. 184). Therefore, in attempting to assist the stakeholders in mediating a solution to the conflict, we contend that the image of the mother may be a potential source of healing because it has the potential to carry the stakeholders to a different level of consciousness. Both Ukrainians and Russians have mothers, and their respective countries may be collectively thought of as their motherland. Lauenstein et al. (2015) contended that using the metaphor of the motherland is a learned cue and is a common theme used to feminise the nation. Especially in times of crisis, Lauenstein et al. (2015) argued that the image of the feminine is heighted where 'emotional mothers' are depicted as being responsible for caring for their (national) family. Therefore, during the heightened time of crisis during the Euromaidan conflict, the unconscious image of the mother would be heightened in the consciousness and unconscious of Ukraine and Russia and may present a potential for healing.

Innes (1994) suggested that women are often presented as embodiments of the nation. Therefore, a healing image of two mothers holding hands, one Ukrainian and one Russian, could be represented as the embodiment of their nations' potential peace. Each mother in the image could hold an infant child, where the Ukrainian mother holds a Russian infant and the Russian mother holds a Ukrainian infant. The image portrays, all at once, the nurturing side of motherhood, how the countries are similarly connected through motherhood, and conveys that mothers will care and love a child even if it is not their own and from another country.

An advertising campaign could be initiated in each country that included several images that portray the relationship of the two mothers over time and how each of them grow old together with their children. The first image could portray a young Ukrainian and Russian mother each wearing their countries' traditional clothing and holding hands. The next image could portray older mothers holding each other's children. The next image could portray elderly mothers surrounded by their older children some of whom are now adults. Finally, the last image could portray two grandmothers holding hands surrounded by their multi-aged families. The addition of the time factor conveys that the two mothers' love for their families grows and deepens with time and how a resolution to the conflict would also take time. The campaign images could be displayed in bus shelters, in the subway, on billboards and on television. Over a few months, the advertising campaign of the two mothers could consciously spread the message of peace and unconsciously promote the need for a peaceful resolution to the conflict.

5.5. Stage 5 of the Inquiry Cycle: Share with Others

At stage 5 of the inquiry cycle 'share with others', students present their conflict summary and potential conflict resolution to their peers through a presentation platform such as Microsoft PowerPoint, Google Slides, Canva, Prezi, and Apple Keynote. The teacher facilitates a classroom discussion with students after each presentation to promote discourse between the students and to further their learning.

6. Suggestions for Future Research

Future research considerations include two possible trajectories. Firstly, we plan on interviewing pre-service teachers about their experiences with IBL. We will be interested in determining the conceptions pre-service teachers hold when using IBL and how they plan on using IBL in their future classrooms. We will use the research methodology phenomenography to analyze the data, and it seeks to map "the qualitatively different ways in which people experience, conceptualize, perceive, and

understand various aspects of, and phenomena in, the world around them" (Marton, 1986, p. 31). Phenomenography is an empirical approach to educational research that has developed since the early 1970's (Uljens, 1996; Lukie & Thomas, 2026) and assumes the existence of multiple realities between individuals underpinned by an inductive, interpretivist research perspective (Green, 2005). For our future study, IBL is the phenomenon in question, and we will be interested in the conceptions pre-service teachers have when they experience, conceptualize, and perceive it.

Secondly, as part of the ACI course taught to pre-service teachers, the students read and we discussed as a class Dobson's (2009) article, "Royal, warrior, magician, lover: Archetypal reflectivity and the construction of professional knowledge". In this article, Dobson (2009) discusses four teacher archetypes of maturity (Royal, Warrior, Magician, Lover) and each has specific characteristics when viewed within the context of teaching and learning. For our future research, we will ask pre-service teachers to reflect on these four teacher archetypes of maturity and invite them to identify their dominant teacher archetype. For example, the 'royal' teacher archetype provides a fertile environment for student growth, the 'warrior' integrates social issues into the classroom, the 'magician' strives to put the course content in service of the social development of the students, and the 'lover' values the emotional and spiritual realms of the educational experience (Dobson, 2009, Lukie, 2021).

7. Limitations

The transferability of research findings depends on the transparency of the limitations for the study (Kuper et al., 2008) and we present two key limitations regarding the transferability of the research findings to help guide transferability considerations.

Firstly, a key limitation for the study is that it may not reflect the experiences of students studying high school social studies, history, and psychology in an international school setting or in other Canadian jurisdictions as the findings reflect the mandated curriculum for one western Canadian province. Further studies with IBL are required internationally and across countries to determine the transferability of the findings. However, for teachers using an international high school curriculum, the IBL cycle may be easily integrated into local jurisdiction social studies, history, and psychology curricular contexts as the IBL cycle is easily modified for teaching and enrichment purposes when examining conflict, identity, fear, symbolism, and group behaviour in the classroom.

Secondly, a limitation is that pre-service teacher reflections about their assessment of the IBL cycle and analytical psychology were not collected subsequent to the ACI lectures, seminars, and in class student-teacher discussions. However, a future research study has been proposed contingent on ethics approval, to interview pre-service teachers about their conceptions and engagement with IBL.

8. Conclusion

In presenting our experience in teaching an education course on advanced curriculum inquiry to pre-service teachers that incorporated analytical psychology into the curriculum, it is our hope that the particularities of the inquiry process involved with this one case may inspire other teachers to engage in a similar process. Rather than students memorizing facts about a historical conflict or event, this paper presents an alternative pedagogical process where IBL could be used to facilitate student engagement and their learning about peace and conflict through the analysis of the psychodynamics of a world conflict. The integration of analytical psychology into high school social studies, history, and psychology where issues of peace and conflict are investigated, is an example of an interdisciplinary union between different high school disciplines. If the interdisciplinary union of IBL, analytical psychology, and high school social studies is thought of as three strands in a braided rope, then we are attempting to re-braid (Zawaly et al., 2023) the traditional high school interdisciplinary rope by braiding different curricular strands together that may not otherwise be linked.

An inquiry approach to high school teaching that incorporates analytical psychology may provide the classroom teacher with an opportunity to dwell in the zone between the mandated 'curriculum as plan' and the 'curriculum as lived' (Aoki, 2005). Roth (2013) reported on the benefits of an enacted and living curriculum and Aoki (2005) aptly suggested that "the quality of curriculum-as-lived experiences is the heart and core as to why we exist as teachers" (p. 165).

Suggestions for the classroom teacher to promote curriculum as lived experience when using IBL with world conflicts may include the teacher including the lived experiences of students who may have had friends and relatives who served in the armed forces during world conflicts. In addition, teachers could obtain the lived experience of students who have lived in countries with different political and economic systems from Canada such as those described in the analytical psychology term of the 'island myth' when referring to countries such as Cuba, China, and the U.S.S.R.

For many pre-service teachers in our Faculty of Education, the ACI course is their first exposure to Carl Jung and the concepts of analytical psychology. As analytical psychology may be a new concept for many pre-service teachers, the goal of presenting them with the Euromaidan conflict is to contextualize how the concepts of analytical psychology could be applied and integrated into their future classroom teaching. This analysis may also be relevant to those individuals involved in conflict resolution studies and group consciousness at the socio-political and organizational levels.

References

Andrews, T., & Burke, F. (2007). What does it mean to think historically. *Perspectives on History*, *45*(1), 32-35. https://www.historians.org/research-and-publications/perspectives-on-history/january-2007/what-does-it-mean-to-think-historically

Aoki, T. T. (2005). Teaching as indwelling between two worlds Ch.6 (1986/1991). In W. F. Pinar & R. L. Irwin (Eds.), *Curriculum in a new key: The collected works of Ted T. Aoki* (pp. 159-165). Lawrence Erlbaum Associates.

Bayat, A. (2013). The Arab Spring and its surprises. *Development and Change*, *44*(3), 587-601. https://doi.org/10.1111/dech.12030

Bebler, A. (2015). Crimea and the Russian-Ukrainian conflict. *Romanian Journal of European Affairs, 15*(1), 35-54. https://heinonline.org/HOL/Page?handle=hein.journals/rojaeuf15&div=7&g_sent=1&casa_token=&collection=journals

Biggs, J. (1996). Enhancing teaching through constructive alignment. *Higher Education*, *32*, 347–64. https://doi.org/10.1007/BF00138871

Bilinsky, Y. (1999). Was the Ukrainian famine of 1932–1933 genocide? *Journal of Genocide Research*, *1*(2), 147-156. https://doi.org/10.1080/14623529908413948

Bohdanova, T. (2014). Unexpected revolution: the role of social media in Ukraine's Euromaidan uprising. *European View*, *13*(1), 133-142. https://doi.org/10.1007/s12290-014-029

Campante, F. R., & Chor, D. (2012). Why was the Arab world poised for revolution? Schooling, economic opportunities, and the Arab Spring. *Journal of Economic Perspectives*, *26*(2), 167-188. http://dx.doi.org/10.1257/jep.26.2.167.

Colburn, A. (2000). An inquiry primer. *Science Scope*, *23*(66), 42-44. https://www.studentachievement.org/wp-content/uploads/An-Inquiry-Primer-1.pdf

Colman, A. D. (1995). *Up from scapegoating: Awakening consciousness in groups.* Chiron Books.

Contant, T. L., Tweed, A., Bass, J. E., & Carin, A. A. (2018). *Teaching science through inquiry-based instruction*. Pearson.

Corbett, L. (2009). War: Some psychological and spiritual underpinnings. *A Journal of Archetype and Culture, 81,* 85-101.

d'Ambrosio, U. (2001). What is ethnomathematics, and how can it help children in schools? *Teaching Children Mathematics*, *7*(6), 308-311. https://math.hawaii.edu/~mchyba/documents/syllabus/Math499/Ethnomath/Ambrosio1.pdf

Dana, N. F., Thomas, C., & Boynton, S. (2011). *Inquiry: A districtwide approach to staff and student learning*. Corwin Press.

Dobson, D. S. (2008). *Transformative teaching: Promoting transformation through literature, the arts, and Jungian psychology*. Sense Publishers.

Dobson, D. (2009). Royal, warrior, magician, lover: Archetypal reflectivity and the construction of professional knowledge. *Teacher Education Quarterly*, *36*(3), 149-165. https://www.jstor.org/stable/23479194

Duit, R, & Treagust, D. (2003). Conceptual change: A powerful framework for improving science teaching and learning. *International Journal of Science Education, 25*(6), 671–88. https://doi.org/10.1080/09500690305016

Fidyk, A. (2017). The influence of cultural and familial complexes in the classroom: A Post-Jungian view. In j. jagodzinski (Ed.), *The precarious future of education. Education, psychoanalysis, and social transformation* (pp. 71-108). Palgrave Macmillan. https://doi.org/10.1057/978-1-137-48691-2_4

Gitz-Johansen, T. (2016). Jung in education: a review of historical and contemporary contributions from analytical psychology to the field of education. *Journal of Analytical Psychology*, *61*(3), 365-384. https://doi.org/10.1111/1468-5922.12234

Goodwin, J. (2011). Why we were surprised (again) by the Arab Spring. *Swiss Political Science Review*, *17*(4), 452-456. https://doi.org/10.1111/j.1662-6370.2011.02045.x

Green, P. (2005). Ch. 3. A rigorous journey into phenomenography: From a naturalistic inquirer standpoint. In J. A. Bowden & P. Green (Eds.), Doing developmental phenomenography (pp. 32-46). RMIT University Press.

Gulevich, O. A., Osin, E. N., Isaenko, N. A., & Brainis, L. M. (2018). Scrutinizing homophobia: A model of perception of homosexuals in Russia. *Journal of Homosexuality*, *65*(13), 1838-1866. https://doi.org/10.1080/00918369.2017.1391017

Hammer, D., & Schifter, D. (2001). Practices of inquiry in teaching and research. *Cognition and Instruction*, *19*(4), 441-478. https://doi.org/10.1207/S1532690XCI1904_2

Hattie, J. (2023). *Visible learning: The sequel: A synthesis of over 2,100 meta-analyses relating to achievement*. Routledge.

Higgins, M. (2018). Engaging in practitioner inquiry in a professional development school internship. *School-University Partnerships*, *11*(2), 3-9.

Innes, C. L. (1994). Virgin territories and motherlands: Colonial and nationalist representations of Africa and Ireland. *Feminist Review*, *47*(1), 1-14. https://doi.org/10.1057/fr.1994.1

Jung, C. G. (1954/2014a). Child development and education. In H. Read, M. Fordham, G. Adler, & W. McGuire (Eds.), *The collected works of C. G. Jung: Complete digital edition* (trans: Hull, R. F. C., Vol. 17, pp. 49-62). Princeton University Press.

Jung, C. G. (1959/2014b). Archetypes of the collective unconscious. In H. Read, M. Fordham, G. Adler, & W. McGuire (Eds.), *The collected works of C. G. Jung: Complete digital edition* (trans: Hull, R. F. C., Vol. 9, pp. 3-41). Princeton University Press.

Jung, C. G. (1959/2014c). Psychological aspects of the mother archetype. In H. Read, M. Fordham, G. Adler, & W. McGuire (Eds.), *The collected works of C. G. Jung: Complete digital edition* (trans: Hull, R. F. C., Vol. 9, pp. 75-110). Princeton University Press.

Kenschaft, P. (2011). Ethnomathematics and mathematics professors. *Mathematical Association of America Focus*, *31*, 8-9. https://www.maa.org/publications/periodicals/maa-focus/ethnomathematics-shows-students-their-connections-math

Kinchin, I. (2004). Investigating students' beliefs about their preferred role as learners. *Educational Research*, *46*(3), 301–312. http://dx.doi.org/10.1080/0013188042002773 59

Kon, I. S., & Riordan, J. (1993). *Sex and Russian society*. Indiana University Press.

Kuper, A., Lingard, L., & Levinson, W. (2008). Critically appraising qualitative research. *British Medical Journal*. https://doi.org/10.1136/bmj.a1035

Kuzio, T. (2016). *Ukraine: Perestroika to independence*. Springer.

Lauenstein, O., Murer, J. S., Boos, M., & Reicher, S. (2015). 'Oh motherland I pledge to thee…': A study into nationalism, gender and the representation of an imagined family within national anthems. *Nations and Nationalism*, *21*(2), 309-329. https://doi.org/10.1111/nana.12123

Lukie, M. P. (2021). An analysis of a conflict between the theories of creationism and science in the experience of a pre-service physics teacher. *International Journal for Talent Development and Creativity*, *9*(1&2), 81-98. https://doi.org/10.7202/1091472ar

Lukie, M. P. (2024). Smartphone inquiry activity investigating the inverse square law of light. *Alberta Science Education Journal*, *50*(1), 15-26.

Lukie, M. P. & Thomas, G. P. (2026). What does it mean to understand physics? A phenomenographic study across high school physics students, high school physics teachers, and university physics professors. *Research in Science Education*, (May 11, 2026), 1-26. https://doi.org/10.1007/s11165-026-10346-5

Manitoba Education and Training (2026a). *Grade 12 global issues: Citizenship and sustainability*. Government of Manitoba. https://www.edu.gov.mb.ca/k12/cur/socstud/global_issues/full_doc.pdf

Manitoba Education and Training (2026b). *Grade 12 psychology*. Government of Manitoba. https://www.edu.gov.mb.ca/k12/framework/english/psychology/docs/psychology-gr12.pdf

Marples, D. R., & Mills, F. V. (2014). *Ukraine's Euromaidan: Analyses of a civil revolution (Vol. 138)*. Columbia University Press.

Marton, F. (1986). Phenomenography: A research approach to investigating different understandings of reality. *Journal of Thought*, *21*(3), 28-49.

Mayes, C. (1999). Reflecting on the archetypes of teaching. *Teaching Education*, *10*(2), 3-16. http://dx.doi.org/10.1080/1047621990100202

Mayes, C. (2003) Foundations of an archetypal pedagogy. *Psychological Perspectives*, *46*(1), 104-117. http://dx.doi.org/10.1080/00332920308405775

Mayes, C. (2005). *Jung and education: Elements of an archetypal pedagogy*. Rowan & Littlefield Education.

Mayes, C. (2007). *Inside education: Depth psychology in teaching and learning*. Atwood Publications.
Mölder, H. (2021). A culture of fear: The decline of Europe in Russian political imagination. In A. Önnerfors, A. Krouwel (Eds.), *Europe: Continent of conspiracies* (pp. 231-252). Routledge.
Montero, P. & Colman, A. D. (2000). Collective consciousness and the psychology of human interconnectedness. *Group*, *24*(2/3), 203-219. https://doi.org/10.1023/A:1007540101096
Moore, R. (1991). *King, warrior, magician, lover: Rediscovering the archetypes of the mature masculine*. Harper Collins.
Moore, R., & Gillette, D. (1992). *The king within: Accessing the king in the male psyche*. William Morrow and Company.
Morris, J., & Garibyan, M. (2021). Russian cultural conservatism critiqued: Translating the tropes of 'gayropa'and 'juvenile justice' in everyday life. *Europe-Asia Studies*, *73*(8), 1487-1507. https://doi.org/10.1080/09668136.2021.1887088
Neumann, D. (2012). Training teachers to think historically: Applying recent research to professional development. *The History Teacher*, *45*(3), 383-403. https://www.jstor.org/stable/23265894
Nicol, C., Knijnik, G., Peng, A., Cherinda, M., & Bose, A. (Eds.). (2024). *Ethnomathematics and mathematics education: International perspectives in times of local and global change*. Springer Nature.
Padmavathy, R. D., & Mareesh, K. (2013). Effectiveness of problem-based learning in mathematics. *International Multidisciplinary e-Journal*, *2*(1), 45-51.
Pedaste, M., Mäeots, M., Siiman, L. A., De Jong, T., Van Riesen, S. A., Kamp, E. T., & Tsourlidaki, E. (2015). Phases of inquiry-based learning: Definitions and the inquiry cycle. Educational Research Review, *14*, 47-61. http://dx.doi.org/10.1016/j.edurev.2015.02.003
Perera, S. (1986). *The scapegoat complex: Toward a mythology of shadow and guilt*. Inner City Books.
Reid, A. (2023). *Borderland: A journey through the history of Ukraine (Revised and Updated Edition)*. Weidenfeld & Nicolson.
Roth, W. M. (2013). *What more in/for science education: An ethnomethodological perspective (Vol. 1).* Sense Publishers.
Roth, W. M., & Roychoudhury, A. (1994). Physics students' epistemologies and views about knowing and learning. *Journal of Research in Science Teaching*, *31*(1), 5-30.
Savin-Baden, M. (2003). Facilitating problem-based learning. McGraw-Hill Education.
Shaker, P. (1982). The application of Jung's analytical psychology to education. *Journal of Curriculum Studies. 14*(3), 241-250. https://doi.org/10.1080/0022027820140303
Sharp, D. (2010). *Jung Lexicon: A Primer of Terms & Concepts*. http://www.psychceu.com/Jung/sharplexicon.html
Shevsky, D. (2022). Euromaidan revolution in Ukraine. In J. A. Goldstone, L. Grinin, & A. Korotayev (Eds.), *Handbook of revolutions in the 21st century: The new waves of revolutions, and the causes and effects of disruptive political change* (pp. 851-863). Springer International Publishing.
Spenser, D. (2005). Cuba: New partners and old limits. *NACLA Report on the Americas*, *39*(2), 25-28. https://doi.org/10.1080/10714839.2005.11722356
Stepan, A., & Linz, J. J. (2013). Democratization theory and the "Arab spring". *Journal of Democracy*, *24*(2), 15-30. https://doi.org/10.1353/jod.2013.0032
Stinner, A. (1994). Providing a contextual base and a theoretical structure to guide the teaching of high school physics. *Physics Education*, *29*(6), 375-381. https://iopscience.iop.org/article/10.1088/0031-9120/29/6/007/pdf
Stinner, A. (2006). The large context problem (LCP) approach. *Interchange*, *37*(1-2), 19-30.
Swan-Foster, N. (2018). *Jungian art therapy: Images, dreams, and analytical psychology (Third Edition)*. Routledge.
Uljens, M. (1996). On the philosophical foundations of phenomenography. In G. Dall'Alba & B. Hasselgren (Eds.), *Reflections on phenomenography: Toward a methodology? (Gothenburg Studies in Educational Sciences No. 109)* (pp. 103-128). ACTA Universitatis Gothoburgensis.
Widyatiningtyas, R., Kusumah, Y. S., Sumarmo, U., & Sabandar, J. (2015). The impact of problem-based learning approach to senior high school students' mathematics critical thinking ability. *Indonesian Mathematical Society Journal on Mathematics Education*, *6*(2), 30-38.
Willms, J. D., Friesen, S. & Milton, P. (2009). *What did you do in school today? Transforming classrooms through social, academic and intellectual engagement*. Canadian Education Association. https://eric.ed.gov/?id=ED506503
Zawaly, K., Ripat, J., Guse, L., Katz, A., Edwards, J., & Sibley, K. M. (2023). Re-braiding the strands of life through community rehabilitation, home care, and informal support: A longitudinal collective case study. *Canadian Journal on Aging/La Revue canadienne du vieillissement*, *42*(1), 80-91. https://doi.org/10.1017/S0714980822000137

About the Authors

Michael Paul Lukie is an Associate Professor in the Faculty of Education at the University of Winnipeg. He teaches secondary education curriculum and instruction courses in physics, science, mathematics, and advanced curriculum inquiry. He previously taught high school physics for 15 years and was the treasurer for the Jungian Society for Scholarly Studies (JSSS). In conjunction with the Canadian Space Agency, he is currently designing physics activities to engage K-12 students in STEAM education, an approach to learning that uses science, technology, engineering, the arts, and mathematics as access points for guiding student inquiry, dialogue, and critical thinking. These activities include a wide-ranging series of diverse engagement materials focused on lunar exploration, particularly Canadian efforts in this realm. His research interests include phenomenography, physics and science education, student understanding, student engagement, analytical psychology, and metacognition.

Address

Dr. Michael Paul Lukie;
Faculty of Education; The University of Winnipeg;
515 Portage Avenue;
Winnipeg, Manitoba; R3B 2E9, Canada.

e-Mail: m.lukie@uwinnipeg.ca

Kathleen Zawaly, B.Sc., M.Sc., is a restorative justice practitioner and interdisciplinary researcher whose work bridges health care, community rehabilitation, and restorative justice. Drawing on this diverse academic background, her current research explores the psychodynamics of conflict to better understand the psychological, relational, and systemic processes that shape human behaviour and our capacity to relate to one another. Her research has been published in peer-reviewed journals on health care delivery, hereditary cancer care, and community rehabilitation, and she has authored impact reports for Research Manitoba on health, innovation, and economic development.

Address

Kathleen Zawaly

e-Mail: Kathleen.zawaly@mail.mcgill.ca.

Using Creative Problem Solving Strategies in Classrooms: Pre-service Teachers' Perspectives

Julia Ellis

Rowan Gazdewich, Malcolm Guglich, Leith Haines, Ava Henschel, Zach Hiltz, Natalie Kieser, Skylar LeBlanc, Jenna McChesney, Youssra Mohammed, Lyndzie Nguyen, Claire Parlee, Joel Turpin, Luke Yakemchuk

University of Alberta, Canada

Abstract

If students are to thrive academically, teachers need to know how to develop a learning environment that will organically support students' engagement, empowerment, and relationships in the classroom. In previous research, when student teachers employed "creativity" activities and creative problem solving strategies in their practicum classes and searched for patterns in their students' responses to these, their analyses overwhelmingly emphasized the many ways in which the activities contributed to students' relationships, engagement, and empowerment. Our current inquiry was intended to clarify how pre-service teachers can experience and evaluate these creative problem solving strategies when they only have the opportunity to work with them in a written course assignment rather than with students in a practicum setting. In one week of an introductory course in a faculty of education, pre-service teachers employed a set of creative problem solving strategies to design creative contests for imagined classrooms or schools. In this inquiry, a number of class members revisit their combined reflections in that assignment to evaluate these strategies. We learned that they were surprised at the effectiveness of the strategies for generating and organizing ideas and they anticipated a number of benefits when incorporating them into both their own student lives and their future teacher lives. In the context of recent emphases on students' wellbeing and relationships in the classroom, as well as new attention to creativity and innovation competencies as curricular outcomes, these findings inform what should be considered essential for including in teacher education programs.

Keywords: Creative pedagogies; creative teaching; creative problem solving; creativity and innovation competencies; students' wellbeing; belonging in the classroom.

In recent years there has been increasing recognition of the kinds of classroom experiences that support students' wellbeing and the importance of their wellbeing for them to thrive academically. In a review, Ibarra (2024) concluded that students need to experience belonging, an inviting classroom community, relationships with classmates and teachers, as well as engagement and empowerment. During the last 15 to 20 years, as evidenced by the content and very existence of this particular academic journal, there has also been widespread increasing interest in creativity and innovation including with respect to competencies as curricular outcomes (e.g., Alberta Education) (Lucas, 2025). Interestingly, activities such as using divergent thinking strategies, collaborating in creative thinking situations, and trying out different ideas until something works in creative activity situations have been found to enhance interpersonal skills, confidence, and willingness to persevere—that is, building blocks for both relationships and academic success (e.g., Booth, 2013; HMIE, 2006; Kaufman & Sternberg, 2007; Reilly et al., 2011).

In previous research (Ellis, 1998), when student teachers employed creativity activities and creative problem solving (CPS) strategies in their practicum classrooms in elementary and secondary schools and recorded their observations and analyses of patterns, it was apparent from their reports that the activities supported their students' relationships, engagement, and empowerment. In this current inquiry we sought to learn whether there was value in introducing the CPS strategies to pre-service teachers in the absence of the opportunity to immediately employ them in a practicum setting.

Accordingly, in an introductory course for pre-service teachers in a faculty of education in 2023, class members were asked to try using a set of CPS strategies to design creative contests for students in

imagined classrooms or schools. For the inquiry reported here, 13 of the 50 class members (co-authors of this article) brought their completed assignments together to explore whether they saw value or practical utility in the CPS strategies either for their own personal use or for including in instructional activities with students in future teaching contexts. The reflections written at the time of the course assignment were studied to identify key ideas expressed.

In this paper, prior to the description of the pre-service teachers' CPS course assignment and the findings of this inquiry, we highlight: 1) key ideas about how students' relationships, engagement, and empowerment—that is, pre-requisites for optimal academic performance--are constituted or supported in classrooms; 2) findings from the earlier research with student teachers who reported on what they observed when using creativity activities and CPS strategies in practicum classrooms; 3) findings from research with in-service teachers in a graduate class who considered the viability and contributions of these creative activities and CPS strategies in classrooms; and 4) some definitions and trends related to creative pedagogies in education.

Building Blocks for Students' Relationships, Engagement, and Empowerment

Disengagement and poor academic performance can be a result of students' social and emotional needs not being met in the classroom (Yorke, et al., 2021, cited in Ibarra, 2022). Ibarra's (2022) review underscored the ways in which instructional practices are inextricably linked to creating an inviting classroom community and a learning environment that nourishes students' sense of belonging. The review emphasized that relationships, engagement, and empowerment are prerequisites for students' academic success and do not happen without appropriate support or constitutive experiences. Table 1 offers a synthesis of many of the needed supports or constitutive experiences identified in Ibarra's review.

The wide range of experiences summarized in Table 1 clarify that it is important to identify instructional routines that will continue to organically generate these student experiences throughout the school year. Lucas (2025) similarly observed that, more so than curriculum, it is the pedagogies teachers choose that have the largest influence on learners' experiences in the classroom.

Table 1: Classroom Experiences that Facilitate Relationships, Engagement, and Empowerment**.**

Accomplishment	Supports, Components, or Constitutive Experiences
Teacher – student Relationships	• Teachers using activities that help them to learn about students' interests all year long, not just at beginning of the year. • Students perceive that their teachers are genuinely caring and supportive. • Teacher practices empower students to express themselves, have choices in learning and opportunities to master learning. • Activities engage students' funds of knowledge
Peer Relationships	• Opportunities for students to: - know their peers and feel valued - have genuine conversation in the classroom - practice effective communication, listening, and collaboration skills - experience autonomy, cooperation, collaboration - engage their funds of knowledge - have support that promotes discussion and simultaneous equitable participation by all students in the classroom.
Engagement and Empowerment	• Opportunities for student input, frequent praise, and classroom choices • Social and emotional climate has minimal conflict, effective transitions between activities, positive feedback and engagement, and supports all learner differences

Note: This table synthesizes a number of the ideas identified in Ibarra's (2022) review about the teacher's role in addressing students' academic and social-emotional needs in today's classrooms.

Benefits of the Selected Creativity and CPS activities

Practicum Classroom Research

In earlier research with student teachers' use of a set of creativity activities and CPS strategies in practicum classrooms (Ellis, 1998), it was apparent that these creative thinking practices can organically support students' relationships, engagement, and empowerment. At the time of that study, the expectation was simply that student teachers might recognize how the activities supported the critical and creative thinking of the students in the practicum classrooms. However, when student teachers presented their reports, their observations and analyses emphasized the many ways in which the activities actually contributed to their students' relationships, engagement, and empowerment. In this section we outline the creativity activities and CPS strategies the student teachers employed and the related benefits they reported.

The "creativity" activities.

The "creativity" activities were in two different formats: 1) **Open-ended Self-Expressive Assignments** (often in the form of "What if…" assignments), and 2) **Forced Connection Creative Assignments** (Ellis, 1998, 2005, 2007).

In the **Open-ended Self-Expressive Assignments** students are asked to express what is meaningful or important to them. Some examples are:

- Before reading to the end of the story called, *Johnny Maple-Leaf*, the student teacher stopped and posed the question: If you were Johnny Maple-Leaf floating through the air, where would you go and what would you do there? Make a drawing to show your ideas.
- When reading a class novel together, the student teacher stopped the story at a pivotal moment and asked the students to each use a shoe box to make a diorama to show what would happen next if the story was taking place in current times.
- The student teacher invited students to imagine that they had an ideal studio apartment that reflected who they were and what was important to them and to make a drawing showing what would be in it and what it would be like.
- Before starting a new topic in world history, the student teacher asked the students to make a drawing of the globe symbolically showing their ideas about the actual world and an ideal world.

In the **Forced Connection Creative Assignments**, a fun activity is developed by forcing a connection between a curriculum topic and a fun idea or topic of high interest to students. Some examples were:

- After reading the class a number of picture book stories about bears, the student teacher asked the students to work in groups to make murals depicting how bears would celebrate a birthday.
- To conclude a unit on the topic of farms near the time of Halloween, students were asked to work in groups to make floor murals showing what witches' farms would look like.
- In a French class, a student teacher asked students to work in groups using the theme of Ground Hog Day to make songs or dances they could teach to the class to help review recently introduced vocabulary and grammar patterns.
- In English class, after listening to a recording of *Rape of the Lock*, students participated in role plays in which journalists interviewed characters in *Rape of the Lock*.

The CPS strategies.

The student teachers were invited to try having their classes use two CPS strategies: 1) making an **Idea Tree**, and 2) making an **Attributes Tree**. Each kind of tree requires a different kind of prompt to initiate or guide brainstorming and or research.

To make an **Idea Tree**, the initiating prompt takes the form of asking "What are all the different ways there are to [do something]?" or "What are all the different kinds of [something] there are? After some initial brainstorming of specific ideas, categories are identified and this leads to brainstorming more ideas and more categories. Categories become the names of branches on the tree.

To make an **Attributes Tree**, the initial prompt is in the form of asking: "What are all the ways that [examples of a particular entity] can be the same or different from each other?" Answers can begin with the words: who, what, why, when, how, and where. Each branch on an **Attributes Trees** is named as a different attribute and its sub-branches show categories of that attribute (e.g., Attribute is "Size" and sub-categories are "bigger" or "smaller." Twigs are examples in a category or sub-category

To introduce the process of making **Idea Trees** or **Attributes Trees**, it is helpful to use topics that are familiar to students and for the teacher to lead the whole class through all the steps. Rules for brainstorming are explained to participants prior to beginning to make a tree together. The rules are: produce lots of ideas, no criticism of any ideas, and it is okay to piggyback on the ideas of others. Having some examples of the entity of interest on display or listed visually is helpful for supporting recall or comparisons. Once students know the process, they can make their trees in small groups and then contribute to a whole-class tree. Figures 1 and 2 are examples of an **Idea Tree** and an **Attributes Tree** for contests.

Student teachers worked flexibly with tree making using this activity in dynamic ways. For example, to start a unit on sex education in a high school health class, a student teacher had her all-girl class of 60 students in a theater-style classroom construct one tree for women and one for men.

> She first had each student privately write all the words and phrases that came to mind when she said the word 'women.' Then she repeated the request for the word 'men.' After the private writing was completed, she took oral contributions which she recorded on the chalk board. As the girls gathered confidence and support from each other, they drew more and more from their private lists to make their oral contributions. (Ellis, 1998, pp. 60-61)

How the Creative Thinking Practices Supported Relationships, Engagement, and Empowerment

The student teachers' reports on using these creativity activities and CPS strategies in their practicum classrooms emphasized the many ways that students' relationships, engagement, and empowerment were supported. It is noteworthy that when the ideas in such assignments are expressed in a visual or performance format, they are easy to share or present and easy for others to remember.



The Idea Tree is developed in response to the brainstorming prompt: "What are all the different kinds of contests there are?". The process of Brainstorm-Categorize-Brainstorm is used. To prompt more ideas during initial brainstorming, ask about contests that take place at particular times, places, or special occasions.

Figure 1: Example of a Completed Idea Tree for Contests**.**



The Attributes Tree is developed in response to the brainstorming prompt: "What are all the ways that contests can be the same or different from each other?"

To tease out more ideas, compare pairs of contests and ask how members of each pair are the same and different from each other.

Figure 2: Example of a Completed Attributes Tree for Contests**.**

The **Open-ended Self-Expressive Assignments** (often in the form of "What if…" assignments) were the first surprise for student teachers. These supported relationships, engagement and empowerment in a number of ways. Some examples were:

- Students who did not usually speak to each other were excited to show and explain their completed drawings to each other.
- Students approached the new student teacher excited to show their ideas in their completed drawings.
- Students who were usually shy or reticent to present to the class insisted on presenting these completed self-expressive assignments to the class.
- Students used the open-ended space of the assignments to share about problems or pre-occupations or exciting family events.
- Students used the open-endedness of the assignment to incorporate using a talent area e.g., construction skills or leadership ability
- The visual representations (e.g., the shoe box dioramas or the globe drawings of ideal and actual worlds) were often striking and memorable and became part of the student teacher's memory of the student.

The student teachers' reports on using the **Forced Connection Creative Assignments** highlighted the benefits for supporting relationships, engagement and empowerment. Some examples of benefits reported were:

- Even young students were eager to return to work on completing group visual products (e.g., witches' farms) perfectly.

- Group projects such as murals or drama skits provided opportunities for students' talents to be validated, recognized, and celebrated by classmates and the teacher.
- Open-endedness of the activities allowed groups to focus on their preferred skills or interests (e.g., in building monsters' homes from recycle-junk, groups of girls focused on decorations while boys' groups focused on construction details.)
- Students were engaged and content with the activities and shared scarce materials with ease and good-naturedness.
- All group members could explain the ideas in the group's product and were excited to do so.
- When students who were "loners" were put together in a group to complete a **Forced Connection Creative Assignment** (i.e., using new mapping skills to create visual plan for a neighborhood route to use for taking their younger siblings out for Halloween), they then kept company together at recess time thereafter.

Student teachers' reports also clarified the benefits for students' relationships, engagement, and empowerment when making **Idea Trees** or **Attributes Trees**. Some examples of benefits were:

- Student teachers reported that during brainstorming the students liked having their ideas accepted and written down by the student teacher. When students could not brainstorm many ideas about the curriculum topic (e.g., junk or waste) it was helpful that they could brainstorm and share many ideas about the "fun" topic (e.g., monsters). Parents at parents' night also told student teachers about their children's joyful reports about having had many ideas to contribute during brainstorming.
- When student teachers had students make ideas trees in small groups before contributing to a whole class brainstorming led by the student teacher, the students enjoyed interacting in these small group conversations.
- Making attributes trees or idea trees gave opportunities for engaging and showcasing students' funds of knowledge.
- Making Attributes Trees in small groups supported group conversation, playful interaction, and mastery of learning by all group members.

In-service Teacher Research

In-service teachers who explored using and assessing the same creativity activities and CPS strategies in a graduate course in 2017 also confirmed the value of these in supporting curriculum goals in a way that at the same time supports students' engagement, empowerment, and relationships (Ellis & Docherty, 2024). Docherty used her completed course assignments as a case study to illustrate how and why the activities and strategies are helpful. Her case study included an example of how her students as a whole class created both the ideas for culminating creative projects for a topic (including projects for both groups and individuals) and the rubrics to guide work on these.

Lucas and Hanson (2021, cited in Lucas 2025) found that teachers who facilitate creativity prefer pedagogies such as problem-based, project-based, and inquiry-led learning, rather than those which are more focused on transmission. All projects in Docherty's example took the form of visual products or performances that students used to teach important curriculum ideas to other classes in the school—that is, all projects addressed "real problems" (Renzulli, 2022, p. 180). The students' culminating projects also illustrated the approach of "Forcing Connections" between the curriculum topic and a fun idea or activity (e.g., working in a group to write and record a rap song that warns about the dangers to our wetlands.) In this way, students drew upon talents or interests in suggesting the format of culminating creative projects.

There are many benefits to having well designed creative projects for students to choose from. Fletcher (2011) noted that such diversification and choices within activities like Docherty's support differentiation as well as the blending of curricular strands. With their needs met, students become more engaged with learning (HMIE, 2006; Rinkevich, 2011). Further, when students can choose projects that are appropriately challenging, they can achieve Csikszentmihalyi's conception of flow— "moments of intense absorption and deep satisfaction" (Fletcher, 2011, p.38.) "To achieve flow, individuals must fully understand the rules of the domain they explore and be able to freely use the tools and constructs

available to them" (Fletcher, 2011, p. 38). These ideal projects are accomplished by ensuring the right balance between structure and freedom (Burnard et al., 2006).

Regarding the selected CPS strategies, Docherty acknowledged that having the class make Idea Trees or Attributes Trees at the beginning of a topic can clarify what students already know or do not yet know about a topic and thereby provide direction to subsequent classes on the topic. Regarding the use of creativity activities in the form of Open-ended, Self-Expressive Assignments—for example, "As a contribution to the school's time capsule, write a letter to future students to say what your lives are like in the current year"— Docherty observed that while teachers may sometimes offer such activities, they do not typically study the students' responses in a teacher-as-researcher mode in order to intentionally learn more about students' interests. Thus, when introducing the creativity and CPS activities to pre-service or in-service teachers, clarifying how these can support students' engagement, empowerment, and relationships in the classroom—and the importance of those for students doing well academically--would be helpful. There are many ways to incorporate the creativity and CPS activities at the beginning or conclusion of each new topic or as daily or weekly routines and so they are well suited to providing ongoing support to the development and nurturance of an inviting classroom community.

Interest and Trends in Creativity and Creative Thinking in Education

About Creativity

Kaufman and Glăveanu (2021) have highlighted key theories of creativity and outlined them based on the questions they ask. Here we will simply reiterate awareness that there is value in both **mini-c** and **little-c** creativity.

Kaufman and Glăveanu (2021, citing Beghetto & Kaufman, 2007), presented the **Four C's** as an expansion of the distinction between **little-c** (everyday creativity) and **Big-C** (eminent creativity). In the developmental trajectory of the individual, the first form of creativity is **mini-c** which is meaningful and new to the creator, even if not to others. When creations that are personally meaningful are also recognized as creative by others, they have achieved the status of **little-c. Pro-c** describes the creative work of an expert or creative professional (Kaufman & Beghetto, 2009, cited in Kaufman & Glăveanu, 2021). **Big-C** refers to creative work that has achieved eminence.

About CPS

Understanding that "anyone might become creatively productive in meaningful ways" (Treffinger, 1995, p. 301) is one of the foundational principles of CPS. Alex Osborn, whose work started the CPS tradition, was committed to supporting these processes because of the potential contributions for enhancing any situation and because of each person's potential for creative behaviour (Treffinger, 1995).

In the Foreword to the 4th edition of *Creative Problem Solving: An Introduction,* Treffinger, Isaksen, and Dorval (1995) acknowledge the contributions of ideas, experience, and research on CPS from a number of colleagues: Alex F. Osborn, Ruth Noller, Sid Parnes, E. Paul Torrance, Don MacKinnon, Cal Taylor, and J. P. Guilford. They state that their own efforts are intended to build on current research and to make CPS natural, descriptive, and "user friendly." Treffinger (1995) outlined their most recent version of a CPS model as having six stages clustered into three components—"Understanding the Problem, Generating Ideas, and Planning for Action (Isaksen and Treffinger, 1991; Treffinger and Isaksen, 1992)" (p. 303).

In discussions of their evolving work with CPS (Treffinger, 1995), three topics of interest have been:

1. an understanding of what constitutes "a problem,"
2. an emphasis on flexibility with the CPS process rather than rigidly following particular steps or strategies,
3. an emphasis on using or applying CPS to address meaningful and important concerns rather than teaching about CPS as an end in itself

To clarify the meaning or nature of problems in CPS, Treffinger (1995, citing Isaksen & Treffinger,1985) explained that problems are not simply puzzles for which one lacks a solution. Instead, Treffinger asserted that "[p]roblems for CPS were described as opportunities and challenges for successful change and constructive action" (p. 304) and further, that "a problem might be any important, open-ended, and ambiguous situation for which one wants and needs new options and a plan for carrying out a solution successfully" (p. 304).

With regards to flexibility of the CPS process and user friendliness, Treffinger explained that the CPS framework is not presented to be prescriptive but rather "provides a structured set of operations or tools as resources upon which to draw as needed" (p. 305). The framework is expected to be experienced as flexible and dynamic.

Creativity Definitions and Competencies

Lucas (2025, p. 10), writing about the possibilities of embedding creativity in schools, offered the following definitions of creativity, creative thinking, and teaching for creativity**.**

- Creativity: The capacity to imagine, conceive, express, or make something that was not there before.
- Creative thinking: A process through which knowledge, intuition and skills are applied to imagine, express or make something novel or individual in its contexts. Creative thinking is present in all areas of life. It may appear spontaneous, but it can be underpinned by perseverance, experimentation, critical thinking and collaboration.
- Teaching for creativity: Explicitly using pedagogies and practices that cultivate creativity in young people. (Durham Commission, 2019, p. 2)

Key features of creative pedagogical practice have been identified as: generating and exploring ideas; encouraging autonomy and agency; playfulness; problem-solving; risk-taking; co-constructing and collaborating; and teacher creativity (Cremin and Chappell, 2019, cited in Lucas, 2025). Many of these features are reflected in the 12 creativity competences listed for Creativity and Innovation by Alberta Education (Alberta Education). A few examples of these are:

- I create to learn and have fun;
- I use my imagination to combine materials or ideas to create something new; and
- I use individual or group brainstorming to build or expand my ideas.

Benefits of Fostering Creative Thinking

A broad range of research has shown that engagement in creative thinking enables students to become more self-confident, persistent, open-minded, empathetic, engaged in learning, and capable of solving a variety of problems (Booth, 2013; HMIE, 2006; Kaufman & Sternberg, 2007; Sternberg, 2005.) Experimenting with different ideas gives students the chance to find and develop new talents (HMIE, 2006) and discovering those new talents supports confidence and leadership. Collaborating in creative thinking situations further contributes to interpersonal skills (McWilliam & Dawson, 2008; Reilly et al., 2011).

Relationships with classmates are essential for students to experience belonging in the classroom. When students can experience small group, open-ended creative activities as forms of play, there is immediate support for the development of relationships. Landers (1998) writing about children in contexts of trauma or dangerous environments, and Boxill (1994), writing about children in the contexts of homelessness, also emphasized the importance and value of unstructured play and the development of relationships in accommodating environments. "Children at play are constantly at work—adding new observations, asking and responding to questions, and making choices. The insight gained provides children with problem solving tools" (Landers, p. 85). Relationships evolve in the context of play. Regarding their importance, Boxill explained: "Relationships change people. When two people really share an experience together, really share themselves as themselves, neither is ever the same again" (p. 37). Open-ended creative assignments with clear criteria for successful products or performances invite playful engagement with just enough structure to initiate direction for playful exploration and creation in small groups.

Barriers to Embedding Creativity in Schools

Lucas (2025) identified a number of barriers to embedding creativity in schools, including: invisibility of creativity in teacher training; lack of teacher training and pedagogical resources; teachers' perceptions of their own lack of creative self-efficacy, fear of failing, a history of thinking that the teacher should be in control didactically, and school cultures that support performance on public examinations instead of creativity. It would seem that greater awareness about the benefits of creative thinking activities for students' overall experience and performance in schools is needed and opportunities for alerting pre-service and in-service teachers to these possibilities are important ones.

The Inquiry: Pre-service Teachers Use the CPS Strategies to Design Creative Contests

In an online section of an introductory course in a faculty of education, one week was dedicated to having course participants try using a set of CPS strategies to design creative contests for imagined classrooms or schools. Class members posted their work and their reflections. Appendix A shows the eight CPS strategies the pre-service teachers were asked to employ. Given the compressed time frame for the assignment, class members were asked to write reflections for the first strategy of making the Idea Tree, but not for the other individual strategies. In this inquiry, our goal was to identify the variety of ideas expressed by the 13 co-authors in their reflections on the Idea Tree strategy. We also included some further reflections added by two of the co-authors at the time of these analyses.

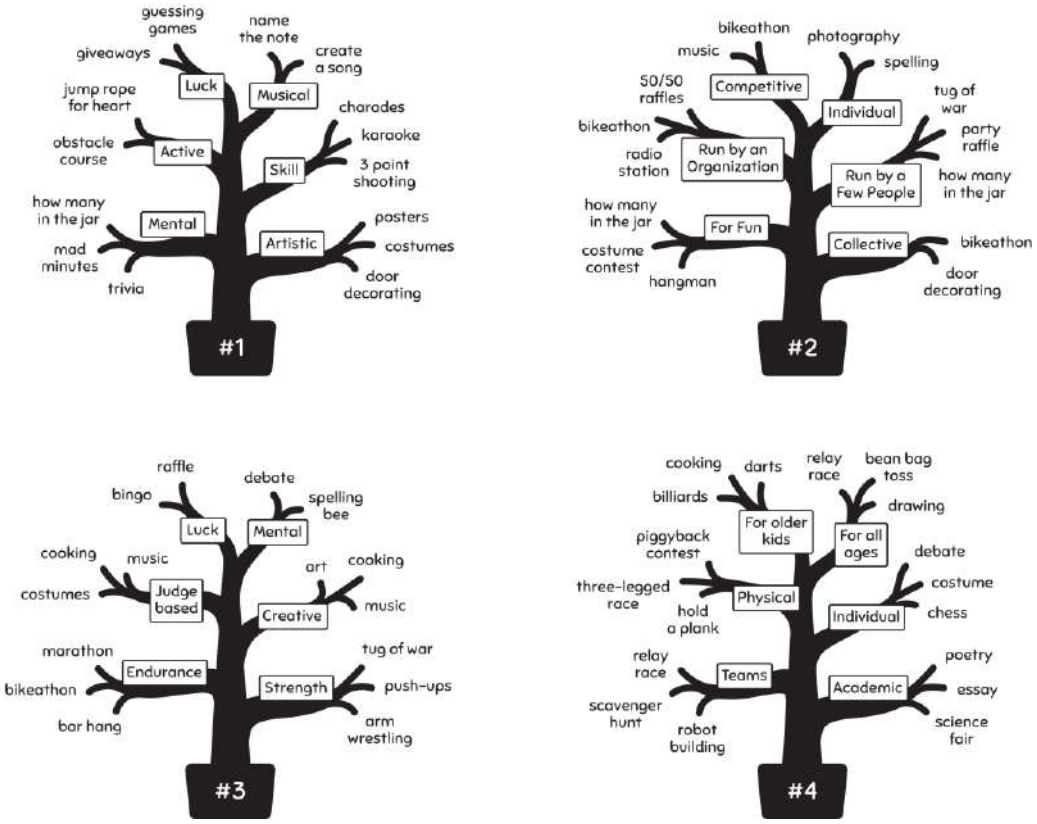
Table 2 shows one co-author's record of the steps completed when preparing the Idea Tree. Figures 1 and 2 presented one co-author's completed Idea Tree and completed Attributes Tree for contests. Figure 3 shows excerpts from the Idea Trees completed by a number of co-authors of this article.

Table 2: Example of One Class Member's First Steps in Making an Idea Tree about Kinds of Contests**.**

Table to Complete for Part 1 – Idea Tree for Contests		
List of 12 or more contests	spelling contest obstacle course mad minutes in math class jump rope for heart Halloween costume contest door decorating classroom contest bikeathon jeopardy/trivia game 3-point shooting contest (basketball)	poster contest guess the song Bingo guess the number of marbles in the jar photography contest Cross country race raffle lottery name the note composer contest
List of initial categories identified	- active - Artistic - mental	
Additional categories brainstormed	- individual - collective - musical - luck - skill	
Reflection on this process	This process was helpful because it encouraged thinking outside of the box, and pushed me to consider my own experiences in more detail, beyond surface level. It wasn't just simple memorization but represented a mixture of creative and critical thinking. I appreciated the individual nature of the assignment and that I was able to explore through my own thinking independently. One thing I struggled with was identifying further categories beyond my initial 3 so I had to go back and add a few more contests to my list. I want to take this method of brainstorming with me throughout the rest of my undergrad when organizing papers and narrowing down topics. Furthermore, when I graduate, I want to use this teaching method to pass this style of brainstorming onto my students.	

Reflections on Making the Idea Trees

Making the Idea Trees following the steps provided proved to be a productive process for class members. The excerpts from reflections presented in this section illustrate a number of sub-themes.



Note: Some "branches" and "twigs" were removed in order to simplify this visual presentation highlighting the variety of classifications of contests generated by class members.

Figure 3: Examples of Completed Idea Trees**.**

Getting More Ideas and Keeping Them Organized

There were many reports on how the activity of making the Idea Tree was experienced as productive and about how class members planned to continue using the strategies in their course work ahead and with their own students in the future. These are examples of co-authors' comments on this theme.

- At first, I found it difficult to think of a variety of contests and ways to categorize them but **once I started constructing my tree, I felt the ideas start to flow**. It was almost as if once I started, I couldn't stop. The ideas just kept coming. It was actually quite enjoyable finding ways to separate the contests based on their differences but also while doing so, to find ways in which they are all similar.
- One thing I struggled with was identifying further categories beyond my initial 3 so I had to go back and add a few more contests to my list. I want to take this method of brainstorming with me throughout the rest of my undergrad when organizing papers and narrowing down topics. Furthermore, when I graduate, I want to use this teaching method to pass this style of brainstorming onto my students.
- As I was doing this, I realized that creating a brainstorming tree like this helps me to compartmentalize these contests and relate them to one another. I might use this method to collect information or plan things in the future.

- Idea Trees are an important visual that expand our learning, whether it is thinking about course-related ideas or brainstorming or general ideas that improve an individual's life and the lives of others.

Learning to Use Incubation

Even tips to the class to tune into the incubation process were noted as helpful.

- I'm grateful Dr. Ellis told us to think about this assignment earlier through the week because brainstorming contests was not easy, but the rest between thoughts refueled the brainstorming and provided me with more and more thoughts!

Authentic Thinking Rather than Aiming for Predetermined Ideas

Some class members noticed and valued the way the process provided space and an invitation for identifying their own thinking. Here, while they were still in the role of being students, they could experience what it was like to have their own thinking and sense-making on centre stage and might perhaps recognize how students in their future classroom teaching might also be drawn to these opportunities.

- I really enjoyed this activity and how there were no restrictions for the thinking process. I think that is important to see how individuals actually think instead of being directed towards certain ideas.
- This process was helpful because it encouraged thinking outside of the box, and pushed me to consider my own experiences in more detail, beyond surface level. It wasn't just simple memorization but represented a mixture of creative and critical thinking. I appreciated the individual nature of the assignment and that I was able to explore through my own thinking independently.

The Idea Tree Can Support Organization and Communication on Large Projects

Class members noticed the way Idea Trees and the record of the steps for developing them can provide helpful organizational support and can facilitate communication with students engaged in larger projects.

- This process of brainstorming, and categorizing is very useful for organizing thought processes and ideas for larger projects. This could be useful for students as a first step towards completing a bigger project or assignment.
- I think this process is a good way for educators to come up with new and exciting lesson plans that keep students engaged. Making a chart such as this is also a helpful way for both student and teacher to stay organized and figure out thoughts.
- Reflecting on the process by grouping the contests into categories, it becomes easier to understand and organize information in a structured manner. This helps me in creating a better overview and reducing complexity when it comes to my work.

Support for Creative Teaching

As a bonus, course participants found that using Idea Trees can support their own creativity when teaching.

- I think this process was very beneficial as I was able to think beyond standard contests. As I was coming up with the contests I was thinking of ways to challenge students differently. I originally started with academic, arts, and physical but then I started including contests that anyone can do without any skill…I was able to include ways that enhance the creativity in the class and foster a community within the classroom. I really enjoyed this process as it opened my eyes to all the possibilities of how to teach.
- I think this method of brainstorming is a great way to help initiate the flow of all your ideas and allow your creativity to continue to generate more from there. I believe this idea tree process will be very useful in my future practice as a teacher for it will allow me to think beyond what first comes to mind and challenge me to find unique ideas and branch out of my "go-to" ideas.
- It made me think outside of the box in a broader way. It also made me think of how it may apply to use this when thinking of ways to teach curriculum that are fun and interactive for students but can be changed to fit into the lesson that is being taught.

Motivated to Make Learning Fun

As one more kind of bonus, some course participants felt inspired to think about how to design engaging activities for their future students.

- This exercise really intrigued me because it brought me back to my younger school days and reminded me just how much fun being a kid was. This exercise portrayed the importance of fun and possibility that should be associated with students' learning.

Needing More Information to Clarify the Problem

In the reflection below, a class member expressed awareness of the need for information about the problem to inform the idea generation process. Without knowing specific details about a school or classroom for the contests, the categories could not be tailored optimally.

- I found it slightly challenging to categorize the options I made properly. With specific goals in mind for your target audience it can be easier to identify what distinctions need to be made across the variety of categories that can be chosen. That being said, I settled for categories that I think properly segregate each contest well.

Isaksen and Treffinger (2004, p. 88) presented a Version 4.0 of CPS as having "three main problem-solving components based on how people behaved naturally." These were: Understanding the Problem, Generating Ideas, and Planning for Action. This class member's reflections showed awareness of the importance of understanding the problem.

Tailoring or Selecting Best Plans According to Desired Criteria

Another class member appreciated the possibilities of selecting contest ideas (solution possibilities) according to criteria developed from knowledge of the class or school of interest—and doing so collaboratively.

- I think that the reflection process that creative problem solving invites someone to take part in is extremely valuable and applicable in many scenarios. In the general processions of day-to-day life, it clearly outlines possible categories and their related activities in a way that is manageable and allows for a tangible platform for cost benefit analysis. In the example assignment, it would be simple to select an activity. Defining what you want out of your contest (first nodes) and finding corresponding activities between those first node categories is accessible and simple in this framework. The framework allows for collaboration with colleagues and for functional activities to be chosen.

Learning the Process of Producing Lots of Ideas Before Evaluating Them

A class member who shared further reflections about using the CPS strategies at the time of writing this article reported that one of the benefits was in helping university students she tutored to work through "perfectionist" inclinations productively.

- I have also been tutoring university students the past year and have also really enjoyed taking the approach of generating a large quantity of ideas first before going through them and identifying the quality of the ideas and selecting the best. A challenge that has arisen is helping students with perfectionist tendencies to overlook the quality of their idea as I have noticed that it is easy for one lower quality idea to derail some students in the thinking process. Mentally, they tend to immediately categorize the idea and beat themselves up over it. However, I have noticed that once students have been made aware of the pattern of labelling their ideas based on their perceived value and used the CPS strategy more than once, they seem to overcome the hurdle and it becomes more effective.

Using the CPS Strategies to generate Course Project Topics

A class member also shared further reflections about using the CPS processes to generate focus questions for research papers in other courses in the remainder of the undergraduate program

- I frequently found myself returning to the Idea Trees that we explored in [our course] throughout the remainder of my undergraduate degree. This was especially true when developing thesis statements for research papers as it helped me to explore all possible avenues before narrowing down a topic that was unique and specific enough to suit my preferences and the available literature. It

also helped me to establish connections between ideas that I previously hadn't considered and on occasion led me down an entirely new pathway of inquiry than I had initially set out to learn about. This technique was sometimes successful in helping my writing to standout from others because the ideas generated were new and fresh.

In sum, class members expressed their appreciation of the many ways in which the CPS strategies can support authentic thinking, idea generation, organization, communication and collaboration, positive progress, creative solutions, and creative teaching. The class members' appreciation for the productive power of the strategies and the benefits of engaging them was pronounced. One class member commented that she planned to start each day as a teacher by having the class make an Attributes Tree about some topic "just to wake up their brains."

It was interesting that the specific CPS strategies included in the assignment seemed to be novel to the class members. Some class members made reference to the related activities of "doing a brain dump" or "making a mind map" but in general, class members expressed surprise that the ideas began to flow once they got going with following the steps of making the Idea Tree (see Table 5)—the first CPS strategy in the assignment. Even the process of purposefully engaging in incubation to support the idea generation process was reported as novel and useful.

It was expected that class members would find the CPS strategies to be generative. It was a happy surprise that some also expected that the CPS strategies could support them in teaching creatively in the future--thinking beyond what first comes to mind and feeling challenged to find unique ideas and to branch out of one's "go-to" ideas.

It was delightful that a class member specifically stated that the creative activity of designing the contests reminded him of "just how much fun being a kid was" and made him think about the "fun and possibility that should be associated with students' learning." Another class member commented that the creative contest might be the only reason some students would want to go to school that day. So perhaps many seeds were planted by this one-week assignment with using CPS strategies to design creative contests.

Discussion

This inquiry began with a question about the value of introducing creativity activities and CPS strategies to pre-service teachers in a written assignment without immediate opportunities for them to explore using these with students in a practicum classroom. The question is timely because of widespread current interest in: 1) how students can be better supported in experiencing belonging, an inviting classroom community, relationships with classmates and teachers, engagement, and empowerment in classrooms (Ibarra, 2022); and 2) whether students are developing competencies for creativity and innovation (Taylor et al., 2020). Because the creativity activities and CPS strategies had been found to contribute to both of these sets of outcomes in earlier research with pre-service teachers who employed them in their practicum classes (Ellis, 1998), it seemed worthwhile to explore their value when experienced only as a written assignment early in a teacher education program. As a relatively short and self-contained activity, the "designing creative contests" activities could be manageable to include as an assignment early in the programs of pre-service teachers and doing so would be worthwhile if results of this inquiry showed benefits.

This study with 13 class members as co-authors clearly indicated that even a single creative activity designed to introduce CPS strategies can enable pre-service teachers to appreciate their value and has potential to deeply influence future professional practice. Because of the barriers to embedding creativity in schools (Lucas, 2025) it is important to also introduce pre-service teachers to research findings about the benefits of creative thinking activities for developing students' talents, confidence, leadership, empowerment, interpersonal skills, and relationships—all needed as building blocks for doing well in school. Ibarra (2022) emphasized the need for instructional activities that can organically ensure ongoing development of those attributes and experiences for students. Creative activities and CPS strategies can make an ongoing strong contribution in those ways. In order to feel confident and

justified in regularly incorporating creative thinking activities, pre-service teachers will need to be aware of the many forms of their contributions to students' wellbeing and academic success.

Conclusion

Our inquiry found that the features that characterise creative pedagogical practice—that is, generating and exploring ideas; encouraging autonomy and agency; playfulness; problem-solving; risk-taking; co-constructing and collaborating; and teacher creativity (Cremin and Chappell, 2019)—can be introduced or highlighted with a single early written assignment in which pre-service teachers are invited to employ a number of CPS strategies to generate ideas for creative contests for students in imagined classrooms or schools. When inviting pre-service or in-service teachers to learn to use such creativity and CPS activities in classrooms, or to use them more, it is worthwhile to also highlight research that explains how these pedagogies can contribute to their students' opportunities for wellbeing and academic success.

References

Alberta Education (n.d.). Competencies in every subject. Retrieved from: Competency Progressions | new LearnAlberta/ Accessed 18 July 2026

Booth, E. (2013). A recipe for artful schooling. *Educational Leadership*, *70*(5), 22-27. Retrieved from: http://www.ascd.org/publications/educational-leadership/feb13/vol70/num05/A-Recipe-for-Artful-Schooling.aspx

Boxill, N. A. (Jan-Feb 1984) Making a place for Nona: Meeting the needs of homeless children. *Child Care Information Exchange*, *95*, 35-37. ERIC - EJ476477

Burnard, P., Craft, A., Cremin, T., Duffy, B., Hanson, R., Keene, J., … Burns, D. (2006). Documenting 'possibility thinking': a journey of collaborative enquiry. *International Journal of Early Years Education*, *14*(3), 243–262. https://doi.org/10.1080/09669760600880001

Cremin, T. & Chappell, K. (2019): Creative pedagogies: A systematic review, *Research Papers in Education*, *36*(3) 299–331. https://doi.org/10.1080/02671522.2019.1677757

Ellis, J. L. (1987). *Handbook of creative problem solving techniques*. Trillium.

Ellis, J. (1998). Creative assignments that promote learning and understanding. In Ellis, J. L. (Ed.) *Teaching from understanding: Teacher as interpretive inquirer (pp. 58-77)*. Routledge.

Ellis, J. (2005). Creative classroom teaching In J. L. Kincheloe (Ed.), Classroom Teaching; An Introduction (pp. 241-260). Lang.

Ellis, J. (2007). Creative problem solving. In J. Kincheloe and R. Horn (Eds.), *The Praeger Handbook of Education and Psychology* Volume 2 (pp. 295-309). Greenwood.

Ellis, J. & Docherty, C. R. (2024). Teacher as researcher activities to build relationships and support learning. In J. McClinton, A. E. Hernandez, & A. Thornton (Eds.), *Qualitative research for diverse and underserved communities* (pp. 231-241). IAP.

Fletcher, T. S. (2011). Creative thinking in schools: Finding the "just right" challenge for students. *Gifted Child Today*, *34*(2), 37-42. Retrieved from: http://journals.prufrock.com/IJP/b/gifted-child-today/volume34/issue2

Freedman, K. (2010). Rethinking creativity: A definition to support contemporary practice. *Art Education*, *63*(2), 8-15 Retrieved from: http://www.naea-reston.org/

Kaufman, J. C., & Glăveanu, V. P. (2021). An overview of creativity theories. In J. C. Kaufman & R. J. Sternberg (Eds.), *Creativity: An introduction* (pp. 17-30). Cambridge University Press

Landers, C. (February, 1998). Listen to me: Protecting the development of young children in armed conflict. Office of emergency programs working paper series. Unicef DeCID https://decid.co.uk/resource/listen-to-me-protecting-the-development-of-young-children-in-armed-conflict/

Her Majesty's Inspectorate of Education (HMIE). (2006). *Emerging good practice in promoting creativity*. Retrieved from: http://www.educationscotland.gov.uk

Ibarra, B. N. (2022). Understanding SEL to create a sense of belonging: The role teachers play in addressing students' social and emotional well-Being. *Current Issues in Education*, *23*(2), 1-15.

Isaksen, S. G. & Treffinger, D. J. (2004). Celebrating 50 years of Reflective Practice: Versions of Creative Problem Solving. *Journal of Creative Behaviour*, *38*(2), 75-101.

Kaufman, J. C., & Sternberg, R. J. (2007). Creativity. *Change: The Magazine of Higher Learning*, *39*(4), 55–60. https://doi.org/10.3200/CHNG.39.4.55-C4

Lucas, B. (2025). The development of a conceptual framework for embedding creativity in schools. *Thinking Skills and Creativity*, *58*. https://doi.org/10.1016/j.tsc.2025.101874

Lucas, B. & Hanson, J. (2021). *Reimagining practical learning in secondary schools: A review of the evidence.* London: Royal Academy of Engineering. https://raeng.org.uk/media/l41dfxrr/rae-practical-learning-report_final.pdf

McWilliam, E., & Dawson, S. (2008). Teaching for creativity: towards sustainable and replicable pedagogical practice. *Higher Education: The International Journal of Higher Education and Educational Planning,* 56(6), 633-643. doi10.1007/s10734-008-9115-7

Reilly, R. C., Lilly, F., Bramwell, G., & Kronish, N. (2011). A synthesis of research concerning creative teachers in a Canadian context. *Teaching and Teacher Education: An International Journal of Research and Studies*, *27*(3), 533-542. doi.org.login.ezproxy.library.ualberta.ca/10.1016/j.tate.2010.10.007

Renzulli, J. R. (2022). What is {or should be} the pedagogy of gifted education programs. *International Journal for Talent Development and Creativity*, *10*(1), August, 2022 and *10*(2), December,2022, 179-191.

Riley, K. (2013). *Leadership of place: Stories from the US, UK and South Africa, London*. Bloomsbury.

Riley, K. (2017). *Place, belonging and school leadership: Researching to make the difference*. Bloomsbury.

Riley, K. (2019). Agency and belonging: What transformative actions can schools take to help create a sense of place and belonging? *Journal of Educational & Child Psychology*, *36*(4), 91-103. https://doi.org/10.53841/bpsecp.2019.36.4.91

Rinkevich, J. L. (2011). Creative teaching: Why it matters and where to begin. *The Clearing House: A Journal of Educational Strategies, Issues and Ideas*, *84*(5), 219–223. https://doi.org/10.1080/00098655.2011.575416

Sternberg, R. J. (2005). A model of educational leadership: Wisdom, intelligence, and creativity, synthesized. *International Journal of Leadership in Education*, *8*(4), 347–364. https://doi.org/10.1080/13603120500156088

Taylor, R, Fadel, C., Kim, H., & Care, E. (2020). *Competencies for the 21st century: Jurisdictional progress*. Washington: Brookings Institution. Retrieved from: Competencies for the 21st century: Jurisdictional progress | Brookings Accessed July 2026.

Treffinger, D. J. (1995). Creative Problem Solving: Overview and educational implications. *Educational Psychology Review*, *7*(3), 301–312. https://doi.org/10.1007/BF02213375

Treffinger, D. J., Isaksen, S. G., & Stead-Dorval, K. B. (2006). Creative problem solving: An introduction (4th edition). Prufrock Press Inc.

About the Authors

Julia Ellis EdD is professor emerita at the University of Alberta. Her research interests have included: creative problem solving in the classroom; planning for teaching as planning for place-making; narrative inquiry with children and youth; the development of a hermeneutic interview protocol to support interpretive inquiry; using pre-interview activities; mentorship programs for children; and the perspectives of "difficult students."
Previous books include: Ellis, J., Small-McGinley, J., & De Fabrizio, L. (2001). *Caring for kids in communities: Using mentorship, peer support, and student leadership programs in schools.* Peter Lang; and Ellis, J. (Ed.) (1998). *Teaching from understanding: Teacher as interpretive inquirer*. Routledge. Ellis is currently serving as co-editor with Derek Stovin PhD for the book, *Working Narratively in Qualitative Research: Inviting, Finding, and Crafting Narratives* with Peter Lang in Shirley Steinberg's Critical Qualitative Research series.

All other co-authors were students at the University of Alberta at the time of writing:
Rowan Gazdewich; Malcolm Guglich; Leith Haines; Ava Henschel; Zach Hiltz; Natalie Kieser; Skylar LeBlanc; Jenna McChesney; Youssra Mohammed; Lyndzie Nguyen; Claire Parlee; Joel Turpin; Luke Yakemchuk.

Graphic Designer: Drury Stratiy

Appendix A

Full list of CPS Strategies Included in the Assignment

Kinds of CPS Strategies	Specific Strategies	Explanation
Three Idea Generation Strategies:	Idea Trees	The tree shows "all the different kinds of something there are" or "all the different ways there are to do something." For example, what are all the different kinds of contests?
	Attributes Trees	Branches of the tree identify all the ways that entities of this kind can be the same or different from each other. Each branch identifies a particular attribute and examples of different values it can have, (e.g., "Time Required" could be a Branch name and "5 minutes; one hour; one week" could be "twigs" on this branch.
	Analogies Charts	Gives example of ways in which the problem of interest has been solved in other times and places. (Entails perceiving products or processes as solutions to problems, e.g., figuring out how the main character in the story one is writing could become a hero.)
Additional Idea Generating Strategies	Forcing Connections	Forcing connections between the features of one entity with the features of another entity, (e.g., forcing connections between farms and witches to design a witches' farm or between a type of contest and features of the school.)
	Imposing Constraints	When it is difficult to get started because there are too many ideas, begin by imposing a constraint, i.e., specifying some required feature of the contest such as how much time, what place, or what key materials, etc. Each group can be assigned a different imposed constraint to ensure a range of products across groups.
	Selecting a Central Feature	Require the use of a central feature that is not typically related to the project. The imposed constraint should "tickle the imagination." Each group (or individual for individual projects) selects one of the offered "central features" from a collection offered. For example, as a central feature of a contest, groups might be invited to choose from: a science fiction theme; or a nursery rhyme of the group's choice; lots of ribbon in the school's colours, or…etc.
Strategies for Evaluating or Refining Solution Ideas and/or Generating Further Ideas or Modifications	Interest Groups	List all the different groups of people there are who are in or connected to the school. Brainstorm what each group might "like" or "not like" about the plan for the contest your group has developed.
	Future Projection	Imagine that the contest idea will be used. Make a schedule for the week. Imagine the plans for the contest going forward and for each key time on the week's schedule (e.g., morning before school starts; recess; lunch; after school; during class time; weekend; etc.) brainstorm all the things that "might be going right" or "might be going wrong" for the contest or because of the contest.

Note: These strategies are selected or adapted from those provided in Ellis (1987).

Well-Being in Education: An Ecological Systems Perspective

Lesley Eblie Trudel
University of Winnipeg, Canada

Abstract

Growing concerns regarding youth mental health have positioned student well-being as a central priority within educational systems. Despite widespread recognition of its importance, considerable variation remains in how well-being is conceptualized and enacted across Canadian jurisdictions. This narrative review examines student well-being from an ecological systems perspective to explore how interacting educational contexts influence opportunities for student flourishing. The review identifies three interrelated challenges: the proliferation of well-being frameworks and initiatives, the perplexity surrounding competing definitions and purposes, and the prioritization of well-being within educational policy and practice. These challenges highlight the need for greater system alignment. The paper concludes by proposing clarity, coherence, and consistency as leadership considerations to strengthen the implementation of student well-being.

Keywords: Well-being; mental health; leadership; global competencies; systems thinking.

Introduction

Amid escalating challenges surrounding youth mental health, well-being continues to assume a prominent role in school organizations and educational discourse in Canada (Canadian Institute for Health Information [CIHI], 2022). Well-being is mentioned in multiple systemic frameworks - global competencies, international conventions and provincial priorities – reflecting a growing recognition that education must address not only academic achievement but also the holistic development of students. Yet while learning and academic achievement are evaluated and reported in multiple ways, metrics for well-being are not similarly identified, communicated, or measured (Short et al., 2017). Ereaut and Whiting (2008) argued that "well-being acts like a cultural mirage: it looks like a solid construct, but when we approach it, it fragments and disappears" (p. 5). Although the concept of well-being may not be precisely characterized, it is seldom criticized as an ideal and has widespread acceptance as a concept used to align actions and policies across diverse social service sectors (e.g., health, families and education). Accordingly, the challenge lies in delineating the concept in such a way that educators, as policy actors within the system, can better understand and apply well-being in both curricular content and pedagogical practice, ultimately creating opportunities for students to "lead lives they have reason to value" (Sen, 1999).

Theoretical Framework

Although student well-being is often discussed within the context of individual schools or classrooms, the conditions that support students extend beyond these immediate environments. Bronfenbrenner's Ecological Systems Theory (1979) provides a useful conceptual lens for understanding how multiple, interacting settings influence human development. The theory emphasizes that individuals are shaped by nested ecological contexts that continually interact over time. This perspective provides greater clarity in understanding student well-being as a multi-dimensional educational construct, influenced by relationships, organizations, policy, legislation and societal conditions. Figure 1 reveals a suggested adaptation of Bronfenbrenner's ecological systems theory in the context of education by illustrating how student well-being is influenced through interacting educational environments. For example, immediate learning experiences typically occur within classrooms and schools; however, these experiences are also shaped by collaborative relationships, organizational leadership, jurisdictional policies and broader educational and societal contexts.

Guided by the ecological perspective informed by Bronfenbrenner (1979), student well-being is addressed in this paper, with particular attention to how it is conceptualized, interpreted and enacted

through interconnected contexts and educational systems. The paper examines interconnected contexts and considers the resulting implications for educational leadership. In addition, the ecological systems perspective provides a foundation to explore how student well-being has emerged as a growing educational priority across Canada.



Figure 1: An Ecological Systems Perspective of Student Well-Being (adapted from Bronfenbrenner, 1979)

Background and Context: Well-Being in Education

Over the past decade, questions and concerns focused on student well-being have moved steadily to the centre of educational dialogue in Canada (Mental Health Commission of Canada, 2016). With increasing challenges in youth mental health (CIHI, 2022), the concept of well-being has gained traction in school organizations and deservedly so. Well-being is not only a powerful indicator and condition for life but also an important influence on student achievement (Wei & Kutcher, 2014). Consequently, boards of education and ministries across Canada have begun to prioritize it, along with student achievement, in their visions for teaching and learning (Hargreaves et al., 2018). Students who experience well-being in schools are more resilient, less likely to take risks, make better choices for their learning and have the ability to confront challenges they may encounter in their lives (Aldridge & McChesney, 2018; Boak et al., 2016; Marracini & Brier, 2017; Rasberry et al., 2017).

Student well-being is mentioned in provincial learning frameworks that summarize the anticipated dispositions and skills required for learners in the twenty-first century. These essential indicators of capacity are defined as global competencies (Council of Ministers of Education, Canada [CMEC], 2018). CMEC has placed well-being under the competency of global citizenship and

sustainability. The positioning emphasizes that well-being is not only a personal or local concern, but an essential element of preparing learners to contribute to a just, inclusive and sustainable global society.

The United Nations Convention on the Rights of the Child recognizes rights and conditions associated with child well-being (Lee, 2009). These principles have influenced Canadian constitutional, legislative and human rights frameworks concerning children and youth. Additionally, Halbreich and colleagues (2019) argued that well-being is a fundamental right of all human beings without distinction based on race, political beliefs, religion, social or economic conditions.

The complexity around the concept of well-being noted thus far points to a broader challenge for educators and leaders who are responsible for determining how it should be enacted within school systems. Although well-being is widely acknowledged as a priority, there remains considerable variation in how it is conceptualized. This lack of clarity and alignment creates challenges for policy, leadership and practice, particularly when well-being is positioned as a fundamental outcome of education alongside academic achievement. As a result, a narrative review process was chosen to examine common themes, tensions and gaps related to well-being that could inform implications for system leadership.

Methods: Narrative Review

A narrative review enables researchers to synthesize the current state of knowledge on a specific topic while offering critical insights and new perspectives that can advance understanding in a field (Sukhera, 2022). This narrative review process involved a concise overview of well-being in education. A focused search of ERIC, JSTOR, ProQuest and Scopus databases was undertaken, using terms like "school and student well-being," "student mental health," and "teacher well-being." Articles were included for critical analysis if they addressed well-being in Canadian educational contexts, highlighted common patterns and practices, and identified gaps or challenges. A Google search was also performed to identify relevant jurisdictional policy documents and publicly available reports. The aim of this approach was to ensure a more inclusive listing of resources that may not appear in traditional indexing systems. Data from selected studies were synthesized thematically to provide a comprehensive overview of how well-being could be better understood, addressed, and supported within schools.

Findings: An Ecological Systems Perspective Across Jurisdictions

The narrative review identified a range of approaches to student well-being across varied educational jurisdictions, revealing common themes on how well-being is defined, positioned and implemented across interacting ecological contexts. The analysis begins with a regional example and expands to consider broader themes and challenges identified across the literature.

In one province, a blueprint of essential elements of teaching and learning has positioned well-being at the center by promoting academic potential and aspects of a fulfilling life (Manitoba Education and Early Childhood Learning [MEECL], n.d.). Manitoba's Framework for Learning espouses a vision for all learners to succeed regardless of their environment, background, or life circumstances. The document highlights the concept of well-being with students placed at the center of an accompanying graphic, along with goals to achieve full potential and the good life (Mino-Pimatisiwin). Moreover, living the good life is described as having a sense of meaning and purpose, facility for expression, a sense of support and safety, as well as the capacity to shape the future as active citizens and to develop positive relationships with others. Mino-Pimatisiwin, an Indigenous teaching rooted in the balance of heart, body, mind and spirit, guides a lifelong journey of living respectfully and reciprocally in the world. This capacity to embrace Indigenous ways of being, knowing and doing, comes with a commitment to and understanding of Truth and Reconciliation. Within this framework, five principles are recognized that provide the foundations on which teaching and learning are established: equity, access, cohesion, flexibility, and agility. Accordingly, these elements are described as keys to achieving the vision of success with well-being in mind. The Framework for Learning also recognizes six global competencies aligned with curriculum, instruction and assessment. When realized, the six competencies provide students with pathways to transform their lives and become responsible members of their communities, capable of addressing issues of local or global importance.

Discussion: Proliferation, Perplexity and Prioritization

Similar to the Manitoba example, most provincial and territorial ministries of education (and thereby schools and teachers) support a *proliferation* of frameworks, initiatives and models where well-being is concerned (Alberta Teachers' Association [ATA], 2019). Viewed through an ecological systems perspective, the varied frameworks reflect the multiple educational contexts in which student well-being is understood and supported. It is critical to acknowledge that the concept of well-being exists within the Determinants of Health (Statistics Canada, n.d.), referring to the group of economic and social factors that influence the health of the general population. Well-being is also promoted in models such as the Circle of Courage (Starr Commonwealth, n.d.) and in elements of the Indigenous-inclusive education system in Manitoba's Mamàhtawisiwin (MEECL, 2022). Additionally, well-being is reflected in the Comprehensive School Health framework (Morrison & Peterson, 2013) and competencies of Social Emotional Learning (Collaborative for Academic, Social and Emotional Learning [CASEL], n.d.). While taxonomies of this nature are viable methods to document the conceptual complexity of well-being, Spratt (2016) cautioned that multiple representations could result in ambiguity and confusion in their practical applications.

Despite the apparent ubiquity of well-being in the previous frameworks, initiatives and models, the concept has also remained difficult to define and elusive in terms of impact. This has resulted in an understandable sense of *perplexity* within the system as multiple ecological contexts emphasize different purposes, priorities and outcomes. Kempf (2018) questioned whether well-being was an outcome in the curriculum, a subject to be taught, or a state of being. Spratt (2016) further characterized well-being as a "conflation of different concepts under one umbrella term" (p.3), highlighting the challenge of reconciling varied interpretations at one time. Bassett-Gunter and colleagues (2015) challenged that some definitions of well-being used in the Comprehensive School Health framework emphasized a holistic, integrated approach, linking physical, mental and social dimensions of health. They also highlighted organizations such as United Nations Educational, Scientific and Cultural Organization (UNESCO, n.d.), that framed well-being in relation to human rights, equity and inclusion, in addition to reflecting global development priorities. They noted that the World Health Organization (WHO, 2021), on the other hand, situated well-being within public health policy, stressing measurable indicators of mental and physical health at the population level. The Alberta Teachers' Association (2019) identified that in addition to the numerous definitions of well-being, government ministries or funders might often simply focus on outcomes, benchmarks or accountability metrics required to guide resource allocation and reporting.

Despite the copious frameworks and perspectives accessible for use, Short and colleagues (2017) argued that most provincial education systems have not been organized to fully include well-being in their *priorities* (Volante et al., 2024). While recent developments have indicated that this situation is slowly evolving (i.e., Manitoba's Framework for Learning), clarification of terminology and measurement of well-being outcomes remain persistent dilemmas. Stiglitz and colleagues (2009) remind us that what is measured is generally valued and what is valued has an impact on action. A central challenge, therefore is determining how to extend the idea of student success beyond academic performance alone (Kempf, 2018). While MEECL has identified indicators of well-being in the vision of the good life for all learners, this provincial ministry has yet to commit to the measurement of identified curricular outcomes for well-being within the domain of student assessment. Nonetheless, there has been a significant shift in the discourse to include holistic and contextual factors when considering student progress and achievement. An ecological systems perspective suggests that prioritizing student well-being requires alignment across interacting educational contexts. Policy alone cannot influence students' experiences unless it is supported through leadership, school culture and classroom practice.

Taken together, the three challenges identified through this narrative review suggest corresponding leadership responses that can strengthen the implementation of student well-being across educational systems (Figure 2).

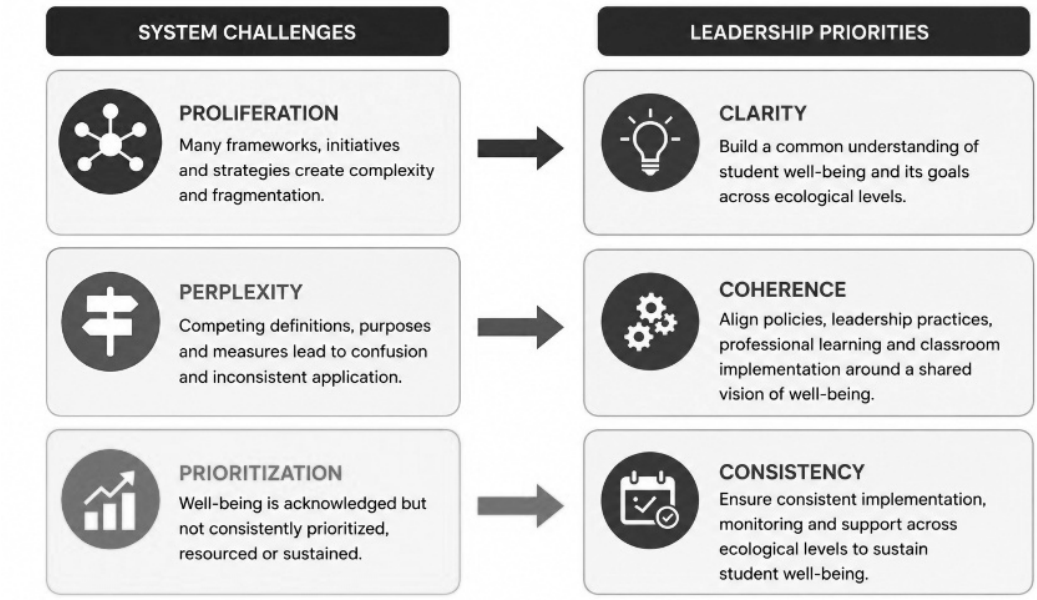


Figure 2: From System Challenges to Leadership Responses

Note: The three challenges identified suggest corresponding leadership responses that could strengthen the implementation of student well-being across educational systems.

Implications for System Leadership: Clarity, Coherence and Consistency

The findings from this narrative review suggest that the challenge of well-being in education is not a lack of commitment or initiative. The proliferation of frameworks and initiatives, the perplexity surrounding definitions and purposes, and the difficulty in prioritizing and measuring well-being, point to a need for clarity, coherence and consistency. As a result, system leaders play a critical role in creating the conditions necessary to move well-being from rhetoric to practice. Within this context, the following recommendations for leadership and planning are offered for further reflection:

1. While there is currently full support and application of a wide range of representations regarding the concept of well-being, increased *clarity* and focus on a common framework would be beneficial in reducing ambiguity for practical application. Clarity promotes a shared understanding of student well-being across classrooms, schools, systems and jurisdictions. Achieving consensus on such a framework may be challenging, however, given the political, cultural and disciplinary differences that influence how well-being is understood and applied.
2. Concurrently, common language and definitions of well-being and related elements would enhance *coherence* between policies and leadership practices and add value to continuous improvement planning processes, as well as dialogue and sharing within, between and beyond school communities. This alignment would create a stronger foundation for collaboration and ensure that discussions about well-being are both meaningful and actionable.
3. Additional exploration around the measurement of well-being is suggested, with particular attention paid to ensuring the *consistency* of indicators across existing dimensions. This could include aggregate assessments like the Early Development Instrument (Janus et al., 2022), evaluations of well-being within curricular outcome areas such as Language Arts, Mathematics, Physical and Health Education, Science or Social Studies, and at broader population-level measures like provincial standards tests. Measurement could also involve individual-level assessments, such as student report cards. Consistency across ecological levels would enable educational jurisdictions to monitor progress, identify trends, highlight curricular areas for targeted support, and strengthen the link between well-being data and educational decision-making.

Conclusion

In summary, while the growing focus on student well-being in schools is both timely and essential given the increasing challenges surrounding youth mental health, the current context is marked by an abundance of structures and interpretations that can lead to confusion and redundancy. Viewed through an ecological systems perspective, the growing emphasis on student well-being highlights the importance of understanding how educational, organizational and societal contexts interact to shape students' experiences. To include well-being meaningfully in educational discourse, it is necessary for education leaders to collaborate with partners across the education, health and community sectors, to create unified contextual frameworks with shared definitions of well-being, alongside measurable indicators. Processes of this nature can enhance collective understanding, strengthen implementation and support communication about the holistic development of children and youth, ultimately creating the conditions for them to flourish regardless of where they attend school.

References

Alberta Teachers' Association. (2019). *School wellness and well-being initiatives across Canada. Environmental scan and literature review*. https://www.teachers.ab.ca/SiteCollectionDocuments/ATA/Publications/Research/COOR-101-27%20School%20Wellness%20and%20Well-being%20Initatives%20across%20Canada.pdf

Aldridge, J., & McChesney, K. (2018). The relationships between school climate and adolescent mental health and wellbeing: A systematic literature review. *International Journal of Educational Research, 88*, 121-145. https://doi.org/10.1016/j.ijer.2018.01.012

Bassett-Gunter, R., Yessis, J., Manske S., & Gleddie, D. (2015). Healthy school communities in Canada. *Health Education Journal, 75*(2), 235–248. https://doi.org/10.1177/0017896915570397

Bronfenbrenner, U. (1979). *The ecology of human development: Experiments by nature and design*. Harvard University Press.

Boak, A., Hamilton, H., Adlaf, E., Henderson, J., Wolfe, D., & Mann, R. (2016). *The mental health and well-being of Ontario students, 1991-2015: Detailed OSDUHS findings*. Centre for Addiction and Mental Health. http://www.camh.ca/-/media/files/pdf---osduhs/the-mental-health-and-well-being-of-ontario-students-1991-2015---detailed-osduhs-findings.pdf?la=en&hash=59BFD5B17408AAEE0E837E01048088ED51E558B2

Canadian Institute for Health Information. (2022). *Children and youth mental health in Canada*. https://www.cihi.ca/en/children-and-youth-mental-health-in-canada#:~:text=In%202020%2C%2058%25%20of%20hospitalizations,as%20males%20the%20same%20age

Collaborative for Academic, Social and Emotional Learning. (n.d.). https://casel.org/

Council of Ministers of Education, Canada - CMEC (2018). *Pan-Canadian systems-level framework on global competencies.* https://www.globalcompetencies.cmec.ca/

Ereaut, G., & Whiting, R. (2008). What do we mean by "wellbeing"? and why might it matter? Research report DCSF-RW073. London: Department of Children, Schools and Families and Linguistic Landscapes. https://dera.ioe.ac.uk/id/eprint/8572/1/dcsf-rw073%20v2.pdf

Halbreich, U., Schulze, T., Botbol, M., Javed, A., Kallivayalil, R. A., Ghuloum, S., Baron, D., Almeida, A. M., Musalek, M., Fung, W. L. A., Sharma, A., Tasman, A., Christodoulou, N., Kasper, S., Ivbijaro, G. (2019). Partnerships for interdisciplinary collaborative global well-being. *Asia-Pacific Psychiatry*, 11(2), e12366. https://doi.org/10.1111/appy.12366

Hargreaves, A., Shirley, D., Wangia, S., Bacon, C., & D'Angelo, M. (2018). *Leading from the Middle: Spreading learning, well-being, and identity across Ontario*. Council of Ontario Directors of Education. https://www.researchgate.net/publication/324455421_Leading_From_the_Middle_Spreading_Learning_Well-Being_and_Identity_Across_Ontario

Janus, M., Brinkman, S. & Guhn, M. (2022). Early Development Instrument. In F. Maggino (Ed.) Encyclopedia of Quality of Life and Well-Being Research, Springer. https://doi.org/10.1007/978-3-319-69909-7_3439-2

Kempf, A. (2018). *The challenges of measuring wellbeing in schools. A review prepared for the Ontario teachers' federation*. https://www.otffeo.on.ca/en/wp-content/uploads/sites/2/2018/02/The-challenges-of-measuring-wellbeing-in-schools-Winter-2017-web.pdf

Lee, Y. (2009). Child rights, child well-being, and child poverty. In J. E. Doek, A. Shiva Kumar, D. Mugawe, & S. Tsegaye (Eds.), *Child poverty: African and international perspective* (pp. 17-26). Intersentia. https://africanchildforum.org/resourcecentre/wp-content/uploads/2025/06/Child-Poverty-African-and-International-Perspectives.pdf

Manitoba Education and Early Childhood Learning – MEECL (n.d.). *Framework for Learning*. https://www.edu.gov.mb.ca/k12/framework/index.html

Manitoba Education and Early Childhood Learning (2022). *Mamàhtawisiwin: The wonder we are born with – an Indigenous education policy framework.* https://www.edu.gov.mb.ca/iid/docs/mam%C3%A0htawisiwin_en.pdf

Marracini, M., & Brier, Z. (2017). School connectedness and suicidal thoughts and behaviors: A systematic meta-analysis. *School Psychology Quarterly, 32*(1), 5-21. https://doi.org/10.1037/spq0000192

Mental Health Commission of Canada. (2016). *The mental health strategy for Canada: A youth perspective*. https://www.mentalhealthcommission.ca/sites/default/files/2016-07/Youth_Strategy_Eng_2016.pdf

Morrison, W., & Peterson, P. (2013). *Schools as a setting for positive mental health* (2nd ed.). Pan-Canadian Joint Consortium for School Health. JCSH Best Practice_Eng_Jan21.pdf (jcsh-cces.ca)

Rasberry, C., Tiu, G., Kann, L., McManus, T., Michael, S., Merlo, C., & Ethier, K. (2017). Health-related behaviors and academic achievement among high school students — United States, 2015. *Morbidity and Mortality Weekly Report*, 66(35), 921-927. https://doi.org/10.15585/mmwr.mm6635a1

Sen, A. (1999). *Development as freedom*. Alfred A Knopf, Inc.

Short, K., Finn, C., & Ferguson, B. (2017). *System leadership in school mental health in Canada*. https://www.cassa-acgcs.ca/cms/lib/ON01929128/Centricity/Domain/30/CASSA-Discussion-Paper-System-Ldrship-in-School-MH.pdf

Spratt, J. (2016). Childhood wellbeing: What role for education? *British Educational Research Journal, 42*(2), 223–239. https://doi.org/10.1002/berj.3211

Starr Commonwealth. (n.d.). *The circle of courage*. https://starr.org/circle-of-courage/

Statistics Canada. (n.d.). Health of Canadians: Determinants of health. https://www150.statcan.gc.ca/n1/pub/82-570-x/2023001/section4-eng.htm

Stiglitz, J., Sen, A., & Fitoussi, J. (2009). *Report by the commission on the measurement of economic performance and social progress*. https://ec.europa.eu/eurostat/documents/8131721/8131772/Stiglitz-Sen-Fitoussi-Commission-report.pdf

Sukhera J. (2022). Narrative Reviews: Flexible, rigorous, and practical. Journal of Graduate Medical Education.14(4):414-417. https://pmc.ncbi.nlm.nih.gov/articles/PMC9380636/

United Nations Educational, Scientific and Cultural Organization – UNESCO (n.d.). SDG resources for educators: Good health and well-being. SDG Resources for Educators - Good Health and Well-Being (unesco.org)

Wei, Y., & Kutcher, S. (2014). Innovations in practice: "Go-to" educator training on the mental health competencies of educators in the secondary school setting: A program evaluation. *Child and Adolescent Mental Health, 19*(3), 219-222. https://doi.org/10.1111/camh.12056

World Health Organization. (2021). Towards developing WHO's agenda on well-being. https://www.who.int/publications/i/item/9789240039384

About the Author

Dr. Lesley Eblie Trudel has devoted over three decades to shaping the field of education, engaging in a range of instructional and leadership roles and working in both urban and rural settings. Her K-12 career culminated as an Assistant Superintendent of Schools focused on equity, diversity and inclusion. Now serving as Associate Dean and Associate Professor in the Faculty of Education at the University of Winnipeg, she brings extensive practical experience to her post-secondary teaching, interdisciplinary research and administrative leadership. Dr. Eblie Trudel is deeply committed to navigating the complexities of diverse communities and promoting innovative approaches to organizational learning, systems transformation, improvement and change.

Address

Dr. Lesley Eblie Trudel
University of Winnipeg, Canada
e-Mail: l.eblietrudel@uwinnipeg.ca

From Self-Awareness to Collaboration Across Difference: A Developmental Framework for Identity-Centered Global Competence Development

Nadia Ibrahim - Taney
The University of Cincinnati, USA

Abstract

Preparing students to engage across cultural differences has become an increasingly important goal in higher education (Deardorff, 2006). Yet, simply placing students in diverse environments does not necessarily lead them to examine their own assumptions, understand others' experiences, or develop the ability to engage across difference. This article presents an identity-centered developmental framework for cultivating global competence through curriculum design. Drawing from experiences teaching career education and cooperative education courses, this article presents a framework describing three interconnected phases: Understanding Self, Learning Through Difference, and Engaging Across Difference. Across these phases, students move from developing self-awareness to practicing empathy and perspective-taking, and ultimately engaging in collaboration with others. For educators, the framework provides a developmental approach for embedding global competence within existing coursework by connecting reflection, identity development, and students' personal, academic, and professional growth.

Keywords: Career pathways; cultural diversity; global competence.

Introduction: Why Self-Awareness Is a Foundation for Global Competence

Today's students are tasked with collaborating across cultures, communicating with people whose experiences differ from their own, and navigating classrooms and workplaces shaped by diverse perspectives. As educators, we often stress the importance of understanding others, without giving students the space to examine how their own identities, experiences, and assumptions shape the way they engage with others. Students may participate in diverse classrooms, international experiences, and collaborative projects while still lacking opportunities to examine how their identities, experiences, and assumptions influence these interactions. Research on global competence education suggests that meaningful engagement across difference requires more than exposure to diverse people or environments. The Asia Society framework conceptualizes global competence as involving four interconnected capacities: investigating the world, recognizing perspectives, communicating ideas, and taking action (Boix Mansilla & Jackson, 2011).

Engaging across difference requires acknowledging that people interpret the world through their own identities, experiences, values, and assumptions. Cultural diversity is not only about recognizing different backgrounds; it also involves understanding how people's experiences shape their perspectives, decisions, and interactions. Developing global competence requires students to examine both the perspectives of others and the assumptions they bring to those interactions (Byram, 1997). Intercultural learning engages a developmental process in which individuals become increasingly able to recognize, interpret, and engage with cultural perspectives beyond their own (Bennett, 1993). Deardorff (2006) describes intercultural competence as "the ability to communicate effectively and appropriately in intercultural situations based on one's intercultural knowledge, skills, and attitudes" (p. 248). This definition reinforces the importance of viewing global competence as a developmental process requiring knowledge, reflection, and intentional engagement. Students need structured opportunities to examine their own identities, reflect on their assumptions, and practice engaging across difference (Deardorff, 2006). Collectively, this scholarship suggests global competence develops when students have

opportunities to examine their assumptions, engage with others' experiences, and apply their learning in meaningful situations.

Building on this scholarship, the framework discussed in this article emerged from my own lived experiences teaching career education courses, where students regularly navigate questions of identity, career purpose, collaboration, and belonging. Career education provided the context where this framework developed, but the process applies wherever students are learning with and from difference. The framework describes global competence development through three interconnected phases: Understanding Self, Learning Through Difference, and Engaging Across Difference. Each phase builds on the previous one, helping students move from self-awareness to empathy and, ultimately, collaboration with others. The goal is not to add more content to already full curricula, but to make the developmental process of global competence more visible through the learning experiences we already create.

Phase One: Understanding Self

I teach undergraduate career education and cooperative education (aka co-op) courses for Information Technology and Cybersecurity majors at the University of Cincinnati, a large urban public R1 university in the Midwestern United States. These courses prepare students for work-integrated learning experiences (e.g. internships or co-ops) while emphasizing career readiness, reflection, and collaboration. While the primary focus of these courses is career education, they also provide a natural context for helping students examine their identities, reflect on their experiences, and become more thoughtful collaborators across difference. Rather than treating career development and global competence as separate goals, I see them as developing together through the same learning experiences. Although the examples in this article come from career education, I believe the same developmental process can be adapted across disciplines where students are preparing to learn and work with people whose experiences differ from their own.

Before students can meaningfully engage with others, they need opportunities to examine how their identities, experiences, and assumptions shape the way they understand and interact with the world. In phase one of this framework, the developmental goal is to encourage students to cultivate self-awareness and examine their identities, values, assumptions, and lived experiences before engaging across cultures. Some common pedagogical approaches I use in my classes include social identity mapping, reflective journaling, values clarification, and personal narratives. The purpose of these activities is not to produce a perfect reflection, but to give students time and structure to examine their experiences and question assumptions they may not have previously considered.

At the University of Cincinnati, co-op is an academic component of the undergraduate curriculum for Information Technology and Cybersecurity students. Students complete a required co-op preparation course before becoming eligible to begin their first co-op placement. The course introduces students to professional expectations while also encouraging reflection on their identities, experiences, and future career goals. For example, students in my co-op preparation course complete a social identity map during the first weeks of the semester. A social identity map is a visual self-reflection activity that invites students to identify and examine the personal, social, and cultural factors that shape who they are, including family, culture, language, values, lived experiences, interests, strengths, and communities of belonging (Jacobson & Mustafa, 2019). Figure 1 provides an illustrative example of the types of reflections students complete in this activity.

This activity is adaptable across disciplines because it encourages students to examine how identity shapes the ways they interpret experiences, develop relationships, and imagine future possibilities. Throughout the semester, students revisit their social identity maps as they engage in reflective writing, classroom discussions, and experiences that challenge their perspectives. Revisiting the social identity map throughout the semester allows students to see how their understanding of themselves changes as they encounter new information, relationships, and professional experiences.

Over time, the social identity map shifts from an introductory reflection activity to a developmental tool that allows students to recognize how their identities evolve.

Identity Dimension	Reflection Prompt	Illustrative Student Reflection
Family and background	What experiences, communities, or relationships have shaped who you are?	"Growing up in a family where persistence and responsibility were highly valued shaped how I approach challenges."
Culture and language	What cultural experiences or languages influence how you communicate and understand others?	"Speaking multiple languages has helped me recognize that people communicate and express ideas differently."
Educational experiences	What learning experiences have influenced your interests and goals?	"Participating in cybersecurity competitions helped me discover an interest in problem-solving and technology."
Values and motivations	What values guide your decisions and future goals?	"I value using technology to improve access, security, and opportunities for others."
Communities and belonging	What groups, organizations, or communities have influenced your sense of belonging?	"Community service experiences shaped my interest in developing technology solutions that support others."
Future aspirations	How do your experiences connect to your academic or professional goals?	"I hope to build a career in cybersecurity that protects organizations and communities."

Figure 1:

In another assignment in this course, student complete an online discussion board assignment where they develop and share a brief elevator pitch introducing themselves, explaining why they chose their major or school, and describing their career interests and aspirations. The activity prepares students for an employer-ready introduction they can use at a career fair, but it also encourages them to reflect on their own experiences and listen to how their classmates describe their goals. Students are not only practicing how to introduce themselves professionally, but they are also learning how others describe their identities, experiences, and goals. In one discussion, two students from different countries responded to each other's videos and noticed a shared interest in careers focused on contributing to their communities. Although their educational experiences and cultural backgrounds were different, they found common ground in the values that shaped their career goals. What began as a career preparation activity became an opportunity for students to recognize connections across experiences they initially viewed as very different. What stood out to me was not simply that students discovered similarities, but that they began to see parts of their own experiences reflected in someone else's story.

Simple activities like these demonstrate how global competence can be nurtured through intentional reflection embedded within existing coursework. Global competence extends beyond knowledge about other cultures; it involves the ability to examine perspectives, communicate across differences, and engage appropriately in diverse contexts (OECD, 2018; Salzer & Roczen, 2018). Research on global competence emphasizes that these abilities develop through the integration of knowledge, skills, attitudes, and dispositions rather than through exposure to diversity alone (OECD, 2018). As students move through assignments, they develop a clearer sense of self through repeated opportunities to reflect, articulate, and revise how they understand their identities in relation to others and their future goals. As educators, we might feel pressure to add new content or create entirely new assignments to address emerging competencies, but sometimes the most significant changes come from being more intentional with the assignments we already use. Built-in reflection helps students better understand their own perspectives and how those perspectives shape the way they engage with others and their future careers.

As students develop a deeper understanding of their own identities and perspectives in the first phase of this framework, they're better prepared to engage with the identities and experiences of others. The second phase builds on this by focusing on empathy, perspective-taking, and intercultural understanding through structured learning activities.

Phase Two: Learning Through Difference

After students begin to understand themselves, they are better positioned to engage with perspectives that challenge their own. In the second phase of this framework, students move beyond self-awareness and toward curiosity, empathy, and perspective-taking. Here, empathy refers to developing the ability to listen, question assumptions, and remain open to perspectives different from one's own. The core of this phase is a simple question: *How do I respond when someone sees the world differently than I do?* Pedagogically, I create these opportunities for students to engage through dialogue circles, perspective-taking activities, role-playing, and structured reflection following discussion. For example, students may examine a workplace scenario where two individuals interpret the same interaction differently or discuss how factors such as culture, prior experiences, or communication styles influence professional expectations. These activities encourage students to pause before making judgments and consider how another person's experiences shape the way they interpret a situation. The goal is not for students to agree with one another, but to listen with curiosity and better understand experiences different from their own.

One way I encourage perspective-taking is through classroom discussions about career access and opportunity within technology fields. Students examine questions such as whether all students have equal access to professional networks, internships, mentorship opportunities, technical certifications, and career preparation resources. For example, students are asked to consider how access to cybersecurity competitions, programming experience outside the classroom, industry connections, or family members working in technology may influence a student's ability to enter and advance within technology careers. They also explore how factors such as socioeconomic background, geographic location, disability, language, or first-generation college status may shape experiences navigating the technology workforce. Rather than asking students to debate whose experience is "better" or "worse," I ask them to explain how they arrived at their perspectives before responding to someone else's. Through these discussions, students begin to recognize that career pathways are not experienced the same by everyone and that effective collaboration requires curiosity about the experiences that shape how people approach learning, work, and professional development.

Many students begin recognizing that assumptions they previously viewed as universal may have been shaped by their own experiences. Not every student sees the world differently after a single activity, and that's okay. Sometimes the learning happens later, when they revisit the conversation, encounter a similar situation, or recognize a perspective they hadn't considered before. Empathy is not something we can assume students will develop simply by working alongside people who are different from them. It grows through intentional opportunities to listen, reflect, and make sense of experiences beyond their own.

Another activity I use in my careers course asks students to evaluate workplace scenarios from multiple viewpoints. For example, students consider a situation where a supervisor interprets an employee's silence during meetings as a lack of engagement. Before discussing possible solutions, students work in small groups to identify several reasons why the employee may be communicating in that way. Responses often include cultural communication styles, speaking English as an additional language, neurodiversity, anxiety, or uncertainty about workplace expectations. Considering multiple explanations before discussing the scenario as a class helps students recognize how quickly assumptions can shape their interpretations of other people's behavior. Over time, I notice students becoming more comfortable asking questions before drawing conclusions, a habit that extends beyond the classroom and into their workplace experiences.

Lastly, I use dialogue circles in my post-work experience reflection course to give students another opportunity to engage with experiences different from their own. Students respond to career-oriented reflective prompts while classmates listen without interruption before asking questions or sharing their own perspectives. The structure creates space for every student to contribute while reducing the pressure to immediately defend or challenge another person's viewpoint. Although students' career experiences differ, they often discover the emotions, hopes, and challenges they describe are remarkably similar. And while these conversations are rarely neat or predictable, they often become meaningful moments of reflection because students are able to connect their individual experiences with broader questions of identity, work, and belonging.

Like the activities in the first phase, these activities don't require an entirely new curriculum, instead, they ask us to be more intentional with the conversations and assignments already built into our courses. Reflection and dialogue help students practice the curiosity and empathy they will need when working with people in professional settings whose experiences and perspectives differ from their own. As students strengthen these reflective and relational skills, they're better prepared to move beyond understanding difference toward working collaboratively across it. The third phase of this framework focuses on authentic intercultural collaboration, where students apply their self-awareness and empathy in partnerships with others.

Phase Three: Engaging Across Difference

In the third phase of this framework, students apply the self-awareness and empathy developed in the previous phases in authentic intercultural contexts. At this stage, the focus shifts from learning about difference to engaging across it. Students begin asking a different question: *How do I collaborate effectively with people whose experiences, perspectives, and ways of working differ from my own?* Experiences such as Collaborative Online International Learning (COIL), international partnerships, professional reflection, and career planning provide opportunities for students to answer that question through practice rather than theory. As an example, a cybersecurity student is working on an international security team responsible for responding to data breaches affecting users across different regions. While technical knowledge is essential, effective collaboration requires students to communicate across different cultural expectations, interpret varying approaches to problem-solving, and recognize how assumptions about communication or decision-making influence team dynamics. A student who has developed self-awareness and practiced perspective-taking through earlier phases of this framework can more easily understand how their own communication preferences and experiences shape collaboration with others.

At the University of Cincinnati, we have developed an ongoing partnership with a university in Taiwan to create COIL experiences that allow technology and engineering students to practice collaboration across cultural and disciplinary differences. Through this partnership, students work with peers across institutions and countries on shared projects that require communication, problem-solving, and collaboration across cultural and disciplinary boundaries (SUNY COIL Center, 2025; Swartz et al., 2020). Within this framework, intercultural learning is supported when students negotiate different perspectives, communication styles, and approaches to problem-solving while working toward a shared goal. A shift I have observed in these experiences is that students begin talking less about "working with international students" and more about working with teammates, collaborators, and future colleagues. Experiences alone, however, are not enough. What truly helps students make this shift is intentional reflection. In my post-cooperative education career reflection courses, students revisit their

workplace and intercultural experiences through assignments aligned with the NACE Career Readiness Competencies (NACE, n.d.). They examine how experiences working across difference strengthened skills such as communication, teamwork, professionalism, and career self-development while considering how those experiences have influenced their career goals. One student initially described an international collaboration as simply an opportunity to work with students from another country. By the end of the course, they described how the experience influenced their ability to adapt, communicate across cultures, and contribute to diverse teams, qualities they later highlighted in job interviews and professional conversations.

Engaging across difference becomes most meaningful when students recognize it as part of who they are becoming rather than simply something they experienced during college. I see elements of this transformation with many students I work with before and after co-ops and other work-integrated learning experiences. Across all three phases of this framework, the emphasis remains the same: engaged learning is not created through isolated activities, but through intentional experiences that help students better understand themselves, learn through difference, and engage thoughtfully with others throughout their personal and professional lives. By the end of this process, global competence is no longer viewed as a separate skill or experience; it becomes part of how students understand themselves and the kind of professional they want to become.

Implications for Higher Education

Although the examples throughout this article come from my career education and cooperative education courses, this framework is not strictly limited to work-integrated learning settings. The developmental process of understanding self, learning through difference, and engaging across difference can be incorporated into almost any discipline because it focuses on how students learn rather than what they are learning. Reflection, dialogue, collaboration, and authentic application can often be embedded into assignments that already exist, making the developmental process visible to students rather than assuming they will simply discover it on their own. When students understand why they are engaging in these experiences and how they connect to their personal, academic, and professional growth, they are better positioned to navigate diverse workplaces, contribute to collaborative teams, and continue learning from people whose experiences differ from their own. Ultimately, these experiences prepare students to become professionals who contribute thoughtfully to diverse teams and collaborative environments.

Students may not remember every assignment they complete in our courses, nor should they. What they carry forward are the experiences that change how they understand themselves, work with others, and approach their future careers in an increasingly interconnected world. Thoughtfully designed, identity-centered curricula provide faculty with an opportunity to create those transformative moments. Developing global competence does not necessarily require adding more content to already crowded curricula; it requires designing the learning experiences we already provide with greater developmental intention.

References

Bennett, M. J. (1993). Towards ethnorelativism: A developmental model of intercultural sensitivity. In R. M. Paige (Ed.), *Education for the intercultural experience* (pp. 21–71). Intercultural Press.

Boix Mansilla, V., & Jackson, A. (2011). *Educating for global competence: Preparing our youth to engage the world*. Asia Society.

Byram, M. (1997). *Teaching and assessing intercultural communicative competence*. Multilingual Matters.

Deardorff, D. K. (2004). *The identification and assessment of intercultural competence as a student outcome of international education at institutions of higher education in the United States* (Doctoral dissertation, North Carolina State University). North Carolina State University Repository. https://repository.lib.ncsu.edu/items/a1d0920c-69ef-4d78-bf37-19ab021a93bc

Deardorff, D. K. (2006). Identification and Assessment of Intercultural Competence as a Student Outcome of Internationalization. *Journal of Studies in International Education*, *10*(3), 241–266. https://doi.org/10.1177/1028315306287002

Jacobson, D., & Mustafa, N. (2019). Social Identity Map: A Reflexivity Tool for Practicing Explicit Positionality in Critical Qualitative Research. *International Journal of Qualitative Methods*, *18*. https://doi.org/10.1177/1609406919870075

National Association of Colleges and Employers. (n.d.). *Career readiness defined*. https://www.naceweb.org/career-readiness/competencies/career-readiness-defined

Organisation for Economic Co-operation and Development. (2018). *Preparing our youth for an inclusive and sustainable world: The OECD PISA global competence framework*. OECD Publishing. https://www.oecd.org/pisa/Handbook-PISA-2018-Global-Competence.pdf

Salzer, C., & Roczen, N. (2018). Assessing global competence in PISA 2018: Framework and preliminary results. *International Journal of Development Education and Global Learning, 10*(1), 1–15.

SUNY COIL Center. (2025). *The SUNY for collaborative online international learning: What is COIL?* https://online.suny.edu/introtocoil/suny-coil-what-is/

Swartz, S., Barbosa, B., & Crawford, I. (2020). Building Intercultural Competence Through Virtual Team Collaboration Across Global Classrooms. *Business and Professional Communication Quarterly*, *83*(1), 57–79. https://doi.org/10.1177/2329490619878834

About the Author

Nadia Ibrahim - Taney is an Associate Professor in the College of Cooperative Education and Professional Studies at the University of Cincinnati. Her teaching and scholarship focus on career development, experiential learning, and student success, with an emphasis on preparing students to thrive in an increasingly global workforce. She can be reached at Nadia.ibrahim-taney@uc.edu or on LinkedIn at https://www.linkedin.com/in/nadiaibrahim/.

Address

Nadia Ibrahim -Taney
Associate Professor; Information Technology & Cybersecurity;
College of Cooperative Education and Professional Studies;
University of Cincinnati; USA.

e-Mail: ibrahini@ucmail.uc.edu

Creativity in Gifted Education: Educational Practices at the Institute For Creativity & Giftedness

Fernanda Hellen Ribeiro Piske

Joseph S. Renzulli

Connecticut University, USA

Abstract

Creativity is an increasingly necessary attribute in education. It can also foster satisfaction and high performance among gifted students during the learning process. In this context, this article aims to highlight the importance of emphasizing creativity as an essential element in the education of diverse learners. Later in this article, we highlight the way creativity be fostered at the Institute for Creativity andGiftedness (C&S), based in Curitiba, Brazil. The concluding remarks underscore the significant role of the Institute C&S, which offers an educational approach capable of moving beyond overly standardized teaching models toward practices that value creativity, diverse talents, and human potential.

Keywords: Creativity; giftedness; education; Institute (C&S).

Introduction

An education that promotes creativity can lead to satisfaction and good performance for gifted students during their learning. In this sense, this article seeks to highlight the importance of emphasizing creativity as an essential element in the education of gifted students. The work of Institute for Creativity & Giftedness (C&S) corroborates current research (Renzulli, 2022; Runco, 2023; Dechaume et al, 2024; Piske, 2024; Grantham, et al, 2025; Besançon, & Lubart, 2026) that values the freedom of expression, flexibility, fluency, and autonomy of gifted students. It is emphasized that creativity is an important aspect for the entire school (Renzulli, 2022; Piske & Stoltz, 2025; Mercier, & Lubart, 2026). The work of the Institute for Creativity and Giftedness (C&S) is inspired by theorists such as Vygotsky (2007) and Rudolf Steiner (1985), involving effective teacher mediation, playfulness, and art. Vygotsky's and Steiner's proposals involve teaching based on teacher mediation, focusing on the love of knowledge, mutual respect, and interaction for learning to occur (Piske & Stoltz, 2025). The purpose of each project and workshop is to provide in-depth knowledge in each student's area of interest, where they can choose the project and/or workshop and have the opportunity to develop freedom of expression when carrying out their activities.

The Importance of Creativity and Motivation

In the current educational context, the absence of creativity in the education of gifted students represents one of the main obstacles to the full development of their potential. Although these students are often recognized for their high cognitive abilities, intense curiosity, and rapid learning, such characteristics alone do not guarantee a satisfactory school career (Pick et al, 2024; Piske, Nakano & Stoltz, 2025). When placed in educational contexts that do not value creativity, these students may experience frustration, demotivation, and even low academic performance (Reis & McCoach, 2000; Collins, Roberson, & Piske, 2023). The lack of creative stimuli not only limits the expression of their abilities but also compromises emotional, social, and intellectual aspects that are fundamental to their development.

Although there are many innovative educational initiatives, traditionally, many educational systems are still based on standardized pedagogical practices, centered on repetition, memorization, and

reproduction of content. This model may even meet the needs of a portion of students, but it proves inadequate for those who exhibit divergent thinking and a need for more complex challenges. When faced with unstimulating and predictable activities, gifted students tend to lose interest in schoolwork (Long et al., 2023). The absence of creativity in the teaching process transforms learning into a monotonous experience, in which there is no room for exploration, questioning, or innovation.

This demotivation can manifest itself in various ways. Some gifted students experience frustration and dissatisfaction, participating minimally in the proposed activities. Others may exhibit behaviors considered inappropriate, such as restlessness, distraction, or constant questioning, which are often misinterpreted by educators. Instead of being recognized as signs of an active and creative mind, these behaviors may be seen as indiscipline, leading to interventions that do not meet the student's real needs.

A lack of motivation, stemming from an absence of creative practices, directly affects learning. When students do not feel challenged or engaged, their ability to concentrate tends to diminish, as does their interest in deepening their knowledge. Even with great potential, they may exhibit low academic performance, a phenomenon known as underachievement (Collins, Roberson, & Piske, 2023). This situation is particularly concerning because it often goes unnoticed or is attributed to external factors, without recognizing the inadequacy of the educational environment as one of the main causes.

In addition to academic setbacks, the lack of creativity impacts the emotional development of gifted students. These students often exhibit heightened sensitivity and a keen perception of themselves and the world. When their needs are not met, they may develop feelings of frustration, anxiety, and low self-esteem. The school, which should be a space for discovery and growth, becomes associated with boredom and dissatisfaction. In more severe cases, this disconnection can lead to social isolation or rejection of the school environment (Olszewski-Kubilius et al, 2026; Puslednik, & Brennan, 2026).

Another relevant factor concerns the limitations placed on critical thinking. Creativity is closely linked to the ability to question, analyze, and propose new ideas. When education fails to encourage these skills, gifted students may stop exercising one of their key competencies. This can happen, and it is important for teachers to help stimulate these abilities. Instead of exploring multiple possibilities and actively constructing knowledge, they find themselves restricted to ready-made answers and predetermined paths. This compromises not only their academic training but also their preparation to deal with the challenges of adult life.

The absence of creativity also hinders the development of intellectual autonomy (Brandon, et al 2024). Gifted students, when properly stimulated, tend to seek knowledge independently, exploring topics of interest and deepening their investigations. However, in an environment that does not foster creativity, this autonomy can be inhibited (Besançon, & Lubart, 2026). The student becomes dependent on rigid instructions and loses the opportunity to develop abilities such as initiative, persistence, and self-regulation. (Lindsay et al, 2026).

Fostering creativity can depend on both material and human resources. Institutions with limited resources and funding may face challenges in using innovative materials and investing in teacher training to help educators understand how to develop creativity—particularly in gifted students (Piske, 2024). However, we know that creativity is an attribute that can benefit all students (Reis, & McCoach, 2000; Siegle el al, 2025).

Challenges in Education Today

A major challenge facing today's schools is the achievement gap that exists between advantaged students and students placed at risk (Renzulli, 2021; Reis, Renzulli, & Delgado, 2023). While some learners overcome dispositional, situational and institutional barriers, many newcomer, immigrant, minority, and low-income children never graduate from high school and in many cities in the United States, more than 30 percent of low-income students score at the lowest percentiles on national reading and math tests. (Renzulli, 2021). An even sadder commentary is the ways we have addressed this achievement gap and the resulting collateral damage eroded innovative teaching, deskilled many of our

teachers, squeezed subjects other than math and reading out of the curriculum, and produced data juggling, test result falsification, and outright lying on the parts of desperate administrators who want to avoid being branded leaders of "failing schools."

How did we get into this mess? Why hasn't the estimated three trillion dollars spent on school reform since the 1960s made more of an impact? (Renzulli, 2021, 2022). We've tried just about everything – smaller schools, year-round schools, single sex classes, after school mentoring, school uniforms, charter and magnet schools, school-business partnerships, merit pay for teachers, paying students for performance, private management companies and for-profit schools, take-overs by mayors and state departments of education, distributive leadership, site-based management, data-based decision making, and just about every scheme into which someone can insert the words, "standards based" and "accountability." (Reis, Renzulli, & Delgado, 2023). All of these so called promising solutions have been suggested as silver bullets that can save our lowest achieving students, but they haven't worked. (Renzulli, 2021).

What do all of these reform initiatives have in common? Most are built on structural changes, designed by well-intentioned policy makers or agencies (usually far removed from the classroom), and calculated to have an impact on entire school districts, states, or even nationally. More important, however, is that these structural changes have drawn mainly upon a pedagogy that is highly prescriptive and didactic. These limited approaches to learning priorize the accumulation, storage, and retrieval of information that will show up on the next round of standardized tests. (Renzulli, 2021, 2022). Imagination, creativity, and multimodal learning are not priorized.

According to Renzulli (2019) the mainstream diet for the majority of poor and struggling learners has been dominated by a remedial and compensatory pedagogy that has not diminished the achievement gap; and, I would argue, has actually contributed to its perpetuation. Demotivation can set in. Indeed, many of these programs are designed to find out what a child cannot do, does like to do, and sees no reason for doing, and then teachers are told to spend most of the classroom time reinforcing a linear and prescriptive curricula. This compensatory pedagogy of prescription and practice simply has not worked! Evidence of this failure is plainly evident in one national report after another, and yet we continue our search for yet another quick-fix solution through structural rearrangements rather than alternative pedagogical modifications. But the solutions, by whatever new names we give them (e.g., Competency Based, Outcomes Based) are always reiterations of the same pedagogy – the same "drill-and-practice" model for learning. And the universal criterion for accountability always remains the same, again with new names given to the same old achievement tests of decades past. It is the singular reliance on these tests for accountability, and the exclusion of other important outcomes of schooling that forces the pedagogy of prescription and practice that lobotomizes our teachers in the process. Is it any wonder that some of our very best teachers are leaving the profession and fleeing urban schools where prescription has become the almost universally practiced pedagogy? (Renzulli, 2021, 2022).

Renzulli (2019) expresses if these approaches have continued to produce dismal results, perhaps it is time to examine a counter-intuitive approach based on a pedagogy that is the polar opposite of the pedagogy of classical and operant behavioral models of learning. These are the learner-centered skills that grow young minds, promote genuine student engagement, and increase achievement. Although focusing on these outcomes may be counter intuitive to the "more-practice-is-better" pedagogy, we need only look at the track record of compensatory learning models to realize we have been banging our collective heads against walls and following an endless parade of reforms being forced through the schoolhouse door with no results. (Renzulli, 2021, 2022).

However, we also need to infuse into the curriculum a series of motivationally rich experiences that promote student engagement, enjoyment, and a genuine enthusiasm for learning. Common sense and our own experience tell us that we always do a better job when we are working on something in which we are personally engaged – something that we are really "into," and that we truly enjoy doing. Take, for example, the demonstrated benefits in performance that result from extra-curricular activities that are based on a pedagogy that is the opposite of the pedagogy of drill and practice. How many unengaged students have you seen on the school newspaper staff, the basketball team, the chess club,

the debate team, or the concert choir? Their engagement occurs because these students have some choice in the area in which they will participate; they interact in a goal oriented environment with other likeminded students interested in developing expertise in their chosen area, they use authentic problem solving, interpersonal, and creative strategies; they produce a product, service, or performance; and their work is brought to bear on one or more intended audiences other than, or at least in addition to the teacher (Renzulli, 2019). The engagement that results from these kinds of experiences exemplifies the best way to approach learning, one that differs completely from the behaviorist theory that guides so much of prescriptive and remedial education.

Learning across all educational levels exists on a continuum ranging from deductive, didactic, and prescriptive on one hand to inductive, investigative, and inquiry oriented on the other. Students who have not achieved are subjected to endless amounts of repetitious practice material guided by the didactic model. Then, when scores do not improve, we often think that the obvious solution is to simply redouble our efforts with what has been popularly called a "drill and kill" approach to learning; an approach that has turned many of our schools into joyless places , lack of genuine student and teacher engagement, absenteeism, increased dropout rates, and the other byproducts of over dependence on mechanized learni**ng.**

Learning as Dynamic and Creative

Although student engagement has been defined in many ways, we view it as the infectious enthusiasm that students display when working on something that is of personal interest and that is pursued in an inductive and investigative approach to learning. It is through these highly engaging approaches that students are motivated to improve basic skills and bring their work to higher and higher levels of perfection. True engagement results from learning activities that challenge young people to "stretch" above their current comfort level, activities that are based on resources and methods of inquiry that are qualitatively different from excessive practice. Our guiding principle in this kind of learning is simply: No Child Left Bored! (Renzulli, 2019).

Research on the role of student engagement is clear and unequivocal – high engagement results in higher achievement, improved self-concept and self-efficacy, and more favorable attitudes toward school and learning. (Renzulli, 2021, 2022). According to Renzulli (2019) there is a strong body of research that points out the crucial difference between time-spent and time-engaged in school activities. In the recently published international Programme for International Assessment (PISA) study,(https://www.oecd.org/en/about/programmes/pisa.html. the single criterion that distinguished between nations with the highest and lowest levels of student achievement was the degree to which students were engaged in their studies.

It will not be easy to turn around a school system whose leaders have made massive financial and policy investments in one particular brand of learning, nor will it be easy to circumvent the powerful influence of the textbook and test publishing industries that have thrived on a prescriptive curriculum and standardized test-driven approaches to accountability. However, a gentle and evolutionary rather than revolutionary approach to school reform is possible if we begin to take advantage of the remarkable advances that have taken place in the information technologies, advances that have brought within reach the equivalent of a dozen teaching assistants in every classroom, all day, every day. (Reis, & McCoach, 2000).

The Absence of Creativity in the Social Context

In the social context, the losses are also significant. Creativity often manifests itself in collaborative activities, in which students share ideas, build projects, and learn from each other. When these opportunities are not offered, the gifted student may have difficulty developing important social skills, such as communication, empathy, and teamwork. In addition, the feeling of not belonging can intensify, especially when they realize that their ideas are not valued or understood.

It is important to highlight that the absence of creativity in the education of gifted students is not necessarily the result of negligence, but often of a lack of preparation on the part of education

professionals. Many teachers do not receive specific training to work with this population and, therefore, end up adopting traditional practices that do not meet their needs (Brandon, et al 2024; Maybee, Bolden, & Joordens, 2025; Mercier, & Lubart, 2026). The lack of resources, time, and institutional support also contributes to the maintenance of a teaching model that is inflexible and uncreative.

To reverse this scenario, it is essential to rethink pedagogical practices and recognize creativity as a central element in the teaching-learning process. Strategies such as project-based learning, problem-solving, the use of technologies, and interdisciplinary activities can contribute to making teaching more dynamic and meaningful. In addition, it is important to offer challenges that are compatible with the students' skill level, avoiding both overload and understimulation. These approaches are important to encourage the success for all learners, across diferent educational levels and disciplines.Assessment also needs to be reviewed. Assessment models that only value correct and standardized answers fail to capture the complexity of creative thinking. It is necessary to adopt more comprehensive forms of assessment that consider the process, originality, and capacity for innovation. This not only favors the expression of gifted students but also contributes to a more complete understanding of their development (Brandon, et al 2024; Maybee, Bolden, & Joordens, 2025; Mercier, & Lubart, 2026).

Promoting creativity is not just a matter of curriculum enrichment, but of educational justice and valuing differences (Maybee, Bolden, & Joordens, 2025; Mercier, & Lubart, 2026). It is essential to recognize that the motivation of gifted students is directly linked to the quality of the educational experiences offered to them. An environment that does not stimulate creativity tends to generate disinterest and limit development. On the other hand, an education that values innovation, autonomy, and critical thinking creates conditions for these students to engage, learn in depth, and fully develop their abilities. Ignoring this need compromises not only learning, but the future of these individuals and the contributions they could offer to the world.

Creativity and its Importance in Gifted Education

Unlike a traditional view of teaching, centered on memorization and reproduction of content, education aimed at gifted students needs to consider creativity as an essential element for the full development of their potential. This is because these students generally exhibit divergent thinking, heightened curiosity, and a natural tendency to explore complex and innovative ideas (Brandon, et al 2024; Mercier, & Lubart, 2026).

In this sense, creativity should not be understood merely as an artistic or expressive skill, but as a broad cognitive capacity that involves the production of original solutions, flexibility of thought, and the ability to establish connections between different areas of knowledge. For the gifted student, learning creatively means going beyond what is proposed, questioning, investigating, and building new paths of understanding. When the school recognizes and values this characteristic, it contributes significantly to the formation of more autonomous, critical, and innovative individuals (Maybee, Bolden, & Joordens, 2025; Mercier, & Lubart, 2026).

The absence of creative stimuli in the school environment can have negative effects on the development of these students. Many gifted students, when subjected to rigid and repetitive pedagogical practices, end up showing disinterest, demotivation, and even low academic performance. This occurs because their educational needs are not being adequately met. Contrary to what is imagined, giftedness does not, in itself, guarantee academic success. Without significant challenges and opportunities for creative expression, these students may feel bored and disconnected from the learning process (Brandon, et al 2024; Maybee, Bolden, & Joordens, 2025; Mercier, & Lubart, 2026).

In addition, creativity plays an important role in the emotional balance of these students. Students with high abilities frequently experience emotional intensity, heightened sensitivity, and a differentiated perception of reality. The possibility of expressing ideas, feelings, and perceptions through creative activities contributes to self-knowledge and the development of socio-emotional skills (Olszewski-Kubilius et al., 2026; Puslednik & Brennan, 2026). Therefore, creativity acts not only in the cognitive field but also in the psychological well-being of the student.

In the educational context, promoting creativity requires changes in pedagogical practices. It is essential that the teacher assumes the role of mediator of knowledge, offering challenges, proposing open problems, and encouraging investigation. Activities such as interdisciplinary projects, solving real-world problems, producing original texts, scientific experiments, and using digital technologies are examples of strategies that can stimulate creativity. More than following a rigid curriculum, it is important to create flexible learning spaces where students can explore their interests and deepen their knowledge (Renzulli, 2022; Siegle et al, 2025).

Personalizing teaching is also an essential factor in this process. Each gifted student has their own characteristics, interests, and learning pace. By considering these particularities, the school can offer more meaningful and challenging educational experiences. Creativity, in this context, emerges as a tool that allows teaching to be adapted to individual needs, making learning more engaging and effective.

Creativity is also directly related to the capacity for innovation, a highly valued skill in the contemporary world. By stimulating this ability from basic education onwards, the school contributes to the formation of individuals capable of proposing solutions to social, scientific, and technological challenges. Gifted students, when well guided, have the potential to become leaders, researchers, and professionals who positively impact society. However, for this to happen, it is necessary that their creative abilities are recognized and developed appropriately (Brandon, et al 2024; Maybee, Bolden, & Joordens, 2025; Mercier, & Lubart, 2026).

A Brazilian Initiative: The work of the Institute for Creativity & Giftedness (C&S)

The Institute for Creativity and Giftedness (C&S) was created in 2022 in the city of Curitiba, Brazil,. Empirical studies and scientific publications on creativity and giftedness were carried out in diferentecountries around the world, which led to the founding of the Institute for Creativity & Giftedness (C&S) focused on identifying and assisting gifted and twice exceptional or 2e children, adolescents, and adults. There are many cases where, in addition to giftedness, there is the coexistence of twice exceptionality (Piske, Collins, & Arnstein, 2022; Lindsay et al, 2026).

Regarding the work of the Institute for Creativity and Giftedness (C&S), its activities include:

- identification of gifted and twice exceptional or 2e children, adolescents, and adults;
- providing services through projects and workshops for children;
- psychotherapies for children, adolescents, and & Giftedness (C&S) was created in 2022 in the city of Curitiba, Brazil, based on research in the area of Giftedness and Creativity (Piske, 2018; Piske, 2024; Piske & Stoltz, 2025). Before its foundation, several empirical studies and scientific publications were carried out in different adults;
- organizing international online congresses on giftedness and twice exceptionality; and,
- publishing books with contributions from internationally renowned authors on giftedness and twice exceptionality. (Piske, & Stoltz, 2026).

Piske (2024) explains that the identification of gifted and 2e students occurs through neuropsychological assessment with a multidisciplinary team. Health and education professionals specializing in the areas of giftedness and/or twice exceptionality conduct assessments of this target audience of inclusive education through forms, interviews with the family and the student, and psychological instruments applied by neuropsychologists (Piske, & Stoltz, 2026).

According to Piske (2024) creativity at the Institute for Creativity & Giftedness (C&S) is integrated into projects and workshops with creative activities that meet the students' area(s) of interest. It is known that it is essential to instill the desire and willingness to learn in a creative and engaging way in an environment that stimulates creativity and innovation. Piske & Stoltz (2026) explains that among the projects and workshops, some examples include: "identifying emotions," "sustainability and

innovation," "learning about cultures and languages," among others. Each project and workshop includes research, readings, games, and other playful and artistic activities that motivate students to continue learning enjoyably

Specific Projects of the Institute for Creativity and Giftedness (C&S)

The "Identifying Emotions" project addresses an often-neglected dimension: socio-emotional development. Although these students are frequently recognized for their high cognitive abilities, they also exhibit emotional intensity, heightened sensitivity, and complex ways of perceiving the world (Olszewski-Kubilius et al., 2026; Puslednik & Brennan, 2026). Ignoring this aspect can lead to significant difficulties in their well-being and learning. The main importance of this type of project lies in helping students recognize, name, and understand their own emotions. Many gifted individuals experience feelings more intensely—such as frustration, anxiety, empathy, or perfectionism—and do not always know how to cope with these experiences. By developing emotional awareness, students gain more control over their reactions, which promotes balance and mental health (Olszewski-Kubilius et al., 2026; Puslednik & Brennan, 2026).

This project directly contributes to motivation and school engagement. When students understand their emotions, they can better cope with challenges, mistakes, and expectations, reducing demotivation and disinterest. This is especially relevant because many gifted students may experience a drop in performance not due to a lack of ability, but due to unaddressed emotional difficulties (Olszewski-Kubilius et al, 2026; Puslednik, & Brennan, 2026). The activities proposed in this project can contribute to strengthening self-esteem. Gifted students, despite their abilities, may feel different, misunderstood, or even out of place compared to their peers. A project that values emotions helps build a more positive identity, allowing the student to recognize themselves in their entirety—not just as someone "intelligent," but as an individual with diverse feelings, challenges, and potential.

The painting, drawing, theater, and music activities proposed in this project also promote the development of social skills. By learning to identify their own emotions, students become more able to understand the feelings of others, developing empathy and improving their interpersonal relationships. This is essential to avoid social isolation and promote a healthier coexistence in the school environment. For teachers and the pedagogical team, the project offers important resources to better understand the behavior of these students. Many attitudes that can be interpreted as disinterest, indiscipline, or excessive questioning may, in fact, be related to emotional issues. With this understanding, educators can adopt strategies that are more appropriate and sensitive to the needs of the students Another relevant aspect is the prevention of more serious problems, such as excessive anxiety, stress, and even depression. By working on emotions preventively, the school contributes to building a more welcoming and safe environment, in which the student feels supported and understood. (Olszewski-Kubilius et al, 2026).

The importance of identifying the emotions of gifted students lies in enabling these students to develop their full potential in a balanced way. When cognitive skills and emotional competencies go hand in hand, the student not only learns more, but also lives better, builds healthier relationships, and prepares more fully for life's challenges (Olszewski-Kubilius et al, 2026; Puslednik, & Brennan, 2026). The project focused on the emotions of gifted students is not a complement, but a necessity. It contributes to the well-being, learning, socialization, and integral development of these students, ensuring that their high abilities are accompanied by emotional balance and quality of life (Puslednik, & Brennan, 2026).

The "sustainability and innovation" project for gifted students, articulates two fundamental axes for the 21st century: the ability to think of creative solutions and the commitment to the future of the planet. Students with high abilities tend to exhibit intense curiosity, critical thinking, and a desire to understand complex problems. When these potentials are directed towards themes such as sustainability, an extremely rich scenario of meaningful learning and social impact is created. The main importance of this type of project lies in offering real and relevant challenges. Gifted students often become demotivated by repetitive activities or those poorly connected to the concrete world. By working with environmental, energy, social, and technological issues, the project promotes deeper engagement, as the student perceives meaning in what they are learning. Issues such as climate change, conscious

consumption, waste management, and technological innovation require analysis, creativity, and systems thinking—precisely the skills that these students tend to develop more easily.

There is a significant impact on socio-emotional development (Olszewski-Kubilius et al, 2026; Puslednik, & Brennan, 2026). Projects involving sustainability and innovation are usually carried out collaboratively, which favors skills such as communication, empathy, and teamwork. Many gifted students may face difficulties in social relationships, and participating in activities with a collective purpose can help them feel like they belong and are valued. The project can also serve as a space for identifying talents. By working with diverse themes and creative methodologies, teachers can observe students' specific skills, such as leadership, scientific thinking, artistic creativity, or argumentation skills. This contributes to more individualized monitoring and the development of potential often unexplored in traditional education.

Another relevant benefit is preparation for the future. Contemporary society increasingly values professionals capable of innovating and thinking of sustainable solutions. By participating in projects with this focus, gifted students develop essential skills for their academic and professional lives, such as complex problem-solving, strategic thinking, and social responsibility. For educators, the project is also an opportunity to innovate in teaching practices. Methodologies such as project-based learning, scientific investigation, and the use of technologies make teaching more dynamic and meaningful. This benefits not only gifted students but the entire class, promoting a more inclusive and up-to-date education.

This project can also promote meaningful learning, stimulate creativity, develop socio-emotional skills, and prepare students for real-world challenges. For gifted students, it represents an opportunity to transform knowledge into action, innovation into impact, and talent into a contribution to society. (Piske & Stoltz, 2025; Olszewski-Kubilius et al, 2026; Puslednik, & Brennan, 2026).

Regarding the "learning about cultures and languages" project, it is possible to highlight that the activities proposed in this project can broaden intellectual horizons, stimulate natural curiosity, and promote holistic development—cognitive, social, and emotional. These students, who usually show great interest in complex and abstract knowledge, find in this type of proposal a fertile ground to explore ideas, understand the world more deeply, and develop advanced skills. Learning about different cultures and languages fulfills the need for intellectual challenge. Gifted students often learn quickly and can become demotivated by repetitive content. Contact with new languages involves linguistic structures, grammatical rules, pronunciation, and interpretation, which requires reasoning, memory, and cognitive flexibility. The study of cultures expands this experience by including historical, social, artistic, and behavioral aspects, making learning richer and more meaningful.

By learning about different ways of living, thinking, and expressing themselves, gifted students can question their own cultural references and understand that there is no single way to see the world. This is especially relevant for gifted students, who often seek deeper explanations and enjoy analyzing different perspectives. The project, therefore, encourages reflection, comparison, and the construction of more elaborate ideas. Projects involving cultures and languages can include activities such as writing, dramatizations, music, research, presentations, and cultural exchanges. These experiences allow students to express their knowledge in an original way, exploring different languages and forms of communication. Creativity, in this context, becomes a bridge between knowledge and personal expression.

We live in an increasingly connected society, in which intercultural communication is an essential skill. By developing linguistic and cultural skills early on, students broaden their academic and professional possibilities. For gifted students, this represents an opportunity to explore their potential in international contexts and collaborate on global projects. The project can also serve as a space for discovering talents. Some students may demonstrate an aptitude for learning languages, an interest in specific cultures, or an ability for intercultural communication. Identifying and valuing these skills is fundamental to guiding the student's development and offering opportunities that are more suited to their potential.

Projects involving cultures and languages tend to be dynamic, interactive, and connected to reality, which increases student interest. For gifted students, who need constant stimulation, this type of approach can make a difference in engagement and the quality of learning. The importance of this project on cultures and languages for gifted students lies in promoting a broader, more humane, and meaningful education. It not only develops language skills, but also forms more conscious, respectful citizens prepared to live in a diverse society.

Educational practices of the Institute for Creativity & Giftedness (C&S) in the development of creativity

In the current educational landscape, integrating creativity into the learning of gifted and 2e students is a challenge that demands pedagogical sensitivity, curricular flexibility, and a deep understanding of the multiple ways of learning (Lindsay et al, 2026). These students not only exhibit above-average abilities in certain areas, but also, in the case of twice exceptionality, live with conditions such as learning disorders, attention deficit, or other particularities that may mask or hinder the expression of their potential. In this scenario, creativity emerges as an integrating element, capable of articulating cognitive, emotional, and social competencies, promoting a more inclusive and meaningful education (Olszewski-Kubilius et al, 2026; Puslednik, & Brennan, 2026).

At the Institute for Creativity & Giftedness (C&S), there are strategies such as project-based learning, real-world problem-solving, and guided investigation that place the student at the center of the educational process, allowing them to explore topics of interest in depth and with autonomy. These approaches promote engagement because they transform learning into a dynamic and challenging experience, in which the student is not just a receiver of information, but the protagonist of their own knowledge construction. (Piske, & Stoltz, 2026).

The team of experts at the Institute for Creativity & Giftedness (C&S) guides many schools on curriculum flexibility, which also plays an essential role. Gifted students often need curriculum enrichment, which may include in-depth content, acceleration in certain areas, or access to more complex topics. 2e students may need adaptations that respect their difficulties without compromising the development of their potential (Lindsay et al, 2026). Creativity, in this context, allows the curriculum to be adjusted in a personalized way, considering both the skills and specific needs of each student.

The team of experts from the Institute for Creativity & Giftedness (C&S) clarifies doubts from many teachers and explains the importance of integrating different areas of knowledge. Interdisciplinarity fosters creative thinking by allowing students to establish relationships between diverse content, broadening their understanding and stimulating new ways of thinking. For example, projects involving science, art, and technology can offer rich opportunities for gifted students to explore their multiple abilities, while 2e students find different forms of participation and expression (Lindsay et al, 2026).

Many teachers who seek guidance from the Institute for Creativity & Giftedness (C&S) also learn about the relevance of using digital technologies, which can significantly expand the possibilities of integrating creativity into learning. Tools such as creation software, interactive platforms, and multimedia resources allow students to develop original projects, experiment with different languages, and express their ideas in an innovative way. For 2e students, these technologies can function as accessibility resources, facilitating the overcoming of barriers and promoting greater autonomy (Lindsay et al, 2026).

The Institute for Creativity & Giftedness (C&S)'s team of experts clarifies for many schools that it is essential to create a learning environment that values experimentation and error as part of the process. Creativity does not flourish in excessively rigid or punitive contexts. On the contrary, it requires a safe space where the student feels comfortable exploring, testing hypotheses, and learning from their attempts. For gifted students, this means the possibility of going beyond expectations; for 2e students, it represents the opportunity to learn without the constant fear of failure (Lindsay et al, 2026).

One of the biggest doubts that schools have is about the evaluation process. The Institute for Creativity & Giftedness (C&S) advises that assessment is another aspect that needs to be rethought. Traditional models, based on standardized tests, often fail to capture the complexity of creative thinking, especially in students with diverse profiles. More flexible assessments, such as portfolios, project presentations, and original works, allow for a broader view of student development. They value not only the final result but also the process, originality, and effort involved in knowledge construction.

Guidance from the Institute for Creativity & Giftedness (C&S) for Teachers of Gifted Students

The team of experts at the Institute for Creativity & Giftedness (C&S) assumes that the teacher's role is central to the learning process of gifted students, because it is a myth to think that these students do not need specialized services. Therefore, the Institute for Creativity & Giftedness (C&S) guides teachers on the possible myths that permeate the education of gifted students and on the educational needs that these students may present during learning.

More than a transmitter of content, the educator needs to act as a mediator, facilitator, and encourager of creativity. This requires ongoing training, openness to new practices, and a willingness to understand the unique characteristics of each student. In the case of 2e students, it is especially important that the teacher is able to recognize both the potential and the difficulties, avoiding labels and promoting a balanced approach (Lindsay et al, 2026).

The Institute for Creativity & Giftedness (C&S) guides teachers on their important role, which requires sensitivity to recognize potential, flexibility to adapt pedagogical practices, and intentionality to create challenging and meaningful learning experiences. These students, characterized by high intellectual capacity, intense curiosity, and rapid assimilation of knowledge, require specific strategies that promote in-depth learning, creativity, and holistic development.

One of the most relevant strategies is curriculum enrichment. Instead of simply following the traditional curriculum, the teacher can expand and deepen the content, offering more complex activities, additional readings, and challenges that stimulate critical thinking. Enrichment can occur within the classroom, with differentiated proposals, or outside of it, through special projects, workshops, and participation in academic events. This approach allows the gifted student to go beyond the basics, exploring topics of interest in greater depth.

Another effective strategy is pedagogical differentiation. Since each gifted student has their own characteristics and learning pace, it is essential to adapt teaching to their individual needs. This may include offering activities with varying levels of complexity, flexible deadlines, and the possibility of choices in the learning process. By recognizing the uniqueness of each student, the teacher creates a more inclusive and stimulating environment.

Stimulating critical thinking is another fundamental strategy. Teachers can encourage students to question, argue, and analyze information in depth. Instead of valuing only correct answers, it is important to promote discussions, debates, and activities that challenge the student to think independently. This type of approach contributes to the development of higher cognitive skills and prepares the student to deal with complex situations.

Acceleration, when well planned, can also be a valid strategy. Some gifted students have such a fast learning pace that they benefit from advancing in certain areas or even skipping grades. However, this decision should be carefully evaluated, considering not only the cognitive aspect, but also the emotional and social development of the student. (Olszewski-Kubilius et al, 2026; Puslednik, & Brennan, 2026). Acceleration should not be seen as a single solution, but as part of a set of strategies.

The use of educational technologies significantly expands teaching possibilities. Digital tools provide access to advanced content, online courses, simulations, and interactive resources that enrich

learning. For gifted students, these technologies offer opportunities to explore specific interests and develop original projects. Furthermore, they can foster autonomy and personalized learning.

Another important strategy is creating an environment that values creativity. Teachers should encourage originality, allowing students to express their ideas in different ways. Open-ended activities, which do not have a single correct answer, are especially effective in this regard. By promoting creativity, the teacher not only stimulates the student's interest but also contributes to the development of essential 21st-century skills (Brandon, et al 2024; Maybee, Bolden, & Joordens, 2025; Mercier, & Lubart, 2026).

Mentoring is a practice that can bring significant benefits. Gifted students can benefit from mentoring by teachers or professionals specializing in areas of interest. Mentoring offers guidance, support, and appropriate challenges, contributing to academic and personal development. In addition, it allows the student to have contact with experiences and knowledge that go beyond the school environment.

Collaborative work should also be encouraged, although with attention to the specific needs of these students. In group activities, the gifted student can develop social skills such as communication, empathy, and cooperation. However, it is important to ensure that he is not overburdened or placed solely in charge of the group's performance. Balance is essential for the experience to be positive.

In addition to pedagogical strategies, the teacher needs to be attentive to the socio-emotional aspect. Gifted students may face challenges such as perfectionism, anxiety, and feelings of isolation. Creating a welcoming environment in which the student feels understood and valued is fundamental to their well-being. Open dialogue and encouragement of emotional expression contribute to balanced development (Olszewski-Kubilius et al, 2026; Puslednik, & Brennan, 2026).

Continuing teacher training is indispensable for the implementation of these strategies. Understanding the characteristics of gifted students and knowing appropriate teaching practices allows educators to act more effectively. Investing in teacher training is therefore essential to ensure quality education.

Guidance from Institute for Creativity & Giftedness (C&S) for Families

The Institute for Creativity & Giftedness (C&S) guides many families of gifted children. The themes, strategies, and general approaches that emerge from the Institute have application in varied learning contexts. Many families seek the Institute's specialized services, but they arrive with unrealistic expectations, often believing that gifted children can handle all situations in life. In this sense, the Institute for Creativity & Giftedness (C&S) clarifies families' doubts and explains the importance of families perceiving not only the potential but also the possible difficulties that gifted children may present. It is essential that the family also takes care of itself. Educating a gifted child can bring doubts, challenges, and even insecurities. Seeking information, participating in support groups, and exchanging experiences with other families can be very helpful. When parents feel more secure and informed, they can offer more consistent and balanced support.

Family strategies to support gifted children involve a set of actions that integrate intellectual stimulation, emotional support, and respect for individuality (Puslednik, & Brennan, 2026). More than just focusing on academic performance, it is essential to promote the child's holistic development, considering their needs, interests, and emotions. By creating a welcoming, challenging, and balanced environment, the family makes a decisive contribution to transforming the child's potential into personal fulfillment and well-being throughout life.

The work of the Institute for Creativity & Giftedness (C&S) seeks to meet the cognitive, social, and emotional needs of gifted students, as well as provide effective support for their families and teachers whenever necessary so that these students can develop fully. It is worth noting that social and emotional development is fundamental for cognitive performance to develop adequately (Olszewski-Kubilius et al, 2026).

Conclusion: Final Considerations and Implications for Teaching and Learning

The Institute for Creativity and Giftedness (C&S) plays a significant role in demonstrating that education can overcome overly standardized teaching models and move towards practices that value creativity, diversity of talents, and human potential.

In an educational landscape often marked by the repetition of content, the standardization of methodologies, and the predominance of standardized assessments, the Institute proposes an innovative approach that recognizes creativity as an essential competence for learning, problem-solving, and the integral development of individuals.

According to Piske, & Stoltz (2026) the work developed by the Institute for Creativity and Giftedness (C&S) is based on the principle that all people possess creative potential that can be stimulated when they find welcoming environments, appropriate intellectual challenges, and opportunities to experiment, imagine, create, and reflect. In this way, the institute works with children, adolescents, and adults, respecting the characteristics, interests, abilities, and learning pace of each participant. This perspective breaks with the logic of homogenization in education and strengthens educational practices that value divergent thinking, autonomy, curiosity, innovation, and the production of meaningful knowledge.

Beyond its practical work, the Institute for Creativity and Giftedness (C&S) is strongly committed to scientific production (Csikszentmihalyi, 2007; Renzulli, 2021, 2022; Besançon & Lubart, 2026). The experiences developed in its program constitute a fertile environment for conducting research that investigates different ways to promote creativity in diverse educational contexts (Piske, & Stoltz, 2026). The data produced by these experiences allow us to understand which strategies favor creative development, which factors hinder its manifestation, and how teachers, families, and institutions can build more stimulating environments for human potential.

Piske & Stoltz (2026) express that the Institute for Creativity and Giftedness (C&S) demonstrates that educational transformation is possible when theory, practice, and research work together in an integrated way. Its work shows that developing creativity is not an isolated or spontaneous action, but an intentional process that requires planning, stimulating environments, prepared professionals, and constant scientific investigation. Thus, the Institute consolidates itself as an important space for educational innovation, contributing to the production of new knowledge and the construction of pedagogical models capable of inspiring schools, researchers, and public policy makers, strengthening an education that recognizes creativity as a central element for human development and for the formation of citizens prepared to face the challenges of the 21st century.

References

Besançon, M., & Lubart, T. (2026). Understanding and Cultivating Creative Giftedness: Educational Issues and Perspectives. *Gifted Education International*, *42*(1), 3-8.

Brandon, L. E., Reis, S. M., Renzulli, J. S., & Beghetto, R. A. (2024). Examining Teachers' Perspectives of School-Based Opportunities and Support for Student Creativity with the ICI Index. *Creativity Research Journal, 36*(2), 245–262. https://doi.org/10.1080/10400419.2022.2110416

Buzan, T, & Buzan, B. (1993). *The mind map book.* New York: Dutton.

Collins, K. H. ; Roberson, & Piske, F.H.R. (2023). *Underachievement in Gifted Education Perspectives, Practices, and Possibilities.* New York: Routledge, v. 1. 252p.

Csikszentmihalyi, M. (2007). *Aprender a fluir.* [*Learning to flow*]. Barcelona: Kairós.

Dechaume, M., Mercier M., Feybesse C., Lubart T., Chouvelon G., Kermarrec S., Tordjman S. (2024). Is intelligence necessary and sufficient for creativity? An analysis of convergent and divergent thinking. *Learning and Individual Differences*, 116, Article 102575. 30p. https://doi.org/10.1016/j.lindif.2024.102575

Grantham, T. C., Acar, S., Dumas, D., & Fox, S. S. (2025). Creativity in gifted education policy and assessment: An introduction of a new measure of original thinking in elementary students. In J. Katz-Buonincontro & T. Kettler (Eds.), *The Oxford handbook of creativity and education* (pp. 447–471). Oxford University Press. https://doi.org/10.1093/oxfordhb/9780197698181.013.0023

Lindsay, R., Rossi, E. B., Smith, B. C., Abaza, N., Renzulli, S., & Burke, M. M. (2026). *Exploring the Experiences of Twice-Exceptional Youth With Section 504 Plans in School. Gifted Child Quarterly, 70*(2), 139-151.

Long D. A., McCoach D. B., Siegle D., Callahan C. M., Gubbins E. J. (2023). Inequality at the starting line: Underrepresentation in gifted identification and disparities in early achievement. *AERA Open, 9,* 23328584231171535. https://doi.org/10.1177/23328584231171535

Olszewski-Kubilius, P., Steenbergen-Hu, S., Calvert, E., Richert Corwith, S., & Bright, S. (2026). A Meta-Analysis of Research on the Relationship Between Overexcitabilities and Giftedness. *Gifted Child Quarterly*, *70*(2), 111-138.

Pick, H., Fahoum, N., Zoabi, D., & Shamay Tsoory, S. G. (2024). Brainstorming: Interbrain coupling in groups forms the basis of group creativity. *Communications Biology*, 7(1), 911. https://doi.org/10.1038/s42003-024-06614-7.

Piske, F. H. R. (2018). *Altas habilidades/superdotação (AH/SD) e criatividade na escola: o olhar de Vygotsky e de Steiner. Tese. (Doutorado em Educação) –* [*Giftedness and creativity in school: the perspective of Vygotsky and Steiner] (Dissertation in Education).*Universidade Federal do Paraná. Curitiba.

Piske, F. H. R. (2024). Identicación y asistencia al alumnado con altas capacidades en el Instituto C&S - Instituto para la Creatividad y Superdotación. [Identify and assist students with high capabilities at the Institute C&S]. In S. González-Víllora, & J. C. Pastor-Vicedo. (Eds). *Más allá de las notas. Comprendiendo al alumnado con altas capacidades.* 1ed.Madri: Morata, v. 1, p. 195-208.

Piske, F. H. R.; & Stoltz, T. (2025). Perceptions of teachers from Brazil and the United States regarding creativity of gifted students: Contributions from Vygotsky. *Culture & Pychology*. v. 31, p. 1046-1066, 2025.

Piske, F. H. R.; Nakano, T. C.; Stoltz, T. (2025). O desenvolvimento socioemocional de crianças superdotadas no Brasil. *[The socio-emotional development of gifted children in Brazil]*. In F. H. R. P.; T. C. Nakano de; R. G. Perales, A. Rocha, T. Stoltz. (Eds.). *Desenvolvimento Socioemocional de Superdotados: uma perspectiva internacional.* 1ed. São Paulo: Vetor, v. 1, p. 219-235.

Piske, F.H.R.; & Stoltz, T. (2026). O desenvolvimento da criatividade na educação de estudantes com altas habilidades/ superdotação e/ou com dupla excepcionalidade no Instituto da Criatividade & Superdotação (C&S). [Developing creativity in gifted and 2e students education at the Creativity & Giftedness Institute (C&S)].In: Fernanda Hellen Ribeiro Piske; Tatiana de Cassia Nakano; Alberto Rocha; Ramon Garcia Perales; Tania Stoltz. (Org.). *Altas Habilidades na Escola - Enriquecimento Curricular e Estratégias.* São Paulo, Brazil: Hogrefe, v. 1, p. 139-146.

Piske, F.H.R.; Collins, K. H.; Arnstein, K. B. (2022). Critical Issues in Servicing Twice Exceptional Students: Socially, Emotionally, and Culturally Framing Learning Exceptionalities. 1. Switzerland: *Springer*, 390p.

Programme for international student assessment (PISA) (2025). https://www.oecd.org/en/about/programmes/pisa.html

Puslednik, L., & Brennan, P. C. (2026). The Transformative Impact of a Novel Research-Mentoring Program on Rural High-Ability Students' Scientific and Socio-Emotional Development. *Gifted Child Quarterly*, *70*(2), 169-193.

Reis, S. M., & McCoach, D. B. (2000). The underachievement of gifted students: What do we know and where do we go? *Gifted Child Quarterly*, 44, 152–170.

Reis, S. M., Renzulli, J. S., & Delgado, J. (2023). Wise choices for children: Enabling students to develop their creativity productivity and wisdom with opportunities, resources, and encouragement. In R. J. Sternberg, J. C. Kaufman, & S. Karami (Eds.). Intelligence, creativity, and wisdom (pp.315—338). Palgrave MacMillan.

Renzulli, J. S. (2019). What we're getting wrong about gifted education. *Education Week*, 39(13), p. 16. https://www.edweek.org/ew/articles/2019/11/11/what-were-getting-wrong-about-gifted-education.html

Renzulli, J. S. (2021). Assessment for learning: The missing element for identifying high potential in low income and minority groups. *Gifted Education International*, 37(2). 199–208. https://doi.org/10.1177/0261429421998304

Renzulli, J. S. (2022). What is (or should be) the pedagogy of gifted education programs. International Journal for Talent Development and Creativity, 10(1–2), 179–192. http://www.ijtdc.net/images/pdf/IJTDC_1012_2022.pdf

Runco, M. A. (2023) Updating the standard definition of creativity to account for the artificial creativity of AI. *Creativity Research Journal*. http://doi.org/10.1080/10400419.2023.2257977

Siegle, D., McCoach D. B., Boldt G. T., Hamilton R., Gubbins E. J., Callahan C. M. (2025). What really happens in gifted education? A portrait of three states. *Gifted Child Quarterly*. https://doi.org/10.1177/00169862251370673

Steiner, R. (1985). *Verdade e Ciência*. Ed. Antroposófica.

Vygotsky, L. S. (2007). *A Formação Social da Mente*. Martins Fontes.

About the Authors

Fernanda Hellen Ribeiro Piske is currently undertaking postdoctoral research in the Postgraduate Program in Education (PPGE) at the Federal University of Paraná (UFPR), with a PIPD/CAPES scholarship, in the area of Cognition, Learning, and Human Development. She holds a doctorate in Education from UFPR and a sandwich doctorate funded by the Coordination for the Improvement of Higher Education Personnel (CAPES) at Purdue University in West Lafayette, USA, focusing on the development of creativity in the education of gifted students. She holds a Master's degree in Education from the Federal University of Paraná and a specialization in Special Education and Inclusive Education from the Uninter International University Center. She won the Maria Helena Novaes Mira Award for her outstanding work among the ten best presented during the III International Congress on High Abilities/Giftedness. She is the President and Founder of the Institute for Creativity and Giftedness (C&S), which aims to contribute to the identification and support of gifted and 2e children, adolescents, and adults. Researcher, lecturer, author, and editor of books on Giftedness, Twice Exceptionality, Creativity, Affectivity, Socio-emotional Development, Bullying, and Complexity Theory published in the United States, Portugal, Germany, and Brazil. ORCID: 0000-0002-1516-6455.

Joseph S. Renzulli is Director of UConn's National Research Center on the Gifted and Talented and Board of Trustees Distinguished Professor of Educational Psychology at the Neag School of Education. A leader and pioneer in Gifted Education, Dr. Joseph S. Renzulli was named among the 25 most influential psychologists in the world by the American Psychological Association. He received the Harold W. McGraw, Jr. Award for Innovation in Education, and was a consultant to the White House Task Force on Education of the Gifted and Talented. His work on the Enrichment Triad Model and curriculum compacting and differentiation were pioneering efforts in the 1970s, and he has contributed hundreds of books, book chapters, articles, and monographs to the professional literature. Dr. Renzulli established UConn's annual Confratute Program with fellow Educational Psychology Professor Sally Reis; the summer institute on enrichment-based differentiated teaching has served more than 25,000 teachers from around the world since 1978. He also established UConn Mentor Connection, a summer program that enables high-potential high school students to work side by side with leading scientists, historians, and artists, and is the co-founder of the Joseph S. Renzulli Gifted and Talented Academy in Hartford, which has become a model for local and national urban school reform.

Address

Fernanda Hellen Ribeiro Piske;
Institute for Creativity and Giftedness (C&S)
Federal University of Paraná (UFPR)
e-Mail: ferhellenrp@gmail.com

Joseph S. Renzulli;
Renzulli Center for Creativity, Gifted Education, and Talent Development Neag School of Education;
University of Connecticut; 2131 Hillside Road Unit 3007;
Storrs, CT 06269-3007; USA.
e-Mail: joseph.renzulli@uconn.edu

We don't know what we don't know: Primary Teachers' Attitudes to Academic Full-year Acceleration for Children in China and New Zealand

Wang, L; Wardman, J; Stephens, J.M.
University of Auckland, New Zealand

Abstract

Extensive international research shows full-year acceleration to be an effective provision for high-ability students, yet the strategy is rarely offered in schooling systems around the world. This article reports on part of a study of teachers' attitudes concerning the utilisation of full-year acceleration within the specific context of the primary sectors in China and New Zealand. Data were gathered using a convenience sample of in-service primary teachers. Results indicate that New Zealand primary teachers generally had a positive attitude regarding the strategy of full-year acceleration for high-ability students, while Chinese primary teachers reported a slightly positive attitude with greater uncertainty. Both groups reported a relatively high level of concern over the social impact of full-year acceleration, with Chinese teachers also worried about accelerated students' academic development. New Zealand teachers in this study demonstrated a preference for other provisions being utilised, for example, enrichment. The findings of this study suggest a need to raise awareness of the empirical findings of full-year acceleration among teachers, especially in the Chinese context.

Keywords: Gifted education; acceleration; high-ability students; teacher attitudes.

Students with exceptional academic abilities are valuable assets to a nation's development and prosperity. Their cognitive and affective characteristics require tailored educational opportunities to help them develop competencies and realise their potential. Previous research has demonstrated the effectiveness of acceleration in facilitating high-ability students' overall development (Hattie, 2009), yet the implementation of the strategy does not reflect the empirical evidence (Assouline et al., 2015; Wardman, 2009). The controversy surrounding the strategy has been suggested to be related to the negative attitudes of teachers in many contexts (e.g., Gallagher, 2007; Hoogeveen et al., 2005; Siegle et al., 2013; Southern et al., 1989; Townsend & Patrick, 1993; Vialle et al., 2001).

This article offers insights into teachers' attitudes concerning the use of full-year acceleration in China and New Zealand primary schools. It was designed to focus on the primary sector because of the profound influence of the academic and social experiences in the early years on the development of high-ability students. As reported by Gross (2006), negative experiences in primary schools can have long-lasting effects on learning attitudes and personal achievement.

Throughout this article, the term *high-ability*, as opposed to the term *gifted*, is used to refer to students who exhibit extraordinary potential. The research subjects of this study are primary teachers, in whose care are a younger age group. For younger students, *potential* appears to be the key (Subotnik et al., 2011). This aspect is further explored in the section relating to terminology.

Overview of Primary School Education Systems in China and New Zealand

Primary schools in China include five or six grades for students aged 7-11/12. Children start primary school at age six (National People's Congress Standing Committee, 2019). School size and class size at the primary level in China differ across regions and are generally much larger than in western countries (e.g., New Zealand). Large cities, such as Shanghai and Hangzhou, are purposefully reducing class size down to 35, whereas in Zhengzhou, which is one of the most densely populated but

economically less developed cities, class size can still easily reach 70 (Lee & Song, 2017). Primary teachers in China are generally responsible for one subject area in the sense that teachers in the Chinese context are considered experts in a discipline (Han, 2012). For example, a primary school teacher may teach students mathematics in one or more classes of different grades in the same academic year.

Schools in New Zealand have autonomy to interpret the national curriculum and apply it to their unique context (Ministry of Education, 2007). There are two types of primary school in New Zealand: full primary and contributing primary schools. The former covers years 1 to 8, whereas the latter covers years 1 to 6. Similar to China, most students in New Zealand attend public (state) schools. Children can start primary school at any time in the term they have their fifth birthday, and they must be enrolled by the age of six. Decile rating (1 to 10) is a socioeconomic indicator of the local area. Government operational funding is determined by school decile. Decile rating is to end by 2022 and be replaced by a new system or Equity Index. In China, primary teachers, as previously mentioned, are subject-focused. In New Zealand, however, primary teachers tend to be responsible for the delivery of subjects across the curriculum.

Understandings of the terms

According to Assouline et al. (2015), acceleration has been regarded as the most effective academic intervention for high-ability students in the gifted education field. Alongside enrichment, they form two basic forms of gifted programs (Heinbokel, 1997; Subotnik et al., 2011). Townsend (2004) defined acceleration as vertical development with enrichment described as lateral. The former matches teaching instruction to students' readiness and needs, exposing students to new content at an earlier age or a faster pace than their age-peers, whereas the latter involves students in additional activities as supplements to some curriculum area, providing "breadth and depth to regular instruction according to [students'] abilities and needs" (Townsend, 2004, p. 291).

Full-year acceleration.

Full-year acceleration (also known as *grade-skipping*) is the most contentious (Assouline et al., 2015) form of acceleration. It is defined as a grade-based acceleration strategy that moves the student up a year level from their chronological-age peers (Southern & Jones, 2015; Wardman & Hattie, 2012). The purpose of full-year acceleration is to appropriately challenge high-ability students optimal placement (Westphal et al., 2017). Contrary to commonly held beliefs, acceleration is not a new strategy. In China's Tang Dynasty (circa 618 BC), child prodigies were summoned to the Imperial Court for special education (Davis & Colangelo, 1997). Later, in the times of Plato, Socrates and Aristotle, high ability students were placed according to performance, not age. It is only in comparatively recent times that high-ability students in schooling systems around the world have been held back according to age/grade and not permitted to advance according to ability and achievement (Wardman & Hattie, 2018).

High-Ability Students.

This study adopted the suggestion made by Steenbergen-Hu and Moon (2011), who used the term high-ability as opposed to the term gifted to refer to students who exhibit extraordinary potential. A recurring theme in Subotnik et al. (2011) is that giftedness is developmental. The goal of gifted education and adult eminence could bring substantial benefits to society, in addition to the gifted individual. Therefore, giftedness in the early years is best referred to as potential.

Cultural factors are valued when discussing the expression and definition of giftedness (Subotnik et al., 2011). This study intended to study the perceptions of primary school teachers in mainland China. From the linguistic aspect, the term 'gifted' in Mandarin (tiān cái) means having inborn superior abilities that are bestowed by God (Shi & Zha, 2000). Viewing giftedness as a gift could lead to the mistaken belief that giftedness exists only in people from advantaged groups (Subotnik et al., 2011).

In the literature, the term is not applied consistently. Therefore, where the literature reviewed uses other terms (e.g., gifted and talented) to describe this group of individuals, the original descriptor is kept to reflect the diverse perspectives in the gifted education field (Jarvis & Jolly, 2018). The term *gifted education* is employed in this study to indicate the education of high-ability students.

Gifted Education in China and New Zealand

China

Despite being the largest developing country in the world, China has yet to focus on gifted education (Fu, 2017). Gifted education in China faces socioeconomic disparities (Fu, 2017) in addition to lack of financial support, research, and qualified teachers (Yang, 2004). There is neither national nor regional official documents or policies that acknowledge gifted students. Special programs for these most capable learners are more likely to be regarded as a privilege, existing only in a few schools and available to only students living in large cities (Zhang, 2017). The situation is also reflected in the research field. According to Zhang (2017), there were only 18 articles regarding gifted students published in China between 2004 and 2014, and most of them focused on the differences of cognition between gifted children and others. These figures are particularly insufficient when comparing them to the overall student population in China. There are approximately 24 million senior secondary school students, 47 million junior secondary school students, and over 100 million primary school students in China (Ministry of Education of the People's Republic of China, 2019). With such a large population base, although there is no specific estimate of the gifted population, the potential talent pool in China is likely to be around 17 million, based on the threshold suggested by Gagné (1998, 2004).

New Zealand

There has been an increasing awareness of the unique needs of gifted and talented students among New Zealand educators since the publication of the administrative document *Gifted and Talented Students: Meeting Their Needs in New Zealand Schools* in 2000 (Ministry of Education, 2012). The New Zealand *Working Party on Gifted Education* was established by the Ministry in 2001 for the purpose of supporting schools in developing their own provisions for gifted and talented students. A range of reports and resources were subsequently published.

In January 2005, the National Administrative Guideline [NAG 1(c)iii] made it mandatory for all New Zealand state schools to identify and provide for gifted and talented students so that their learning needs can be met (Ministry of Education, 2012). Although schools must follow the Ministry guidelines, they are autonomous in terms of governance. Wardman and Hattie (2012) stated that the school's Board of Trustees (BOT), which typically consists of five parent representatives, a teachers' representative, a students' representative and the principal, is responsible for the governance of the school. The BOT decide on the strategic direction of the school. In practice, it is the principal and the senior leadership team who are in charge of the implementation of school programs (Wardman, 2015).

Teachers' negativity towards acceleration

Researchers have suggested a variety of reasons for the continued reluctance of schools to apply accelerative options. For example, acceleration tends to be perceived as a disruption to the age flow of students, with teachers generally valuing keeping students in cohorts according to chronological age (Gallagher et al., 2011; Southern et al., 1989) more than their developmental readiness (Kanevsky, 2011). The way students are organised in schools across the globe tends to make teachers believe that "any departure from a child's age cohort was a bad thing" (Gallagher et al., 2011, p. 16). As Wardman (2009) suggested, it might become less controversial if acceleration practice could be interpreted as "an accommodation of the educational system to the needs and abilities of the students" (p. 34).

Some literature suggests that the low prevalence is not due to acceleration per se, but because other provisions are preferred over acceleration, especially enrichment (Gallagher, 2007; Gallagher et al., 2011; Heinbokel, 1997; Rubenzer & Twaite, 1979; Wardman, 2009). In the attitudinal study of Rubenzer and Twaite (1979), the majority of teachers (73%) answered '*Yes*' when asked if enrichment is a preferred alternative for gifted students in the classroom. Wardman (2009) left an open section at the end of her survey, and through comments made by teachers, she also found a preference for enrichment in her sample. Within accelerative options, content-based acceleration strategies are also more likely to receive support from educators and be implemented within schools (Kanevsky, 2011).

An overwhelming majority of New Zealand (Townsend & Patrick, 1993; Wardman, 2009) and international (Gallagher et al., 2011; Heinbokel, 2015; Hoogeveen et al., 2005; Lassig, 2015; Siegle et

al., 2013; Southern et al., 1989; Vialle et al., 2001; Westphal et al., 2017) research regarding teachers' attitudes ranked social-emotional concerns as the main reason teachers oppose or remain hesitant about acceleration. Academic advantages of acceleration are evident (Wardman, 2009) as they are more likely to be precisely measured. For both researchers and educators within the field, the focus on accelerated students' learning has been gradually transferred to their social-emotional development (Ministry of Education, 2012). Some researchers specifically indicated that teachers were most concerned about accelerated students' social separation from age-peers (Southern & Jones, 2015) and the possibility of not finding new friends in new classes (Heinbokel, 2015). In an Australian study with 126 primary teachers, Lassig (2015) found that teachers tended to identify gifted students as those who were popular and friendly in class and lacked the awareness of the painful experiences gifted students often get when interacting with same-age classmates, yet the latter is widely proved in other empirical research (e.g., Gross, 2006; Vialle et al., 2001). Concerns about the unpredictable long-term social-emotional effects also tempered teachers' enthusiasm about acceleration (Wardman, 2009; Young et al., 2015).

Methodology

This study sought to investigate how primary school teachers in China and New Zealand perceive the impact of full-year acceleration on high-ability students and to identify if there were any differences between the two groups. Of note is that this study was carried out just as New Zealand went into level 4 lockdown in March/April 2020. The relatively low response rate is a result of schools closing and teachers having to adapt their delivery of content to online teaching. Participating in research was not a priority for teachers at that time. The data in China had already been collected, and the researcher was fortunate to be able to return to New Zealand before New Zealand closed its borders. New Zealand has maintained an elimination stance to Covid 19, and as a result, the borders are not expected to open until at least 2023 (at time of writing in August, 2021, New Zealand is once again in level 4 lockdown, with schools and all but essential services, closed).

Instrumentation

Participants' views concerning the effects of full-year acceleration were assessed with the Attitudes toward Acceleration Scale (AAS) adapted from Southern et al. (1989). Specifically, the term *gifted* in the original survey was replaced with *high-ability* in the current study. The AAS consists of 22 items that assess participants' academic concerns (a= .78 for China and .76 in New Zealand), social concerns (a= .73 for China and .78 in New Zealand), emotional concerns (a= .90 for China and .88 in New Zealand), and leadership concerns (a= .49 for China and .74 in New Zealand). Participants were asked to indicate their agreement or disagreement on each item using a 5-point Likert-type scale (1=strongly disagree to 5=strongly agree). Given the unacceptably low Cronbach's alpha for the Chinese sample, the leadership factor was excluded in subsequent analyses.

Procedures

The same multi-stage sampling and data collection procedures were employed in New Zealand and China. First, a convenience sample of potential primary schools was identified in each country. Second, principals of the selected schools were sent a message (via email or the approach they indicated preference) seeking their consent to participate. Third, principals who agreed to participate then asked a school administrator to distribute, via email, a message to all certified teachers in their school, inviting them to participate in the study.

Participants

Participants in this study included 133 primary teachers from China (n=105) and New Zealand (n=28). The vast majority of the participants (approximately 85 % in both countries) were female. In terms of age, 81 % of participants in China reported being younger than 35, while in New Zealand, 71.4 % indicated that they were 35 or older. Most of the Chinese participants (61%) reported having less than three years of teaching experience, while only 7.1 % of the New Zealand sample indicated so. Conversely, while less than 20 % of Chinese participants had more than ten years of teaching experience, over half of the New Zealand sample did.

Data Analysis

The data in this study were collected through Qualtrics and exported as an SPSS data file. All statistical analyses were conducted in SPSS (version 26). Descriptive statistics (e.g., mean, standard deviation) of teachers' attitudes toward full-year acceleration were presented by factor. To explore the differences between two groups of participants in terms of their views on full-year acceleration, analysis of variance (ANOVA) was used, and Cohen's *d* was calculated for all the factors and every item in the AAS. The comments made by teachers at the end of the survey were qualitatively analysed based on the six phases process for thematic analysis outlined by Braun and Clarke (2006). Themes generated in this study included *social concerns*, *individual differences*, and *the bigger picture*.

Results

Teachers' Attitudes Toward Full-Year Acceleration

As detailed in

Table **1**, Chinese teachers scored a mean of 2.80, indicating a slightly positive attitude toward the overall impact of full-year acceleration. They shared a very similar level of concern over the academic and social outcomes of accelerated students, which was higher than their emotional concern. New Zealand teachers demonstrated a positive attitude with a mean score of 2.36. They were concerned most about accelerated students' social development and least concerned about their emotional consequences.

There were statistically significant differences existed between teachers' attitudes toward the overall impact of full-year acceleration as well as between their views about the three sub-factors. Teachers in New Zealand scored lower means in all four categories than teachers in China, expressing a more positive attitude about the impact of full-year acceleration. Accelerated students' social outcomes caused the least between-country discrepancy. Both groups expressed a relatively higher level of concern toward this factor.

Table 1: Attitudes toward Acceleration by Country (Descriptive Statistics and Mean Differences**)**

Factor	China (n = 105)		NZ (n = 28)				
	M	*SD*	*M*	*SD*	Δ Mean	*F*	Cohen's *d*
Overall Concern	2.80	0.59	2.36	0.57	0.44	12.41**	0.76
- Academic Concern	2.85	0.64	2.40	0.55	0.45	11.52**	0.75
- Social Concern	2.84	0.68	2.49	0.77	-0.35	5.04*	0.48
- Emotional Concern	2.74	0.64	2.26	0.57	-0.48	12.91***	0.79

Note: Cohen's $d = (M2 - M1)/\sqrt{[(\sigma 1^2 + \sigma 2^2) / 2]}$; *d* values between .2 and .5 constitute a small effect, .5 to .8 a medium effect, and .8 or greater a large effect. *p< .01.

Table **2** below details the mean score, standard deviation, and Cohen's *d* for each item in AAS. On every item, New Zealand teachers scored a lower mean than their Chinese counterparts, indicating a lower level of concern. Only 10 per cent of the New Zealand sample on average chose either *Agree* or *Strongly agree* for these negatively worded items. The percentage was twice that (21.0%) for Chinese participants. It is also worth noting that the proportion of teachers having uncertain attitudes toward full-year acceleration in China was higher than that in New Zealand. All items but one had at least one-third of Chinese teachers selected *Unsure* as their responses.

Academic concerns

Academic-related issues overall concerned Chinese teachers most, especially the item focusing on whether the age of the student is a more important factor to consider than their actual academic ability. This item also made the most considerable difference between the two groups in this dimension. More participants in China in this study agreed with (34.3%) this statement than disagreed with (28.6%) it. New Zealand teachers yet have an opposite perspective. The majority of the participants (78.6%) in New Zealand disagreed that age was a priority.

The statement regarding full-year acceleration being less suitable than enrichment was agreed by one-third of teachers in both groups. Within the AAS, this item caused the least between-country difference and the highest level of concern among New Zealand teachers.

Social concerns

Both of the groups reported positive attitude about whether accelerated students could socialise well with other students (M = 2.51, SD = .80 for Chinese sample and M = 2.25, SD = .89 for New Zealand sample), but both of them also expressed strong concerns that high-ability students would miss essential social interactions if being accelerated. Chinese participants had a mean score of 3.12 for this item, and New Zealand participants scored 2.82, which were the highest and second-highest mean scores in their respective scales.

Emotional concerns

Both of the Chinese teachers and New Zealand teachers expressed the least concerns that full-year acceleration would harm high-ability students' emotional wellbeing among all sub-factors. Within the AAS, New Zealand teachers shared the least concern that full-year acceleration would lead students to become conceited, arrogant or less reliable compared to those who remained in classes with same-age peers. Over three-quarters of New Zealand teachers disagreed with these two statements.

Table 2: Mean Scores for Each Item of the AAS by Item and Country**.**

Item	China (*n=105*)		New Zealand (*n*=28)		Cohen's *d*
	M	*SD*	*M*	*SD*	
Academic issues					
1. Accelerating a high-ability student place too high a level of academic demand on the student.	2.83	.94	2.25	.65	.72
2. A high level of academic demand will later lead to diminished performance.	2.70	.90	2.29	.81	.48
3. Acceleration is unnecessary because other less capable same-age students tend to catch up.	2.70	.92	2.54	.88	.18
4. Accelerated students will not do as well in the new classes because of increased academic competition.	2.81	.95	2.14	.76	.78
5. Full-year acceleration is not suitable as enrichment for high-ability students.	**3.01**	1.00	**2.96**	1.00	**.05**
6. The chronological age is a more important consideration than the level of academic achievement when planning educational programs for high-ability students.	**3.05**	.91	2.21	.79	**.99**
Social issues					
7. Accelerated students will miss important social interactions.	**3.12**	.96	**2.82**	1.09	.29
8. Accelerated students will have fewer friends than if they remain in classes with their same-age peers.	2.84	.92	2.36	.95	.51
9. Accelerated students will not socialize well with other students.	2.51	.80	2.25	.89	.31
10. Accelerated students will be deprived of necessary childhood experiences.	2.88	1.00	2.54	.92	.35
Emotional issues					
13. Accelerated students will tend to be involved in fewer extra-curricular activities.	2.81	.88	2.21	.79	.72
14. Accelerated students will tend to become conceited or arrogant.	2.72	.80	2.04	.64	.94
15. Accelerated students will not be as happy as high-ability students who remain with their same-age peers.	2.70	.85	2.61	.96	.10
16. Accelerated students will be less apt to be happy in later life than if they had remained with their same-age peers.	2.71	.85	2.32	.77	.48
17. Adults who were accelerated during their schooling tend to be less satisfied with their jobs.	2.84	.82	2.43	.84	.49
18. Students who have been accelerated tend to become more rebellious.	2.65	.76	2.11	.57	.81
19. Accelerated students will become more emotionally unstable.	2.81	.90	2.32	.77	.58
20. Accelerated students tend to be less reliable than high-ability students who remain in classes with their same-age peers.	2.66	.86	2.04	.74	.77

Note: Cohen's d = (M2 – M1)/√[(σ1² + σ2²) / 2]; d values between .2 and .5 constitute a small effect, .5 to .8 a medium effect, and .8 or greater a large effect. *p< .01.

Teacher comments

Very few (3.8%) teachers in China wrote comments regarding their views on the research topic at the end of the survey. Two teachers briefly stated that the study was thought-provoking and had practical meaning. The other three teachers, who were all younger and had less than three years of teaching experience, suggested that full-year acceleration was unfamiliar to them, and they had difficulty answering the questions. The word count for Chinese teachers' comments were altogether 112 Chinese characters. In contrast, more New Zealand teachers (35.7%) expressed their opinions and concerns relating to full-year acceleration and high-ability students in more detail in the comment section. Together, these respondents contributed more than 1,500 words. Using thematic analysis outlined by Braun and Clarke (2006), three themes were generated from New Zealand teachers' comments.

Social concerns.

Despite having answered several forced-choice questions pertaining to accelerated students' social aspects, half of the New Zealand respondents reiterated and amplified their concerns over accelerated students' social development in the comment section. In their opinion, younger age was more likely to lead to socially immature and subsequently cause negative acceleration experiences. One teacher, drew from her own practical experiences, specifically stated that learning alongside older peers "leads to social issues rather than academic ones". Some teachers stated that whether the students are socially ready is the most important factor to consider when making decisions about acceleration. One teacher asserted that "accelerating children could be detrimental to their holistic development" even though they are academically strong. Another teacher agreed: "I would more often suggest that students be held back a year if they are young for their class and younger than their peers and quite immature socially". Some teachers expressed concerns about the long-term outcome under the impact of age differences. Two teachers commented that if they exist, social problems usually occur or become "more pronounced [when] entering puberty/adolescent years and entering high school".

A more comprehensive comment came from a teacher who was personally accelerated from Year 7 into Year 9 at high school. The teacher considered acceleration a good decision for her academically. Her social and emotional experiences, on the other hand, were not ideal. She explained: "The emotional and social expectations of college [high school] were vastly different than I was used to, and my emotional maturity may not have been at the level of the higher year level". Compared to one of her students who was accelerated a year before reaching Year 4, the teacher suggested that the earlier that acceleration occurs, the better the outcome may be, in the sense that the students "are then able to grow with the cohort they are placed in". The teacher, however, also stressed that she didn't know if her situation would have been better if she had *not* been accelerated.

Individual differences.

Although teachers were concerned about the potential adverse impact full-year acceleration might have on high-ability students' social development, they did not completely oppose the provision. Instead, most of these respondents did not make a broad statement and stated that they were fully aware that the situation varied from person to person. A notion mentioned by several teachers was about full-year acceleration being a "case-by-case" decision. As one teacher explained:

> For all of the questions, it really depends on the individual student, their personality and their circumstances… It is an option that will be successful in some cases and not successful with other students despite everyone's best intentions. Depending on personality – stress can be motivating or cause burnout. It depends [on] how that individual reacts. For some students, it will be essential as they just can't relate to the curriculum of year level - bored and unmotivated, or for others, the social aspect of same-age peers might override the academic.

The teacher went on to state that one possible solution to avoid negative impact is to engage all parties - students, parents, and school - in prior decision-making process. Different opinions can be heard and thereby socially and emotionally immature students can avoid being improperly accelerated. Another teacher referred to the similar idea of involving stakeholders but took a longer view. She stated that continuous observations, in which parents/caregivers actively seek potential problems post acceleration, were essential.

The bigger picture.

The concerns that emerged from the comment section were not only about the influence of full-year acceleration per se, but also about how the education system is taking care of its most capable learners. Equality and equity were argued. As one teacher shared, "A lot of time, support, and focus go to students having difficulty progressing in their learning and/or behaviour, but students at the other end of the spectrum do not seem to [have] the same level of support". The lack of support for high-ability students was mostly regarded as resulting from insufficient resources such as time and professional knowledge. One teacher wrote: "Government funding, school budgets, lack of training and knowledge in this area, resources (and teachers) being stretched too thinly to meet all needs as we would like, are some of the contributing factors".

Some respondents advocated that all children, regardless of their ability level, should be provided for, based on their individual needs. They believed that "all children have the chance to succeed" and suggested that classroom differentiation, where different learning goals were set for different students so that everyone could be involved and meet their outcomes, could be a better option. One teacher, however, also admitted that this might be hard to achieve in a mainstream setting where the classroom teacher was already overloaded, and thus makes acceleration inevitable, "I am not sure how this could be achieved in a mainstream setting (where a teacher is already stretched for time and resources), so acceleration is possibly an option".

Discussion

The Academic-Driven Environment in China.

Chinese teachers in this study shared the highest level of concern for accelerated students' academic outcomes, which was different from research findings in other contexts (e.g., Southern et al., 1989; Wardman, 2009). This may be attributed to Chinese culture, where academic achievement is traditionally highly valued. The first appearance of the elaborate examination system in China could be traced back to the Spring and Autumn period (770 BC. — 476 BC.). Achieving higher grades in tests in China often links to more prestigious middle schools or universities (Yang, 2004), higher-paying jobs (Leung & He, 2010; Liu & Meng, 2009), and thus the perception of a better future.

The concern for the chronological mismatch among Chinese teachers was likely to associate with the contemporary social norm where the rigid placement structure in the school system worldwide is based on children's age cohort (Wardman, 2009). In China, the revised Compulsory Education Law (National People's Congress Standing Committee, 2019) stated that activities designed for students should match their chronological age. Mixed-age teaching only exists in the early childhood education context as few rare examples (Zhang & Ye, 2017). A broader educational environment like this is likely to lead teachers to subconsciously view age as the most important consideration when planning for students' development and thus cause low usage of full-year acceleration. As Kanevsky (2011) stated, "valuing chronological age rather than developmental readiness as the guiding principle for organising students for learning" tend to be one of the issues that contribute to the ongoing resistance to the implementation of accelerative options (p. 173).

Preference for other provisions among New Zealand teachers

This study confirms that approaches that keep high-ability students in the same classroom with their age-peers are preferred by primary teachers and is reflected when they consider strategies. New Zealand teachers support enrichment as being more suitable than full-year acceleration, with more than

one-third of teachers in the study confirming and another quarter being unsure. The notion also emerged in the comment section, where some teachers suggested the use of differentiation with enrichment in the classroom instead of acceleration, so that every child could succeed. The strategy, however, is perceived as hard-to-achieve in mainstream settings by many practice teachers (Wardman & Hattie, 2018). Although New Zealand teachers expressed an overall positive attitude toward full-year acceleration in this study, the tendency to retain high-ability students with age-peers is noteworthy. The research of Gross (2006) and Dare et al. (2016) in Australia showed substantial evidence of high-ability students being retained with age peers and, as a result, suffering from boredom and disengagement. This practice has also been reported in the New Zealand context (e.g., Wardman & Hattie, 2012). It would appear that the evidence of the research regarding acceleration is still not being heeded by classroom teachers. As Riley et al. (2004) stated, students with high potential are displaying abilities and skills 24 hours a day. Their needs to interact with intellectual peers are full-time problems. Part-time solutions such as enrichment do not "address these ever-present special abilities" (p. 65).

Common Social Concerns.

In line with the previous research (Gallagher et al., 2011; Heinbokel, 2015; Hoogeveen et al., 2005; Lassig, 2015; Siegle et al., 2013; Vialle et al., 2001; Westphal et al., 2017), the findings of this study reaffirmed that among all dimensions, the social impact of full-year acceleration tends to be what most concerned teachers. Despite the lack of empirical evidence in support of the view, they were concerned that acceleration would result in some degree of social isolation (Southern & Jones, 2015). In contrast, the difficulties high-ability students experience while being retained with age-peers, which included both physical symptoms and psychological problems, have been extensively reported by students themselves (e.g., Gronostaj et al., 2016; Gross, 2006; Heinbokel, 2015), parents (e.g., Dare et al., 2016; Vialle et al., 2001), as well as teachers (e.g., Wardman, 2009).

The suggestion that better social outcomes could be delivered if acceleration occurred earlier was made by one New Zealand teacher in the comment section in the current study. Her belief concurred with empirical research findings (Gronostaj et al., 2016; Gross, 2006). When studying the social-emotional characteristics of both accelerated students and non-accelerated students in the Netherlands, Hoogeveen et al. (2012) found that early accelerated students tended to show fewer risk-avoiding behaviours and more positive self-concept regarding opposite-sex friendships.

Differences in the Development of Modern Gifted Education Between China and New Zealand.

The findings regarding the comparison between teachers' attitudes toward full-year acceleration in China and New Zealand highlighted the differences in the development of modern gifted education between the two nations. As reflected in both quantitative and qualitative data, the low awareness of and unfamiliarity with full-year acceleration in China could be attributed to underdeveloped gifted education in the Chinese context. As a result, teachers are provided with scarce resources and little guidance that could help them understand the reality of high-ability students and the need for appropriate intervention to prevent underachievement and harmful outcomes.

In New Zealand, on the other hand, although there is still a long way to go, gifted education has drawn more attention. The advocacy of being aware of individualisation when implementing full-year acceleration and having more resources to support gifted education in general from New Zealand teachers' comments, reflected their greater awareness of catering for students with high abilities.

Study Limitations

The representativeness, and thus generalisability, of this study are limited for a few reasons. First, the sample size in this study was small, especially the New Zealand sample. Second, the sampling strategy employed in this study likely caused a response bias. As Fink (2009) stated, voluntary participation may result in teachers who volunteer being more enthusiastic about the research topic.

Particularly, in New Zealand, the low response rate and relatively few responses may mean that the respondents were teachers who are most interested or engaged in acceleration or gifted education.

Third, the generalisability was limited by the demographic distribution. Specifically, most of the Chinese respondents were younger than 35 years old, while the majority of New Zealand participants were over 35 years old. In the case of the former, the relative youth of the sample may explain the large proportion of respondents who expressed uncertainty for the items in the AAS and their comments indicating unfamiliarity with full-year acceleration.

Implications.

The current study is the first of its type, to the researcher's knowledge, in mainland China to explore teachers' perceptions of acceleration strategy. It is also one of the few studies regarding gifted education in the Chinese context. In New Zealand, this study is one of the few studies that specifically focused on full-year acceleration. The findings of this study imply that more still needs to be done to achieve the implementation of full-year acceleration in school settings and address the needs of high-ability students in general.

Suggestions for Future Research

Teachers in China in this study demonstrated a high level of concern for accelerated students' academic outcomes compared to other factors, which is different to the research findings in other studies. More research exploring Chinese teachers' academic concerns regarding high-ability students is recommended. Consistent with previous studies, teachers in this study reported mostly positive views toward full-year acceleration, yet the practice is rarely used. Therefore, another possible direction for future research would be to study the attitudes of school leaders and policymakers toward acceleration as they tend to hold greater power in determining the provisions for high-ability students in their schools or jurisdictions.

Conclusion

There is a well-known anecdote named *Pity Zhongyon*g in China, which was written around a thousand years ago. It is about a child who was talented at composing poetry, then gradually lost his abilities because of inadequate education and learning opportunities. This is not what societies need if they are to be prosperous and able to meet future challenges. Placing high-ability students according to their performance is not a new intervention as it has been practised since ancient times. Full-year acceleration is a relatively easy-to-implement and highly effective educational provision. The accepted meaning of 'not knowing what we don't know' is generally that we don't know what we are missing. If teachers and school leaders heed the evidence of the research and can accept the strategy of acceleration as benefitting their most capable learners, more students will have access to the provision and achieve their potential.

References

Assouline, S. G., Colangelo, N., & VanTassel-Baska, J. (2015). *A nation empowered: How schools hold back America's brightest students* (Vol. 1). Belin Blank.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77-101. https://doi.org/10.1191/1478088706qp063oa

Dare, L., Smith, S., & Nowicki, E. (2016). Parents' experiences with their children's grade-based acceleration: Struggles, successes, and subsequent needs. *Australasian Journal of Gifted Education, 25*(2), 6-21. https://doi.org/10.21505/ajge.2016.0012

Davis, G. A., & Colangelo, N. (1997). *Handbook of gifted education*. Allyn and Bacon.

Fink, A. (2009). *How to conduct surveys: A step-by-step guide* (4 ed.). Sage Publications.

Fu, T. (2017). Wandering in the shadow of egalitarianism and equity: A social and cultural explanation to the underdeveloped gifted education in China. *Global Education Review, 4*(1), 34-44. https://go-gale-com.ezproxy.auckland.ac.nz/ps/i.do?id=GALE%7CA544247888&v=2.1&u=learn&it=r&p=AONE&sw=w

Gagné, F. (1998). A proposal for subcategories within gifted or talented populations. *Gifted Child Quarterly, 42*(2), 87-95. https://doi.org/10.1177%2F001698629804200203

Gagné, F. (2004). Transforming gifts into talents: The DMGT as a developmental theory. *High Ability Studies, 15*(2), 119-147. https://doi.org/10.1080/1359813042000314682

Gallagher, S. (2007). Exploring preservice teachers' attitudes towards gifted education. *TalentEd, 25*(1), 11-18. https://search-informit-com-au.ezproxy.auckland.ac.nz/fullText;dn=173376;res=AEIPT

Gallagher, S., Smith, S. R., & Merrotsy, P. (2011). Teachers' perceptions of the socioemotional development of intellectually gifted primary aged students and their attitudes towards ability grouping and acceleration. *Gifted and Talented International, 26*(1-2), 11-24. https://doi-org.ezproxy.auckland.ac.nz/10.1080/15332276.2011.11673585

Gronostaj, A., Werner, E., Bochow, E., & Vock, M. (2016). How to learn things at school you don't already know: Experiences of gifted grade-skippers in Germany. *Gifted Child Quarterly, 60*(1), 31-46. https://doi.org/10.1177/0016986215609999

Gross, M. U. (2006). Exceptionally gifted children: Long-term outcomes of academic acceleration and nonacceleration. *Journal for the Education of the Gifted, 29*(4), 404-429. https://doi-org.ezproxy.auckland.ac.nz/10.4219%2Fjeg-2006-247

Hattie, J. (2009). *Visible learning: A synthesis of over 800 meta-analyses relating to achievement*. Routledge.

Heinbokel, A. (1997). Acceleration through grade skipping in Germany. *High Ability Studies, 8*(1), 61-77. https://doi-org.ezproxy.auckland.ac.nz/10.1080/1359813970080106

Heinbokel, A. (2015). Grade skipping and the achievements of girls. *Gifted and Talented International, 30*(1-2), 39-48. https://doi-org.ezproxy.auckland.ac.nz/10.1080/15332276.2015.1137453

Hoogeveen, L., Van Hell, J. G., & Verhoeven, L. (2005). Teacher attitudes toward academic acceleration and accelerated students in the Netherlands. *Journal for the Education of the Gifted, 29*(1), 30-59. https://doi-org.ezproxy.auckland.ac.nz/10.1177%2F016235320502900103

Hoogeveen, L., van Hell, J. G., & Verhoeven, L. (2012). Social-emotional characteristics of gifted accelerated and non-accelerated students in the Netherlands. *British Journal of Educational Psychology, 82*(4), 585-605. https://doi.org/0.1111/j.2044-8279.2011.02047.x

Jarvis, J. M., & Jolly, J. L. (2018). Introduction. In J. M. Jarvis & J. L. Jolly (Eds.), *Exploring gifted education: Australian and New Zealand perspectives* (pp. 1-4). Routledge.

Kanevsky, L. (2011). A survey of educational acceleration practices in Canada. *Canadian Journal of Education, 34*(3), 153-180. https://link-gale-com.ezproxy.auckland.ac.nz/apps/doc/A271511523/AONE?u=learn&sid=AONE&xid=32b328e9

Lassig, C. (2015). Teachers' attitudes towards the gifted: The importance of professional development and school culture. *Australasian Journal of Gifted Education, 24*(2), 6-16. https://doi.org/10.21505/ajge.2015.0012

Leung, G. S. M., & He, X. (2010). Resourcefulness: A protective factor buffer against the academic stress of school-aged children. *Educational Psychology, 30*(4), 395-410. https://doi-org.ezproxy.auckland.ac.nz/10.1080/01443411003682574

Liu, S., & Meng, L. (2009). Perceptions of teachers, students and parents of the characteristics of good teachers: A cross-cultural comparison of China and the United States. *Educational Assessment, Evaluation and Accountability, 21*(4), 313-328. https://doi.org/10.1007/s11092-009-9077-z

Ministry of Education. (2012). *Gifted and talented students—Meeting their needs in New Zealand schools*. Learning Media.

Ministry of Education of the People's Republic of China. (2019). *Overview of educational achievements in China in 2018*. http://en.moe.gov.cn/documents/reports/201910/t20191022_404775.html

National People's Congress Standing Committee. (2019). *Compulsory Education Law of the People's Republic of China*. http://www.npc.gov.cn/npc/c30834/201901/21b0be5b97e54c5088bff17903853a0d.shtml

Riley, T., Bevan-Brown, J., Bicknell, B., Carroll-Lind, J., & Kearney, A. (2004). *The extent, nature and effectiveness of planned approaches in New Zealand schools for providing for gifted and talented students*. Ministry of Education.

Rubenzer, R. L., & Twaite, J. A. (1979). Attitudes of 1,200 educators toward the education of the gifted and talented: Implications for teacher preparation. *Talents and Gifts, 2*(4), 202-213. http://ezproxy.auckland.ac.nz/login?url=https://search-proquest-com.ezproxy.auckland.ac.nz/docview/63707480?accountid=8424

Shi, J., & Zha, Z. (2000). Psychological research on and education of gifted and talented children in China. In K. A. Heller, F. J. Mönks, R. J. Sternberg, & R. F. Subotnik (Eds.), *International handbook of giftedness and talent* (Vol. 2, pp. 757-764). Elsevier.

Siegle, D., Wilson, H. E., & Little, C. A. (2013). A sample of gifted and talented educators' attitudes about academic acceleration. *Journal of Advanced Academics, 24*(1), 27-51. https://doi-org.ezproxy.auckland.ac.nz/10.1177%2F1932202X12472491

Southern, W. T., & Jones, E. D. (2015). Types of acceleration: Dimensions and issues. In S. G. Assouline, N. Colangelo, J. VanTassel-Baska, & A. Lupkowski-Shoplik (Eds.), *A nation empowered: How schools hold back America's brightest students* (Vol. 2, pp. 5-12)

Southern, W. T., Jones, E. D., & Fiscus, E. D. (1989). Practitioner objections to the academic acceleration of gifted children. *Gifted Child Quarterly, 33*(1), 29-35. https://doi.org/10.1177%2F001698628903300105

Steenbergen-Hu, S., & Moon, S. M. (2011). The effects of acceleration on high-ability learners: A meta-analysis. *Gifted Child Quarterly, 55*(1), 39-53. https://doi.org/10.1177/0016986210383155

Subotnik, R. F., Olszewski-Kubilius, P., & Worrell, F. C. (2011). Rethinking giftedness and gifted education: A proposed direction forward based on psychological science. *Psychological Science in the Public Interest, 12*(1), 3-54. https://doi.org/10.1177/1529100611418056

Townsend, M. (2004). Acceleration and enrichment: A union rather than a choice. In D. McAlpine & R. Moltzen (Eds.), *Gifted and talented: New Zealand perspectives* (2 ed., pp. 289-308). Kanuka Grove Press c2004.

Townsend, M., & Patrick, H. (1993). Academic and psychosocial apprehensions of teachers and teacher trainees toward the educational acceleration of gifted children. *New Zealand Journal of Educational Studies, 28*(1), 29-41. https://www.researchgate.net/profile/Helen_Patrick/publication/257977102_Townsend_M_A_R_Patrick_H_1993_Academic_and_psychosocial_apprehensions_of_teachers_and_teacher_trainees_toward_the_educational_acceleration_of_gifted_children_New_Zealand_Journal_of_Educational_Studies/links/02e7e52681974c434b000000/Townsend-M-A-R-Patrick-H-1993-Academic-and-psychosocial-apprehensions-of-teachers-and-teacher-trainees-toward-the-educational-acceleration-of-gifted-children-New-Zealand-Journal-of-Educational-St.pdf

Vialle, W., Ashton, T., Carlon, G., & Rankin, F. (2001). Acceleration: A coat of many colours. *Roeper Review, 24*(1), 14-19. https://doi-org.ezproxy.auckland.ac.nz/10.1080/02783190109554119

Wardman, J. (2009). Secondary teachers', student teachers' and education students' attitudes to full year academic acceleration as a strategy for gifted students. *Australasian Journal of Gifted Education, 18*(1), 25-36. https://search-informit-com-au.ezproxy.auckland.ac.nz/fullText;dn=177413;res=AEIPT

Wardman, J. (2015). To act or not to act? Academic acceleration worked in the past, so what's the current hold-up in NZ? *APEX: The New Zealand Journal of Gifted Education, 19*(1). www.giftedchildren.org.nz/apex

Wardman, J., & Hattie, J. (2012). Administrators' perceptions of full-year acceleration at high school. *Australasian Journal of Gifted Education, 21*(1), 32-41. https://search-informit-com-au.ezproxy.auckland.ac.nz/documentSummary;dn=731016970141051;res=IELAPA

Wardman, J., & Hattie, J. (2018). What works better than the rest? The impact of various curricula provisions for gifted learners. In B. Wallace, D. A. Sisk, & J. Senior (Eds.), *The SAGE handbook of gifted and talented education* (pp. 321-334). SAGE Publications Ltd. https://ebookcentral.proquest.com/lib/auckland/detail.action?docID=5599582

Westphal, A., Vock, M., & Stubbe, T. (2017). Grade skipping from the perspective of teachers in Germany: The links between teachers' decisions, acceptance, and perceived knowledge. *Gifted Child Quarterly, 61*(1), 73-86. https://doi.org/10.1177/0016986216670727

Yang, W. (2004). Education of gifted and talented children: What's going on in China. *Gifted Education International, 18*(3), 313-325. https://doi-org.ezproxy.auckland.ac.nz/10.1177%2F026142940401800311

Young, M., Rogers, K., Hoekman, K., Van Vliet, H., & Long, L. (2015). Acceleration in Australia: Flexible pacing opens the way for early university admission. In S. G. Assouline, N. Colangelo, J. VanTassel-Baska, & A. Lupkowski-Shoplik (Eds.), *A nation empowered: Evidence trumps the excuses holding back America's brightest students* (Vol. 2, pp. 225-240). Belin Blank.

Zhang, H., & Ye, C. (2017). Exploration of early childhood teachers' professional development in mixed-age education. *Data of Culture and Education*(21), 136-137+123. https://kns.cnki.net/KCMS/detail/detail.aspx?dbcode=CJFQ&dbname=CJFDLAST2018&filename=WJZZ201721062&v=MjA1NzJGeUhtVXJ6TU1pZlJkTEc0SDliT3JvOURab1I4ZVgxTHV4WVM3RGgxVDNxVHJXTTFGckNVUjdxZllPWnQ=

Zhang, Z. (2017). Gifted education in China. *Cogent Education, 4*(1), 1-12. https://doi.org/10.1080/2331186X.2017.1364881

About the Authors

Wang, L; Wardman, J; Stephens, J.M.
University of Auckland, New Zealand

e-Mail: j.wardman@auckland.ac.nz

We don't know what we don't know: Rethinking Giftedness and Talent Terminology

Roland S. Persson
Jönköping University, Sweden

Abstract

The proliferation of labels used in relation to giftedness and talent is well-known. So much so, it has become not only confusing to practitioners but also a daunting scientific problem. Problems have increased scholars often tend to assign an envisioned greater purpose of being gifted and/or talented. On the basis of social evolutionary theory, I propose that the way forward to handle not only confusion and an increasingly less substantive research base is to focus on extreme behavior as opposed to average behavior in relation to the normal distribution. This article explains why such a nomenclature is most likely a better choice rather than the increasing number of labels and constructs in the field, most of which tend to be based on illusion or be culturally biased in a multitude of ways.

Keywords: Talent Giftedness; Extreme behaviour; Nomenclature; Normal distribution; Cultural bias; Positive bias; Illusion.

Introduction

In every population throughout history, by virtue of normal distribution, there have always existed individuals in all cultures with abilities varying in kind and level; with a majority of the population being average by whatever measure. It is a fundamental need of most individuals to actually be average. That is, we want to be similar to each other, or at least not to be too dissimilar in comparison to others constituting their social frame of reference. At the one extreme of normal distribution there are individuals with low levels of ability, while at the other extreme there are individuals with abilities at extraordinary levels. A perhaps trite statement, but the tangible result of this in a population is that individuals at both extreme ends will find it difficult to cope with everyday life but for different reasons. A shortcoming in cognitive abilities makes school and everyday life difficult to cope with and to understand. Being capable of extreme abstract thinking and profound insight, on the other hand, tends to have social repercussions resulting in suspicion and exclusion. These individuals will have difficulties fitting into mainstream society since they cannot identify with most others in their social context. Equally important is that mainstream society can also not identify with or understand them.

It is rare that we perceive low-skilled individuals as a threat. It is quite common, on the other hand, that highly skilled individuals are construed as intimidating to others of lesser skill and understanding. People in general do not like to work or identify with someone who is perceived as being more intelligent than they are (Judge, Colbert & Illies, 2004); or as phrased by an experienced British manager: "[They] are extremely difficult to manage—they are easily bored and refuse to accept the authority of a boss just because he is the boss. This is why most companies, despite all their propaganda, actually do not want talented people" (as quoted in Robertson & Abbey, 2003; p. 28). In addition, extreme intelligence and an undying passion for social justice may also pose a potential threat to social order and its leadership as evidenced by how societies through the ages have dealt with many a critic (e.g., Martin, 2019).

We exist in a world in which all development is designed by evolution to strive toward the average. Evolution "experiments" by random genetic mutation which, in a multitude of ways, *always* constitutes a deviation from the average in that it always originates in a single individual. Given propagation and the survival advantage of such a mutation it will spread to all members of a species given enough time. Hence, that which at first was unique and perhaps extreme in comparison to everyone

else will eventually become average in the sense that everyone will then possess the advantageous characteristic. The evolutionary process always strives toward physiological, psychological and social equality by every species member being similar to one another. The engine driving this process is invariably *deviation* from the average. The societal consequence of this is a tension, social in nature, between the average and the extreme. Such tension frequently causes conflict in mainstream society, which most extremely gifted and talented individuals will be able to give witness to (e.g., Hollingworth, 1942; Lachner, 2012; Noks & Nauta, 2013). Anyone who is by any means extreme in comparison to his or her social context risks being challenged, little depending on whether their deviation from the average could either serve social cohesion, status, identity or pose as a threat to it (cf. Persson, 2021). Importantly, given that the ability to extreme abstract thinking and creative behavior is a species survival advantage we would all eventually evolve to possess such levels of extreme ability and endeavor. Hence, all members of humankind would, per definition, at this new level of extreme ability then have become "average". Among these, some would no doubt develop even greater abilities and skills. If these too are advantageous for the species they will also be transmitted to a future generation and all the while create tensions in the social context between the extreme and the ones who are then "average". This is a never-ending cycle lasting until the species, for some reason, has become extinct.

The significance of social labeling

The evolutionary process is important when trying to understand how and why we label gifted and talented individuals so differently and inconsistently in different contexts and cultures. Unless the result of a physiological disorder, in the world of social animals, all behavior takes on a *function* with the sole purpose to serve the preservation and propagation of the species. To make sense of the world around us we categorize and assign representative labels to objects and phenomena; usually in accordance with their practical use (Rosch, 1978). Labeling objects as applied to things we use is necessary to perceive the world; to learn and to accumulate knowledge. Labeling social behavior is more complicated. It involves social interaction which is often symbolic and not perceived as immediately practical (e.g., Mead, 2015). Most interaction is impacted by value systems exerting a largely *unaware* influence on behavior in relation to social status, kin-selection, mating, parental investment and survival by co-operation and so on. When we therefore choose a name for a social position, function, phenomenon or any social event in society, we are likely to do so on the basis of cultural values without being aware that we do. This in turn leads to imbuing social labels with wished-for attributes always construed as positive. It is known, for example, that perceived heroes or leaders, sometimes one and the same, tend to represent projected cultural ideals (e.g., Kessler & Wong-Mingji, 2010). These are much more important than a more objective attribute such as level of knowledge and understanding. Appointing heroes and leaders is all about keeping up appearances and maintaining them. University of California anthropologist G. F. Bailey's (1988) damning description of leadership in general is likely to be to some degree correct depending on context and leadership level (cf. van Vugt & Ahuja, 2010). To Bailey leadership is mainly about "humbuggery and manipulation":

> … [It] is the art of cutting into … chaos and imposing a simplified definition on the situation, that is, making people act as if the simplified picture was reality. This cannot be done in any honest, open, reasoned, dispassionate, and scientific fashion. The leader must be partisan. He must use rhetoric. He must be ruthless, be ready to subvert values while appearing to support them and be clever enough to move the discourse up a level where opportunism can be successfully hidden behind a screen of sermonizing about the eternal verities. Leadership is a form of cultivating ignorance, of stopping doubts and stifling questions (p. 2).

The proliferation of labels used in relation to giftedness and talent is well-known. So much so, it has become not only confusing to practitioners but also a daunting scientific problem (e.g., Dries, 2013; Lewis & Heckman, 2006; Persson, 2014). While everyone is likely to recognize gifted and talented overt behavior by observation when exposed to it regularly, diversions, not to say contentions, emerge when we try to explain theoretically why such behavior exists, and how we should go about identifying it.

Differences in labeling became an even crippling problem when we began to assign an envisioned greater purpose to being gifted and talented. With the introduction of a global knowledge economy in the early 1990s, it is no longer acceptable to be gifted or talented for its own sake (Persson, 2015). To be extreme in achievement, understanding and creativity is entirely utilitarian and should

always be considered as being of service to society. The gifted and talented are envisioned as being at the forefront of securing future societal welfare, to resolve global problems, and also to be future leaders each according to his or her domain of skills and interests. Few labels, in my view, speak more clearly of our proclivity to project ideals onto these remarkable individuals, than the most recent addition, namely *transformational giftedness* (Sternberg, 2020).

At the same time the gifted and talented have become the sole focus of the so-called "Talent Wars" (e.g., Oelsnitz, von der Stein, & Hahmann, 2007), which have raged worldwide since the Global Knowledge Economy emerged. Markets understood early that there were only few of such excellent individuals around for hire. Everyone wants them to work for their company to provide a much-needed competitive edge. They are construed by the markets as top industrial investments for innovation and maximum profits. At the same time, it is rare that employers understand how to manage their gifted and talented employees to make them happy and productive at work (Ivancevic & Duening, 2001; Lachner, 2012; Nauta & Ronner, 2013). Scholars have been quick to jump onto this bandwagon of giftedness as an attribute of human capital for purely strategic reasons. Clinkenbeard (2007), among several others, published pleads to the scholarly community to *advocate* the significance of the extremely able for future societal prosperity (see also Bleske-Recheck, Lubinsky & Benbow, 2004; Conrad, 2011; Sever, 2011; Wai, 2013). Hopes and wishes of what these remarkable individuals are able to achieve have spread widely. Their potential has to some extent been taken to heart also by politicians worldwide, although each culture on their own terms and not infrequently with their own ideological understanding as a basis.

The advantage of extreme behavior over other labels

Labels defining giftedness and/or talent tends to have a relatively weak scientific basis. In addition, this basis has progressively deteriorated for political and financial reasons, as well as for increasingly projecting ideals tied to national cultures (for a more extensive discussion, see Persson, 2018; however, see also Borland, 2021; who makes a point of giftedness being entirely a social construction). We do, however, need a reasonable nomenclature when studying this unique group of individuals. Tried and explored for a century none has so far emerged to establish itself as a general basis for all studies and practices. Instead, the number of labels seem to continue to grow giving the impression of confusion. No less important is the fact that we increasingly seem to build academic careers and social status on new constructs, which do not always add substance to the allegedly neutral base of scientific knowledge. It is true that the number of scholarly publications has never been greater, but it is equally true that never before has so little been said of substance by so many (Bennich-Björkman, 2013; Moore, Neylon, Eve et al., 2017; Täljedal, 2013). We appear to sometimes invent constructs to launch an academic career for the sole purpose of making a name for ourselves by creating what Ziegler and Raul (2010) has referred to as a "toothbrush concept". That is, it only serves the scholar who invented it. As with a toothbrush it is not likely to be used by anyone else.

Compounding the problem is the general reluctance in education, and often also in psychology, to acknowledge the biological foundations for all human behavior; and how these relate to social evolution, genetics, epigenetics and, in particular, how any behavior deviating from the average tends to have a social impact by taking on largely unaware evolutionary functions. This, it seems to me, is the most crucial obstacle to reaching a scholarly consensus on a sustainable understanding of giftedness and talent and its education. It is our unaware drive to construe everything in positive terms (e.g., Cummins & Nistico, 2002; Lerner, 1980), thereby also projecting wishes and hero qualities onto some individuals, which makes us falter scientifically and veer off into illusions, ideology and political opportunism. To have hopes and wishes is of course a considerable human advantage, but such sentiments are not necessarily based on objective facts. Illusion is an asset to the human species. We need it to survive. But, our need for illusion is simultaneously destructive to much social science scholarship. Every scholar is sworn to stay neutral in studying, analyzing and presenting research findings. If we begin to advocate certain scholarship just to appeal to society; to "sell" knowledge to politicians, leaders, and markets alike to be noticed and obtain influence, however, this is good evidence that we have already abandoned a neutral stance. If we have, we can no longer take for granted that we add substance to our designated field of knowledge.

Needless to say, any label used runs the risk of becoming representative of a certain cultural value, and with it also encounter linguistic and semantic problems difficult to translate from one culture

to another. We cannot prevent this. I propose, however, that we can make a reasonably wise and quite pragmatic choice. We need to use labels always relating to normal distribution.

All behavior lends itself to being described as either average or extreme, not only by standardized measures but also by repeated observation in relation to social context. Both terms also lend themselves to degrees of being either extreme or average. In addition, extreme behavior can also relate to low ability as well as to high ability. My point is that this is likely to be the most parsimonious way of understanding behavioral variation between individuals in terms of level and frequency. Importantly, evolutionary dynamics does not make a difference between the two possible extremes. It always strives toward the equilibrium of being average regardless. Whether a behavior qualifies as extreme on either side of the normal distribution makes no difference. Then, why should we as scholars construe such evolutionary insignificance as something culturally and practically significant? I therefore suggest that we study *the dynamics and practical applications of extreme behavior* and abandon labels such as gifted, talented, having potential, being eminent or excellent to mention only a few of the labels currently in use.

To speak of extremes has the advantage of acknowledging the biological foundations on which all human behavior invariably rests and, importantly, it also reduces cultural bias. Every language presumably has an efficient way of expressing this mathematical phenomenon and also to describe the dynamics of normal distribution without becoming entangled in semantics and the values governing how we assign meaning to words and social interactions.

Extreme individuals at *both* ends of the normal distribution deserve our attention for their own sake without being opportunely promoted as "human capital" or "saviors of a troubled world." What they eventually become must be their choice. This choice will always be limited by the social dynamics of society based and governed by similarity and the implicit, but nevertheless sovereign, rule of the average. Extreme behavior will always need acceptance first followed by permission by its social context to act (cf. Freeman, 2005).

References

Baily, F. G. (1988). *Humbuggery and manipulation. The art of leadership*. Ithaca, NY: Cornell University Press.

Bennich-Björkman, L. (2013). Down the slippery slope: the perils of the academic research industry. In S. Rider, Y. Hasselberg, & A, Waluszewski (Eds.), *Transformations n research, higher education and the academic market* (pp. 125-136). Dordrecht, NL: Springer.

Bleske-Rechek, A., Lubinski, D., & Benbow, C. P. (2004). Meeting the educational needs of special populations. Advanced placement's role in developing exceptional human capital. *Psychological Science*, *15*(4), 217-224.

Borland, J. H. (2021). The trouble with conceptions of giftedness. In R. J. Sternberg & D. Ambrose (Eds.), *Conceptions of giftedness and talent* (pp. 37-49). Cham, CH: Palgrave MacMillan

Clinkenbeard, P. R. (2007). Economic arguments for gifted education. *Gifted Children, 2*(1), 5-9.

Conrad, J. J. (2011). *Gifted education and the development of human capital,* https://giftedparentingsupport.blogspot.com/2011/ (Retrieved on 10 April 2021).

Cummins, R. A., & Nistico, H. (2002). Maintaining life satisfaction: the role of positive cognitive bias. *Journal of Happiness Studies*, *3*, 37-69.

Dries, N. (2013). The psychology of talent management: A review and research agenda. *Human Resource Management Review*, *23*, 272-285.

Freeman, J. (2005). Permission to be gifted: how conceptions of giftedness can change lives. In R. J. Sternberg & J. E. Davidson (Eds.), *Conceptions of giftedness* (2nd Ed., pp. 80-97), Cambridge, UK: Cambridge University Press.

Judge, T. A., Colbert, A. E., & Ilies, R. (2004). Intelligence and leadership. A quantitative review and test of theoretical propositions. *Journal of Applied Psychology, 89*(3), 542-552.

Hollingworth, L. (1942). *Children above 180 IQ: origin and development*. New York: World Book Company.

Ivancevic, J. M., & Duening, T. M. (2001). *Managing Einsteins: Leading high-tech workers in the digital age*. New York: McGraw-Hill.

Kessler, E. H., & Wong-Mingji, D. J. (2010). *Cultural mythology and global leadership. Cheltenham, UK: Edward Elgar.*

Lachner, M. (2012). *Talent-Management spezial: Hochbegabter, Forscher, Künstler ... erfolgreich führen* [Special talent-management: To successfully manage the gifted, scientists, artists …]. Wiesbaden, Germany: Gabler Verlag.
Lerner, M. J. (1980). *The belief in a just world: a fundamental delusion.* New York: Plenum.
Lewis, E. R., & Heckman, J. R. (2006). Talent management: a critical review. *Human Resource Management Review*, *16*(2), 139-154.
Martin, B. (2019). *Dissident histories in the Soviet Union. From de-stalinization to Perestroika*. London: Bloomsbury Academic.
Mead, G. H. (2015). *Mind, self, and society.* Chicago, IL: University of Chicago Press.
Moore, S., Neylon, C., Eve, M. P., O'Donnell, D. P., & Pattinson, D. (2017). 'Excellence R Us': university research and the fetishisation of excellence. *Palgrave Communications*, *3*:16105, DOI:10.1057/palcomms.2016.105
Nauta, N., & Ronner, S. (2013). *Gifted Workers hitting the target*. Maastricht, NL: Shaker Media.
Oelsnitz, D., von der Stein, V., & Hahmann, M. (2007). *Der Talente-krieg: Personalstrategi und Bildung im globalen Kamp um Hochqualifieziete* [The talent war: staff strategy and training in the global battle for the highly qualified]. Bern, CH: Haupt.
Persson, R. S. (2014). The needs of the highly able and the needs of society. A multidisciplinary analysis of talent differentiation and its significance to gifted education and social inequality. *Roeper Review*, *36*, 43-59.
Persson. R. S. (2015). High ability and dreams of innovation and prosperity in the emerging global knowledge economy; A critical analysis of changing orientations in research and practice. *International Journal of Talent Development and Creativity*, *2*(2), 15-34.
Persson, R. S. (2018). *Evolved human giftedness: Reclaiming science from ideology, dogmatism, and self-serving bias*. Ulm, DE: International Centre for Innovation in Education.
Persson, R. S. (2021). Giftedness, talent, and human evolution: a framework for understanding extreme behavior. In R. J. Sternberg & D. Ambrose (Eds.), *Conceptions of giftedness and talent* (pp. 281-294). Cham, CH: Palgrave MacMillan.
Robertson, A., & Abbey, G. (2003). *Managing talented people.* London: Pearson Education Limited.
Rosch, E. (1978). Principles of categorization, in E. Rosch & B. B. Lloyd (Eds.), Cognition and categorization (pp. 27-48). Hillsdale, NJ: Lawrence Erlbaum.
Sever, Z. (2011). Nurturing gifted and talented pupils as leverage towards a knowledge-based economy. In Q. Zhou (Ed.), *Applied social science—ICASS 2011. Volume One* (pp. 454-458). Newark, DE: IERI Press.
Sternberg, R. J. (2020). Transformational giftedness: rethinking our paradigm for gifted education. *Roeper Review, 42*(2), 230-240.
Täljedal, I. B. (2013). Publish and perish: A note on a collapsing academic authorship. In S. Rider, Y. Hasselberg, & A, Waluszewski (Eds.), *Transformations in research, higher education and the academic market* (pp. 145-156). Dordrecht, NL: Springer.
Van Vugt, M., & Ahuja, A. (2010). *Selected. Why some people lead, why others follow, and why it matters*. London: Profile Books.
Wai, J. (2013). Investigating America's elite: cognitive ability, education, and sex differences. *Intelligence*, 41, 203-211.
Ziegler. A., & Raul, T. (2010). Myth and reality: A review of empirical studies on giftedness. *High Ability Studies*, *11*(2), 113-136.

About the Author

Roland S. Persson, *Ph.D.*, is professor of educational psychology at Jönköping University, Sweden, trained at Karlstad (SE), McGill (CA) and Huddersfield (UK) universities, and is currently assigned to the Jönköping University Human Resources Program. Once a Western classical piano performer interests developed into music behavior, talent and giftedness, as well as universal and cross-cultural behavior. Consultant to Swedish and Hungarian governments on issues of talent and giftedness in education; current member of the International Centre for Innovation in Education (ICIE); and the World Council for Gifted and Talented Children (WCGTC) as well as an active member of several scholarly journal boards 9e.g., The International Journal for Talent Development and Creativity (IJTDC)), and one of few devoted to giftedness, rather than talent, as a constituent of talent management.

Address

Roland S Persson, *Ph.D.*,
Jönköping University, School of Education & Communication,
Box 1026, SE-55111 Jönköping, Sweden, Europe.
e-Mail: roland.persson@ju.se

Our Student Success Initiative: From Hypothesis to Contribution to Major Impact

Mike Babb
Winnipeg, Canada

Abstract

In 2010 we had the opportunity to join into a three-year pilot program with the province of Manitoba entitled the Student Success Initiative (SSI). As part of the provincial government's poverty reduction initiative the goal was to develop programming that would support "students to help them stay in school and graduate" (Manitoba Education, 2010). There were three parameters that we had to develop and these included: 1) a diagnostic tool to identify students who were at risk of dropping out or falling off the graduation path, 2) a targeted intervention for which we created the Student Success Centre (SSC), and 3) ways to strengthen school-wide engagement in which we were already reasonably strong. Our SSI pilot program became a Provincial Model Program in its fourth year, the Student Success Centre (SSC) and ran until 2023. The SSC offered academic support and/or social-emotional support for students in regular classes in grades 9-12. The SSI/SSC journey was one of the most impactful initiatives I had been involved with over my 39-year educational career thanks to remarkable teamwork that emphasized the building of trusting, caring, respectful relationships with students. Early on in our journey, an SSI student's written note showed us we were on the right path.

"When I first came to this school, I didn't know anything and if it wasn't for SSI, I would have left school like my cousin did, but you helped me and now I am the first one to graduate in my whole family."

(SSI Graduate, 2012).

Keywords: Relationships; caring; open mindedness; teamwork; academic and/or social emotional support.

The Beginning of the Journey

When offered the chance to join with a new provincial project we accepted the opportunity. I attended a meeting in the Spring of 2010 with the provincial Deputy Minister of Education, provincial consultants, superintendents from three school divisions and principals from five other schools. We had been asked if we were interested because many families in our community faced financial challenges – these challenges included that 38% of the families lived below the Low Income Cut Off and 43 % were single parent (Divisional Demographic Report, 2009). Our school became the urban school for this project with two other school groups representing rural areas.

Located in Winnipeg, Elmwood High School is a Grade 7-12 school averaging 585 senior high school students and 240 middle years students. The staff averaged 53 teachers, 35 support staff and 3 administrators. Thirty-five percent of our students self-identified as Indigenous, and ten percent were newcomers many with English as an Additional Language (EAL) needs. We received funds for breakfast programming, which was implemented at the school. Elmwood hosted a wide range of programming with nine Special Education programs, a Middle Years Low Enrolment Program, a Grade 7 and 8 project based learning program, an Off Campus Program for students who had complex difficulties at the main campus, a Young-Parent Infant Program and an EAL Program. There was much need identified in our community, and attendance and academic achievement were ongoing concerns.

Our Mission Statement was to meet the educational, social and emotional needs of all students while striving to develop their potential by providing quality, wide-ranging programming within a safe and inclusive environment. Our school priorities were to improve literacy in all subject areas, embed Indigenous perspectives, develop and implement learning and behavioural supports to increase the levels

of success achieved by all students, impart knowledge, skills and attitudes that students need to make good decisions around their own health and the heath of their community, and strengthen links to post-secondary education and work. The SSC helped to enhance our effectiveness in all of these priorities.

Following the initial SSI meeting, we hosted open staff pre-planning sessions to determine how to best utilize the new funds that came with this new opportunity. The year before the SSC was underway, we had been venturing into the Whole Child Philosophy (Association for Supervision and Curriculum Development, 2007) and we were working towards students being engaged, supported, challenged, healthy and safe; therefore, we decided to make this philosophy one of the foundational pillars of the SSI. We had also just started looking into ideas on engagement where social engagement leads to academic engagement which leads to intellectual engagement and felt that this deserved to be another foundational pillar (Dunleavy & Milton, 2008).

We chose to create a centre-based model that would support academic and/or social emotional needs of students in grades 9-12 in regular classes. We would be surprised at how many students we would reach. Students would do the regular classroom work, and the classroom teacher would maintain responsibility for their students and would continue to assess the student work. Our data made clear that at least one of the two teachers working in this program needed to be strong in mathematics as that area would require a great deal of support. Initially the plan was to have one teacher support mathematics and science and the other teacher support English Language Arts (ELA) and social studies. However, what became clear early on was that it would be best to have the lead teacher support students social-emotionally, strengthen connections with families and help them link with community connections. The second teacher would provide academic support across all subject areas.

When new teachers came into the SSC program, they brought in fresh ideas that enhanced what was already in place. All of the teachers in those two positions worked together effectively. The pilot program gave us the two teaching positions for three years after which this was reduced to one position. In staff planning with team leaders in the fourth year of the SSI, it was deemed that the SSC was an essential element of our school. There was full support to reallocate a position from our staff in order to maintain the two teaching positions. In the following year the school division allocated the second position, and this continued for the next eight years before we had to draw from our own staff again.

We felt that it was important for the students to be able to choose whether to access SSC support or not even when it was recommended. This voluntary component added greatly to the SSC success because when students were there, they were there for a purpose and contributed positively to the learning dynamic in the centre. Students could go to SSC in the work phase of a class or attend on their own time during a spare and/or lunch hours. A comparison of student performance in the first three years of the program based on data collected by the SSC team found that those who chose not to utilize SSC support when recommended achieved credits 0-15% of the time, while students who accepted the supports acquired credits from 55% to 76% of the time. From the fourth year on, excluding a COVID year, the pass rate for students accessing SSC support was consistently over 80%. Our pass rate data applied only to courses for which students received academic support. As a result, we did not include courses completed for students only accessing social-emotional support, even though that support played a role in their successful credit acquisition.

The SSC was our targeted intervention, and it opened in September 2010. Both the school staff and the students were not really sure exactly what the SSC was, so students did not jump at the opportunity for support right away. As a result, the first two months of the SSC program were quiet. The SSC was open over noon hours but there were no students who wanted to use the centre at that time for that entire first year. Both of these dynamics would change substantially over time as realization that the supports offered were helpful, that it was a safe space and that students were welcome in that space.

We were able to credit student past learning using a credit recovery plan. Student credit recovery plans were made with the SSC teacher and the classroom teacher if students had achieved a final mark in the 40% range, thereby just falling short. The student recovery plans could be completed in the following semester on an agreed upon timeline by the student and the teachers. Many students found the SSC environment to be a safe home base, and the SSC became packed every noon hour. Our planning

began with the effort to meet the three parameters laid out by the province and provincial parameters these included:

I. Diagnostic identification:

- Determine core strategies to identify students at risk of dropping out or falling off the graduation path.

II. Targeted Intervention:

- Identify core strategies to support students' academic and social emotional needs.

III. Strengthening School-wide Engagement

- We looked for ways to enhance our already solid efforts to draw kids in.

I. Diagnostic Identification

We worked in coordination with the Winnipeg School Division's Research and Evaluation Department to develop the Diagnostic Identification Tool (DIT) based on the Early Warning System Tool developed by Heppen et al, (2008). The Early Warning Tracking System was developed for the first 20 days of each semester and the first term of each semester. The criteria were as follows:

Attendance

- Flagging absences of 10% or more in the first 20 days of a semester and absences of 10% or more in the 1st Term of a Semester.

Performance – First Term markers

- Failed Math or ELA.
- Failed two or more courses.
- Had an average mark of 55% or less in a term.

As indicated in Figure 1, there is a concerning consistent pattern with the percentage of Off-Track students across grades 9-11 based on the diagnostic criteria above. All three grade cohorts were consistently above or close to being 50% off track. Both tracking reports were reviewed by our student support team. The team then connected with each student to see what support could be offered and provided. Initially the provincial goal was supposed to address the learning of Grade 9s. Work out of Chicago (Allensworth & Easton, 2007, p.1) presented that "inadequate credit accumulation in the freshman year, which usually results from course failures, is highly predictive of failing to graduate four years later." Helping students to be successful in their first year of high school is important, but our feeling was that many students needed support in later grades as well, so we asked for data in other grades and the school division added Grade 10 and 11 to the mix.

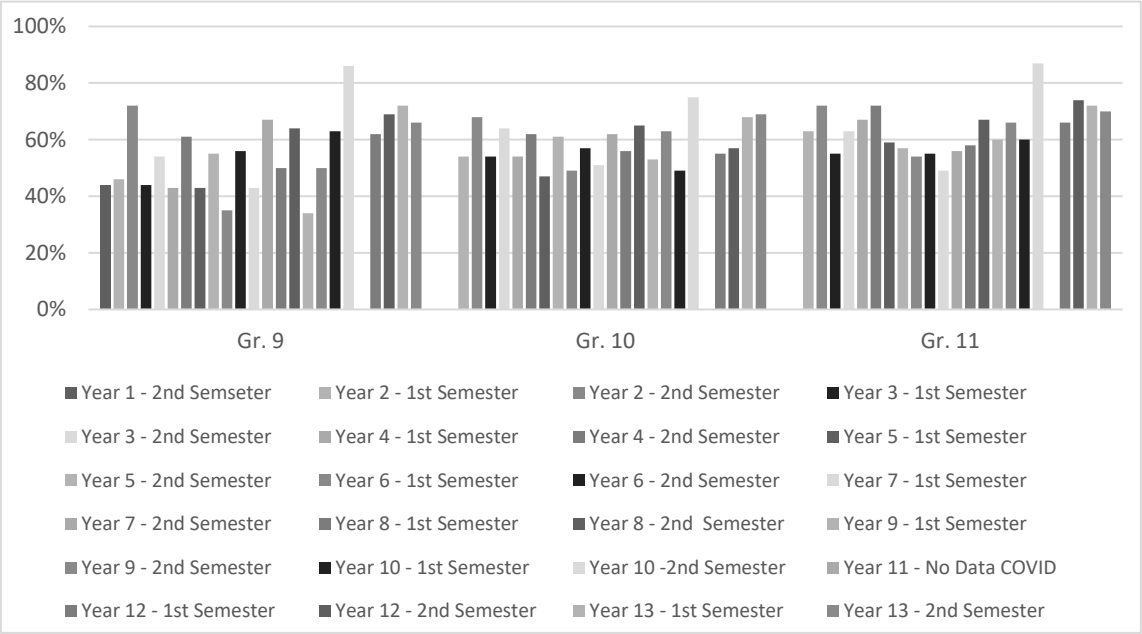


Figure 1: The Early Warning Data indicating Students who are deemed to be Off-Track from the First Terms of each Semester from 2010-2023.

The first year only tracked Grade 9 data as that was the initial target. However, it became clear that support was needed throughout many students' entire school attendance. This data was not tracked in SSC's 11th Year due to the three cohorts on different days that were created to meet the COVID pandemic demands. The first term data of both semesters was found to be of more value than the first 20-day data and that is why they were chosen to be represented here (SSC Team, 2010- 2023).

II. The Student Success Initiative's Targeted Intervention – The Student Success Centre (SSC)

The success of our SSC was based on building relationships and helping students believe in themselves. The SSC was a welcoming place that never closed its door to a student. The staffing for this centre was enhanced by pulling 1.5 educational assistants from our staff and in year three by accessing the University of Winnipeg's Education Faculties Mentoring Program that brought in education students to work with our students. This practice was beneficial to both parties as the future educators received the opportunity to learn our students' stories and our students were able to relate to university students closer to their age. Person-power was further strengthened by many teachers using their preparation periods to voluntarily support students in the SSC.

In her Ted Talk on Education the late Rita Pierson (2013) stressed "*the importance of human relationships*" (Pierson, 2013). The success of our SSC program was based on the building of trusting, caring, respectful relationships. Three presenters at different in-services brought forward terms for caring teachers that resonated with me. Gary Phillips, whose work with at-risk students stands the test of time, spoke of '*healing teachers*' who are '*gatherers of gifts*' (Phillips, 2001). Chick Moorman (2012) referred to teachers who nourish a child's spirit as '*Spirit Whisperers*' and Crystal Kuykendall (2005) felt that principals and teachers needed to be '*Merchants of Hope*' that inspire marginalized youth through building authentic, high-trust relationships. The impact of a teacher can be so powerful, and all of the SSC staff were deserving of these descriptors.

In a virtual presentation Jessica and John Hannigan (2021) contended that, '*SEL* (Social Emotional Learning*) is not a thing to do. It is the way of being – all day, every day*.' The SSC staff's 'way of being' drew kids in and made it a very welcoming space. Our initial goal of supporting students academically and social emotionally was substantiated by Crew and Noguera (2022) "*Students in poverty need both academic and social supports."* (Opening page).

Our staff knew it was important to never give up on students and realized that "*Kids who give us a good run for our money, may need us the most*." (Babb, 2024 p.1) which coincides with Barbara Coloroso's quote that:

"If kids come to us from strong, healthy functioning families, it makes our job easier. If they do not come to us from strong, healthy, functioning families, it makes our job more important". (Coloroso, n.d.)

The positive impacts that SSC could have on students is reflected in a comment from a thank you note written by a graduate:

"You are the reason why I returned to school. You never gave up on me." (SSC Graduate, 2016)

III. Strengthening School-wide Engagement

Students benefitted from the return of co-curricular activities over the year after the COVID shutdown. During the 2020-2021 school year, it was very sad to have the school with no activities outside of the school schedule. Prior to COVID, our school was active from early in the morning, over the lunch hour with intramurals, the arts and student groups, and late into the evening with co-curricular activities. Many of our students who loved the arts, athletics, and/or student clubs struggled without these positive activities. The important co-curricular activities returned in 2021-2022, but in 2022-2023 these activities were still in a rebuilding phase.

For many of our students, what we offered as a school was what they had access to. The accumulated amount of staff volunteer time for coaching at our school was in the thousands of hours. Similarly, the performing arts required a substantial amount of staff volunteer leadership and when you

add active Student Councils, Human Rights Groups, Sustainable Development Groups, Charitable Groups, an Indigenous Leaders Group, a Newcomers Leaders Group, a Gay Straight Alliance, a Drum Line, a Pulse Cooking program, a Fishing program, Envirothon teams, community sewing projects, a Health and Wellness Expo, an entrepreneurship program and clubs and games groups, many students became engaged with the school, which helped many to get onto a more successful path and/or stay on the path to graduation.

Anything that is outstanding at a school is largely because of a teacher's time, energy, and effort. Staff are to be commended for their commitment to lead extensive co-curricular activities in sports, performing arts, school clubs and community opportunities. Such opportunities are essential in financially challenged communities. Teacher volunteer time contributes greatly to the positive lifeblood of a school and helps connect kids to the school.

From the Conceptual to a Remarkable Impact

As mentioned earlier our academic support teacher always had strong mathematics abilities. Both graphs below in Figures 2 and 3 support this point. Over time we greatly increased our ability to support learning across all subject areas which is indicated in the Credits Earned graph in comparison to the earlier Credits Supported graph below, and also clearly in the fifth row of the SSC Historical Data Summary Charts (see Tables 1 and 2). Figure 2 indicates a continued success in achieving math credits and highlights the improvement in effectively supporting other subject areas. Figure 3 indicates an earlier data piece where we tracked only courses supported and demonstrates the lesser ability to support courses other than math. The improvement in supporting other courses indicates the ongoing open mindedness of our SSC staff as to how best to support students and enhance the ways in meeting their needs.

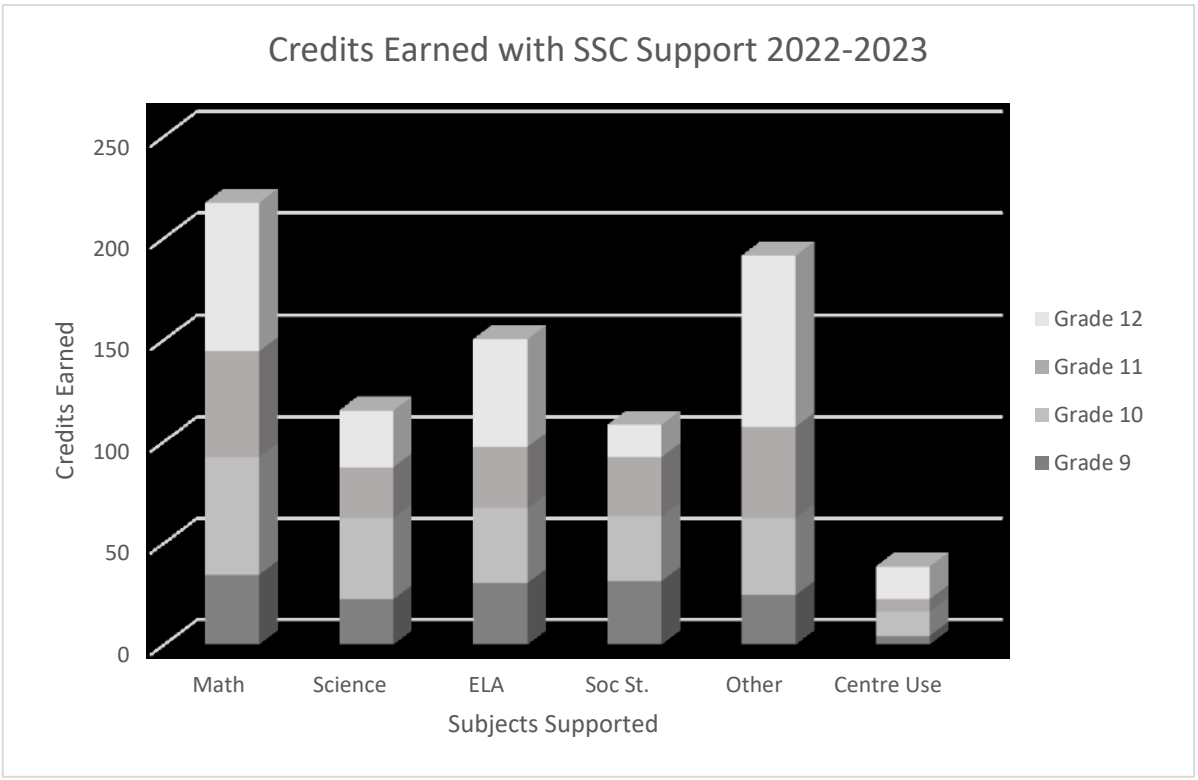


Figure 2: *Credits Earned with SSC Support 2022-2023* (SSC Team 2023)

The SSC staff and school staff worked in coherence with Andy Hargreaves' thoughts that *"well being*" and "*achievemen*t" are intertwined where there can be "*No achievement without well-being and no well-being without achievement*." (Hargreaves, 2020).

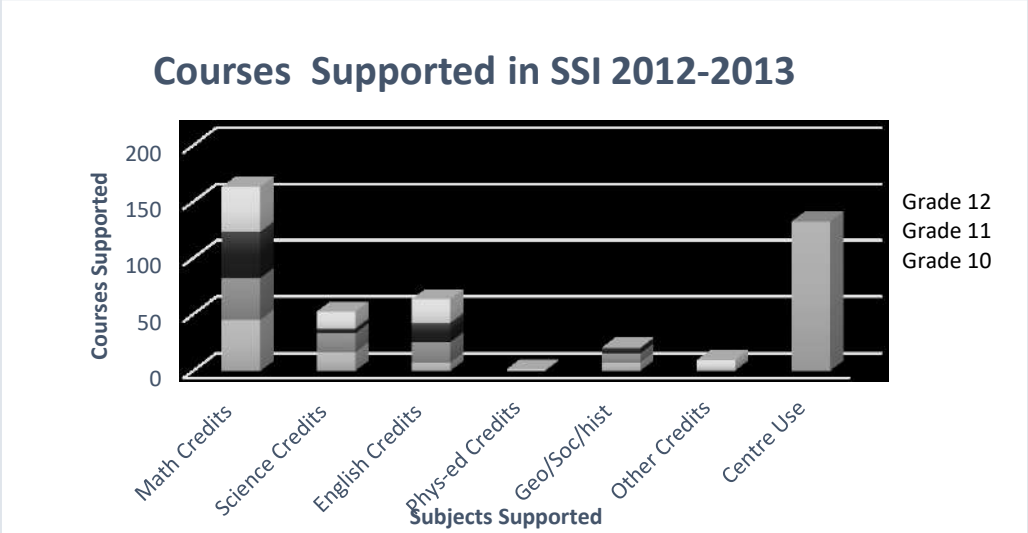


Figure 3: Courses Supported in SSI 2012-2013 (SSC Team, 2013).

The SSC Historical Summary Data Charts (see Table 1 and Table 2) highlight the tremendous impact that the Student Success Centre had on our school. Tables 1 & 2 counters the concerning data evident in the Off-Track Student Data presented earlier. We developed these data pieces over the first three years of the pilot with the assistance of Researcher in Residence, Dr. Elouessa Polyzoi from the University of Winnipeg. Dr. Polyzoi also helped guide our report writing and analysis of the data. This support contributed greatly to the success of the program as did the whole structure of the SSI pilot. We met quarterly with the rural SSI schools over the three years of the pilot to share successes and ideas. Other contributors included Dr. Karen Rempel from the University of Brandon who was the other schools' Researcher in Residence and Kathy Collis and Marc Kuly from the Winnipeg School Division's Machray Learning Centre who led many of the quarterly sessions. We also visited Beaver Brae School in Ontario, five schools in and around Minneapolis and the MET school in the Seven Oaks School Division. Thanks to Dr. Sheila Giesbrecht for being the provincial lead on this pilot project and for designing such an effective infrastructure to this initiative.

The information and data utilized and analyzed for this entire section are taken from the 13 annual Year End SSI/SSC reports that were written for the province in the first two weeks of July to meet the mid-July deadlines. The data collection and format were enhanced and expanded over time.

The trends in the data in the following two SSC Historical Data tables Years 1-7 and Years 8-13 were encouraging in the buildup prior to the pandemic that hit in March 2020 and then in the recovery following COVID. The number of Students Supported by SSC increased from 90 to a peak of 426 (year seven), maintained around 400 until COVID and recovered to 371 in year thirteen. Credits Earned with SSC academic support followed the same trend starting at 60, peaking at 814 and recovering after COVID to 781. One of the main factors was that our SSC learned to better support a wider range of courses. Excluding the COVID year of 2020-2021, the Pass Rate in courses supported by SSC reached 80% in year four and then stayed above that level. On March 20, 2020, all students across the province were sent home because of the COVID pandemic and were required to do virtual learning for all subjects for the rest of the year which staff adapted to in an exceptionally tight time frame. All co-curricular activities were cancelled. Students returned to school in September 2020, but 2 metre spacing was required so only one teacher, and 12 students could be in a classroom at any given time. This required us to set up three cohorts that came to school four half days per six-day cycle while also running virtual lessons. Students could not stay for the lunch hour or come early for afternoon classes. No co-curricular activities were allowed. Bands could not play wind instruments, so our band students learned percussion with 2 metre spacing on Home Depot pails that year. Special Graduation accommodations were required for 2020 and 2021.

Table 1: Student Success Centre Historical Data Years 1-7

SSI/SSC Historical Summary Data Chart	Year 1 2010-11	Year 2 2011-12	Year 3 2012-13	Year 4 2013-14	Year 5 2014-15	Year 6 2015-16	Year 7 2016-17
Students Supported Academically and/or Social Emotionally	90	145	296	341	373	366	426
# of Credits Earned with Academic Support	60	101	235	273	331	339	814
Community Connections	Developing	Increased	Increased	Increased	Maintained	Increased	Decreased
# of Graduates with SSC Support	3 of 82	20 of 86	50 of 81	69 of 102	48 of 83	70 of 92	58 of 83
Credits earned by Subject Area	(46) Math 19 (20) Sci. 13 (23) ELA 14 (13)Soc.St.9 (6) Other 5	(81) Math (17) Sci. (21) ELA (7)Soc. St. (13) Other	(163) Math 118 (52) Sci. (63) ELA (20) Soc. St. (10) Other	191 Math 35 Sci. 38 ELA 9 Soc. St. 0 Other	207 Math 30 Sci. 49 ELA 36 Soc. St. 9 Other	210 Math 39 Sci. 55 ELA 25 Soc. St. 3 Other	276 Math 134 Sci. 192 ELA 116 Soc .St. 90 Other
Peers Helping Peers	Low	Increased	Increased	Increased	Maintained	Maintained	Maintained
Use at Noon Hour	0	Frequent	Increased	High Level	High Level	High Level	High Level
Pass Rate	55.00%	73.00%	76.00%	80.00%	82%	85%	82%
Social Emotional Support							85

The bracketed numbers indicate courses supported. The numbers without brackets indicate courses completed successfully and credits earned. Our data tracking and analysis improved over time.

Table 2: Student Success Centre Historical Data Years 8-13

SSI/SSC Historical Summary Data Chart	Year 8 2017-18	Year 9 2018-19	Year 10 2019-20 COVID March 20	Year 11 2020-21 COVID Sept.-June	Year 12 2021-22 COVID Restrictions Decreased	Year13 2022-23
Students Supported Academically and/or Social Emotionally	408	396	343	264	368	371
# of Credits Earned with Academic Support	793	787	603	424	748	781
Community Connections	Increased	Increased	Increased/ None after March 20	Decreased due to COVID	Recovering	Increased but still Recovering
# of Graduates with SSC Support	64 of 88	76 of 94	67 of 91	34 of 73	72 of 103	74 of 105
Credits earned by Subject Area	254 Math 146 Sci. 170 ELA 97 Soc. St. 113 Other	234 Math 125 Sci. 165 ELA 112 Soc. St. 153 Other	214 Math 104 Sci. 124 ELA 74 Soc. St. 87 Other	129 Math 64 Sci. 80 ELA 56 Soc. St. 93 Other	231 Math 102 Sci. 128 ELA 77 Soc. St. 210 Other	217 Math 115 Sci. 168 ELA 108 Soc. St. 191 Other
Peers Helping Peers	Maintained	Maintained	Maintained/ None after March 20	0	Recovering	Increased
Use at Noon Hour	High Level	High Level	High Level/ None after March 20	Decreased due to COVID	Recovering	High Level
Pass Rate	81%	84%	86%	74%	86%	82%
Credit Recoveries	35	63	61	25	63	99
Social Emotional Support	130	92	122	67	118	139

The number of graduates each year that utilized SSC support reached 70% in year six and that level was maintained even through the pandemic. The Credit Recoveries through SSC that honoured past work increased since they were tracked. One student failed Grade 10 Geography three times. He would do okay in the first two months and then for a variety of reasons would miss substantial amounts of school the last three months. He was told we would honour his previous learning of the early work in the course, but he needed to complete the work he had not done. He bought in, gained confidence by completing the course and ended up graduating. He is now a tradesperson.

The SSC benefitted a wide array of students but also two specific populations for which the province started looking at disaggregated data. These two groups were self-identified Indigenous students and Children in Care. We started looking at Indigenous student data when we started working with Indspire in 2014-15 and Children In Care in 2016-17 when the disaggregated data was introduced.

SSC Support of Indigenous Students

With 38% of our student population having Indigenous heritage, we initiated an Indigenous Leadership group where the initial goal was to help students from northern and rural communities feel more comfortable in urban settings by building connections with urban Indigenous students. Feedback from a student from Wasagamack First Nation in 2013 informed us that we were achieving this initial goal:

"Being in SSI makes me feel like I'm back home. This room is where I go when I have hard times or when I miss home.*"* (Student from Wasagamack First Nation, 2013).

Dr. Laara Fitznor's work with the national program, Indspire, recognized our SSI/SSC as a program that served our whole Senior High school but that SSI's "success with the subset number of Aboriginal students is remarkable" and this is because Indigenous students "receive supports in innovative and proactive ways to ensure they succeed toward graduation" (Fitznor, 2015, p.31).

We started to track data for our self-declaring Indigenous students (2014-15) when we started working with Indspire and continued to do so when the province started to disaggregate the data (2016-17). We calculated the number of Off-Track students for Indigenous students using the Early Warning Data for the first terms of both semesters. The number of Indigenous students accessing SSC started at 127, hit a high of 190 and rebounded after COVID to 166. Credits acquired with SSC support started off at 107 and built up to 313 after COVID. It dropped to 100 during the COVID recovery year of 2020-21.

The average Pass Rate was 73% for Indigenous students receiving SSC support excluding the COVID Full Year. The students who were deemed to be Off Track and did not utilize SSC achieved an average Pass Rate of 52% excluding the COVID Full Year. Both were at their lowest number in the COVID Full Year (see Table 3).

Table 3: The SSC's Support of Indigenous Students.

The Student Success Centre's Support of Indigenous Students	**2014-15**	**2015-16**	**2016-17**	**2017-18**	**2018-19**	**2019-20 COVID 3 Months**	**2020-21 COVID Full Year**	**2021-22 COVID Recovery**	**2022-23**
# of Indigenous students accessing SSC	127	157	193	186	190	153	100	167	166
# of Credits Earned by Indigenous students with SSC support	107	126	314	226	322	224	111	337	313
Pass Rate of Indigenous students in courses supported by SSC	71%	65%	73%	70%	73.3%	75%	55%	80%	77%
Pass Rate of Indigenous students deemed to be Off-Track not accessing SSC support				52%	71%	71%	43%	43%	47%

The Indigenous Leaders Group also worked to engage students in their culture and access valuable programs available to Indigenous students. These programs included Career Opportunities in the Medical Fields, the Paul Martin – KPMG Mentoring Program, a noon hour Drum Group, and the Verna J. Kirkness Science and Engineering Program at the University of Manitoba.

In 2022 Manitoba Education developed and adopted the Mino-Pimatisiwin (The Good Life) as part of a new Framework for Learning. This approach is to give students hope, belonging, meaning, and purpose, have a voice, feel safe and supported, have the capacity to play an active role in shaping their future and be active citizens, live in relationships with others and the natural world, and honour and respect Indigenous ways of knowing, being and doing with a commitment to and understanding of Truth and Reconciliation. Our SSC program, despite beginning 12 years earlier, touched upon and honoured all of these areas. Our Lead SSC teacher has always been of Indigenous heritage and Indigenous ways of knowing, being and doing have always been a part of the program and these efforts were strengthened over time.

SSC Support of Children In Care

The average number of students in care was 22, which covered approximately 90% of Children In Care in regular classes. Many others were supported in special education programs and did not require SSC support.

The highest number of credits earned with SSC support in a single year was 55. The trend of SSC support assisting students to acquire credits as opposed to not utilizing those supports exhibited averages of 79.4% to 58.0% respectively. The pass rate for students not accessing the SSC supports dropped to 42% in the COVID Recovery Year 2021-22 while that for students utilizing SSC supports rose to 91% (see Table 4).

Table 4: The SSC's Support of Children in Care.

SSI's Student Success Centre	2016-17	2017-18	2018-19	2019-20 COVID March 20	2020-21 COVID Full Year	2021-22 COVID Recovery	2022-23
# of Children in Care accessing SSC	19	21	23	23	21	21	27
# of Credits Earned by Children in Care with SSC Support	36	42	40	31	29	39	55
Pass Rate of Children in Care in courses supported by SSC	88%	82%	71%	82%	60%	91%	81%
Pass Rate of Children in Care students deemed to be Off-Track not accessing SSC support		50%	65%	66%	67%	42%	**

A School-Wide Literacy Program that Evolved out of SSC

A school-wide, cross-grade literacy program grew out of our Student Success Centre in 2013-14 with the philosophical foundation of Equity Through Literacy. Providing subject area meeting time, accessing expertise from subject area consultants and reading clinicians, sending teams or individuals to professional development opportunities, hosting local professional development opportunities regularly, and utilizing book studies greatly enhanced our abilities to strengthen literacy skills across all grades and all subject areas. One resulting major goal was to increase the volume of reading and writing across all subject areas as suggested by Gallagher (2012), an easy to implement idea from one of the presentations school teams attended.

The Heart and Soul of the SSC that Guided the Journey

The SSC positively impacted our school before COVID, during COVID where the social-emotional piece became so important and after COVID restrictions were lifted. One phenomenal effort initiated by the SSC teachers during the COVID send home in March 2020 until September 2020 was to send all 850 students, Grade 7-12, a handwritten "We Miss You Card" (see Figure 8) in May 2020.

Staff could send kids a message as their homeroom teacher or coach, for example, by submitting their thoughts to the SSC team who would hand write the card. No kid was missed, as the SSC team wrote to the kids who did not have messages submitted. These cards were greatly appreciated by the students.

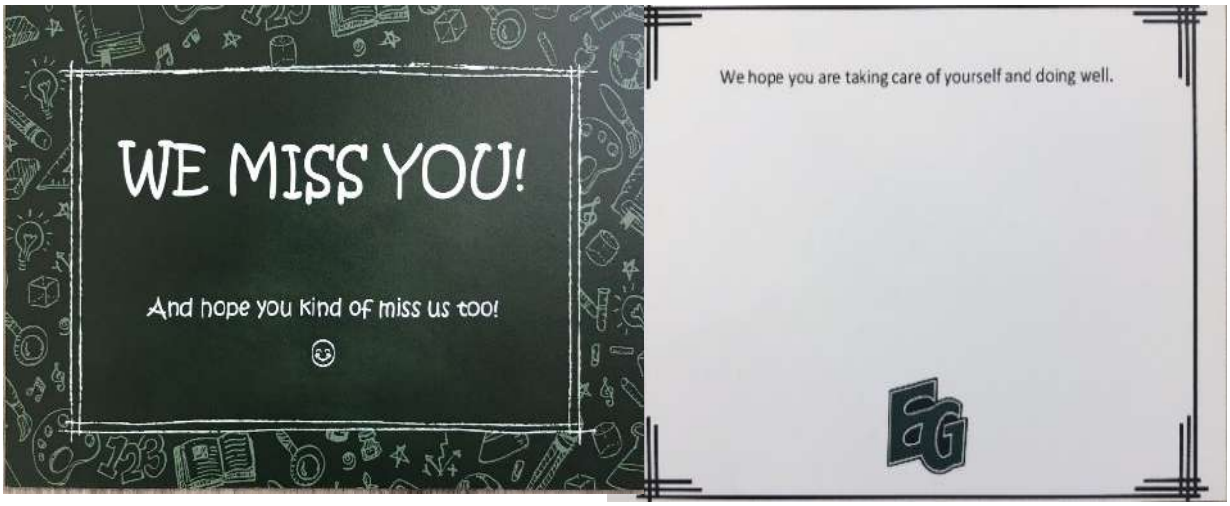


Figure 8: We Miss You Card

A student that SSC supported through long-haul COVID symptoms showed appreciation for their effort and understanding through a written note:
"SSC means a judgement free zone that helped me learn the grade 9 curriculum for math and science. The teachers in SSC were patient and helpful with helping me learn those subjects. I felt comfortable to say I didn't understand how to do something in SSC". "The SSC teachers were accommodating with my health situation and were flexible with appointments." (SSC Student, 2021).

They also made sure to stay in contact with students they knew to be struggling when everyone was out of the school for COVID for the last three and half months of the 2019-20 school year. They reached out to many students but intentionally to 119 students on a consistent basis who they knew were really struggling and carried out several sidewalk-porch visits. They set up a Google Classroom that was joined by 389 students. In 2021-2022, 485 of 550 Senior High students joined the SSC's Google Classroom. In the first semester of 2022-2023, 417 of 603 students had joined this virtual connection. The SSC staff's resiliency to do what was needed during the pandemic, their energy to be front and centre in the recovery and even more importantly their ability to reestablish healthy, trusting relationships after COVID enabled the SSC to meet all of the challenges prior to, during and after the pandemic challenges.

The SSC staff utilized the idea of growth mindset, Carol Dweck's idea that with effort all people can move their learning forward and enhance their abilities. (Dweck, 2007, p.6) The SSC staff helped students believe they can learn and then supported and encouraged their efforts to learn.

Peers helping peers was a common occurrence in the centre. The German National Team Basketball coach, Gordon Herbert (2023) stated that a third aspect of their team identity was to "*enjoy togetherness*" throughout their journey to win the World Championship. Enhancing the building of individual relationships, building group togetherness helped the SCC to achieve its remarkable levels of success.

In meeting the wide-ranging needs of our students, in 2013 the SSC accessed a Daily Fresh Fruit and Vegetable grant from the Child Nutrition Council of Manitoba. This program was led by the SSC staff. In 2020-2021 it took on a different look to meet the demands of providing food during a pandemic, and with the help of other staff met the challenges of bins with lids and pre-packaged snacks, and the cleaning and restocking of the bins for every classroom. This exemplified the adaptability and flexibility used by the SSC staff to meet challenges head on and find ways to overcome them.

Coming to the End of this 13 Year Journey

Dr. Jenni Donohoo stresses the importance of Collective Efficacy, where people know if what they are doing is working. In her presentation to WSD staff Dr. Donohoo (2018) highlighted the importance of a school staff knowing the impact of their efforts:
"Collective Teacher Efficacy is a belief that together teachers can positively impact student learning. It is a set of beliefs that teachers in a school share, it is not an action.
Strong efficacy beliefs lead to actions."

Because of the data pieces developed and collected over the thirteen years we felt we had a solid understanding of the impact that the SSC had on our school. The SSC staff and the teaching staff believed that what they did impacted student learning positively, and we found there to be a high degree of Collective Efficacy which has a very positive Effect Size on learning of 1.57 (Hattie, 2023).

Through an asset-based approach the SSC staff strengthened students' confidence in their ability to learn, which increased their belief in their own abilities. With this new understanding students were more willing to do the work. Building upon strengths was key to the SSC's positive impact as "Expectations a student has about his or her success" has an Effect Size of 1.44 (Hattie, 2023) where .4 is an indicator of one year's growth for one year of instruction. Learning that they were more capable than they may have thought, students were more willing to buy into the belief that "Heart + Mind + Effort = Success, a phrase that was part of our school culture. Believing in yourself and experiencing success can lead one to put forth a better effort. In her description of the 'Why' in what we do in a virtual presentation, Donohoo (2020) believes that "all students deserve to feel a sense of belonging, self efficacy and autonomy in an environment conducive to learning."; something that the SSC accomplished to a high degree.

Crystal Kuykendall (2004) contends that "When students feel that teachers really care about them and appreciate their presence, they are less likely to misbehave." and that it is important to 'Remember, all students, regardless of race or class, need affection, appreciation, approval, achievement, and accomplishment" (p. 137).

Our Lead teacher recommended a book, *kids these days* by Dr. Jodi Carrington, for our staff book study one year and it was well received. One of the teacher's key take aways was "every time you think of calling a kid 'attention seeking' this year, consider changing it to 'connection seeking' and see how your perspective changes" (Carrington, 2019, p. 63).

Dr. Polyzoi, our Researcher in Residence, was the lead author in a paper that highlighted the "*Ethos of Caring*". They presented that "Caring is a fundamental principle and prerequisite to all other student supports" and must be "a prevailing attitude" that "cannot operate successfully unless it is sustained". "When students know they are cared for, when schools provide numerous opportunities for developing skills, when the students feel a sense of belonging to the learning community created within their classrooms, they begin to hope" (Polyzoi, Atkinson, and Klassen, 2012, p. 11). Our SSC staff's consistency in caring built a huge amount of trust with the students, drew them in, hung onto them and gave them hope.

A statement from the previous Chief Superintendent, Jan Schubert (2005) at a school year opening administrative meeting provided an important point to keep in mind:
"Achievement of our most disadvantaged students is a true measure of a quality school."

Many of our students had very challenging lives and needed to know that someone believed in them. We showed that by how we talked to them, by our body language, by listening and hearing their story, by valuing the time spent with them and by recognizing and celebrating their 'Aha! Moments'. We cannot afford to just celebrate the successes of the 'best' and the 'brightest'.

Our Student Success Centre had a remarkable impact upon our school by building strong connections with a wide range of students which helped them find a better path and/or stay on track in the 30 credit graduation system. It created a success oriented dynamic with students and staff. It created a remarkable learning environment. Unexpectedly a strong Indigenous Leaders program was initiated that enhanced connections to their culture and opened doors to great programming all the while supporting their learning. Another unexpected result was the dynamic school-wide Literacy program.

SSC played a major role in navigating the COVID challenges. Judging new ideas on "Is it good for kids?" (Babb, 2025, p. 115) directed open minded, flexible thinking and actions that enabled us to meet challenges head on while still moving forward.

In their review of the SSC, Wiebe, McCluskey, Baker, Van Bockern, Brendtro and Brokenleg (2015) have summarized that "The two teachers have developed innovative ways for students deemed to be "at-risk' for academic failure to attain high school credits in a supportive environment featuring alternative approaches to learning." (p. 20).

Our Mathematics Department Head, Michelle McLarty, summarized her appreciation of the SSC and its support of mathematics and the students in a note in 2023:

The Student Success Centre supports our students significantly in a variety of ways. From an academic standpoint, SSC supports our students tremendously in earning their credits. Students commonly access SSC to get help with their course work. Finding support staff who can support all levels of math from Essentials to Pre-Calculus is not commonplace in many schools. We are very lucky to have an academic support teacher who can do so, as well as two amazing EA's who know the curriculum and can assist our students. The role of SSC, however, extends greatly beyond this academic support. Our SSC staff know that before our students can make and attain their academic goals, they must be cared for – in all aspects of life. SSC plays a pivotal role in supporting students' needs from this whole child perspective. The social-emotional support that the SSC teachers provide to our students is essential in helping them build their confidence, develop a readiness to learn, and engage in our school community. For many of our students SSC is a home base. A safe space where they know they will be supported; in whatever area they may need (Babb, Buller, Church, 2023, p. 7).

Every year we had many students be the first one to graduate in their extended family and SSC contributed greatly to that accomplishment. The SSC staff "acknowledged where kids are at but honoured what they can become." (Babb, 2024 p. 78) and rise to the most important factor presented by Reasoner (cited in Macbeth, 2010 p. 23):

"The single most important factor in a child's potential success in school — regardless of age, gender, socioeconomic status, quality of home life, ability and all the other factors — is the child's perception that 'my teacher likes me.' "

The lead SSC Teacher summarized the impact that SSC had on our school following the COVID challenges in our SCC Year End Report for 2022-2023:

"Looking back, it is evident that the school year in SSC was far from normal. However, it was a year marked by growth, adaptability and a renewed appreciation for the well-being of both our students and staff. The challenges faced have further strengthened the impact that SSC continues to provide, to ensure that every student has the opportunity to thrive academically, emotionally and personally. I am consistently humbled to have this opportunity to shape and change lives in the variety of ways SSC does." (Babb, Buller, Church, 2023, p. 27)

A heartfelt thank-you goes out to all involved in the SSC journey, Manitoba Education, the Winnipeg School Division and especially the SSC Lead Teachers Joanne Sabourin and Laura Buller, and Academic Support Teachers Grant Andruchuk, Rhianna Church and Darren Alford whose hearts and souls care so deeply about kids. Thanks also to Leslie Dickson for her role as our Lead Literacy person and to Dr. Gerald Farthing, the Deputy Minister of Education in the early years of SSC who believed in what we were accomplishing and appreciated the importance of building relationships.

Key Take-Aways from our Journey

The adoption of the Whole Child Philosophy (Association for Supervision and Curriculum Development, 2010) as a foundational pillar to the SSI in 2010 proved to be a wise step. We worked towards students being engaged, challenged, supported, healthy and safe. Everything we did as a school fit into these five tenets. Using Dunleavy and Milton's ideas that social engagement leads to academic engagement which leads to intellectual engagement was also an important element. Many of our staff are to be commended for their willingness to offer volunteer time to provide an exceptional range of co-curricular activities that got a wide range of students involved with the school.

Students having the choice to receive SSC support or not was an important factor because when they did choose to do so they had a reason for being there and contributed greatly to the positive learning culture in that space. Staff buy in was also an important factor.

Focusing on and honouring credit acquisition was an essential element as it enabled students to realize they were moving forward through the 30 credit system which provided reason and motivation to keep going.

The quote below highlights the SSC's early success and that success continued to grow:

> The SSI (Student Success Initiative) has supported a wide range of courses over the project's tenure. Students have been challenged to move onto a successful track and are supported in their efforts. Many previously disengaged students have become involved in the life of the school and are more engaged in their studies. For some students, the SSI has provided a safe home base with people who believe in and encourage them to make healthy choices. The SSI has built resilience, hope, and resolve among students who were at risk of dropping out. Hopefully, SSI schools can tip the balance for these vulnerable youth so that life-long success is now within their reach. (Polyzoi, Collis, Babb, 2013 p. 64)

The structure of the pilot program was another key factor in leading to the SSI/SSC's success. Sharing with other the other SSI schools on a quarterly basis ensured you were putting work into what you were going to present. Writing the final report for 13 years allowed us to see if what we were doing was working and allowed us to track the growth over time. Making the Researcher in Residence a mandatory part of the pilot project enabled us to access knowledge and expertise that enhanced our data creation, tracking and analysis. We appreciated Dr. Polyzoi's additional two years after the three year pilot ended. As a provincial Model Program, we appreciated the opportunities to share with other schools and school divisions and speak at several conferences including the provincial Learning to 18 Conference, the Canadian Association of Principals (CAP) Conference in Whistler, the International Literary Association's (ILA) conference in Boston and the Adolescent Literacy Summit in Winnipeg.

It was an honour to have worked with a team who built and developed a very successful Student Success Centre (SSC) from the ground up. It supported 70+ percent of our high school students academically and/or social-emotionally over thirteen years. And in that time average graduating class sizes increased by 69% when compared to a collated thirteen years prior to SSC being established. A key reason for the SSC's success was the ability of the SSC staff to build trusting, caring and respectful learning relationships that maintained or rekindled hope and helped students believe in themselves. The buy-in from the school staff and most importantly the buy-in from the students contributed to a phenomenal learning culture that helped students connect with the school, achieve credits and move forward along their path to graduation.

References

Allensworth, E. M., Easton, J. Q. (2007) What matters for staying in on-track and graduating in Chicago public high schools *Consortium on Chicago school research – University of Chicago*. p.1

Association for Supervision and Curriculum Development. (2010). Keeping the whole child healthy and safe: Reflections on best practices in learning, teaching, and leadership. *ASCD*.

Babb, M., Buller, L., Church, R. (2023). A note submitted by McClarty, M. for Elmwood High School's Student Success Journey -Mid-Term Report. February 2023. The SSC Team, 31.

Babb, M., Buller, L., Church, R. (2023). *Elmwood High School's Student Success Centre's 2022-2023 year-end report: A positive impact over 13 years working with and believing in young people.* Submitted to the Manitoba Government July 13, 2023, 26.

Babb, M. (2024). *Reflections on kindness, connections & lifelong learning: Empowering emerging educators.* Friesen Press, 1.

Babb, M. (2025). Is it good for kids? In B. J. Smith (Ed.). *Urgent care for educators: Situating responsibility as a way for educators to transform school cultures.* (pp.114-117). Brill. DOI: 10.1163/9789004736658

Carrington, J. (2019) *Kids these days: A game plan for (re) connecting with those we teach, lead and love*. Friesen Press.

Coloroso, B. (n.d.) *Keynote address.* [Speech Transcript]. Brabara Coloroso Official Presentations.

Crew, R., Noguera, P. (2022). What it takes to truly leave no child behind. *Educational Leadership – December 2022/January 2023,* 1st page.

Divisional Demographic Report. (2009). Winnipeg School Division Research Department.

Donohoo, J. (2018). Presentation to Division Teams.

Donohoo, J. (2020). Virtual presentation to school staff.

Dunleavy, J. & Milton, P. (2008). Student engagement for effective teaching and deep learning. *Education Canada, 48(5)*, 6.

Dweck, C. S. (2007) "Boosting achievement with messages that motivate," *Education Canada 47, no. 2* (Spring 2007), 6

Fitznor, L. (2015). Elmwood High School Student Success Initiative. Final report draft submission. *Inspire Nurturing Capacity*. July, 2015, 31.

Gallagher, K. (2012). Literacy Instruction: Blending in the Tried and True with the Brand New. Presentation hosted by the Clinical Support Services Reading Clinicians: February 12, 2018.

Hannigan, J., Hannigan, J. (2021). *SEL From a Distance.* A virtual presentation January 25, 2021.

Hargreaves A. (2020) Leading through change in education - *Joan Irvin Lecture. The University of Manitoba, Feb 3, 2020.* Live presentation.

Hattie, J. (2023*). Visible learning the sequel: A synthesis of over 2,100 meta-analyses relating to achievement*. Routledge.

Heppen, J., O'Cummings, M. and Bowles Therriault, S. (2008) Early warning system tool. *National High School Center* www.betterhighschools.org

Herbert, G. (2021). *Basketball Super Clinic*. Basketball Manitoba, October 20, 2023.

Kuykendall, C. (2004). *From rage to hope: Strategies for reclaiming Black and Hispanic students, 2nd Edition*. National Education Service.

Kuykendall, C. (2005). Canadian Association of Principals Conference, *Leadership Winds of Change* in Halifax NS. *Leadership Development to Bring Out the Best in Everybody.*

Manitoba Education and Learning. (2010). *Engaging Middle Years Students in Learning: Transforming Middle Years Education in Manitoba*. Manitoba Government. https://www.edu.gov.mb.ca/k12/docs/support/my_foundation/index.html

Manitoba Education and Learning. (2022). *Framework for Learning: Mino-Pimatisiwin*. The Manitoba Government. https://www.edu.gov.mb.ca/k12/framework/docs/goodlife_eng.pdf

Manitoba Government. (2010) *Student Success Project*. Manitoba Government.
http://news.gov.mb.ca/news/index.html?item=8782

Moorman, C. (2012, October,19) Council for Exceptional Children, Special Area Groups in Education presentation*. Motivating the Unmotivated – Practical Strategies for Teaching the Hard-to-Reach students*. Winnipeg, MB, CA.

Phillips, Gary (2001). Presentation to four schools in Winnipeg, Manitoba, Canada. .

Pierson, R. (2013). Every kid needs a champion. *Ted Talk, May 3, 2013*

Polyzoi, E., Atkinson, L. and Froese Klassen, C. (2011). "Orchids" and "Dandelions": The voices of our vulnerable youth. International Centre for Innovation in Education *Community Connections: Reaching out of the Ivory Tower*, Ulm Germany. Sokal, L.& McCluskey, K. (ed.),11

Polyzoi, E., Collis, K., Babb, M. (2013). Leadership and Capacity Building: Facilitating Change Through Tri-Level Partnerships. *International Journal for Talent Development and Creativity. Volume 1. Number 1. International Centre for Innovation in Education (ICIE) and Lost Prizes International (LPI)*, 64

Schubert, J. (2005). Divisional Presentation to start off the school year.

Smith, B. J. (2025). ED. *Urgent Care for Educators: Situating Respomsibility as a Way for Educators to Transform School Cultures*, 114-117. Is It Good for Kids? Babb, M. Brill. DOI: 10.1163/9789004736658

Student Success Centre Team. (2010-2023). SSC Data developed, tracked and collated over 13 years and summarized in annual Year End Reports.

Student Success Centre Graduate. (2016). Written note to the SSC staff.

Student Success Centre Student. (2021). Written note to the SSC staff.

Student Success Initiative Graduate. (2012). Written note to the SSI staff.

Student Success Initiative Student from Wasagamack First Nation. (2013). Written note to the SSI staff.

Wiebe, A.C., McCluskey, K.W., Baker, P. A., Van Bockern, S., Brendtro, L. K. and Brokenleg, M. (2015) *Connecting with at-risk children and youth through mentoring: Ten elements to consider.* Monograph #2 May 2015. University of Winnipeg. 20.

Winnipeg School Division's Research and Evaluation Department (2010). Development of the Diagnostic Identification Tool.

Winnipeg School Division's Research and Evaluation Department. (2009). Divisional Demographic Report, 2009.

About the Author

Mike Babb

After a 39 year educational career as a Phys. Ed./Biology Teacher, a Vice-Principal, a Principal and a longtime coach, Mike felt there were some ideas and experiences that could benefit newer teachers. The result was his book *Reflections on Kindness, Connections, and Lifelong Learning: Empowering Emerging Educators*, that draws upon a wealth of experience. At the heart of his holistic approach to education is his belief that kindness, compassion, and really listening to kids are key to finding joy in teaching and helping students become their best selves.

One of the most impactful projects he was ever involved in was his school's development of the Student Success Centre (SSC) which he led for 13 years. He worked closely with the SSC staff who provided effective academic and/or social-emotional support to Grade 9-12 students in a community where many families faced financial hardship. He is honoured to have been asked to contribute to this special volume of the IJTDC especially because the SSC journey fits so well into the category From Hypothesis to Contribution and to which 'to Major Impact' can be added.

He has received several honours that include the King Charles III Coronation Medal, Outstanding School Leader by Manitoba's Excellence in Education Awards, the Honour 150 that commemorated Manitoba's 150th anniversary, the Manitoba Band Associations Outstanding Administrator, induction into the Manitoba High School's Athletic Association's Hall of Fame and the Manitoba Reading Association's Crocus Award for Literacy.

He lives with his wife of 45 years in Winnipeg and is proud of their two adult children, David and Kelly who are accomplished in their own fields. He enjoys time with his grandchildren as they grow and learn about this world. He is still coaching and will reach his 50th season of basketball and 125th team across ten sports this upcoming school year.

e-Mail: mikebabbauthor@gmail.com

Stories that Teach: Dialogue, Narrative, and the Construction of Educational Knowledge in *We Make the Road by Walking*

Jessica Sokolowski

Faculty of Education, University of Ottawa, Canada

Abstract

In this book 'awakening', the text *We Make the Road by Walking* will be explored not as a review of a foundational text in critical pedagogy, but as an example of how narrative inquiry, dialogue, storytelling, memory and lived experiences construct educational knowledge imperative for 21st century skillsets. As learning landscapes continue to grow more multimodal, proficiencies such as creative and critical thinking, communication, and collaboration should be the priority in teaching and education. As students become "brilliant designers" of their own educational journey, their personal narratives, lived experiences and community connections will form the basis for students constructing and building the knowledge necessary to grow as thinkers, learners, and problem solvers. This paper will discuss key ideas proposed by Freire and Horton as they relate to core competencies fundamental to education today.

Keywords: Critical pedagogy; narrative inquiry; lived experience; dialogic pedagogy; storytelling; educational knowledge; 21st century competencies; multimodality; student agency; experiential learning.

While preparing content for a graduate-level course on integrated literacy, I encountered a TEDx Talk delivered by Dr. Nick Kelly, an Associate Professor of Design Sciences at the Queensland University of Technology, on the topic of schools in the 21st century. In his talk, Dr. Kelly claims that the goal of schooling is to produce "brilliant designers". He describes 21st century skills as skills that include creative and critical thinking, communication, and collaboration, and notes that this should be the priority for education. As an educator of the Arts and Language Arts, this concept has stayed with me, further defining my understanding of the co-constitutive relationship between policy and practice. The concept of students as brilliant designers establishes a clear understanding that personal narrative, systems thinking, metacognition, and intrinsic motivation/interest are all attributes that contribute to the individual constructive process. Further, I see a specific emphasis on point of view and personal experience as necessary components of this process, highlighting communication as a means for teaching, learning and research. At the beginning of the talk, Dr. Kelly recounts finding a book by chance on a University bookshelf. That book was titled *We Make the Road by Walking*, a conversation on education and social change between Myles Horton and Paulo Freire. He describes the book as transformative, establishing connections between his own research and understanding of education and the key concepts and takeaways from the book. I swiftly ordered and proceeded to read this book within a few days, taking away my own messaging, connections and relationship with the book. In reading and reflecting on this text, I see that like art, stories provide different meanings to different people, their understanding of (and connections to) the story shaped by their own continuum of human experience. While *We Make the Road by Walking* has been established as a foundational text in critical pedagogy, I consider it an example of how narrative inquiry, dialogue, storytelling, memory and lived experiences construct educational knowledge imperative for 21st century skillsets.

Narratives as Methodology

In her work entitled *Factional Stories: Creating a methodological space for collaborative reflection and inquiry in music education research*, Kallio (2015) describes a methodological space

where researchers and participants can engage and inquire together, sharing their voices. In this study examining the inclusion or exclusion of popular music conflicting with traditional school values, Kallio engages five Finnish secondary school music teachers in two sets of interviews. Using the preliminary findings, she (re)stories the experiences, crafting short 'factional' stories using the information gathered. These factional stories were then shared with participants, representing an interpretation of the blending of the participant and researcher voices. A third round of interviewing was then conducted, and a second round of analyses, including the responses of the participants to the factional stories. The factional stories "allowed for reflection to take place through interacting with their own, now distanced, stories, and other teachers' experiences and narratives" (p. 13). This reflective thinking encouraged participants to disconnect and then reconnect with their own narrative, inspiring further personal inquiry, while facilitating a learning experience.

Kallio describes 'factional stories' as being "a bricolage of previously collected data, analyses and fictive elements, combining research participants' and researcher voices and presented as a short, first person story" (p. 3). By adding researcher-written vignettes, the researcher can draw from the collected information, and have space to insert personal reflections and narratives, as well as (re)interpret and cultivate meaning within the story. To further explain, factional stories are "not the *ends* of research, presenting or communicating data or analyses, but are employed as a heuristic means to gather rich, meaningful data and deepen inquiry" (p. 5).

There is much evidence of the use of fiction-styled interpretations within qualitative research studies. In one such example entitled *Living Stories: The Role of the Researcher in the Narration of Life,* Yardley (2006) inserts herself as a character in the fictional (re)telling of Lindy's story. This article opens with a beautiful story, *Homage to Lindy: A Narrative,* which shares a moving documentation of the final events leading the unfortunate demise of Lindy, and what transpires following her untimely death. In actuality, the author had not been there on that final day, witnessing those final hours, and she could only speculate, and piece together the full story based on her knowledge of Lindy, and how she may have wanted the story to be told. The events of Lindy's story were factual, and the fictional aspects helped to create a strong relationship between the author and the reader, allowing us to know and understand Lindy in a way that perhaps we could understand her actions. Yardley herself addressed the issue of 'truth' in a candid discussion speaking to proposed criticisms of fiction style narratives. Her explanation was that her "sense of "truth" in the context of Lindy's story requires generosity of spirit, a willingness to imagine another's life and to walk for a time in another's shoes" (p. 5). She acknowledges that this style of biography is "curiously similar to writing fictional narrative" (p. 5). When we share in biography, as in Lindy's story, it is at the discretion of the author how the story will be shared, and which creative elements will be fused within the piece. The partnership with the storyteller will ultimately define the content; however, the presentation of the 'facts' can be developed from many creative elements and include the voice of the researcher in many different ways.

In *Staking a small claim for fictional narratives in social and educational research*, Watson (2011) examines the use of fiction as data, as well as the potential benefits of adopting fiction within qualitative research designs. She suggests that "the potential openness of fictional narrative forms, which enables multiple interpretations fostering productive ambiguity, provides one justification for their place in social research" (p. 403). The article summarizes many key claims supporting fictional narratives, including the idea that "crossing disciplinary boundaries gives us access to another set of tools which enable exploration of some issues of social and educational interest in – slightly – different ways" (p. 406). The use of fictional elements may in fact help to enhance meaning within the research, and allow room for multiple interpretations of the same data set.

O, have you seen the Muffin Man,
The Muffin Man, the Muffin Man:
O, have you seen the Muffin Man,
That lives in Drury Lane?

(Mitchell & Blyton, 1968, p. 43)

A simple child's rhyme can embody many forms and meanings, depending on the context of how it is told, and can employ three principal dynamics: story, interpretation, and discourse (Leggo, 2008, p. 1). As a child, this rhyme, paired with a catchy tune and sideways illustrations, constructed my

first memories of thoughtful engagement with storytelling. I did not recognize at the time that my preschool self, flipping through the pages of old story rhyme books, was the preface for me to begin to make sense of my world through stories.

In his work on narratives, Leggo engages with Fulford (1999), and concurs that "there is no such thing as *just a story*" (Leggo, 2008, p. 7). To imply that a story is simply that, would be to renounce that this rhyme has stayed with me throughout childhood and into adulthood, shifting meaning and transacting in different ways. I can still picture the dated illustrations of the nursery book, passed down to me from the generation before, and the weathered pages, stiff and weighted, and the hard, plain cover. This book had seen many years and carried many stories, external to those contained within its delicate pages. Throughout the years the story has altered, adding character actions and additional lines to suit the grade or audience, until finally becoming an ongoing joke with my own two children. I frequently ask them, "do you know the muffin man?" as they look at me with confusion. I then continue with "you know; he lives down Drury lane". It has become an endearing conversation, with them sometimes replying to my first question, other times they look at me as if to say, *not again*. The inquiry of our narratives can be described as "an ongoing process of understanding how we invest space and chronology with significance" (Leggo, 2008, p. 15).

When we think about the interpretation of stories, we consider also the role that our own stories play in that interpretation. The meaning that we give to stories, and the way that we understand our own realities based on these stories, is significant in and through the discourse surrounding them. The significance of *The Muffin Man* for me, was the ability for the interpretation and engagement of the story to shift as my story changed, but also that it was a moment that sparked true curiosity in the arts and storytelling, and was a pivotal moment for me as a young human, recognizing my interest to be artistic. It was only a few short years after this memory that I became very engaged in the world of the arts, and I recognize that these moments of opportunity are vital to the growth of students. Creative writing, fiction, and the arts provide opportunities for communication that extend beyond the potential boundaries of spoken language alone. The nuances between words, subtle symbolisms and use of metaphors creates space for connection, inquiry, and allegory that can be understood through expression and embodiment. Narratives give voice to human experiences recognizing lived realities as authentic sources of knowledge. With reflection comes clarity; meaning is derived not by the experiences themselves, but rather reflecting on and understanding the circumstances, conditions, and contexts in which the narrative is told, understood or experienced. For example, as a teacher, I prepare and teach a lesson, experience the reception of the lesson by the students, reflect on that experience and decide how to improve based on that reflection. The feedback, engagement, and communication with (and from) students will help inform my understanding of their experience, and journalling, for example, will help me to explore my own experience, not just from teaching, but also the embodied communication and interpretations of the experience. Narrative inquiry employs a reciprocal cycle between my experience and the experiences of my students, continually asking questions and devising meaning from the interpretations (and re-interpretations) of the experience over time.

I ask, then, as educators, do we establish meaning from students, for students, with students or outside of students? What is the purpose of learning, if not to make meaning, and is it possible to define meaning making for another person? "There is considerable diversity *within* the qualitative tradition regarding assumptions about reality and knowing" (Reissman, 1993, p. 300), as narratives can be expressed in a multitude of mediums, carrying very individualized meaning for the storyteller, the researcher and the audience. Asking students, for example, to share stories of their academic experiences, or relationships with their educators, will result in a "multiplicity of perspectives – that is, multiple narratives" (Estrella & Forinash, 2007, p. 378) that cannot be confined to one mode of delivery. Personal expression must be free to grow where it needs to, in whatever medium it needs to, in order to uncover the meaning of the experience, and transfer that meaning into a shared experience with others. Narrative inquiry can be "storytelling as a process of co-construction, where the teller and listener create meaning collaboratively" (Reissman, 2005, p. 4). As Bolden (2017) states, "indeed narrative researchers have been capitalizing on the potential of stories for building knowledge of teaching and learning for some time" (p. 5). The experience of teaching and learning translates into a shared experience as each individual person not only shares their own story, but also attends to the stories of others. "We are born into stories, including the

stories of family, community, and nation" (Leggo, 2008, p. 2). What we each contribute to the storytelling of others is the lived experiences that allow us to create new and personal meaning from the same shared story, based on what we bring to the story and how we enter it. How we experience and make sense of the story, is not limited to words on a page. Just as an artist is not limited to paint, meaning making is not limited to words as expression.

Vygotsky and Human Thinking

In the paper entitled *From 'external speech' to 'inner speech' in Vygotsky: A critical appraisal and fresh perspectives,* Jones (2009) describes language as having a "pivotal role to play in the emergence of distinctively human forms of thinking and action in the child" (p. 167). A distinction between the different phases of learning are made, highlighting key processes in the stages of language learning. 'Social' speech (also described as internalization or external speech) can be explained as language used to communicate with (or direct the behaviour of) children, working towards 'inner speech' which would then become the internalized language/thought of the child. From here the child would develop their own personal consciousness and internal motivation to act independently. During the process of internalization, the child will utilize 'private speech' (or egocentric speech) to guide their own thinking with self-talk. Vygotsky suggests that we do things 'externally' in a social setting before building the capacity to do them 'internally'. "The capacity to think to ourselves, to inwardly reflect on what we are doing, to guide our own actions purposefully and self-consciously, depends on 'inner speech', a specially adapted 'inner' form of language use which, according to his premise, must derive from the 'external' practice of using language in dialogue with others" (Jones, 2009, p. 167).

Consider the earlier example of fictional narratives and 'factional' stories. Learning *how* to think, construct and conceptualize ideas, and create meaning are skills that emerge through creativity and imagination. The story of Lindy, for example, demonstrates how narratives can be paired with imagination to make sense of tragedy. By narrating the events preceding Lindy's death, the researcher can construct meaning and understanding, but also empathy. In education we teach empathy by asking students to step into the shoes of another person and imagine what their perspective might be in a given situation. Whether that be in social scenarios at school, through literature and character analysis, or comprehension activities designed to tease apart main events and ideas from a story, narratives teach perspective and appreciation for the lives of others. In this way students might better understand themselves through a comparison of the similarities, differences, and overlaps between the self and others. A dramatic re-telling (or reader's theatre), for example, invites embodiment of character, transforming the story from simply words on a page to a lived experience through re-enactment. Readers theatre asks students to imagine voice, intent, emotional tone and connection, adding layers to a story by utilizing imagination in learning. In order to develop 'private' or 'inner' speech, stories and narratives build 'social' speech by rehearsing scenarios in alternate, low stakes spaces through storying. Egan (1992) argues that imagination is essential in constructing knowledge and "the fictional story is one of the more hospitable environments for thinking of things as possibly being so" (p. 54). As Vygotsky (1978) describes, "learning is not purely an internal process, nor is it passive, but that culture and context are highly important in forming understanding and hence the beginnings of deep learning" (Bryceson, 2007, p. 191).

Schreiber & Valle (2013) draw from Vygotsky's theories of social constructivism in their study on small group and teamwork principles. By focusing on collaboration and the sociability of learning, their study aimed to review teaching strategies and teamwork methods that could be used in classrooms to encourage social learning. What they found was that "the most important outcome of this pedagogy is that in working with others to accomplish a socially worthy goal, students are empowered, they learn about citizenship and building a better world, and they develop confidence for future interactions" (Schreiber & Valle, 2013, p. 409). Bryceson (2007) also explores these concepts in her study on the online learning environment, embracing social constructivism and the concept of scaffolding to understand how the internet can best be utilized as a learning tool. Bryceson found that establishing a 'socialization mechanism' was key to student success and satisfaction. She concluded that "by itself, the facility does not perform the function – it is necessary to have a structured approach to use" (Bryceson, 2007, p. 202) and that "a good learning environment for students involves some form of socialization" (Bryceson, 2007, p. 203).

The concept of 'socialization' is highly relevant to narratives as social opportunities that enable students to explore their own reality through interactions with others. Interpretation of experience is what builds personal reality and an awareness that "there can be multiple perspectives and multiple interpretations" (Green, 1986, p. 782). This idea will be important to this conversation as lived realities, according to Freire, construct knowledge. Narrative inquiry, then, is also embodied as narratives are not simply stories but rather lived experiences that construct knowledge from meaning.

21st Century Skillsets

In their study entitled *Student negotiated learning, student agency and General Capabilities in the 21st Century: The DeLorean Project*, Grainger et. al., (2019) report their findings on student perceptions of their learning following a school program entitled "The DeLorean Project". In this project, students attending an Australian school in year 10 of their programming were invited to participate in project-based learning that encouraged them to utilize "21st Century Skills". One day per week, students participated in the project, designing, creating and implementing their own real-world projects that they designed with supervision and assistance from teachers that would take on a 'facilitator' role. The project was compulsory for all students and asked them to focus on solving a 'real-world' problem, challenging them to research, design, collaborate and communicate their projects to the outside world. As noted in the study, "there were a total of 26 projects…negotiated by students in 2016. At the end of approximately 180 curriculum hours of effort, students showcased and presented their work to the community at an evening showcase event, sharing their achievements, challenges and the learning they had experienced" (p. 434). As discussed previously by Dr. Nick Kelly in his talk, creativity, critical thinking, communication, and collaboration, key components of 21st century teaching and learning, are all demonstrated within the aforementioned project. Students became active agents of their own learning, utilizing their own knowledge (and each other's) to work towards a common goal. Relating this study to the dialogue between Freire and Horton, education can be seen as an agent of change when the learner is placed in a position of power over their own learning; in their conversation Freire asks Horton, "Do you see the power of interest, of motivation?" (Freire & Horton, 1990, p. 81). In addition, Freire makes the following comment, which will frame the discussion for this section:

> I am sure that one of the most tragic illnesses of our societies is the bureaucratization of the mind. If you go beyond the previously established patterns, considered as inevitable ones, you lose credibility. In fact, however, there is no creativity without *ruptura*, without a break from the old, without conflict in which you have to make a decision. I would say there is no human existence without *ruptura* (pp. 37-38).

To provide context for *We Make the Road by Walking,* the format in which it is written – a conversation, demonstrates the transformative practice of language and communication as proponents of building not just community, but also knowledge. Throughout the conversation, Horton revisits his experiences in education stemming from Highlander Folk School, which he founded in 1932. Committed to democracy and social change, Horton believed that communities could learn with and from one another as opposed to traditional schooling with a teacher as an 'expert'. He understood that educators must have "respect for people's abilities to learn and to act and to shape their own lives. You have to have confidence that people can do that…I think our job is to try to figure out ways to help people take over their own lives" (Freire & Horton, 1990, p. 177). Freire echoes these sentiments, stating, "the more people participate in the process of their own education, the more the people participate in the process of defining what kind of production to produce, and for what and why, the more people participate in the development of their selves. The more people become themselves, the better the democracy" (Freire & Horton, 1990, p. 145).

Outside of the current educational frameworks found within public schooling, Miller (2010) describes a "whole child education", focusing on human and community development, mirroring concepts explored by Freire and Horton. In this text, the researcher reviewed the holistic environment and teaching and learning strategies used by an alternative school in Toronto, Ontario that aims to "nurture, inspire and educate the Whole Child" (Miller, 2016, p. 284). The vision for this school involved the physical, spiritual and mindful development of students, by encouraging student involvement in the learning process, as well as establishing a well-rounded approach through six basic connections: thinking

connections, body-mind connections, soul connections, subject connections, community connections and earth connections (Miller, 2016). Some of the successes of this school were associated with a strong curriculum, delivery of holistic education and a strong community connection. The principal says that the schools' successes are the result of "how we meet the unique needs of the kids…I see successes in the kids. They are happy" (Miller, 2016, p. 297). Through interviews with students, parents and staff, Miller (2016) reinforces the importance of experience on learning, making the observation that "we live in the day of outcome-based education, but often these outcomes are limited to a few skills that sometimes are put within the framework of being 'marketable'. Education can be more than this" (Miller, 2016, p. 300).

Communication, Community and the Construction of Knowledge

> Marx said men make history and are made by history, and men make history starting from some reality in which they find themselves, from the reality that they were given. We are now dealing with the present in order to create the future. We are now creating the future by the formation of the present. We are creating the *future present* for the new generation. (Freire, 1990, p. 191)

Becoming a 'brilliant designer' entails more than just a standard schooling in math and literacy. It requires critical consciousness to understand a problem and the life experience, motivation, and collective action to be able to solve it. Freire and Horton describe knowledge in connection with agency; literacy, then, is a tool for greater knowledge leading to greater agency. Freire describes a process of codification as being central to teaching and learning. By beginning with the lived experiences and lives of the learner, 'codes' can be created to present the reality of the individual through various representations such as pictures, stories, or 'generative words'. He explains how, through the use of codification, students share "a perception of the former perception of reality…In doing that, maybe I change my perception" (Freire & Horton, 1990, p. 88). He provides an example of codification by describing an activity where you might provide individuals with a camera to record whatever they wish, the only stipulation being that they must be able to provide a justification for what they choose to record. In doing this, Freire suggests that they would "[read] reality through the camera…trying to understand the concrete reality in which you are" (Freire & Horton, 1990, pp. 88-89). When considering the outcome of this task, I ruminate on the idea that I presented earlier, that recordings from a camera or video, like stories or art, will hold different meanings for different people. My interpretation of a video and perception of my reality is shaped by my own human experience, and I cannot predict or propose what that meaning might be for another person. Understanding another person's perspective requires engaging with the meanings they communicate about their lived experiences; experience drives understanding, and communication emerges with purpose and motivation. Lived realities create conditions for communication, creative and critical thinking, and collaboration.

In *We Make the Road by Walking,* Horton proposes that "you don't get answers from a book. You look for a *process* through which you can learn, read, and learn" (Freire & Horton, 1990, p. 40). Both Horton and Freire reinforce the social nature of learning and that while 'book learning' is valuable to some people, it is not the best method of learning for everyone. But that doesn't mean that we cannot use or teach what we learn from books; the learning *process* should remain the primary focus in learning. Freire notes that children enter school with "linguistic competency. We don't teach language to anyone. Children become competent in a language. After that we can teach grammar. But *language* we experience, we create" (Freire & Horton, 1990, p. 61).

In the age of technology, the methods and resources that we use to teach, communicate, express knowledge, create, and ultimately experience being human continue to expand, becoming more multi-modal. An example would be reading. I love the tactile feel of a physical book; the smell, the crisp pages, making notes in the margin. Freire describes the same attachment, stating that "I had an almost physical connection with the text. It was this experience that began to teach me how reading is also an act of beauty because it has to do with the reader rewriting the text. It's an aesthetical event" (Freire & Horton, 1990, p. 27). I consider this sentiment, and the nuances between words, images and ideas that are constructed by the individual as they interact with any work, fiction or non-

fiction. Visual art, poetry, music and even interpretive dance includes various layers of understanding. The reader/audience will take away different messaging than what might be intended by the catalyst, and the artist/writer, too, may only be sharing a specific version of their own truth, or a snapshot of a specific moment, feeling or connection. In this way narratives, stories, art and even dialogue are deeply personal, and the communication of the ideas and the learning process are what should be valued, not necessarily the product or outcome. It is not the platform of communication but the communication itself that is important. In this way, we can *make the road by walking*.

With an increasing understanding of literacy and a broader definition of multiliteracies, we can 'read' and interact with information in various ways outside of print-based texts through audio, digital, and visual imagery, to name a few. The tension, then, lies not in the *what* but the *how*. As Horton describes, "I'm less interested in methodology or techniques than I am in a *process* that involves the total person, involves vision, involves total realities" (Freire & Horton, 1990, p.176). He adds that "curiosity is very important I think, and I think too much of education, starting with childhood education, is either designed to kill curiosity or it works out that way anyway" (Freire & Horton, 1990, p.191). It can be argued, then, that "21st century skills" not only form the foundation for the construction of knowledge, but narratives, stories, and dialogue are the building blocks for community, education, and social change. Bruner (1996) describes narratives as "a mode of thinking" and that "domains of knowledge are *made*, not *found*; they can be constructed simply or complexly, abstractly or concretely" (p. 119). I return to the *what* and *how*; as educators, the platform for delivery (technology or otherwise) is not what should be the focus. Rather, *how* we are interacting with students, building community and inviting creativity, experience, and student voice should be the priority. While I recognize that a focus on 21st century skills certainly responds to a technological shift in school climate, I believe that these 'skills' more importantly preserve culture, invite curiosity and establish human connection.

Concluding Thoughts

As I reflect on this text and the insightful conversation between Freire and Horton, I agree that it is, in fact, a transformative read for educators. This conversation has not been a book review but rather a book 'awakening'. Whether we are teaching literacy as a tool for social mobility and change or as a means for societal innovation, what is clear is that education is more than establishing proficiency in areas of math and language or even establishing competence across multiliteracies. Knowledge grows from experience, understanding, and developing critical consciousness about the self, the community and the greater circumstances surrounding the community. Stories, then, can be considered codifications of experiences, and through communication and dialogue, representation can be transformed into meaning. Indeed, we are producing 'brilliant designers' but not through traditional teaching methods. The focus on creative and critical thinking, communication and collaboration will guide students to construct knowledge through experience, with educators as facilitators supporting students to "learn how to *think*" (Freire & Horton, 1990, p.164). Knowledge is co-created within the classroom through student experience and narrative, curiosity and exploration, communication and community building. The skills for the 21st century are not necessarily new, but rather a shift in thinking, intended goals and outcomes and a focus on the student as an active agent in their own learning journey and life story. These goals mirror many of the objectives behind the Highlander Folk School initiated by Horton in 1932. Nearly a century ago this school aimed to promote social change through democratic education and teaching individuals how think, learn, problem solve and mobilize. In 2026 we are returning to many foundational ideas outlined in *We Make the Road by Walking.* While this book undoubtedly has had a profound and lasting impact on educational theory, I propose that the book will speak to each educator differently depending on the context in which it is read and the messaging the reader is looking for. For me, this text confirms my own teaching pedagogy and focus. And that is that student narratives are the foundation for knowledge, establishing relationships and building community. Without them, education becomes curriculum and methods. Meaningful learning starts with the individual.

> Being a progressive means to deepen the connection with the masses of people, mans to respect the beliefs of the people, means to consult the people, means to start from the letters and words with which the people are starting the process of education. All these things are

> like recognizing what levels of knowledge people have, in order to create a new knowledge and to help the people to know better what they already know. It's not idealism; it is consistency. It's a revolutionary process. (Freire, 1990, p. 226)

References

Bolden, B. (2017). Music as Method: Musically Enhanced Narrative Inquiry. *International Journal of Education and the Arts, 18(9),* 1-19.

Bruner, J. (1996). *The Culture of Education*. United States: Harvard University Press.

Bryceson, K. (2007). The online learning environment – A new model using social constructivism and the concept of 'Ba' as a theoretical framework. *Learning Environments Research, 10*(3), 189-206.

Egan, Kieran. (1992). *Imagination in Teaching and Learning: Ages 8 to 15*: Routledge.

Estrella & Forinash. (2007). Narrative Inquiry and Arts-Based Inquiry: Multi-narrative Perspectives. *Journal of Humanistic Psychology, 47(3),* 376-383.

Freire, P., & Horton, M. (1990). *We make the road by walking: Conversations on education and social change*. Temple University Press.

Grainger, Peter, et al. (2019). Student Negotiated Learning, Student Agency and General Capabilities in the 21st Century: The DeLorean Project. *Australian Educational Researcher*, *46*(3), 425–47.

Green, M. (1986). Landscapes and Meanings. *Language Arts*,63(8), 776–84. https://doi.org/10.58680/la198625740

Jones, P. (2009). From 'external speech' to 'inner speech' in Vygotsky: A critical appraisal and fresh perspectives. *Language & Communication* 29, 166-181.

Kallio, A. A., (2015). Factional Stories: Creating a Methodological Space for collaborative reflection and inquiry in music education research. *Research Studies in Music Education, 37*(1), 3-20.

Kelly, N. (2024). Schools for the 21st century: Teaching a generation of expert designers. [Video]. YouTube. https://www.youtube.com/watch?v=DkrIVEr9qHg

Leggo, C. (2008). Narrative inquiry: Attending to the art of discourse. *Language and Literacy, 10,* 1-21.

Miller, J.P. (2010). *Whole Child Education*. University of Toronto Press: Canada.

Riessman, C. K. (2005). Narrative analysis. In *Narrative, memory and everyday life* (pp. 1–7). Huddersfield, UK: University of Huddersfield. Retrieved from: http://eprints.hud.ac.uk/4920/

Reissman, C. K. (1993). Teaching Research: Beyond the Storybook Image of Positivist Science. *Journal of Teaching Social Work, 8(1-2),* 281-303.

Schreiber & Valle. (2013). Social Constructivist Teaching Strategies in the Small Group Classroom. *Small Group Research, 44*(4), 395-411.

Watson, C. (2011). Staking a small claim for fictional narratives in social and educational research. *Qualitative research, 11*(4), 395-408.

Yardley, A. (2006). Living Stories: The Role of the Researcher in The Narration of Life. *Forum: Qualitative Social Research, 9*(3).

About the Author

Jessica Sokolowski is a long-term appointment professor at the University of Ottawa in the Faculty of Education where she teaches courses for pre-service teachers and graduate students focused on the arts, language arts, and creativity. Her research and approach to teaching is focused largely on arts-based and experiential learning, creativity, and inclusive approaches to teaching and learning. She is a steering committee member with the Canadian Network for Imagination and Creativity (CNIC) and a regional coordinator with the Council of Ontario Drama and Dance Educators (CODE).

“She Noticed Me”: Retrospective Accounts of Relational Teacher Noticing among Canadian University Academics

Kenneth Lloyd Reimer
Faculty of Education, University of Winnipeg, Canada

Abstract

The act of a teacher “noticing” their students appears to be an essential component of effective teaching. Sherin et al. (2011) describe “noticing” from an educational perspective as the act which incorporates “the processes through which teachers manage the ‘blooming, buzzing confusion of sensory data’ with which they are faced, that is, the ongoing information with which they are presented during instruction” (pp.4-5). In 2025, a study invited Canadian university professors with doctorate degrees to be individually interviewed in order to better understand what made a particular classroom teacher their favourite teacher. The eight participants (5 males, 3 females, between the ages of 40-59) who consented to participate in the study were interviewed individually and asked to describe their favourite teachers. A review of these interviews uncovered several themes, including a key theme that, “My favourite teacher noticed me." This article reviews literature pertaining to the act of teacher noticing and highlights specific examples in which participants described how their favourite teachers “noticed” different aspects about them and other students in the class. Based on what was noticed, participants shared ways in which their teachers positively responded to their observations.

Keywords: Notice; differentiation; teachers; students; academic excellence.

Introduction

Talents arise from people in a variety of ways and at different times in their lives. Feldhusen (1994) states, “Talents emerge from general ability as a confluence of genetic dispositions, home and school experiences, and students' unique interests and learning styles” (p.10). Feldhusen (1994) also notes, “Some children have great talent potential which calls for even more powerful nurturance or educational interventions” (p.14). Since schools have a significant role in providing “educational interventions”, then it stands to reason that schoolteachers can play a substantial part in identifying and developing talents in their students.

Still, Parra-Martinez and Wai (2023) posit that the act of “determining who has potential or talent is not an easy task” (p.2). Although it can be a difficult task, teachers who have the ability to “spot” high ability potential of their students can play critical roles in talent identification and subsequent development (Swanson et.al, 2022). Instead of using the word “spotting”, some scholars describe the ability to identify present or potential talents in others as “recognizing” (Brinkmöller et.al, 2026) or “noticing” (Sherin et.al, 2011). In essence, these terms all relate to the ability for teachers to identify talents in their students.

When teachers notice how a student is doing personally and academically, the information received can greatly enlighten teachers and help them respond effectively to what is noticed and how it is perceived. Mason (2011) states that, “Noticing is a common enough word in English, with an etymology tracing back to the Latin words notitia [being known] and notus [known]” (p.35). Sherin et al. (2011) posit that, “We recognize that the term noticing is used in everyday language to refer to general observations that one makes. Humans go about making these general observations all the time. Louie (2018) states that, “We each notice myriad things as we go about our daily lives. We notice that the days are getting shorter, that a friend has gotten a haircut, or that there is a stain on the rug” (p.56). Noticing

is considered to be an action, as Sherin et al. (2011) state that "The word noticing names a process rather than a static category of knowledge" (p.5). Schoenfeld (2011) elaborates on this pointing, claiming that, "what makes noticing consequential, of course, is that people act on what they notice." (p.230).

This article investigates the significance of classroom teachers noticing the unique characteristics of each student and acting in response to what is noticed. Specifically, it seeks out the voices of students who have gone on to excel academically and earn doctorates in the realms of the arts, science, and education. First, a review of the literature defining the term "notice" and its connection to effective teaching and learning is provided. Second, the methodology of a 2025 study investigating university professors' (n=8) perceptions of what made a certain classroom their favourite teacher is shared. For the purposes of this article, I allowed participants to interpret for themselves what "favourite teacher" meant to each of them and describe why someone was selected by them to be their favourite. Third, the article highlights responses from the participants related to the notion that effective classroom teachers noticed key elements of their students and responded positively with specific actions and interventions. Finally, the article compares several findings from the review of the literature with participant responses.

Noticing and Teaching

In terms of teaching, Sherin et al. (2011) state that, "we use the phrase teacher noticing to encompass the processes through which teachers manage the 'blooming, buzzing confusion of sensory data' with which they are faced, that is, the ongoing information with which they are presented during instruction" (pp.4-5). Goldsmith and Seago believe that educators "use the term noticing to capture the work that teachers do in identifying and interpreting key features of classroom interactions and student work" (2011, p.170).

From an educational perspective, teacher noticing is "not at all a passive process. Teachers do not merely sit back and try to make sense of what is going on in a classroom or other instructional setting. Instead, teachers are actors in the instructional scene that they are observing" (Sherin et al., 2011, p.5). Erickson (2011) agrees with this statement (2011) noting that, "teacher noticing was not armchair observation, normatively neutral and distanced description" (p.24).

Noticing in Math, Science, and Inclusive Education

In recent literature, 'noticing' has been associated with effective instruction in the mathematical domain. Chan et al. (2020) posit, "In the mathematics education literature, the teacher noticing construct emphasizes the perceptual and cognitive thinking processes that underpin teachers' in-the-moment decisions and actions related to students' mathematical thinking and reasoning" (p.2). Additionally, Chan et al. (2020) share, "In the context of reform in mathematics education, teachers are encouraged to teach in student-centred and responsive ways, and noticing and interpreting classroom events are thus important skills." (Chan et al., 2020, p.3). Sherin et al. (2011) outline three domains in which "mathematics education research that support the idea that teacher noticing is likely to be an important and productive focus: i.) Adaptive and responsive teaching; ii.) Learning from teaching; and iii.) Decomposing practice." (p.6). The construct of noticing has also "gained traction" in the sciences (Chan et al., 2020, p.2).

The act of teachers noticing potential in students also seems to align well with inclusive teaching practices. There are many components that teachers need to be familiar with in order to establish an inclusive learning environment in their classrooms. For example, Gheyssens et al. (2020) posit that many "Different models and strategies, such as Universal Design for Learning (UDL), individualised instruction, student-centred learning and others are put forward as possible approaches and practices for teachers to create more inclusive learning environments." (pp.1-2). Differentiation/Differentiated Instruction is considered to be a key component of an inclusive classroom. Differentiation essentially refers to classroom teachers "attending to the learning needs of a particular student or small group of students rather than the more typical pattern of teaching the class as though all individuals in it were basically alike." (Tomlinson & Allen, 2000, p.4). Weselby (2014) notes that teachers who differentiate

their instruction design lessons based on learning styles, interests, topic and ability, and then use formative assessment to "continually assess and adjust lesson content to meet students' needs" (para.4).

In order to accomplish any of the aforementioned tasks, classroom teachers need to be adept at "noticing" individual student preferences, learning styles, and needs (Smit et al., 2024). Classrooms with diverse learners present incredible opportunities for teachers, but also numerous challenges. The practice of teachers being able to differentiate what to notice and what to disregard from their numerous interactions with their students in oftentimes chaotic environments is incredibly complex (Sherin, 2011). Noticing (and responding to) individual student needs, interests, and abilities in the classroom in order to provide an inclusive learning environment is certainly much easier said than done.

In order to grasp what needs to be noticed in the classroom, teachers need to realize that important events can happen very quickly in the classroom (Chan et al., 2020). While what needs to be noticed may occur suddenly, it appears that educators should thoughtfully make sense of what they may have noticed, as, "teacher noticing is more nuanced than we originally conceived" (van Es & Sherin, 2021, p.18). Therefore, Schoenfeld (2011) cautions that, "the things that teachers notice (or fail to notice) shape what they act on. Noticing is thus a fundamental part of teachers' decision making - and highly consequential" (Schoenfeld, p.234). Schoenfeld (2011) further states, "In sum, teachers' decision making is shaped by what teachers notice" (Schoenfeld, 2011, p.233). In order to be an effective classroom teacher, there is more to the act of noticing than simply observing their students and their actions. Teachers need to effectively respond to what these observations reveal.

Attending, Interpreting and Shaping

Van Es and Sherin (2021) highlight three critical dimensions of noticing, which they describe as, "Attending", "Interpreting", and "Shaping" (p.19). Schoenfeld (2011) believes that attending and interpreting are "interrelated and cyclical. Teachers select and ignore on the basis of their sense making; the way they respond shapes subsequent instructional events, resulting in a new and varied set of experiences from which teachers attend and make sense." (p.5). When Schoenfeld (2011) describes 'attending' within an educational context, he means, "Attending to particular events in an instructional setting. To manage the complexity of the classroom, teachers must pay attention to some things and not to others" (p.230).

While attending and interpreting are two key components of teacher noticing, they are not sufficient. For example, Chan et al. (2020) state that researchers "have expanded the scope of the teacher noticing construct to include not only attending to and interpreting sensory data, but also making decisions about next instructional steps." (p.4). These teacher decisions can be referred to as 'shaping' teacher practice in the classroom. While Erickson (2011) acknowledges that, "Some teachers took an aesthetic pleasure in watching students do things that did not call for intervention by the teacher" (p.18), he further explains that teacher noticing was more often a "triage-like exercise of successive foci of attention, shifting in bursts of attention from moment to moment. And this was noticing in order to act- to do something about what is noticed, often to do something right away." (p.24).

Based upon the literature reviewed, several questions arise. Do students believe that teachers "noticing" them had positive effects on their classroom experiences? How do student perceptions of being noticed by their teachers compare with the findings of prior research on noticing? Is effective teacher noticing an essential ingredient in being viewed as a student's favourite teacher, particularly when the students later in life academically excel? The following study attempts to seek out clarity to some of these questions by highlighting responses from Canadian university academics who share how they were impacted by being noticed by their favourite schoolteachers for their interests and abilities in certain subject areas. The central question asked to the participants was, "Why was your favourite schoolteacher your favourite schoolteacher?" Participants were also asked questions such as, "How important is it for teachers to develop positive relationships with their students?", "What are some recommendations that you would offer to school teachers at this time in terms of connecting with their students?", and "If you could offer any piece of advice to new teachers regarding connecting with

students, what would it be?" Interestingly, the topic of "teacher noticing" seemed to arise in each of the interviews.

Methods

This (2025) study explored the perceptions of adults (n=8) who have completed a doctorate degree and presently work in a university faculty in order to learn about their favourite teachers. Specifically, the central question asked of the participants was, "Why was your favourite teacher your favourite teacher?" This article highlights a qualitative interview study that specifically sought out adults (18+) who no longer attend K-12 schools and invite them to participate in a study in order to better understand what makes teachers successful at helping students become engaged in their classrooms and schools.

Procedures

After receiving approval from the University of Winnipeg's Human Research Ethics Board, I attempted to recruit participants in two ways. I created a poster and letter advertising my study seeking out participants to interview for the study. I recruited participants by reaching out to faculty with doctorates at one university individually by email and in person, sharing the poster and letter, and asking if they would be interested in being interviewed for this study. I invited eight people to take part in the study, and everyone consented to take part. All participants were required to give written consent prior to the commencement of the study. Additionally, the participants were asked to complete a short information sheet to fill out and return, regarding factors such as their age, gender, and education they have completed.

All interviews were conducted in person and on campus. The interviews were scheduled during times based on participant availability. Each interview was held in my university office. Interview times were scheduled for one hour, and actual interview times ranged from approximately 45 minutes to an hour in length. Participants could withdraw their consent to this study at any time before the recording of the session and could withdraw their active participation at any time before or during the study timeline without consequence. No participants withdrew from the study after their interviews. Although the identities of the participants were known to the researcher at the time of the interview, this information was kept strictly confidential in any information that is disseminated.

Data Collection and Analysis

The interviews were audio taped, and detailed written notes were kept to record their ideas and responses. The interviews were not videotaped. The tool Otter.ai was used to produce transcripts of all interviews. A research assistant was used for this study and was asked to independently review each transcript. The research assistant was asked to find and code potential themes within the transcripts by carefully reading each transcript and highlight (using different coloured highlighters and notes in the margins of the transcript copies) areas that emerged within each transcript. Then, both the research assistant and I independently compared and contrasted the transcripts looking for potential themes that appeared to emerge. Following independent analysis, the research assistant and I met and compared our initial themes and highlights with each other. We eventually agreed upon several themes that emerged from the interviews. The main theme that we agreed upon was that participants' favourite teachers seemed to notice and that they were interested and/or talented in particular subject areas. This was the case for all but one participant, who did not provide evidence of this being a factor. These teachers then seemed to find a variety of ways to encourage the participants to explore these subject area interests. It should be noted that the theme of "noticing" was not prompted during the interviews by myself.

Participants

Eight people responded to an invitation to participate in this study. They were employed in university faculties and had obtained their doctorate degrees. For more information on the participants please see Table 1.

Table 1: Participants' Age, Gender, and University Education

Age (years)	Gender	University Education (Degrees Obtained)
40-49 (3) 50+ (5)	Female (3) Male (5)	Bachelor of Arts (3) Bachelor of Education (2) Bachelor of Science (6) Master of Arts (1) Master of Education (2) Master of Science (3) Master's degree other than Arts or Science (1) PhD (7) Doctor of Education (1)

Findings

One of the themes that was revealed from the study was that participants repeatedly discussed "the importance of their favourite teachers noticing them". This article focuses on this theme for the purposes of this article. Please note, to benefit the reader some participant responses were edited to remove repeated phrases, and words such as "like", "kind of", and "um".

When one participant was asked why one of their teachers was their favourite, they simply replied, "She noticed." Many of the participants highlighted times when their favourite teacher noticed them. Participants shared stories of their favourite teachers noticing when they were in distress during the school day and helped them with support, accommodations, or even funds. Some participants expressed how teachers helped them with some personal or family issues. Some shared how teachers noticed their interest in the subject matter they were teaching. Participants also shared how their favourite teachers noticed when students needed extra challenges in order to further engage them. Participants also commented on their favourite teachers noticing when they needed to provide extra assistance outside of the classroom in order to support their learning.

Noticing When to Support Students with Personal Issues

Participants shared numerous examples of their favourite teachers noticing them. In some instances, this happened when they were in various states of distress over a variety of issues. For example, one participant shared that a teacher once noticed when they lost some money to attend a school concert. The participant shared the following story about a time when he had money stolen from him that was allocated for a rock concert at the junior high school.

> We're all outside for phys-ed doing cross country [and] we all come back in and my jeans, someone had gone through them and taken it all the money [designated for a noon hour concert]. I have no cash, none of my buddies have extra money…I'll never forget [when the teacher saw me visibly upset and] took me around and he used his keys because he was a phys-ed teacher. He opened the side door to the gym and he grabbed me and he said, 'you need to see his'…I'll just let you in".

On another occasion, a participant who typically did very well in school shared how a teacher noticed that the student was having a difficult time, and as a result his grades were slipping. The participant stated the teacher "could see that I was struggling to struggling to fit in with other kids… and she saw this and called me on it and got my mom and dad involved and we said, oh, yeah, she was again she noticed…She kept my parents were killing me." The participant added, "All of a sudden I became one of hers, and she…guided and protected me a little bit more, probably more than I know. She talks [my parents] off the ledge instead of making it worse, like a lot of teachers do." Another participant shared a time when their parent came home after meeting with a teacher and shared, ""I remember my mom went to some teacher parent and… said 'he seems to know and understand you quite well.'"

One participant shared that when they reflected on teachers, "it always starts with relationships". Sometimes teachers helped students with relationships, too. One participant shared about a time when they were struggling with a relationship and the teacher noticed enough to pull them aside to discuss the

issue. The participant stated, “I was breaking up with a long-term boyfriend and I was really struggling for a little while…You know, I can't remember if he gave me any advice to be honest…he just listened and just encouraged me to keep moving forward.” One participant shared that with regards to their favourite teacher, “he had this way of personalizing conversations with us that just had my complete attention.”

Respect for All

Participants also shared examples of how their favourite teachers seemed to notice all students in the classroom and were respectful to everyone. One participant stated that their favourite teacher “was very good about making sure that everybody felt special.” Another participant added how respectfully their favourite teacher spoke with everyone, sharing, “he just referred to us all as ‘sir’.” Another participant commented, “what [my favourite teacher] was able to do was see each kid individually and what they needed when they were not getting to that place of distress. And just put enough of a relationship in there that there was settling. And when we needed him, he saw us.”

One participant spoke of the impact the teacher had on them by establishing a culture of mutual respect in the classroom, saying, “if I treat you with respect, you will treat me with respect...He held everyone in high positive regard, and so you had to meet him there. He had a…high bar for himself and for others too.” One participant greatly appreciated having when teachers noticed every student’s gifts, because “when you're a teacher, you're not teaching to the top five percent. You're teaching at the bottom 10% percent that are feeling left behind, that are struggling, that you don't know what's exactly is going on their belief. But, during their classroom [time] they're not excelling to where they could be, and you can see the potential of them.”

One participant noted that with their favourite teacher, “different people were being lifted up in this environment.” One participant shared a story of a teacher lifting a student up by noticing talent in a student that was not immediately obvious to classmates. They shared the following:

> There was a kid in our grade who was very quiet had a very difficult home life [and] would sit by himself in the corner in a class. I never heard him speak in any other in any other class. I remember him in this class and his work being celebrated as being really good. The teacher asked him to read his stuff and it was the only time I remember interacting with this person in a classroom setting in the school and I remember being like, ‘oh wow, like, this guy's really smart’. I've just never heard him talk in any of the other classrooms.

Based on the interviews, it appeared that teachers who noticed and acted respectfully to everyone in the classroom were highly revered by many participants in the classroom. Favourite teachers also insisted on students treating each other with respect as well. One participant shared a time when they were not being respectful to another student, and this was quickly corrected by the teacher. They shared, “I remember sticking sticky notes on the back of the kid that I [was] teasing… and the teacher had told me to stop, I probably would have been pouty about it, but I remember putting sticky notes on the back of the kid in the class and he looked at me and said, ‘sir’. [I realized], ‘oh, I disappointed the teacher, right?’”

One participant shared about how important it was for the teacher to build positive relationships with their students, saying, “the relationship that you build with a student is what the student's going to remember more than the content or anything else about it. They're going to remember that you cared about them, that you supported them, that you respected them, that you held them up, and you can, I think, do that to students in any kind of situation.” One participant revealed that establishing teachers should know how to build respectful and sincere relationships, saying, “that's probably by training, and people didn't have this ‘touchy feely’ way, that you have to be everybody has to be everybody's friend.” The participant concluded that with regards to their favourite teacher, “you can strike a balance” between being a caring teacher and not “talking down to people and humiliating them.”

One participant shared their displeasure for focusing on some students more than others, saying, “I was a very strong student, and I was going to excel in the class kind of no matter what. I remember being so frustrated when I could tell that the teacher was more interested in the students who were doing

well in the class than the teachers than the students who were doing poorly…I would get so frustrated and angry." To conclude, one participant offered the following advice for teachers.

> Trying to find those opportunities to show mutual respect with the students, have high expectations of them, give them opportunities to shine as individuals and give them opportunity to get that attention and encouragement. From their teachers probably goes a long way. And for all students, not just the students that are maybe gift and talented or anything, but all kids.

Noticing the Need to be Challenged, Supported, and Encouraged

Many participants shared how their favourite teachers noticed student interests in the subject matter they taught and responded accordingly. For example, one participant stated, "because I was a good student who was clearly interested in English and I would often talk to him to one on one and so on." Sometimes the teacher recognized a small group of motivated students, and shared, "There was a group of us that he spent some additional time with for development. It was just one of those things where I don't know, maybe he saw different capacity and wanted to work" One participant noted that one of their favourite teachers had the unique "ability to recognize that just with a little bit of encouragement through treating me like an adult intellectual, by having conversations about books, bringing me books, and talking to me about applying to university, telling me I would be good at university…He stands out and I still think the reason I went on to do a PhD eventually in English. [It] started there." The participant added how important it was for them when they realized, "I've just spent another lunch hour talking to him about this book. He's great."

In one way or another, each participant shared their appreciation for teachers that recognized the desire to be challenged. One participant recognized the love for academics at an early age, sharing. "From kindergarten on, just wanting to be the best in the class." One participant remarked, "I can look back distinctly to grade three, four, five, already being so passionate about learning and not just getting the A's, but learning." One participant stated, "I think [the teacher] really established this connection by, in my case, supporting me and valuing what I had to say and I treating my ideas not as silly ideas that a kid would have, but like serious things to talk of them."

One participant acknowledged that their love of learning and need to be academically or intellectually challenged often did not come from the home. One participant commented how "my parents weren't actively trying to stop me [from pursuing academia], but they weren't actively helping me either." One participant also shared, "I come from a blue-collar background of German immigrants…but I was always driven to be super in school. So it didn't match them at all". In response, one of their teachers "listened and just encouraged me to keep moving forward". For another participant, challenges for their teacher "inspired me about science", which eventually motivated them to pursue a doctorate in Physics.

One participant noted that a special teacher that provided more attention to them, stating, "I love having attention focused on me. So having a teacher that was able to spend a bit more time focusing on me, I always really appreciated." Another participant noticed that receiving extra attention was "something that was different for me from the other classes", and that the student felt "empowered to share my opinion and share my perspective and to have it be have it be sort of valued or interrogated or challenged in a way that it wasn't in the other classes."

One participant shared a time when the teacher provided freedom in a class to choose and learn more about an important philosopher. The participant noted, "The contemporary person I picked was Jane Jacobs…I was 16 with no basis of reading it, and it was amazing. It was like really incredible stuff to read. Probably a bit out of my depth."

Participants shared examples of their favourite teachers encouraging them in their classrooms. One participant commented, "I think he was the first teacher that was interested in our ideas…He was the first one that wanted us to engage content…analyze it. Give your opinion…It was the first time I probably even found my voice in a class where I would say, 'I don't agree with your interpretation' to

the teacher. But, he encouraged it." One participant stated, "I think I got great nuts and bolts teaching all throughout. I got the reading, writing, and arithmetic by and large, and I think we had great teachers for that. But I think it was my first experience of, disagree with me, and tell me why you disagree with me." Another participant agreed when describing their favourite teacher, sharing, "he was treating me like a real intellectual". They noted that in their favourite teacher's classroom, "you had a voice in there, not just ears to listen and then regurgitate it onto a test at the end."

When asked about a teacher providing extra time outside of class, one participant stated the careful attention provided in class was sufficient. The participant shared, "My favourite physics teacher, we never did anything after hour. It was just in classroom, but I loved the way he taught us and the way he treated us in class. And he had high expectations." Another participant shared, "It is a living…and he had a family…So I think he just had a life outside of teaching and it was his job".

Still, one teacher was highlighted for the extra time they put into an engaged student. One participant shared the following.

> The science fair that year, I had an idea to do something with testing model airplanes. And I came up with five different pieces of paper and five different designs of airplanes and I came up with several different tests that I wanted to see, what would be the best combination of paper and style, which for grade five science is cool. It ended up with 25 possible permutations, and he stayed after school for three hours one day to time every single flight of every single paper airplane with me in the gym, and to run through things so that I got the stuff done that I needed to do. And there was nobody else in my life who would have half an hour to do that with me, let alone three hours.

One participant noted how important it was to be viewed in high regard by teachers. This had a great impact on the student early in life, because "at 10 and 11 years old, [you're] trying to figure out how to be. And to have somebody see you and get you and expected things and to help you achieve good things was phenomenal." Based on participant responses in this study, classroom teachers who noticed that some students were gifted, talented, and/or enthusiastic about their subject areas were in turn noticed and held in very high regard by their students.

Discussion

The following section compares and contrasts several components of the early review of literature concerning the act of teacher "noticing" with responses from participants in this study. It needs to be stated that there are several limitations to this study. This study only involved eight participants, and so further research on this topic needs to be conducted in order to better understand the significance of teacher noticing. Second, this study involved participants currently working in university faculties, and therefore it might be beneficial to interview individuals who are currently shining in business, sports, and/or the arts. Third, this study was limited to Canadian participants. It would be beneficial to be able to compare and contrast the perceptions of individuals from other countries. Finally, it is important to note that in interviews involving the recollection of past events by participants, recall bias may come into play. Recall bias is "a systematic error that occurs when participants do not remember previous events or experiences accurately or omit details: the accuracy and volume of memories may be influenced by subsequent events and experiences" (Spencer, Brassey, & Mahtani, 2017, para.1). It is entirely possible that some of the participants may have shared idealized memories (rather than completely accurate recollections) when sharing about their interactions and experiences with some of their favourite teachers. Researchers should always be aware that there is the risk of this bias occurring in studies when interviews involving past recollections are being sought out. Therefore, I want to be careful not to exaggerate how participants' retrospective interpretations of the past resulted directly in them eventually earning doctorates.

Still, this study did provide several interesting findings. Many of the findings supported the review of literature on "noticing". First, participants described being noticed in ways that correlate with Mason's (2011) definition that noticing is traced "back to the Latin words notitia [being known] and notus [known]" (p.35). Students provided numerous examples that teachers they regarded as their

favourite seemed to "know" them. They seemed to know when students were in distress, when they were struggling, when they needed challenge, and when they needed additional support. Several participants also commented that their favourite teachers seemed to "know" other students in their classroom, too.

Second, it appears that participants would agree with the notion that "teacher noticing is not at all a passive process" (Sherin et al., 2011, p.5). Participants shared numerous examples that aligned with Erickson's (2011) assertion that noticing refers to 'directing' their attention to some things (and not others), and then 'attending' to what they noticed with a "practical action" (p.17). Participants also seemed to highlight of what Van Es and Sherin (2021) highlight as the three dimensions of "learning to notice" as "Attending", "Interpreting", and "Shaping".

For example, one teacher noticed that a student lost some money for a noon hour concert (attending), noticed the distress on the child (interpreting), and responded practically by getting the student into the event (shaping). One teacher noticed that a student was interested in philosophy (attending) and needed to be challenged beyond the scope of what the course offered (interpreting)and challenged them with a high-level philosopher to research (shaping). One teacher noticed that a student seemed to love literature (attending), recognizing their talent in the subject area (interpreting), and regularly provided books outside of the curricular scope in order to further engage them (shaping). In these ways, noticing something about their students was not the end of the exercise, but rather served as a "call to action" for teachers. These findings support Erickson's (2011) assertion that teacher noticing was more often a "triage-like exercise of successive foci of attention, shifting in bursts of attention from moment to moment. And this was noticing in order to act-to do something about what is noticed, often to do something right away." (p.24). These actions based on teachers noticing may not have been grand acts in and of themselves, but they were nonetheless significantly meaningful to the participants.

Third, although much of the literature reviewed acknowledged that "noticing" seemed to emerge in mathematics and scientific fields (Chan et al., 2020; Sherin et al., 2011), the act of noticing appeared to cross into all academic domains. Participants shared stories of how they were noticed by teachers of English, Mathematics, Physics, Philosophy, Physical Education, Social Studies, and History. Further, "noticing" does not appear to be something only practiced by teachers of specific age groups. Participants provided examples from elementary, middle school, and high school teachers noticing them.

Fourth, participants appreciated when teachers demonstrated respect for all students, and held them all in high regard. In this way, the participant positive responses on observing teachers noticing all their students aligns with Tomlinson and Allen's (2000) definition of differentiation as, "attending to the learning needs of a particular student or small group of students rather than the more typical pattern of teaching the class as though all individuals in it were basically alike." (Tomlinson & Allen, 2000, p.4). Their responses also correlate with Weselby's (2014) list of effective components to differentiating instruction. Based on participant responses, there may be one amendment to the list that could be made. When Weselby states that teachers who differentiate "Manage the classroom to create a safe and supportive environment" (para.4), perhaps it could be altered slightly to state, "Manage the classroom to create a safe, supportive, and *challenging* environment".

While the study confirmed much of what has been reviewed in the existing literature on "noticing", it also reveals something new. While participants appreciated being "noticed" by their favourite teachers, many noted the importance of the teacher paying attention to the skills, interests, and talents of every student in their class. Specifically, participants seemed to suggest that when teachers practiced "noticing", they did so in an inclusive manner. That is, they appreciated and respected when students noticed all students in the classroom and responded in effective ways. Sometimes the stories that participants shared related to how their favourite teacher interacted with other students. On other occasions they shared how teachers positively noticed students who may have been struggling in certain areas. Teachers who were respectful to students demonstrating a wide range of proficiencies in the subject areas being taught were deemed to be viewed highly favourably by the participants in this study. Teachers who made sure that all students were worthy of care, belonging, recognition, expectations and mentoring were generally viewed in high regard by participants in this study. Additionally, teachers who seemed to intentionally provided unequal attention and preferential treatment to only the "stronger"

students in the classroom were not viewed in high regard by the participants. While participants acknowledged that being noticed by a teacher made them feel "special", they appreciated when teachers went out of their way to make everyone feel respected and "special".

Conclusion

This study supported the notion that attention should be paid to the act of noticing what students and acting responsively to what is observed. In this regard, the study aligned well with the existing literature about teacher noticing. It also revealed that there is no "one size fits all" approach to the actions required to what is noticed by the teacher. Rather, the actions required to engage each student in the classroom are much more nuanced, complex, and contextualized in nature, and necessitate customized and tailor-made responses. When these types of personalized academic responses and interventions are effectively put into action, the potential consequences for students - whether immediate or sometime later down the road - can be extraordinary.

The study also provided some unique insights into the subject of teacher noticing. In the literature, the focus tended to be on the importance of teachers noticing academic interests and abilities. The participants in this study certainly shared memories of their favourite teachers noticing specific academic interests, passions, and abilities. These stories aligned with the literature reviewed that highlighted the importance of teachers identifying and developing potential academic talents in their students across a wide range of subject areas. However, they also spoke favourably of teachers who noticed students experiencing personal or family-related challenges. These teachers identified personal challenges at times and responded effectively to these observations. The participants also provided numerous examples of how their favourite teachers seemed to notice everyone in their classrooms. When it comes to the topic of "noticing", it appears that students notice a great deal about their teachers, too.

References

Brinkmöller, B., Eckardt, V. C., Dreiskämper, D., Höner, O., & Strauss, B. (2026). "Why did no one recognize this person as a talent?": Advancing selection practices through a comparative analysis of sports and business. *International Journal of Sports Science & Coaching*, *0*(0).

Chan, K. K. H., Xu, L., Cooper, R., Berry, A., & van Driel, J. H. (2020). Teacher noticing in science education: do you see what I see? *Studies in Science Education*, *57*(1), 1–44. https://doi.org/10.1080/03057267.2020.1755803

Erickson, F. (2011). On noticing teacher noticing. In Sherin, M., Jacobs, V., & Philipp, R. (Eds.). (2011). *Mathematics teacher noticing: Seeing through teachers' eyes (1st ed.)* (pp.17-34). Routledge. https://doi.org/10.4324/9780203832714

Feldhusen, J. F. (1994). Talent identification and development in education (TIDE). *Gifted Education International*, *10*(1), 10-15.

Gheyssens, E., Consuegra, E., Engels, N., & Struyven, K. (2020). Creating inclusive classrooms in primary and secondary schools: From noticing to differentiated practices. *Teaching and Teacher Education,100,* 1-9, https://doi.org/10.1016/j.tate.2020.103210.

Gibson, S. A., & Ross, P. (2016). Teachers' Professional Noticing. *Theory Into Practice*, *55*(3), 180–188. https://doi.org/10.1080/00405841.2016.1173996

Goldsmith, L. & Seago, N. (2011). Using classroom artifacts to focus teachers' noticing: Affordances and opportunities. In Sherin, M., Jacobs, V., & Philipp, R. (Eds.). (2011). *Mathematics teacher noticing: Seeing through teachers' eyes (1st ed.)* (pp.169-187). Routledge. https://doi.org/10.4324/9780203832714

Louie, N. (2018). Culture and ideology in mathematics teacher noticing. *Educational Studies in Mathematics, 97*, 55-69. https://doi.org:10.1007/s10649-017-9775-2.

Mason, J. (2011). Noticing: Roots and branches. In Sherin, M., Jacobs, V., & Philipp, R. (Eds.). (2011). *Mathematics teacher noticing: Seeing through teachers' eyes (1st ed.)* (pp.35-50). Routledge. https://doi.org/10.4324/9780203832714

Parra-Martinez, F.A. & Wai, J. (2023). Talent identification research: a bibliometric study from multidisciplinary and global perspectives. Front. Psychol. 14:1141159. doi: 10.3389/fpsyg.2023.1141159

Reimer, K. (2023). Designing for inclusion. In Rick Freeze (Ed.) A Practical Guide to a Transformative Inclusive Education (pp.178-198). Canadian Scholars and Women's Press.

Schoenfeld, A.H. (2011). Noticing matters. A lot. Now what? In Sherin, M., Jacobs, V., & Philipp, R. (Eds.). (2011). *Mathematics teacher noticing: Seeing through teachers' eyes (1st ed.)* (pp.169-187). Routledge. https://doi.org/10.4324/9780203832714

Sherin, M., Jacobs, V., & Philipp, R. (Eds.). (2011). Mathematics Teacher Noticing: Seeing Through Teachers' Eyes (1st ed.). Routledge. https://doi.org/10.4324/9780203832714

Smit, R., Roggensinger, A., Matic, M., & Moll, E. (2024). Teachers' noticing in inclusive and special school systems: the same or different? *European Journal of Special Needs Education*, *40*(4), 706–721. https://doi.org/10.1080/08856257.2024.2421109

Spencer, E.A., Brassey, J., & Mahtani, K. (2017). Recall bias. In: Catalogue Of Bias 2017. https://www.catalogueofbiases.org/biases/recall-bias

Swanson, J. D., Brock, L., Van Sickle, M., Gutshall, C. A., & Curby, T. W. (2022). Teacher perceptions as an entry point for talent spotting and development. *Journal for the Education of the Gifted*, *45*(3), 238-270.

Tomlinson, C.A. & Allan, S.D. (2000). Leadership for Differentiating Schools & Classrooms. ACSD.

van Es, E., Sherin, M. (2021). Expanding on prior conceptualizations of teacher noticing. *ZDM Mathematics Education* 53, 17–27. https://doi.org/10.1007/s11858-020-01211-4

Weselby, C. (2014). *What is Differentiated Instruction? Examples of How to Differentiate Instruction in the Classroom.* https://mercury.educ.kent.edu/trc/files/Differentiation/What%20is%20Differentiated%20Instruction%20Examples%20of%20How%20to%20Differentiate%20Instructio.pdf

Woodcock, S., Sharma, U., Subban, P., & Hitches, E. (2022). Teacher self-efficacy and inclusive education practices: Rethinking teachers' engagement with inclusive practices. *Teaching & Teacher Education* 117:103802. https://doi.org/10.1016/j.tate.2022.103802

About the Author

Kenneth (Ken) Reimer is an Associate Professor in the Faculty of Education (Inclusive / Special Education) at the University of Winnipeg (Canada). Prior to this, he had a twenty-five year career in Canada's public school system. This included positions as a mainstream, special education, and resource teacher, guidance counselor, and school administrator/principal in six different schools in two different school divisions. Recently Dr. Reimer has collaborated on projects related to with Cambridge University (DOT Canada), Ubisoft (NOVA: The Ubisoft Winnipeg Women in Technology Summit), and has conducted workshops and teacher training in K-12 schools in Brazil, Central America, and the Middle East. Most recently Dr. Reimer delivered keynote addresses for the University of Vienna's Faculty of Education and the International Centre for Innovation in Education's (ICIE) Conference on Excellence, Innovation, & Creativity in Houston, Texas. Dr. Ken Reimer holds a Ph.D. in Inclusive Education (2014) from the University of Manitoba. **ke.reimer@uwinnipeg.ca**

Address

Kenneth Lloyd Reimer, *Ph.D.*
Faculty of Education, University of Winnipeg, 515 Portage Avenue,
Winnipeg, Manitoba, Canada R3B 2E9

e-Mail: ke.reimer@uwinnipeg.ca

Legacy in the Making: Mapping a maker of art, research and teaching, with reference to Make Medway Community Makerspace in Kent, England

Bev Hayward
Sotheby's Institute of Art, London, UK

Abstract

This reflective article explores my identity as an artist, researcher, and teacher (a/r/t) through the lens of a/r/tography and community c/a/r/tography. Drawing on an autoethnographic approach, I map my a/r/t landscape as a working-class, neurodivergent learner to a differently academic a/r/t, positioned within the creative landscape of Medway, Kent, England. I argue that meaningful artistic, research and pedagogic legacies are created not through institutional prestige, but through relational, community-centered practices grounded in care, collaboration, and social justice. Using the closure of the University for the Creative Arts' Maidstone and Rochester campuses as a case study, I examine the effects of the marketisation of education and institutional mismanagement in arts education. Then I present Make Medway Community Makerspace as an example of a different learning space that embodies the values of c/a/r/tography through shared making, lifelong learning, inclusivity, and collective creativity. The Make Medway demonstrates how "common spaces" can nurture artistic practice, and support different ways of knowing by engaging local communities and neurodivergent learners.

Keywords: Creative Expression; Arts Based Pedagogies; Neurodivergent Learners; Lifelong Learning; Practitioner's Experienced Knowledge; Social Justice.

Introducing the artist, researcher and teacher

Being invited to contribute to this special volume of Intellectual Reflection for the IJTDC, I consider my experiences as artist, researcher, teacher (a/r/t) as conceptualized by Irwin and de Cosson (2008) and Irwin et al, (2024). Understanding my identity as a complex oscillation of blurred and overlapping a/r/t roles, I map them to a landscape of my creative primary research, scholarship, and most importantly, the networks to which I have had, and continue to have the privilege to contribute. Just as the scholars, Irwin and de Cosson (2008) and Irwin et al (2024), reconceptualized a/r/tology to include community 'c/a/r/tology' (Baldus et al (2026), I too understand the importance of community as an artist, researcher and teacher in higher education. The relational significance of community within art research and pedagogic practices is discussed in this reflection. I argue that those c/a/r/tologies of collaboration and relationships go beyond the rigidity of formal higher education systems, such as the University of the Creative Arts (UCA) England. UCA, as a case study, is an example of a higher educational institution used to illustrate that which, as a/r/t, we wish to avoid - epistemological inflexibility and adherence to the marketisation of education. I recall with sadness how mismanagement first led to the closure of Maidstone campus, sold to the local further education college and latterly Rochester campus sold to a property developer.

Differently academic: artist and maker of Medway

That said, my legacy, in the making, is made possible through those spaces and relational connections, some of which I made at UCA in what I term my 'NeuroTribe' (Silberman, 2015). This NeuroTribe, I fostered during my career in the arts at Medway in Kent from 2007 to the present day. The location, Medway, and 5 of the staff at UCA have come together to create an arts community, Make

Medway (MakeMedway, 2026). I discuss Make Medway, a learning space, a community which it is a hugely influential part of my legacy as a/r/t. This article explores the importance of Make Medway Community Makerspace ‘a place where people come together to create, innovate, and collaborate’ (MakeMedway, 2026). It is an example of the future of excellence for arts education where learning can be reimagined (Harman et al, 2022) within the ‘common’ spaces of existing communities as the intersections of a/r/t converge (Collet-Sabé and Ball, 2024). Accordingly, this article visualizes being *differently academic* (Jackson, 2004) in what Collet-Sabé and Ball 2024 term ‘common spaces’ for the lifelong learners and artist of Medway, of which I am one.

I have a long history with Medway as a geosocial memoire engaging space; it is part of my psyche and legacy as a maker. As a teenager I would take a shortcut from my secondary school through a large building complex of educational institutions. Often, I would walk to Maidstone town center library, which was built adjacent to the river Medway. Coincidently, next to the library was the museum, housing a picture gallery, a space in which art classes were first offered in1867 (The National Archives, n.d.). On my way into town, I would pass Maidstone College of Art, and I wished I could enroll there when I left school. However, as a working-class child, who failed in traditional educational settings, I was told by the English teacher, who doubled up as a career's adviser, that art was neither ‘a real’ nor ‘a proper’ job. In agreement, my father said, university was for those who wanted to be a doctor, lawyer or vet and college was for vocational courses like plumbing and bricklaying; therefore, my choice of program was dismissed as a waste of time and money (Crosby, 2024; McRobbie, 2016; Reay, 2017). The disappointment was raw when later I discovered that Tracey Emin, later to become a member of the YBAs (Young British Artists), would have been my peer. Asked in 1995 "Which person do you think has had the greatest influence on your life?" Emin replied, "It's not a person really. It was more a time, going to Maidstone College of Art, hanging around with Billy Childish, living by the River Medway" (Emin, in Hunter, 2022). Yet this was not to be my time and place, and off to the bank I went and then onto retail to become an admin assistant: they were the most soulless, monotonous jobs.

Differently academic: teacher

I left those jobs, devoid of creativity and talent development, to have a family and as a ‘stay at home mum’ I was determined not to go back to the bank. Therefore, I was the first generation in my family to gain a degree. Furthermore, I shifted the working-class narrative as I did not follow the traditional vocational programs for working-class learners (Callender, & Dougherty, 2018). In this way I was differently academic as I gained a degree in Humanities with Art History, no less. However, being working-class and neurodivergent, I often felt out of my depth. I embodied the imposter and the interloper and with my unpaid care and emotional labors, it took nine years to complete (Crew, 2024; Lehmann, 2007; Jackson, 2004). I had few strategies to support an enjoyable learning experience; it was challenging, and I often felt it was beyond my abilities, but I was motivated to change.

In the meantime, Maidstone College, together with Canterbury and Rochester’s local art colleges, became part of the Kent Institute of Art and Design. Then they merged with two Surrey colleges to become UCA (Archives Hub, n.d.). I joined UCA, not at Maidstone as the campus was sold to cover the debts of mismanagement and therefore it was due to close, so went to Rochester Campus, and not as a student of the arts but as a Dyslexia Tutor, working for Student Services. It did feel like my dreams had come true; I was in an environment where I could map my interests of as a/r/t. But there was a darker side - in this capitalist landscape my job was not as expected; however, my relational experiences at UCA developed, and I became an advocate for staff and students. I took a highly ethical stance for the students’ well-being, as I can empathise with the difficulties they might face in becoming an artist in a bleak climate. I took the trauma of my student experiences, to embody the matriarchal archetype, that of the nurturing, caring protector, and a sharer and producer of new knowledges (Stevens, 2003).

Differently academic: researcher

The first of those new knowledges was the creation of a project that stemmed directly from my experiences as a support worker, at UCA Rochester in Student Services. This was my doctorial research that grew from the injustices I saw in the everyday lived experience at UCA as it went through many

‘transformations’ - jargon for campus closures and redundancies (Gomm, 2023; Hayward 2019). I recruited my participants from the talented artists, researchers and teachers that were colleagues, now close friends. Through my research, I discovered that my participants were once mature students from UCA, recruited to work at the university in Student Services, two of which, Chrissie Peters and Vicki Lane, now are founders of MakeMedway. Also, the other three directors of Make Medway were employed as technicians and tutors. Rosie Melville, with whom I had the privilege to support, as her mentor, gained her PGC. Rob Roach was a student that was allocated to me whilst he was undertaking a BTEC qualification, now applying for a PhD. He would often bring Seal Jeal along to the sessions, and in this pedagogic space we fostered a collaboration of shared learning. Their immense talent and creativity are detailed on the Make Medway website. Thus, I explore our positions here, as part of our own research community as a c/a/r/tology, in a geosocial positioning of ethical, caring environments.

In this community as a/r/t, we all developed at UCA, but we were neither considered artists nor ‘academics’ and we were not allowed to map our development to the ‘research’ pathway, a facility on the HR hub – we were support workers, our pathway was *differently academic* (Jackson 2004). We were placed in those borderlands, those liminal spaces often performing unpaid emotional labors to support each other, the students and our community (French et al, 2023). Yet, in these spaces, the arts have made our academic journey different. Submerged in creative practices, community made us resilient. We facilitated safe spaces for all student artists, who felt able to disclose their trauma and talk to us knowing there would be no judgement. We encouraged self-expression, talent development and strategies to make the completion of the course possible and more manageable.

One problem for which we found a strategy, upon which we often reflected was the need to prolong and ‘develop’ a project. Where education follows a business model, it is regulated to sustain retention to keep management in jobs and reproduce results. This model is hugely challenging for neurodivergent students as the assessment requirements privilege sequential development and visible iteration. Conversely, from the outset of an assignment brief, neurodivergent students frequently know the outcome with bigger picture conceptualization, non-linear and intuitive approaches. As support workers, technicians and tutors, we would suggest that the students withhold their initial ideas. Instead, they fabricated alterative concepts and intermediary stages, so that the work conformed to institutional expectations of ‘process’. Paradoxically in industry this lengthy form of ‘progress’ would not be the norm as it would not sustain a business model.

Thus, in this arts university, the assumption should be that the space would be creative, rewarding even, but often the students were reproducing Sisyphusian tasks that were an endless monotony of assessment, grading and progression. They were guided to projects that often were not of their choosing, but necessary to produce ‘success’ to ensure retention. As one of my research participants said ‘the students' creativity is knocked out of them’ as they are encouraged to internally progress on to courses that are not appropriate (Hayward, 2019). This was when further education, level 3 provision was an option and progression to an undergraduate degree the norm. The decision by management to take the university to new heights of globalisation had no place for the local communities and specifically the campuses in the deprived areas, Medway. At the ‘prestigious’ Surrey campus, Epsom, the business school was built. Additionally, further education was terminated, as it did not fit with an elitist pedagogy and Maidstone and Rochester campuses were closed, as the global economy contracted and the international student market declined (BBC, 2021).

Accordingly, I argue that the marketplace constrains the growth of students. The market has, in this neoliberal episteme, sold a product that negates welfarism and the university’s ‘civic responsibility’ (West, 2012). Ironically, all the art colleges discussed were borne out of a need to educate the local, mainly working-class communities, as the evolution of education in the mid-Victorian era served the growing economies. However, in agreement with Collet-Sabé and Ball’s understanding of current institutions that follow the business model of education, they are inherently flawed, inducing harm to students’ well-being. That harm was both financial and psychological; when Rochester campus closed, those students in the third year of their degrees were relocated from Rochester to the Surrey campuses. The sham was exposed (Hoult, 2012) - the emperor had no new clothes - mismanagement ensured the university doors closed for business and the emperor, naked, had to move on.

Differently academic: artist

Some staff moved on too - to other campuses, but the majority took redundancy. They are local people that have family ties and commitments to the community, a community loved and not to be left. Before the closure, there was a small acknowledgement to our artistry and creative identities. An exhibition of 40 exhibits was held at Rochester Visitor's Centre. My artwork, along with Rosie Melville's ceramic pieces, was chosen alongside a print by Billy Childish. The exhibition was entitled: A Retrospective: Creativity Past, Present & Future. The photograph below shows my daughter and I in front of the exhibited embroidery piece, which I co-created with the found data from the Connection Workshops of The Feminist Imaginary Research Network (FIRN) (Hayward, 2025). However, the exhibition was bittersweet, as I was conflicted about whether to be part of the establishment, that had so long rejected me. Yet, it was important to show to other working-class neurodiverse learners that we can be a/r/t.



Carole Hatfield, 2024. Rochester Art Gallery - 27 January 2023 to 15 April 2023

This creative community came together at the farewell party, a photograph of which accompanies the photograph of UCA; UCA is the large brutalist structure at the top left. I am on the balcony of the university with my back to the River Medway. In an uncanny coincidence, Make Medway is situated directly opposite the university building: it is the building with the red crane in front of it. Thus, Make Medway is in the heart of the community, advocating for a landscape that celebrates the localized, 'common' educational spaces. In this common-unity, we can focus on care of the self, the land and the world in which we inhabit and those sharing this environment. Our legacy is to foster ethical practices to care-take of our communities near and far, to facilitate transformational experiences. Make Medway eloquently made this point:

> When UCA Rochester closed, it took with it a real part of Medway's creative identity. But UCA was never a public space, its tools and facilities were only ever available to students. Make Medway is buildings something different, a space that genuinely belongs to everyone. Whether you're a student, a retired professional, a hobbyist or someone who has never made anything before, you will be welcome here. We want to help bring that creative energy back to Medway and make it accessible in a way it never has been before."
>
> - Rob Roach, Director, Make Medway

Lessons Learned and Implications for Education

I am hoping to volunteer at Make Medway to support my community, as Irwin (2008) states, an artographic community is "a community of inquirers working as artists and pedagogues" (p.73). It is a space to care for our world and the peoples within it, as it is a place that is 'environmentally passive, sustainable, and non-exploitative' (Collet-Sabé and Ball, 2024). In an artographic community, this makers' space has positive implications for everyday artistry. Learners can dip in and out of contemporary (3D printing, laser cutters etc.) and traditional (sewing, woodworking, ceramics etc) workshops. It is their choice; they have autonomy.

When teaching is fun, with no pressure to meet targets and those teaching understand the trauma of school for marginalised children and adults, learners can express their artistry and creativity. The challenges faced by educators in the system are conceived from standardization and a hyper-prescriptive curriculum. A major barrier to creativity is the fear of failure as learners are paralyzed in a culture of 'doing it wrong'. Unconventional and interdisciplinary approaches may be discouraged as the outcome is predetermined with no space to move too far from the assignment brief. I would urge educators in traditional teaching spaces across all disciplines to encourage differently academic ways of knowing. Discover what interests and motivates learners and use that to inspire the projects. Passions can be shared with others to promote big picture and critical thinking as well as problem solving. These strategies are encouraged by Make Medway.



UCA Pinterest



Carole Hatfield, 2024, UCA

Thus, the Medway Towns in Kent, England have and will feature greatly in my legacy of belonging to a creative community of practicing artists, researchers and teachers. Make Medway is a space 'open to local young people and adults, providing access to tools, resources, and supportive community'. The a/r/t 'believe in the power of making and its ability to bring positive change' (Make Medway, 2026). And to return to Tracy Emin's quote, I agree, a time and place are influential, but equally the people of that time and place are what make a difference and significance. Thus, my legacy of artist, researcher and teacher maps to periods in time, places and spaces and communities of peoples. The impact of which is the creative production of art whilst in and outside academia, illustrating resilience and how being differently academic can bring about social change.

References

Archives Hub (n.d.) Kent Institute of Art and Design, Kent Institute of Art and Design Publications Collection, 1989–2005. University for the Creative Arts Archives & Special Collections. GB 3094 KIADPC. Available at: http://archiveshub.jisc.ac.uk/data/gb3094-kiadpc

Baldus, A. I., Sarreshtehdari, E., & Irwin, R. L. (2026). Becoming in the style of a/r/tography: A c/a/rtography of sorts. *Journal of Curriculum and Pedagogy*, *23*(1), 36–48. https://doi.org/10.1080/15505170.2024.2390929

BBC, (2021). University for the Creative Arts to close Rochester campus, https://www.bbc.co.uk/news/uk-england-kent-57001439

Callender, C., & Dougherty, K. J. (2018). Student Choice in Higher Education—Reducing or Reproducing Social Inequalities? *Social Sciences*, *7*(10), 189. https://doi.org/10.3390/socsci7100189

Clover, D.E., Sanford, K. and Harman, K. (eds.) (2022). *Feminism, Adult Education and Creative Possibility: Imaginative Responses.* Bloomsbury Publishing.

Collet-Sabé, J. and Ball, S.J. (2024) 'Without school: education as common(ing) activities in local social infrastructures – an escape from extinction ethics', *British Journal of Educational Studies*, *72*(4), pp. 411–427.

Crew, T. (2024) *The intersections of a working-class academic identity: A class apart.* Emerald Publishing.
Crosby, V., (2024). 'Art, prejudice and privilege: disciplinary elitism, students from poor and working-class communities and epistemic justice', in Meredith, M. (ed.) Universities and Epistemic Justice in a Plural World: Knowing Better, Singapore: Springer.
Emin, T., in Hunter, C. (2022, November 8). How Maidstone and Rochester Colleges of Art gave the world Tracey Emin, Karen Millen, Tony Hart, Where's Wally and Bob Holness. Kent Online. https://www.kentonline.co.uk/maidstone/news/how-our-art-colleges-helped-shape-the-world-276627/
French, A., Griffin, S., & Lambert, L. (2023). Teachers' creative, critical, and agentic professional learning in liminal spaces. *Professional Development in Education*, *49*(4), 693–706. https://doi.org/10.1080/19415257.2023.2203171
Gomm, P., 'You've Always Been The Caretaker', May 29 2023, https://www.linkedin.com/pulse/youve-always-been-caretaker-phil-gomm/.
Hayward, B. (2025). Sharing the lived experiences of women in academia by remembering, reclaiming and retelling stories of the feminist imaginaries. *International Journal for Talent Development and Creativity, 12*(1), 79-91. https://doi.org/10.7202/1115470ar
Hoult, E. (2012). Recognizing and escaping the sham: Authority moves, truth claims and the fiction of academic writing about adult learning. *InterActions: UCLA Journal of Education and Information Studies, 8*(2). https://doi.org/10.5070/D482000807
Jackson, S. (2004) *Differently Academic? Developing Lifelong Learning for Women in Higher Education*. Springer
Irwin, R.L. and de Cosson, A. (eds.) (2008) *A/r/tography: Rendering Self Through Arts-Based Living Inquiry*. Pacific Educational Press.
Irwin, R.L., Lasczik, A., Sinner, A. and Triggs, V. (eds.) (2024) *A/r/tography: Essential Readings and Conversations*. Intellect.
Lehmann, W. (2007) '"I'm policing myself": Working-class students' vocabularies of motive at university', *Sociology of Education*, *80*(2), pp. 89–108.
McRobbie, A. (2016) *Be Creative: Making a Living in the New Culture Industries*. Polity Press.
MakeMedway (2025). https://www.makemedway.org/
National Archives (n.d.) Discovery catalogue entry for C282552. Available at: https://discovery.nationalarchives.gov.uk/details/r/C282552 (Accessed: 27 May 2026). Maidstone College of Art (1936–1987) Maidstone College of Art Archive, University for the Creative Arts Archives & Special Collections, GB 3094 MCOL.
Reay, D. (2017). *Miseducation: Inequality, Education and the Working Classes.* Policy Press.
Silberman, S., (2015). *NeuroTribes, The Legacy of Autism and How to Think Smarter About People Who Think Differently*. Allen & Unwin
Stevens, A. (2003). *Archetype Revisited: An Updated Natural History of the Self*. Brunner-Routledge.

About the Author

Bev Hayward is an artist, researcher and teacher committed to inclusion and lifelong learning, with over twenty years' experience of teaching and managing in adult, further and higher education. She has a keen interest in research methods, methodologies and pedagogies that facilitate a horizontal approach to teaching and learning. This is to enable marginalised learners to feel comfortable to speak their truths and be successful in their lifelong learning. She has a learning disability and is from a working-class background and by exposing her vulnerabilities, she hopes to foster a transformative and democratic pedagogical student experience. During her PhD in Education, Transformation and Lifelong Learning, Dr Hayward presented her research at SCRUTREA and was awarded the Tilda Gaskell prize for the best student paper and prior to that she won the Laurel Brake award for her master's dissertation. She is a poet, writer and embroider and currently supports students at Sotheby's Institute of Art, London

Address

From Iron to Gold: The Forge of Imagination Reflections on a Life in Education

Howard Esbin
Founder and CEO, Heliotrope Imaginal, Canada

Abstract

This article examines what inspired the author to develop a learning resource that empowers people's agency and imagination to thrive in the artificial intelligence era. Drawing on three strands of recent research, (1) widespread overestimation of self-awareness, (2) AI-driven "cognitive surrender," and (3) imagination's newly recognized status as a trainable, core neurocognitive capability, the article argues that intentionally cultivating imagination is essential to sustaining human agency and healthy human-AI collaboration.

Keywords: Creative learning; Imagination; Autobiographical writing; Transformative learning; Practitioner's experienced knowledge.

Introduction

Part one of this chronicle reviews several successive professional stages including: (1) long familiarity with the creative process as a studio artist and commercial jewellery designer, (2) substantial cross-sectoral management experience within complex, multi-stakeholder international organizations, and (3) a doctorate examining how a community of artisans, imbued with imagination and entrepreneurial drive, transmitted their creative skills cross-generationally to establish a thriving micro-economy in a region of high unemployment. At age fifty, in 2000, it became evident that this experience had only been a prelude.

Part two chronicles my transformation into a social enterprise founder and educational product developer, driven by two pressing questions. These questions are: (1) what imagination truly is?, and (2) Why so many capable people devalue their own? These two questions precipitated two decades of inquiry researching imagination while developing learning resources for students and professionals.

Part three brings us to the present, where artificial intelligence (AI) is causing widespread human "cognitive surrender," a corresponding "imagination deficit," and accumulating "psychological debt." I conclude with a review of the human capability development program built in response that harnesses imagination to empower individual, team, and organizational self-awareness longitudinally, thereby helping ensure sustainable, optimal human AI collaboration.

Formative Years

I was an indifferent, often poor, student but loved history and drawing. My precocious artistry was part nurture, part nature: I was born into a creative family, my paternal grandfather an ornamental ironsmith and foundry owner, my father a gifted draftsman, designer, and noted jewellery boutique owner in Montreal. Early on, I saw firsthand, through both men's examples, the role imagination and creativity could play when combined with entrepreneurial drive. One formative memory endures: at ten, in 1962, my mother took me to the Museum of Natural History in New York City, where an adult sat sketching the rotunda's towering African bush elephant. I introduced myself and asked his advice; he told me to practice drawing circles freehand, as Raphael reputedly could. For years afterward I practiced that exercise, though I never quite matched the maestro's skill.

High School Art Studio

My final year at Sir Winston Churchill High School in Ville Ste. Laurent was 1968–69. I chose "studio art" as an elective to fulfill part of the provincial school-leaving exam requirements — as I

explained to my parents, an "easy credit" given my drawing skill. That first day, about twenty-five adolescent girls filled the spacious studio; the only other boy and I sat far in the back. Then the teacher, Hannah Hyams, entered like a force, hands on hips, and announced loudly, "Whoever is here for an easy credit, get the hell out now!" She was frightening, but I stayed because I needed that "easy credit."

That autumn, Hannah organized a class visit to the Montreal Museum of Fine Arts for the retrospective "Jackson Pollock: Works on Paper" (MOMA, 1968), a traveling MoMA showcase tracing his evolution from early 1940s figurative sketches to his iconic "drip" technique. The impact of those enormous canvases was visceral — it felt like being struck — and I returned home eager to try my hand at something more than casual drawing. My parents, who despaired of my finding a career, converted the crawl space housing the boiler into an art studio for me, and there I began experimenting with mixed media — spray paint, Xylol solvent, acrylics, pastels, colored pencils — inspired by magazines like Art in America and books from the local library.

I started bringing my homework to school to show Ms. Hyams, and what followed changed the trajectory of my life: by year's end I had won a national drawing competition and bursary from the Eagle Pencil Company, was given the first student art exhibition ever held at the Protestant School Board of Greater Montreal, and had a piece — a painted, collaged window screen — presented to the school's retiring principal.

As an educator, Hannah was transformed too, by discovering and mentoring a rare, gifted student — fittingly, she later wrote that "the art produced by an era is a measure of its social and spiritual personality... good education must develop imaginative, sensitive, and inventive people, confident in their ability to contribute actively to their society" (Hyams, 1974). The capstone of my year as a budding artist was an early acceptance letter from Pratt Institute, received on the strength of my portfolio months before my matriculation grades came in — fortunate, since my academic record was uneven.

Pratt Institute

In September 1969, when I arrived on campus, Pratt was undergoing significant transformation — student activism had contributed to a rethinking of curriculum and practice. The first-year program remained deeply influenced by Bauhaus traditions (Phelan, 2025) and the structural design principles of Alexander and Rowena Kostellow (Hannah, 2002), immersing students in the fundamentals of visual language: light, colour, shape, volume, structure, drawing, and representation, complemented by courses in English, art history, and the humanities. One of my instructors, architect Eugene Futterman, once exclaimed in frustration during a drawing class, "Esbin, you'd have great drawings if only you'd listen to me!" As he later put it, "perspective is not just a way to communicate with the untrained but "an aid to thinking and planning in three-dimensional space" (personal communication; Rosenberg and Futterman, Merim Residence Catalog, 1965).

For the 2D Design Course, I created a sixty-four-card game called Shh! — each card ten inches square, silkscreened individually, meant to be played silently as partners negotiated patterns without speaking, inspired by the multimedia collaborations between Robert Rauschenberg and John Cage (Klotz, 2016). Looking back, I can see an early fascination with systems and collaborative meaning-making. Ironically, my favorite course, however, was not a studio class, it was literature. Dr. Tobey Herzog taught American literature and encouraged my writing as much as my drawing. Under his influence I began to appreciate language as another creative medium. Literature opened different possibilities than visual art. Images could be created through words. Ideas could be explored through narrative. Questions could be examined through metaphor. Pratt exposed me to an educational environment where art, design, literature, and inquiry existed side by side. Yet my time there was brief. Circumstances including a health challenge interrupted my studies and I returned to Montreal.

Mosaic

The interruption led me to another unusual educational experiment: Dawson College's Mosaic Program at the Viger Campus in Montreal's east end, which Steven Pinker — who attended Dawson around the same time — later described as a place where experimentation flourished, and traditional

academic boundaries broke down. Pratt and Dawson now strike me as two expressions of the same cultural moment: Pratt exposed me to the artistic and imaginal dimensions of late 1960s New York, Dawson to the intellectual and philosophical dimensions of that same era in Montreal. Neither institution trained mere specialists; both encouraged exploration and inquiry — visual art teaching observation, design teaching structure, literature introducing interpretation and ambiguity. By the time I left Dawson, the foundations of my formal education were established, providing the intellectual framework upon which later studies, professional practice, research, and educational innovation would be built.

The Jewelry Industry

Apprentice

As with my grandfather's ironwork, my father's craft followed the same underlying process: ideas first appeared in imagination before taking material form through applied skill. While enrolled at Dawson College, I got a part-time job at a jewellery factory through him, learning to anneal gold, stamp charms with hydraulic presses, polish rings, and assist the die-maker — a die being not the final object but the hidden negative space that shapes it. People admire the finished gold charm; few ever see the polished iron die that made it possible, a fitting metaphor for the unseen craft behind any visible result.

Gemology

Upon graduating from Dawson College, my parents offered to underwrite my training as a Gemologist, leading to two years at the Gemological Institute of America (GIA) in Los Angeles, studying to identify and evaluate precious gems and diamonds. One lesson endures: the modern diamond cut, developed by engineer Marcel Tolkowsky in 1922 (Tolkowsky, 1919), showed that diamonds valued for millennia by size and weight alone were not categorically more valuable — their true worth was only revealed once excess weight was cut away. I have found this a metaphor for a great many things that need to be cut down to size, and why "less is more."

Peoples Jewelers

After completing the GIA program, I was hired by Canada's largest retail jewelry chain, rising by 1983 to director of merchandising for its upscale stores, including the famed Mappin's brand. My greatest success came when I was charged with developing a gemstone ring that would sell "in the thousands," spurred by the 1981 engagement of the UK's Princess Diana, whose twelve-carat sapphire and diamond ring became famous worldwide. My research process was unconventional: I cut hundreds of colored photos of gemstone rings from trade magazines, sorted them into piles, and discovered three basic design motifs recurring across an otherwise chaotic market. Working with a manufacturer, we cast three wax prototypes, each settable with different gems and price points — a program that generated millions in sales, set Peoples apart from its competition, and led to my being tasked with revamping the diamond training program for over 2,000 employees across Canada.

India

After several years of 100-hour work weeks, I was burned out and newly divorced, so I left the company. Through happenstance, I was invited to a retreat in India at Gangotri, led by Pir Vilayat Inayat Khan, in the high Himalayas. For a week, a group of about twenty westerners camped at 13,000 feet by the source of the Ganges — a river that begins as glacial meltwater and takes fifteen hundred miles to reach the sea, an apt metaphor for what happens when a little imaginative sunshine warms frozen thinking. While there, I was inspired to go back to university and become an art teacher, a viable alternative to corporate life.

Back to University

In order to gain the needed time and space for classes and study, I took a new part time job with lesser pay at a small but growing pearl importer. There, for the next five years, I worked as a marketing director while completing two successive degrees in art education. Back in 1985, while at McGill University I was preparing for my final assignment of a year-long practicum, I wanted to conclude with

a special lesson plan for a mixed gender class of thirty-two students, aged 15 to 17, and who were also diverse culturally and economically.

During a random search for an idea in the McGill Education Library, one slim, book hidden on the shelf caught my eye. The book, "Arts-Based Games," had been printed in 1979 (Pavey, D, 1979) . For five years it remained on the shelf, simply not part of any professor's reading list. Reading the book in one sitting, I learned the author was Don Pavey. He was a British educator and scholar as well as respected national expert on the psychology of colour.

During the 1960s, Pavey had been searching for a particular kind of learning game with specific criteria. It had to involve an entire classroom working in teams. It also had to use visual art-making to promote "winning" as an outcome for the entire class of students. Although Pavey discovered many interesting models and tools, he didn't find what he sought.

In the tradition of all visionaries and inventors, Don Pavey went about creating his own learning game, he called the "Art Arena Model" (AAM) (Pavey, 1979). He designed the model to be played without conscious deliberation or forethought. This was to help teammates strike a dynamic balance between freedom and control as well as individual and team expression. At the centre of the arena, where the students converge, anything may be creatively possible, and nothing may be ruled out.

Throughout the 1970s, thousands of individuals across Great Britain – in primary schools, secondary schools, technical schools, universities, and organizations – played a version of AAM. Pavey then summarized his extensive insightful research and practical experience in the book. After consulting with my McGill advisor and the classroom's art teacher, I decided to introduce AAM to his class of senior students. This was an audacious experiment to last several weeks and involve unfamiliar exercises. The advisor remarked given its complexity, it might likely fail but would be an invaluable learning experience.

The students were resistant at first. This experience was unlike anything they, or he, ever experienced previously. However, by the time it was over four weeks later, both the homeroom teacher and students all were highly engaged and energized. I then condensed the process and repeated it with my practicum advisor and fellow teachers-in- training at McGill. They played a version over two hours. Here too the experience was positive.

Graduate Studies and Doctoral Research

After receiving my Bachelor's Degree, I went on to complete two further degrees in education at McGill University. This took 14 more years, during which this extraordinary AAM experience receded from memory. My M.A. thesis, Western Aesthetic Conventions and Values Denoted through Artisanal Production in Non-Western Culture (Esbin, 1991), examined the contemporary Inuit carving tradition within the wider fine arts market, questioning concepts of indigenous culture, colonialism, and cultural appropriation. Western aesthetic convention, I argued, separated the manufacture of aesthetic objects from their economic purpose and forced them into a binary of art or craft — a problem compounded when Western judgements were applied to non-Western aesthetics. Inuit soapstone carving showed that the existing convention and nomenclature were inadequate to both intra- and extra-cultural concerns, and that a broader, more inclusive orientation was needed.

Doctoral Thesis

In 1991, I was invited to pursue a doctorate in education at McGill University based on my research examining the Inuit carving cottage industry and my professional background in product design. It was suggested I produce an educational ethnography. My research question was how one generation of Kisii artisans transmitted their carving skills to the next generation, informally and non-verbally in extended family work groups (Esbin, 1998). This meant I would live within and study, as a participant observer, this stone carvers' community located in the western highlands of Kenya by Lake Victoria.

My principal advisor, the late Dr. Tom Eisemon, directed McGill's Centre for Cognitive and Ethnographic Studies and was working with both Inuit and Kenyan soapstone carvers to identify psychosocial dynamics common to both groups despite vast cultural and geographic differences; the centre had also produced a book and national travelling exhibition of these carvers' work called "Stories in Stone."

My other two doctoral advisors deepened the study's goal and scope. Dr. Boyd White suggested a phenomenological approach, given that most artists cannot vocalize what they do or why, drawing on Arnold Berleant's The Aesthetic Field: A Phenomenology of Aesthetic Experience (1970). Dr. Mary McGuire suggested framing the study using Lev Vygotsky's theory of learning as a social activity — Vygotsky, a pioneering Soviet-era social psychologist, saw human psychological development as emerging through interpersonal connections (Vygotsky, 1978) — and studying Jean Lave and Etienne Wenger's work on communities of practice in Situated Learning (1991). Both advisors' counsel proved prescient regarding the dynamics of virtual project teams some two decades later.

During my time in Kenya I also consulted for the International Labour Organization, the Royal Netherlands Government, and the Mennonite Central Committee, including a 1994 ILO study on the informal artisan sector called Jua Kali ('Hot Sun' in Kiswahili), "The Marketing and Promotion of Jua Kali by Government and Institutional Partners." It deepened my appreciation for the power of human imagination to repurpose anything, including trash, into useful, inventive products — like discarded car tires into durable sandals.

Social Entrepreneurship: The Return To Don Pavey

The Art Arena Model and Don Pavey's work had receded into memory during my doctoral years in Kenya, about to resurface unexpectedly. After returning to Canada in 1994, I worked for Oxfam Canada as managing director of its fair trade company, then became executive director for H.O.P.E., a volunteer-driven, not-for-profit events organization that raised funds for community charities through a novel event combining several thousand volleyball players (ages 20–30+) with an all-day rock concert; revenues, after modest expenses, went to a roster of local and regional charities. In 2000, I decided to write a book on imagination and began extensive research. That same year, unbeknownst to me, Dr. Johan S. Roos and Dr. Bart Victor founded the Imagination Lab in Switzerland with funding from LEGO, building on the LEGO Serious Play methodology they had introduced in their 1998 paper, "In Search of Original Strategies: How About Some Serious Play?" Given my own experience with the Art Arena Game (Pavey, 1979), a kindred protocol, I soon 'discovered' the Lab's first white paper, "Managerial Intentionality in Strategy Making." Salmador, Victor, and Roos (2001) explained how imagination was instrumental to good management, noting that their framework "fuels further the development of the science and practice of imagination as a source of strategy creation" (p. 22) — validation that I was on the right path. However, by 2003 I felt blocked in my writing. By chance, I heard someone say, "a theory without practice is useless," and that was my problem: I had many ideas but no methodology.

It was while working for H.O.P.E. in 2003 that the solution presented itself. A former Oxfam colleague invited me to speak to his group of managers from the Canadian Association of Community Colleges, and after asking what they actually needed, I realized it wasn't a talk but a transformative experience — so I decided to introduce the Art Arena Game to them. My original notes were long gone, so working from a few remaining class slides from '85, I reconstructed the basic process, condensing the four-week, thirty-person process into a four-hour activity with ten participants. In November 2003, the Art Arena Model was facilitated for the third time in Canada after 18 years. My workshop received mixed reviews — some saw its value, most did not, and in fairness I had been asked to design a workshop around learning professional networking skills.

However, I saw AAMs relevance and Pavey's long lost book in a new light. That is, a practical framework and application for the theory I was developing. That theory was weaving together strands of thoughts and models from Pavey, Carl Jung, Kenneth Boulding, and Jose Arguelles. About the use of symbol and color in visual design to covey complex messages to engage and transform human perception at an individual, organizational, and societal level.

Given my “re-discovery” of the Art Arena Model, and the pivotal role it was again playing, I felt a responsibility to seek formal permission from its creator. This proved difficult: I could not remember the name of the book or its author, the book had gone out of print, and another author by the same name — Don Pavey — was prominently listed in library databases, complicating the search. Thankfully, the head librarian at the McGill Education Faculty Library found a single reference after nearly a year of sleuthing. The correct Don Pavey was then in his late seventies, alive and well in London. In April 2004 I wrote to him explaining my ideas and asking to meet; he responded with a warm invitation, and I flew to London to outline my vision and a proposed compensation plan. Pavey graciously gave his blessing for me to adapt AAM freely, without commercial recompense or conditions, wanting only, in his words, “to bring it into the 21st Century.” I returned to the UK to see Pavey again in 2006. Don further transformed my work and life by sharing something as profound as the Art Arena Game: a strengths-based self-assessment software program using color preference, based on his neuropsychological research into how color and shape stimuli are processed perceptually. Users viewed a series of color palettes onscreen, and their preferences were tabulated algorithmically into a personality profile report.

Pavey’s research and writings helped bridge contemporary scientific thought with ancient healing therapies using color. Pavey’s posthumous publications include “Color & Humanism” (2003) and “Buddhist Colour: How Mahayana Buddhists Overcome Destructive Emotions” (2013). The following is a hint of this work. "Dante's use of green... refer[s] back... to the Gnostics who saw Mind itself as the 'Great Green' and the Heaven Space or Celestial Nile. A century later the mystic poetess Hildegard of Bingen saw the Holy Spirit as being of 'most noble greenness” (Pavey, 2003, p. 51).

Building the First Prototype

Don and his business partner encouraged me to also bring their software self-assessment to North America, presenting a new design challenge: how to combine the Color-based Self-Assessment with the Art Arena Model in one integrated offering. In December 2004, I incorporated a social enterprise in Canada, Heliotrope Imaginal Education Systems, to develop and market a new learning resource based on Pavey’s innovations in strengths-based self-assessment and team development training. It took three years to integrate both offerings into a working prototype that aligned Pavey’s color-based resources with my own “fifth element” of imagination. Piloting it in willing organizations proved difficult, since decision-makers rarely want to risk employee time on an unknown resource, especially where students or vulnerable groups are involved. After repeated rejections, two intrepid professionals agreed — the head of a nonprofit youth-serving agency in Vancouver, and a Quebec middle-school teacher introduced by a district superintendent. Feedback from both groups was invaluable; both liked the process and found value in it, and I kept Don abreast through email and VOIP calls.

Developing the Star Model

In 2007, I had to stop using the software, as Don’s part-time tech consultant in London could no longer support our growing user base in eastern Canada. This precipitated a crisis: I needed an alternative strengths-based assessment, since both pilot groups liked the combined package. Fortunately, I was able to purchase a self-assessment algorithm no longer on the market — a four-fold model of personality originally developed by Carl Jung in the early twentieth century, based on the ancient four elements of fire, air, water, and earth, and later adapted commercially by True Colors International and CPP, owners of the Myers-Briggs Type Indicator (MBTI). I wanted something more holistic, so I re-envisioned the four-fold model as a five-point star, with imagination as its apex element. Instead of Jung, I looked to Pythagoras.

Pythagoras

The ancient Pythagorean School adopted the five-point star as a symbol of the ideal human (Britannica, 2022; Scientific Library, n.d.). Each of the five geometric triangles were associated with an element. The four lower triangles – air, fire, water, earth - form the arms and legs of the star. The fifth triangle is the apex. This completes the star and gives it crowning form. The apex points upwards to its divine celestial origins.

This fifth element, aether, was of a different order than the material lower elements (Aristotle, ca. 350 BCE/1995): it was thought to fill the cosmos, enveloping the terrestrial sphere and humans, unchanging and timeless yet still material in quality. They called this "Quintessence" — the absolute best something can be, or, in another word, "Excellence." The Pythagoreans placed the five-point star within a circle, its points spelling the word "Hygieia," reverenced as a sacred symbol of sanity and good health and a mark of recognition between peers not meant for outsiders — a powerful archetypal image and prompt for "phronesis," or practical wisdom: "mindfulness in action" (Opsopaus, 1999). Excellence is defined as "the quality of being outstanding"; its ancient root, "kel," meant "hill" or "to be prominent" (Online Etymology Dictionary, n.d.) — the importance of "high ground" has been recognized in military strategy for over 2,000 years, and the apex of the five-point star points upward for the same reason. For ancient Greek philosophers, "Aretē" meant excellence in the pursuit of character and vocation (Aristotle, ca. 4th century BCE/1999); its original sense was the top of an ear of grain, and it survives in Swiss French as the "sharp crest of a mountain." By the 14th century C.E., "excellence" had come to mean "that in which someone or something excels" — the sense that constitutes popular understanding today. The five-point star remains a universal symbol of excellence and power today. More than forty nations feature it on their flags, spanning otherwise incompatible political systems. Police badges, medals for courage, gold stars for schoolchildren, and a general's insignia all draw on the same symbolism. Each person is called to discover their "telos" — who they are uniquely and what their vocation will be: to actualize their full potential, harness all their faculties and abilities, work at an optimal level of effectiveness, practice virtues such as wisdom, courage, kindness, humor, and moderation, and achieve excellence. Several models of mastery and growth employ the five-point star or five-step pyramid as an aspirational symbol of achievement — among them Maslow's "Hierarchy of Needs" (1943), Senge's "The Fifth Discipline" (1990), and Dreyfus's "Five Stages of Adult Skill Acquisition" (1980).

When a person is focused, their goals are clear, and their elemental traits are harmonized, we say they're 'together'. When such individuals apply themselves in any endeavor they reach for excellence. This characterizes a natural psychological state of Flow. In this state, learning, work, and living are optimized. These individuals are "Star Performers" in the truest sense. This was true in ancient Greece 2,500 years ago and as true today.

Schools, Ngos, And Companies

External Reference Models

The pioneering work of Dr. Mihaly Csikszentmihalyi and Dr. David Cooperrider were touchstones for what we were observing firsthand: a team's experience of strength-flow fusion (Csikszentmihalyi, 1990; Cooperrider & Whitney, 2005). Csikszentmihalyi wrote that by understanding and leveraging one's strengths, a flow state can be achieved, leading to optimal performance for individuals, teams, and organizations. Cooperrider, co-founder of Appreciative Inquiry, called this "Profusion" — the positive fusion of strengths that forms an organization's "positive core" (Cooperrider, 2012, p. 115), a prism that can "refract and reflect our highest human strengths outward into society, enabling upward spirals of collaborative innovation" (Cooperrider & Lindsey, 2012, p. 36).

Events

In 2008, Education Canada published my seminal article. Imagination Goes To School. This was distributed to ministries of education and district leaders nationally.

> Children enter school brimming with imagination, masters of make-believe honed through years of play — yet for the next decade this cognitive faculty is neglected by school, while reason is explicitly and assiduously cultivated, reflecting the West's historical bias. That bias is now shifting, informed by non-Western views where the imaginary and the real are interwoven, and by advances in science and technology: imagination is increasingly recognized as intrinsic to every endeavor, from the arts and science to medicine, industry, and sport. (Esbin, 2007–2008, p. 24)

In 2009, the Eastern Townships School Board in Quebec became the first to license our combined resource for middle school students, followed by steady growth across school boards, community agencies, and colleges in six Canadian provinces and four American states — used in mainstream classrooms as well as Drop-out Prevention, Life Skills, and Aboriginal Youth Programs, and licensed internationally for two years by the Women's College in Dubai.

In 2009, I presented the resource virtually at the World Appreciative Inquiry Conference in Nepal — the first time the event was held outside the United States — which drew over 400 participants and focused on using strengths-based community building to support Nepal's peace and constitution-making processes.

Appreciative Inquiry (AI) Principles and AllStarTeams (AST) Practices

AST practices share a common premise: people and teams perform best when they build from strengths, envision positive futures, foster meaningful relationships, and engage in purposeful dialogue.

- **Strengths Focus** : AST identifies and amplifies individual and team strengths ("positive core"). More specifically, the protocol valorizes "imagination" as an apex strength and key to understanding themselves and how they apply their other strengths like thinking feeling, planning and acting.
- **Future Orientation** : AST helps participants create compelling images of their desired future and align action with purpose.
- **Quality Relationships** : AST uses storytelling, reflection, and visual collaboration to deepen trust, empathy, and shared understanding.
- **Collective Engagement** : AST brings diverse perspectives together to build shared vision, accountability, and coordinated action.

In 2012, Curriculum Services Canada (CSC) awarded the Seal of Quality to the AllStarTeams after a rigorous review. CSC was a non-profit education quality assurance agency. In May 2012, the Software Information Industry Association (SIIA) showcased the blended learning version as one of the year's "*most innovative, relevant new education tech products".*

Shifting Sectors Strategy

The prior year, a Bellwether Education Partners report had found that public education operates within a fragmented, often irrational philanthropic funding environment, dominated by a handful of large publishers with little competitive pressure to innovate (Smith & Petersen, 2011) — explaining many of the challenges a small education enterprise faces. In 2019, with support from advisors, I decided to move primarily into company training, where the decision-purchase cycle is shorter and more rational, margins are better, and global scale more possible — a shift that educators, principals, and superintendents had long suggested would be invaluable.

Going Virtual

Lipnack and Stamps (2000) published Virtual Teams: People Working Across Boundaries with Technology, an expanded edition of their pioneering 1997 work and one of the first books devoted to virtual teams, helping establish concepts that still shape distributed collaboration today. The early emergence of virtual teaming told me the resource had to be digitized to engage individuals and teams online with the same quality of experience as our blended learning model. We first experimented with Microsoft PowerPoint Online — effective, but too restrictive in its sequential slide format. Cloud-based whiteboards offered a more expansive "endless canvas," closest to the cohort-based methodology we practiced in physical settings. By then the protocol was well honed: participants began with an individual strengths-based self-assessment, creating visual digital artifacts now called Star Cards, alongside exercises to promote a positive, holistic sense of self and one's potential.

Then, meeting as teams, participants share their Star Cards and instantly recognize each other's uniqueness — heliotropic in nature. Individual core strengths and flow-state attributes appear visually

as a table of symbolic colors, and hundreds of student and professional teams have been able to explain what they see and assess for themselves, with little facilitation, whether they're in balance or unaligned.

Overall, the scaffolded methodology was to guide participants through ever wider frames of reference experientially, from individual, to team, to organization, and to society. This continued to reflect the principles and goals of the original Art Arena Game. Northern Cree Elder and Educator said that it was like their Medicine Wheel and *"really effective in bringing the group together" (personal communication, 2016).* Today's version remains, a prime exemplar of constructivist theory and practice. That people learn best by making sense of life, especially when shared collaboratively through co-creation of experiences and artifacts.

Use Cases: Corporate - Academic

In 2017, I contacted Mariano Suarez-Battan, founder of the cloud-based whiteboard platform MURAL, whose philosophy was the most cogent since the original work of Roos and Victor (1998). As Suarez-Battan (personal communication, 2017) observed, imagination at work is key to innovation, and early adopters at some of the largest organizations realized they didn't need to be in the same room to turn imagination into innovation through visual collaboration. Mariano immediately saw value in our use of the whiteboard, beginning a five-year collaboration; at its peak in 2022, over 500 MURAL employees worldwide experienced our resource. The protocol also proved viable with educational clients — one testimonial described using it successfully on a dozen enterprise architecture projects to build trust and align new teams (personal communication, Dr. Alexander Zak, University of California, San Diego, 2018). In retrospect, our decision to focus on business over school clients was prescient: COVID cost us all our educational clients, while our business clients simply migrated online.

Completing the Book

During COVID, MURAL received over $150 million in new investment and tripled their staff to 1500 employees. Unfortunately, the new Human Resources Director favored more traditional assessments like MBTI and was also critical of some of our design features.

This was a significant setback, both strategically and financially. Over the next two years (2023–2024) I undertook a major redesign with an external consultancy, which led to new pilots and engagements with the Project Management Institute and an invitation to keynote the PMI CanWest Conference in November 2024. Two publications informed that talk: Gallup CEO Jon Clifton, launching the 2024 State of the Workplace report, said "the world's workplace is broken" (Gallup-podcast-state-global-workplace-thriving.aspx); and Deloitte's 2024 Global Human Capital Report found that as AI advanced, organizations were experiencing an "imagination deficit" even as the skills they demanded had increasingly shorter shelf lives. Accordingly, the authors suggested organizational leaders focus on empowering employees enduring human capabilities including imagination, curiosity, empathy, creativity, and courage.

These two publications were highly validating of our work. My subsequent presentation was well received by the approximately 100 project manager attendees. Moreover, I finally felt it was time to complete my book on imagination, started two decades earlier. In other words, there was now a functioning methodology to support my theory of imaginal education missing in 2003.

Returning to Education

An unexpected opportunity in 2025 arose to work again in education. This unfolded on two levels involving a UK-based training program and later the International Center for Innovation in Education (ICIE).

Directed Development

The first opportunity was an initiative in Kenya, the very birthplace of the entire enterprise discussed thus far. (DirectED Development https://directed.dev/) connects high-potential African students with world-class education and remote tech work opportunities at zero upfront cost.

The protocol was adapted for a cohort of 40 Kenyan and Ethiopian students from diverse socio-economic, cultural, and geographic backgrounds, delivered virtually by facilitators in the UK and Italy, once weekly for 90 minutes over five weeks, resulting in:

- 100% cohort completion rate.
- Full engagement sustained across all five weeks
- Increased clarity in personal strengths and how to apply them in teams.
- Greater awareness of optimal working conditions and flow strategies.
- Stronger connection to a personal future vision.

Table 1 summarizes the program's five-week structure.

Table 1: DirectED Development Five-Week Program: Modules, Focus Areas, and Key Deliverables.

Week	Module	Focus	Key Deliverables
1	**Discovering My Strengths**	Core self-awareness	Star Self-Assessment (Core Strengths profile)
2	**Finding My Flow**	Focus, motivation, and stress resilience	Flow State Attributes mapped to strengths
3	**Visualizing My Potential**	Future orientation and well-being	Ladder of Well-Being + Future Self Vision
4	**Integrating My Insights**	Readiness for collaboration	Team Role commitment + personal growth plan
5	**Team Fusion Workshop**	Collective synthesis & co-creation	Fusion Map + shared team growth plan
Takeaways	• Digital Star Card – visual summary of each student's strengths and flow attributes. • Holistic AI-Curated Report – integrates all assessments into a personalized development narrative. • Digital Badge of Achievement – verified, shareable proof of learning.		

ICIE Journal and Conference

After the DirectED program concluded in August 2025, I continued working on the imagination book. An online search turned up "The International Journal for Talent Development and Creativity (IJTD), Volume 3, Number 1, June 2015," and in it, "From the Editor's Desk: Creative Journeys: Inspiring Imagination and Innovation." Dr. Karen Magro had written at length about my 2008 article, "Imagination Goes to School," observing that "Esbin's work reveals how imagination functions as a transformative force in learning, community development, and human potential." After I contacted her, she kindly introduced me to Prof. Dr. Taisir Yamin, leading to an ongoing dialogue and collaboration, and an invitation to present virtually at the December 2025 ICIE Annual Conference in Houston, entitled Human Agency and Imagination in the AI Era: The Reset.

The Neuroscience Paradigm Shift

These events spurred me on to complete the book. The Neuroscience Paradigm Shift: Professional Imagination in an AI World lays out a comprehensive foundation for understanding imagination — how it functions, why it diminishes, and how it can be intentionally renewed, from individual cognition to team and organizational performance — drawing on convergent findings from neuroscience, psychology, education, and organizational studies. It introduces a new Imaginal Agility framework and program from theory to practice, including the I4C model, the Ladder of Imagination, and practical tools for cultivating imaginal capability in an AI-driven world. Both AllStarTeams and Imaginal Agility are now presented as a scaffolded two part learning program for closing the "self-awareness gap" (Eurich, 2017(and the "imagination deficit" (Deloitte, 2024).

Conclusion

"The more AI-enabled work becomes, the more important human imagination becomes."

(Deloitte, 2024, p. 69)

The title of this essay reflects more than a family history spanning generations of makers. It epitomizes an enduring fascination with the visionary nature of transformation itself. As William Blake observed: "*What is now proved, was just once only imagined" (Blake, 1790).*

Imagination is the neurological foundation that enables us to intentionally develop the core human capabilities of curiosity, caring, creativity, and courage across an entire lifespan. Today, we have begun to map both the deficit and the pathway forward. The good news is that:

- Imagination is not fixed—it is trainable.
- The brain responds to focused practice.
- Future-Self Continuity can be strengthened at any age through structured protocols.

This research on neuroplasticity helps explain why Michelangelo reportedly wrote in his journal, "I am 87 and still learning" (as possibly recorded in the Casa Buonarroti archives, Florence) — even as he carved his final masterpiece, the Rondanini Pietà, begun around age seventy-seven in 1552 and refined until days before his death in 1564 at age eighty-eight.

Implications for Educators

For educators, the implication is direct: imagination deserves the same deliberate, methodical cultivation as literacy or numeracy, not incidental encouragement, and Artificial Intelligence is only accelerating that urgency. This chronicle points to high-impact, low-cost, scalable approaches — built into curricula, teacher training, and workplace learning alike — since scaffolded practice can produce measurable neural change within eight to twelve weeks, and cultivating imagination collectively is associated with increased interbrain coherence among participants, effects that can shape an entire classroom or organizational culture.

Imagination is a powerful force that can lead to both creation and destruction. Moral imagination ensures that what we envision is not only possible, but also wise, just, and compassionate.

Imagination is our bridge to tomorrow. Before us lies the possibility of a healthier, wiser, more creative, and more humane world—one in which every person has the opportunity to imagine, and become, their best self.

A Celtic knot has no obvious beginning and no final end. Its strands continuously return to themselves while moving forward. So too has been my own journey. Imagination is the forge in which identity, knowledge, community, and possibility are continuously wrought into life.

"Imagination is not just powerful; it is power itself" (Abhinavagupta, ca. 1000 C.E., as cited in Ratié, 2010).

"The highest use of imagination is to imagine the unimaginable."(Ozick, 1987)

References

Argüelles, J. (1975). *The transformative vision: Reflections on the nature and history of human expression*. Shambhala.

Aristotle. (1995). *On the heavens* (W. K. C. Guthrie, Trans.). Harvard University Press. (Original work published ca. 350 BCE)

Aristotle. (1999). *Nicomachean ethics* (T. Irwin, Trans., 2nd ed.). Hackett Publishing Company. (Original work published ca. 4th century BCE)

Benner, P. (1984). *From novice to expert: Excellence and power in clinical nursing practice*. Addison-Wesley.

Berleant, A. (1970). *The aesthetic field: A phenomenology of aesthetic experience*. Charles C Thomas.

Blake, W. (1790). *The marriage of heaven and hell*. https://en.wikisource.org/wiki/The_Marriage_of_Heaven_and_Hell

Boulding, K. E. (1956). *The image: Knowledge in life and society*. University of Michigan Press.
Britannica. (2022, September 29). *Pentagram*. Encyclopedia Britannica.
Collins, J. (2001). *Good to great: Why some companies make the leap . . . and others don't*. Harper Business.
Cooperrider, D. L., & Whitney, D. (2005). *Appreciative inquiry: A positive revolution in change*. Berrett-Koehler.
Cooperrider, David & Godwin, Lindsey. (2012). *Positive Organization Development: Innovation-inspired Change in an Economy and Ecology of Strengths*. The Oxford Handbook of Positive Organizational Scholarship.
Csikszentmihalyi, M. (1990). *Flow: The psychology of optimal experience*. Harper & Row.
Deloitte. (2024). *2024 global human capital trends: Thriving beyond boundaries—Human performance in a boundaryless world*. Deloitte Insights.
Dreyfus, S. E. (2004). The five-stage model of adult skill acquisition. *Bulletin of Science, Technology & Society, 24*(3), 177–181.
Esbin, H. (1991). *Western aesthetic conventions and values denoted through artisanal production in non-Western culture* [Unpublished master's thesis]. McGill University.
Esbin, H. (1994). *The marketing and promotion of Jua Kali products by government and institutional partners*. International Labour Organization.
Esbin, H. (1998) Carving Lives from Stone: Visual Literary in an African Cottage Industry] (Unpublished doctoral dissertation). McGill University.
Esbin, H. (2007–2008). Imagination goes to school. *Education Canada, 48*(1), 24–26, 28.
Eurich, T. (2017). Insight: Why we're not as self-aware as we think, and how seeing ourselves clearly helps us succeed at work and in life. Crown Business.
Gallup. (2024). *State of the global workplace: 2024 report*. Gallup, Inc.
Hyams, Hannah L (1974) Toward a theory of instruction (according to Jerome S. Bruner) as applied to art teaching in the secondary school. Master's thesis, Sir George Williams University.
Hannah, G. G. (2002). *Elements of design: Rowena Reed Kostellow and the structure of visual relationships*. Princeton Architectural Press.
Jung, C. G. (1971). *Psychological types* (R. F. C. Hull, Rev.; H. G. Baynes, Trans.). Princeton University Press. (Original work published 1921)
Klotz, S. (2016). *The Black Mountain years: Experiments and collaborations*. Robert Rauschenberg Foundation. https://www.rauschenbergfoundation.org/art/artists/robert-rauschenberg/black-mountain-years
Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge University Press.
Lipnack, J., & Stamps, J. (2000). *Virtual teams: People working across boundaries with technology* (2nd ed.). John Wiley & Sons.
Magro, K. (2015). From the editor's desk: Creative journeys: Inspiring imagination and innovation. *International Journal for Talent Development and Creativity, 3*(1).
Maslow, A. H. (1943). A theory of human motivation. *Psychological Review, 50*(4), 370–396.
Maxwell, J. C. (2011). *The 5 levels of leadership: Proven steps to maximize your potential*. Center Street.
Miller Rodgers, M. (2010, September 27). Comprehensive Soldier Fitness marks change in Army culture. *Army.mil*.
Museum of Modern Art (New York, N.Y.). Exhibit brochure for *Jackson Pollock works on paper*, 1968. Jackson Pollock and Lee Krasner papers, circa 1914-1984. Archives of American Art, Smithsonian Institution.
Online Etymology Dictionary. (n.d.). *Excellence*. Etymonline. Retrieved July 6, 2026, from https://www.etymonline.com/word/excellence
Opsopaus, J. (1999). *The Pythagorean pentacle*. http://opsopaus.com
Ozick, C. (1987). The art of fiction, no. 95 [Interview]. *The Paris Review*, (103).
Pavey, D. (1979). *Art-based games*. Methuen.
Pavey, D. (2003). *Colour and humanism: Colour expression over history* (R. Osborne, Ed.). Universal Publishers.
Pavey, D. (2013). *Buddhist colour: How Mahayana Buddhists overcome destructive emotions*. Lulu.com.
Phelan, A. (2025). *The Bauhaus and studio art education*. Jon Kolko.
Ratié, I. (2010). "A five-trunked, four-tusked elephant is running in the sky": How free is imagination according to Utpaladeva and Abhinavagupta? *Asiatische Studien / Études Asiatiques, 64*(2), 341–385.
Roos, J., & Victor, B. (1998). In search of original strategies: How about some serious play? *Perspectives for Managers, 26*(15), 1–4. IMD International.
Rosenberg & Futterman, Architects. (1965). *Merim residence catalog* [Firm catalog]. Rosenberg & Futterman.
Salmador, M. P., Victor, B., & Roos, J. (2001). *Managerial intentionality in strategy making* (Working Paper No. 5). Imagination Lab Foundation.
Satir, V. (1988). *The new peoplemaking*. Science and Behavior Books.
Scientific Library. (n.d.). *Pentagram*. ScientificLib.com.
Senge, P. M. (1990). *The fifth discipline: The art and practice of the learning organization*. Doubleday/Currency.
Smith, K., & Petersen, J. (2011). *Steering capital: Optimizing financial support for innovation in public education*. Bellwether Education Partners.

Tolkowsky, M. (1919). *Diamond design: A study of the reflection and refraction of light in a diamond*. E. & F. N. Spon.
Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes* (M. Cole, V. John-Steiner, S. Scribner, & E. Souberman, Eds.). Harvard University Press.

About the Author

Howard B. Esbin, PhD, is Founder and CEO of Heliotrope Imaginal, a Canadian social enterprise developing neuroscience-informed human capability infrastructure for the AI era. His work integrates research from neuroscience, psychology, education, and organizational development to strengthen self-awareness, imagination, and human-AI collaboration. Dr. Esbin completed his doctorate at McGill University, where his research examined how indigenous knowledge, education, and social learning contributed to sustainable community development in Kenya. Over a career spanning more than three decades in organizational leadership and international education, he has designed innovative learning systems for educators, students, and organizations. His current research focuses on imaginal agility, collective intelligence, and the uniquely human capabilities needed to flourish alongside Artificial Intelligence (AI).

Reflections of a Lifelong Learner

Humam Bishara Ghassib
University of Jordan, Amman – Jordan

Abstract

In these autobiographical reflections, the author recounts the main themes of his intellectual journey as a perennial learner from the cradle to the grave. These themes include: (1) *Dichotomies*, such as "East versus West" and "Humanities versus Sciences" (the *Two Cultures*): The idea is that there exists almost invariably an overall frame that embraces both sides of a dichotomy. (2) *Language* and its relation to *creativity*: The concept of *language* is extended to embrace not only our verbal language, but also the various disciplines and non-verbal languages. Mastery of one's "language(s)" is a necessary, but not sufficient, condition for creativity. Other elements are underlined. (3) *Theoretical Physics*: Pursuing high-level research in this field; but also the application of its ideas and concepts to other fields – for example the application of the concept of *interaction* to intercultural interactions, and of the ideas of symmetry and asymmetry to the Arabic language.

Keywords: Dichotomy; Language; Creativity; Theoretical Physics.

Preliminaries

I am a professed lifelong learner of the *Two Cultures* [the Sciences and the Humanities] (Snow, 1959 & 1964; Huxley, 1963). Right from my youth, I have felt at home in both. Since these early days, I have been celebrating the unity of knowledge, unity of existence, and unity of the Cosmos. My teachers at Bishop's School in Amman, Jordan, often called me "the young philosopher", thanks to my probing questions and extraordinary fascination with ideas and concepts. A few years later, when I finished high school and went to England for my higher education, one distinguished professor of theoretical physics told me: "Son, you are a born theoretical physicist; stay away from Philosophy!"

Before proceeding further with these autobiographical reflections, it is fair to pose the question: Why should a person like me write such reflections? It is not that there is nothing of interest or even value in my intellectual life and times; but there are, I think, too many autobiographies or autobiographical "pot pourri", and some of these are somewhat pretentious and marginal. Besides, if one wishes to write a reasonably good autobiographical account, one should satisfy Leo Tolstoy's two criteria for a good account: One should write well, and one should have something to say. While I hope I will pass on both counts, it remains up to the critical reader to make an objective judgment.

There are other reasons for my hesitance and embarrassment (aside, of course, from the extensive use of the first-person singular, which cannot be helped here). One of them is that I believe an autobiographical narrative should be written in one's mother tongue. Although I have read and written extensively in English, I can only breathe and feel free in Arabic. It is the nuances and delicate shades that fascinate me in a language. Above all, it is nothing short of a miracle when a writer attains an unmistakable style which shines in every sentence and every paragraph. Can one achieve this (at least in most cases) in any but one's 'first' language? I can only speak for myself: I cannot – not to my satisfaction! After all, our *mother* tongue is our first. One's brain receives its first training, as it were, in one's mother tongue.

Another reason is the question of 'universality' versus 'locality'. Can one speak to readers everywhere? Will at least part of a writer's output be of some appeal or interest to readers of different creeds, backgrounds, and cultures? If it turns out to be rather parochial and limited in its outlook, then why should one waste time and effort putting anything on paper? Any 'nonuniversal' writing will be born dead!

These have been turbulent times, especially in my part of the World where political and economic upheavals have been, and still are, the norm rather than the exception. Yet, perhaps all times

are ‘phase transitions’, to use a familiar term in physics. Some, though, are more so than others. I was born and brought up in a small country, Jordan, which was ‘created’ in 1921 right at the heart of a torn ‘Arab Nation’. Emerging from the grip of the Turkish Ottoman rule, which had lasted four long centuries, the Arab World was sliced ruthlessly mainly between the old colonial powers – namely, Britain and France – with Libya ‘sacrificed’ later on a silver platter to Mussolini’s Italy. Especially painful was the sequence of events in Palestine, culminating in 1948 with the *Nakba* (meaning ‘calamity’), whereupon most of the historic land of Palestine became ‘Israel’ and the long Palestinian diaspora began. Jordan was one of many Arab countries which bore the brunt of this human tragedy of monumental proportions. This was particularly poignant for me as soon as I grew old enough to grasp the agony of it all, because Fate had it that I was born that very year, on April 27th – only 18 days before the ‘official’ date of the *Nakba*!

But, I am not going to dwell on such matters, impactful as they have been on the upbringing of my generation and subsequent Arab generations. This is because they involve so much complex politics and history which would take me too far afield from the main themes of this essay. These themes are the subject of the next section.

Main Themes of My Intellectual Journey

For the past few decades, I have been describing myself as a lifelong, struggling, but diligent, learner – not out of modesty, whether genuine or fake; but, in response to the lingering question I keep asking myself: Who am I *vis-à-vis* the Cosmos, no less? After all, “the more I *know*, the more I know how ignorant I am”, according to an Arabic aphorism attributed to the famous *Imam Al-Shafi'i* (767-820)(1). [In Arabic: *"كلّما ازدتُ علمًا، ازدتُ علمًا بجهلي".*] I should add that this aphorism recurs, in some form or another, in several different cultures. The implication is that one is necessarily a perennial learner from the cradle to the grave. I have remained a child in that for me, the wonders of the world are not only seven, but infinite! I am awestruck all the time, even in my dreams and thoughts, by the phenomenon of Life and of the Universe; by *The Grand Design* (Hawking and Mlodinow, 2010); by the infinitesimal and the infinite; by patterns recurring everywhere in space and time; and by all the tools at our disposal to explore and probe both our ‘outer’, material world as well as our ‘inner’, spiritual world. Here are some overarching themes in my never-ending quest to make sense of our World:

Dichotomies

Time and time again, I have been overwhelmed by many striking, *apparently* incompatible, dichotomies. Part of the struggle of my life has been to reconcile these dichotomies and show that they are quite harmonious – hence the italics in the word ‘apparently’. The idea is that there exists almost invariably an overall frame that embraces both sides of a dichotomy. It is not an “either … or” situation, but rather “either *and* or”. There is indeed a *spectrum* of shades and colors between the two. In some respects, this is reminiscent of Hegel’s dialectical model (1807-1817) “*Thesis-Antithesis-Synthesis*”. For me, as a theoretical physicist, this is only natural. After all, the Universe consists of both matter and antimatter; particles and antiparticles; positive and negative charges/poles; order and disorder.

For example, consider the dichotomy “East versus West”. You will find some elements of the one in the other. It might turn out not to be a dichotomy after all, with due respect to Rudyard Kipling [“Oh, East is East, and West is West, and never the twain shall meet”, from his *The Ballad of East and West* (1889)].

I have already mentioned another example: C. P. Snow’s dichotomy of the *Two Cultures*, “Humanities versus Sciences” (Snow, 1959 & 1964). Several decades ago, I started talking and writing about a *third culture* bridging the two. This would be informed by a solid, hybrid education based on well-curated material designed to enable students to cope with a rapidly-changing world.. I am not referring here to the odd lecture or lesson; rather, I have in mind an innovative curriculum which emphasizes the unity of knowledge as well as interdisciplinarity. Such a curriculum should be a prerequisite in both high school and college. It should be directed to students of all disciplines, straddling both humanities and sciences.

Language

I have spent a lifetime thinking about the *concept* of 'language' and its relation to creativity.

Let me start with the verbal language, our spoken and written language – the language of letters and words, and the miracle of constructing complete rational sentences and even great writings. This is not just our means for communicating with ourselves and with others; I also view it as merely *one* of our essential tools for addressing, and interacting with, Nature and indeed the Universe as a whole. Other tools with a similar objective include physics, mathematics, computing, digital technologies, artificial intelligence (AI), music, and virtually all other disciplines. I regard all these, together with our instruments and devices, as potent probes for exploring the infinitesimal and the infinite, including our own brain and "inner life". Each discipline has its own 'language'. For instance, the language of physics includes, *interalia*: mathematical symbols and equations, graphs and charts, computing codes and algorithms – in addition to our verbal language, in which we can express scientific concepts and explain physical laws and theories. The point is that one can become a physicist only if one becomes adept in this language of physics. And the same applies to all other disciplines.

How is this related to creativity? My tentative answer is that, *first,* one must have crossed a certain threshold in one's mastery of the 'language' of one's discipline before manifesting any sign of creativity or innovation. However, to quote a mathetical expression, this is a *necessary, but not sufficient, condition* for creativity. *Second*, there comes the mysterious, almost divine, spark – namely, *inspiration*. I am reminded at this point of Thomas Alva Edison's famous remark: "Genius is one percent inspiration; ninety-nine percent perspiration". Inspiration may well be one percent, or even less; but, without it there exists no creativity! *Third*, one must be a *creative learner*. This means that one should be curious, adaptable, and open to possibilities, with a propensity to appreciate multiple perspectives, problem solving, and even problem finding.

This generalization of the concept of *language* may seem superfluous or just pure semantics. However, I strongly believe that it is not only useful; it also underlines the limitations of any single 'language' alone. What is needed is a holistic approach, based on all our 'languages', to probing our brain, and indeed the entire Universe in all its majesty and grandeur.

Having said all this, I should add that our verbal language furnishes an overarching background for all other 'languages'. We cannot do without it. Wittgenstein and Chomsky, among others, insist that we cannot even think without it. However, mounting evidence, based on careful experimentation, points out that in some cases we *can*. Perhaps this is not, once again, an "either/or" situation.

The potency of our verbal language needs no emphasis: "In the beginning was the Word (*Logos*)" [Gospel of John (1:1)]. We can use it to express the sacred and the profane; the sacrosanct and the vulgar. Creativity of language, any language, is evident in countless texts: poetry and prose; old, modern, and contemporary. The earliest language for any person is his/her mother tongue. This is one's first probe of the world; hence its significance. As stated earlier, the brain receives its first training in one's mother tongue. Thereafter comes the lifelong journey with other 'languages' as well. This is one main reason that I have spent so much time and energy on mastering my mother tongue, Arabic; with especial attention to scientific Arabic prose – both the syntax and the semantics. I have written (in Arabic) and translated (from English into Arabic) physics books. I have also made *YouTube* videos in Arabic on a variety of topics including, among others, science, culture, and classical music. In fact, I have been affiliated to the *Jordan Academy of Arabic* almost since its foundation in 1976 – first, as a so-called "expert", then as an elected active member.

But, all these activities have never distracted me from my principal track: theoretical physics; on the contrary, they have been complementary to each other and have instilled much breadth and depth into my intellectual pursuits. They have also helped me to work very long hours without feeling bored or exhausted, focusing with enviable concentration on the matter(s) at hand. Moreover, it has been most illuminating for me to apply physical ideas and concepts to my other intellectual activities, as will be seen in the next subsection.

Prior to this, however, I wish to say a few words on the language of *silence*. This could be a most powerful language under certain circumstances, even in music![(2)] In fact, the language of silence could be at times profoundly spiritual. Other non-verbal languages include the *body language* (which is not universal; it is culture-dependent) and the *sign language* of the deaf and the mute (which, again, is not universal; there are different sign languages in different countries).

So many languages to explore, verbal and nonverbal!

My Journey with (Theoretical) Physics

My interest in theoretical physics started when I was at high school. I called it then "thought physics" and, a little later, "*gedanken* physics". A turning point came when I found a book on Special Relativity in our school library. It was in English and written by the same author of our geometry textbook. The language was quite simple, and so was the mathematics. I was fascinated by the new ideas and concepts which opened an exciting world for me. I was doing exceptionally well in all subjects and in all public examinations, so that I could have been easily accepted in, say, medicine or engineering (the dream subjects of most top students) at any university. But, I chose physics, much to my father's chagrin, although he wisely let his children pursue the fields of study they wanted and supported them generously.

Upon my graduation at high school, I left for England, embarking on my academic journey there. I earned my doctorate in theoretical physics and worked for one more year as a postdoctoral fellow before being appointed as an assistant professor of physics at The University of Jordan fifty-one years ago. It was then the only university in the country. I immediately started supervising graduate students, in addition to teaching at all levels and pursuing my research in theoretical physics. I worked feverishly very long hours and interacted intensely with students, most of whom were (at least, during the first few years) in my age-bracket. I have never regarded my work as a mere job or profession; it has been a vocation, inseparable from my "being" and fully internalized. I have published extensively – not only research papers in theoretical physics, but also miscellaneous writings in literature, philosophy, science for the interested layperson, and music appreciation. I have edited academic as well as general cultural journals and have revised books in science and cultural affairs. Although I have never sought after recognition, still I have been the grateful recipient of quite a few forms of recognition. Perhaps among the most gratifying "accolades" bestowed on me by our physics community has been the title "the father of theoretical physics" in Jordan. Many of my former students are doing quite well at various universities in my country and elsewhere. They are part of the "school" I have established in my field over the past few decades.

Most importantly for me, I have applied several powerful ideas and concepts of physics to other fields. Two examples: (1) the concept of *interaction*, whether of particles or waves, as well as ideas of *Complex Theory* and *nonlinearity*, to intercultural interactions (Ghassib, 2022); and (2) the ideas of symmetry and asymmetry to the Arabic language (Ghassib, 2025). In fact, such ideas and concepts are deeply ingrained in my thinking; at times, they seem to seep quite naturally through my mind!

In my teaching at various levels, I have tried to introduce some doses of history and philosophy of physics[(3)]. I believe this is necessary for the students to gain more depth and understanding of their field. The human drama involved in this context is bound to attract the students' attention and to make the class more *interactive*. I should also mention that, to make the students more interactive, I have found it essential to communicate with them in our mother tongue, Arabic – side by side, with the *lingua franca* of science, English.

Conclusion

I hope I have not imposed myself too much upon the readers. I have spared them, though, the details of my research contributions to theoretical physics, which are hardly appropriate for this type of essay. Suffice it to say that I have indeed presented, in over one-hundred papers published in international journals, several original ideas and opened quite a few new avenues. During the first three

decades or so of my career, I traveled widely abroad and attended numerous international events. Among my miscellaneous activities, physics has always occupied my top priority.

Despite the occasional hurdles as well as lack of time now and then, I have always tried to devote my whole being to the task at hand. In fact, I have treated every activity, and still do, as a labor of love. I cannot do without hard and careful work, first and foremost, with full attention to details and *minutiae*; nor can I do without passion and enthusiasm and resilience.

I hope this has shed some light on my intellectual life: its *spirit* and *flavor*.

Notes

(1) This famous Muslim scholar, jurist, theologian, poet, and visionary wrote the first book ever on the principles of Islamic jurisprudence.

(2) Here are three examples in music which celebrate *silence*: (1) The baffling, though seminal, piece *4′ 33″* (i.e., "four minutes, thirty-three seconds"), which refers to its duration, by the American classical composer John Cage (1912-1992). This piece is in three very short 'movements'. It has remained controversial since its first performance in 1952, because throughout its duration, the players stay still just looking at their instruments in absolute silence! The idea is to urge listeners to meditate, much like *Yoga*. (2) The equally seminal piece *Tabula Rasa* (Latin, meaning "clean or blank slate"), written in 1977 by the Estonian composer Arvo Pärt (1935-). This is a double violin concerto scored for two solo violins, a string orchestra, and a 'prepared' piano (i.e., a grand piano with its sound altered by inserting various objects between its strings, invented in 1940 by John Cage himself). The work, which lasts 25-27 minutes, is in two movements marked: I. *Ludus* ("game/play") and II. *Silentium* ("silence/stillness"), which occupies around 22 minutes. While the first movement is quite energetic, the second is a celebration of silence: it is reflective and meditative, ending in sustained silence. (3) Also remarkably meditative is the 30-minute work *Towards Silence* (2007) by the English mystic composer John Tavener (1944-2013) – not to be confused with his much earlier compatriot John Tave**r**ner (*c.* 1490-1545). The work is scored for four string quartets and a large Tibetan temple bowl. It was inspired by Hindu mythology and metaphysics. **Note**: All three works are available on *YouTube.*]

(3) It is noted that, for precision, I am using here the term 'philosophy of physics' rather than 'philosophy of science'. This is because the evolution of separate branches of science has been so rapid, especially in recent times, as to merit this distinction. For instance, the 'philosophy of biology' or 'philosophy of technology' are different in some important respects from that of physics, which for a long time was called *natural philosophy* (and still is in certain limited contexts at the ancient Scottish universities – Edinburgh and Aberdeen).

References

Ghassib, H. (2022). On Intercultural Interactions. *International Journal for Talent Development and Creativity*, *10*(1-2), 87–95. *https://doi.org/10.7202/1099944ar.*

Ghassib, H. (2025). On Language and Creativity [In Arabic]. The 27th ICIE Conference 2025 on: *Excellence, Innovation,& Creativity in Basic-Higher Education & Psychology*, Houston - Texas, USA (December 8-12, 2025).

Hawking, S. and Mlodinow, L. (2010). *The grand design*. Bantam Books, New York.

Huxley, A. (1963). *Literature and science*. Harper & Row, New York and London.

Snow, C. P. (1964). *The two cultures and second look.* Cambridge University Press, Cambridge. [Originally published under the title: *The two cultures and the scientific revolution, 1959*.]

About the Author

Humam Bishara Ghassib [(*)] was born in Amman, Jordan, on 27 April, 1948. He grew up in Amman and received his primary and secondary education there. He pursued his higher education at the University of Manchester, UK, 1968-74: BSc Hons in Physics, 1971; Diploma for Advanced Studies in Science, 1972; PhD in (Theoretical) Physics, 1974. He is a man of the two cultures (Humanities and Sciences), and often writes about a *third culture* bridging the two. He joined The University of Jordan, Amman on 11/10/1975, where he is now Professor Emeritus – one of the pillars of the School of Science and the doyen of the physics community in Jordan. He has been widely recognized as a top-notch researcher, a founder of a school of thought, an inspiring teacher, a gifted popularizer of science and the Arab-Islamic scientific heritage, as well as a talented writer and editor. He is a firm believer in the unity of knowledge. Added to this is a profound appreciation of the arts, especially (classical) music. He is the recipient of several awards and honors, both local and international – including: The *Abdul Hameed Shoman Prize for Young Arab Scientists in Fundamental Sciences*, Amman, 1986; *[King] Al-Hussein Order of Merit for Distinguished Contribution*, 1st order, Amman, 2000; *Innovation Prize in Theoretical Physics*, Arab Thought Foundation, Beirut, 2006; *Distinguished Researcher Prize*, The University of Jordan, 2011. Positions held: *Fulbright Senior Research Fellow*, Cornell University, 1983-84; *Chair*, Department of Physics, 1986-1988, and *Dean of Research*, 1990-94, The University of Jordan; *Associate Member*, [Abdus Salam] International Centre for Theoretical Physics (ICTP), Trieste, 1977-90; *Secretary General*, Arab Thought Forum (ATF), Amman, 1/8/2009-31/1/2011; *Advisor* to HRH Prince El Hassan bin Talal, 1/9/1999-31/1/2011; for many years: *member* of several science committees at the Jordan Ministry of Education and at the National Center for Curriculum Development, Amman. Research Areas: Low and ultralow temperature physics; many-body theory; quantum fluids; thin films and low-dimensional systems; superfluidity; nanophysics; trapped Bose and Fermi gases; physics education; history and philosophy of science; Arabic language and culture.

[(*)] Professor Emeritus of Theoretical Physics, The University of Jordan (2022 -);
Fellow,TWAS (The World Academy of Sciences), Trieste (1988 -);
(Active) Member, Jordan Academy of Arabic (1984 -);

e-Mail: humamg@ju.edu.jo
Mobile: +962-777-872122.

Small Decisions, Small Acts, Large Impacts: A Letter Reflecting on a Beginning Scholar's First Year of Academic Administrative Practice

Derek Stovin

Faculty of Education, University of Winnipeg, Canada

Abstract

Through this academic letter, I engage in a structured ethno-narrative process of reflective practice related to my first year in a tenure-track and academic administrative position in a public university in Canada. It is grounded in interpretive and narrative inquiry and structured on themes produced from my dissertation research on the career-life experiences of five associate deans. The academic letter format affords a storied and somewhat discursive style that is appropriate to interpretivist approaches to research. Indeed, beyond the expectation of personal-professional growth that is inherent to reflective practice, a key purpose of this academic letter is to demonstrate the value of pushing the boundaries of dissemination beyond the ubiquitous standardized scientific manuscript and into more creative modalities. Other purposes include an initial testing of the practical utility of my particular thematic structure as a more general framework for reflective practice in higher educational administration and the sharing of my personal-professional experiences in a way that may resonate with others and, hopefully, encourage others to engage in (and share) similar processes.

Keywords: Ethno-narrative; Interpretive; Narrative; Praxis; Higher Education; Administration; Reflective Practice.

Introduction

I have a broad personal-professional interest in individuals' experiences as members of various university constituencies. As a scholar of higher educational administration, organization, and leadership, and as a former professional university administrator, one such group of interest is academic administrators.[7] In my dissertation research I took an interpretivist and narrative approach to focus on the associate deanship because, as Floyd and Preston (2019) identified, it is "under-researched and not well-understood" (cited in Stovin, 2023, p. 60). Beyond this gap in the literature, I also had a deep personal-professional[8] interest based on my years of working closely with people in decanal level and other academic administrative roles. According to Ellis (2006) and Ellis et al. (2011), this concerned engagement with participants and the topic through a holistic or global perspective is a foundational precursor for appropriately and effectively carrying out research within the interpretivist tradition. Throughout my career, I sometimes experienced wise, empowering, and inclusive leadership within

[7] I use the terms *academic administration* and *academic administrators* to refer, respectively, to the academic service work and the faculty members who take it on through formal academic roles such as chair, director, dean, and variants such as associate or assistant chair, director, and dean. They may also include senior academic administrative roles such as Vice-President Academic where those roles are accompanied by a professorial appointment. The terms are distinct from professional administration in higher educational institutions where the roles are not required to be carried out by academic faculty.

[8] I use the term *personal-professional* intentionally and with specific meaning stemming, in part, from the personal and the professional being deeply intertwined in educational and higher educational pursuits. For more detail, see Stovin (n.d.).

culturally healthy, vibrant, and supportive organizational environments. When this was the case, I was fortunate to have good mentors and excellent colleagues with whom I worked closely and collaboratively. Unfortunately, at times I also experienced authoritarian or militaristic leadership within organizational environments that were culturally unhealthy, de-professionalizing, and ultimately de-humanizing. My research was, therefore, also motivated by wanting to better understand individuals' approaches to academic administration and how they came to hold their related beliefs. I hoped that exploring the career-life experiences of individual academic administrators would, in part, result in stories and findings that could assist in the practice of academic administration.

Following the completion of my Ph.D. studies, I was fortunate to begin a tenure-track assistant professor position at a primarily undergraduate university in Canada. It was somewhat unique, however, as this position also came with a 5-year appointment to an academic administrative role as director of an academic unit. Near the end of this first year of academic administrative practice, carried out in the midst of the pandemic as a beginning university scholar and outsider to the community of practice, it occurred to me that it might be useful if I dedicated some time to intentional reflection – and that such reflection might be useful or of interest to others.

When one is engaged in interpretivist research, at least of the humanist rather than the post-positivist type (Stovin, 2021), key ideas from philosophical hermeneutics are foundational to one's activities and stance. Among those is the hermeneutical circle, which represents the acts of interpretation as continuous and repetitive "back and forth" movements between "part and whole" (Ellis, 1998a, pp. 15-16). Interpretive researchers must be cognizant of how they "enter" the hermeneutical circle (Ellis, 2006; Stovin, 2016). That is, beyond concerned engagement, and among other things, "entering the hermeneutic circle in the right way requires: … humility; openness; [and] a capacity for reciprocity" (Ellis et al., 2011). Importantly, one never leaves the hermeneutical circle. Even as the dissertation phase of my research is complete, I am often brought back, in new and unexpected ways, to the stories I was told and the stories that we wrote, which leads to new understandings of both the past and the present. It is for these reasons that I decided to try to "walk the talk." In other words, I decided to intentionally continue engaging in the hermeneutical circle by being open and vulnerable in an attempt to give back through a public reflection on my first year of academic administration at a conference session of the Canadian Association for the Study of Educational Administration (CASEA) (Stovin, 2022).

This paper builds upon my CASEA presentation as a formal academic letter, with the intent for it to be the first in a short series of letters that similarly reflect at appropriate points in time where the sharing of my career-life transitions and experiences might have some value for, or resonance with, others and the state of the literature. Academic letters, although increasingly out of fashion due, at least in part, to the well-known neo-liberal "push" in higher education of recent decades, are not extinct. Recently, for example, Doğan (2025) "explored the repression of academic freedom under authoritarian regimes … [by adopting] *a unique approach* … [that presented her] arguments as an *academic letter* addressed to German philosopher Herbert Marcuse" (p. 1, emphases added). Riveros (2009) took a similarly unique approach to his work entitled "A postponed dialogue with Ludwig Wittgenstein." These are excellent and creative works that contribute to the scholarship and practice of higher educational administration. Although my academic letter is not an imagined discourse, and perhaps leans more to the applied side of philosophy, its further purpose is to help revive and encourage a wider variety of forms of academic writing and dissemination in higher educational administration, and in the humanities, social sciences, and various "studies areas" more generally. Such broader forms provide alternatives to the now ubiquitous and standardized scientific manuscript format, which is necessary as alternative formats are often better suited to interpretivist research and scholarship for the greater creativity they afford and can enable.

Background

Numerous scholars of educational organization and leadership have drawn attention to the ongoing need to engage in interpretive research focusing on individuals' lived experiences and constructed realities (Greenfield, 1979; Greenfield and Ribbins, 1993; Ribbins & Marland, 1994; Gill, 2009). As a result of my own personal-professional experiences, and because of the dearth of this type

of research in higher educational organization and leadership, I explored the career-life experiences of five associate deans (Stovin, 2021) using a narrative and interpretive approach following Ellis (1998a, 1998b, 2006) and Polkinghorne (1988, 1995). Among other findings, I developed three themes through an analysis of narratives looking across the five cases. The themes revolved around community, relationships, and commitments (Stovin, 2021, 2023). These themes helped me to better understand how participants approached their academic administrative roles and construed their organizational surroundings.

Ellis (2006) claims that "research participants can best reveal their sense-making and experience narratively" (p. 112). A benefit, then, for the reader of – or listener to – the stories resulting from narrative inquiry is the personal insight that may be gained from learning participants' deeply held beliefs, thoughts, feelings, assumptions, and values that they use to guide their actions and decision-making (Stovin, 2016). Such insight can then be reflected upon, refined, and applied within the reader's or listener's own field of practice or life circumstances.

As noted above, near the end of my first year of academic administrative and scholarly practice, I decided that I should engage in reflective practice – and that I would do so publicly – so I submitted a conference proposal. As I would soon learn, and is common in academic administration, I had been overly optimistic with the amount of time I would have for my own research and writing on top of my teaching duties and ever-increasing administrative tasks. The conference was coming up quickly, I had been reading through past emails, notebooks, journals, texts, and calendar entries, but I was not sure how to engage in this reflective practice in a meaningful way. I was stuck.

In my personal life, for many years, I have been commuting back and forth to Victoria, B.C. regularly from wherever I was working in western Canada for parenting time with my children. It so happened that I was there at this particular time of feeling stuck and under time constraints. An old and dear friend was also there for a 1-day stopover, and I was excited to visit, but did not feel that I had the time to spare. An old and dear friend had a short 1-day stopover, and I was excited to visit, but did not feel that I had the time to spare. Nonetheless we met and walked along the ocean but, embarrassingly, I was preoccupied. I shared with him what was troubling me, that I was trying to engage in reflective practice, that because of the nature of my research I had committed to do so publicly at a fast-approaching conference, but I did not know how to approach it or to structure it. He asked me to remind him what my dissertation was on. So, I told him about the narrative approach, the stories of the five associate deans, and the three themes I found. He didn't have much to say, other than sharing through stories was an important part of his practice as a social worker.

Immediately after sharing, I had an "aha" moment. His "not much to say" was, in fact, profound. I wondered if there were any insights I might have gained from the stories of associate deans' career-life experiences that might be applicable to my current situation as a new university faculty member taking on an academic administrative role. That is, it (finally, belatedly) occurred to me that I should be putting my research into practice – and I wondered if I had already been doing so, at least to some degree, having internalized some "lessons" or understandings from being immersed in my dissertation work. On hindsight this is, of course, obvious. But things had moved quickly and I had taken up the role naturally based on my own experiences. I had not felt the need to intentionally apply my research directly to my new role. Now, however, I had a place to start.

At first, I wondered whether my experiences compared particularly well with one of my participants and if I could, or should, try to compare and contrast those experiences. But why one, and not the others? On what basis would I pick? How about comparing and contrasting with all of them? This seemed to be quickly becoming not feasible, at least within the given time constraints. And which of all of their experiences would I compare and contrast with anyway? And another aha moment hit me: I could reflect on my practice using the three themes from my dissertation. As obvious as this is on hindsight, given that this is one of the purposes of developing the themes in the first place, it was not obvious at the time while I was stuck, under pressure on the "tenure-track" to produce or create, and newly "in the midst" of academic administration at a new-to-me university and city during a pandemic.

So, thanks to my friend from my first academic home in Saskatoon for his insight, and thanks to Randy, my dissertation supervisor, for attuning me to the role of happenstance and the role of others in the careers of academics (Wimmer, 2003).

Reflection

In this academic letter I reflect upon, and share, some of my experiences during my first year of academic administrative and scholarly practice. I do so by using the three thematic areas from my dissertation as a framework to guide my reflection (i.e., Community, Relationships, Commitments). Within each thematic area I draw upon elements of the collected stories, such as quotations or narrative excerpts, that correspond in some way to my experiences, decisions, and actions. My hope is that by engaging in this process and by sharing my initial reflections with colleagues I will gain additional insight into my experiences and my understandings of academic administration. I also hope that the framework will provide a useful way for other academic administrators to engage in reflective practice, or at least a place to start. What follows is by no means meant to be a fulsome audit of my entire academic year or a thorough comparison of my experiences in relation to the experiences shared through my participants' stories. Rather, I am sharing initial thoughts meant only as a beginning reflection and as a way to test the potential usefulness of the framework offered. The three themes and their descriptions below have been published elsewhere (Stovin, 2021, 2023), but they have not been reflected upon in relation to personal-professional practice as is shared here. For each theme, to aid in my reflection, I started by asking myself two questions: (1) What are some examples of [the theme] offered by my research participants? (2) Have I been attending to [the theme] in some related way, or in multiple ways, large or small?

Community

This theme was expressed as attending to local organizational and broader cultural environments. The career-life story of every participant I engaged with during my dissertation research included descriptions of how being and becoming part of different communities at different times in their lives was critical to their particular life's path. These communities of importance played a key role in each associate dean's development of their personal-professional beliefs, values, and commitments.[9] As academic-administrative leaders, therefore, they consciously attended to, and offered stewardship for, the culture of their local and broader communities.

Community building (staff). An example of a narrative excerpt from my dissertation research related to building community, or its stewardship, within academic program areas is provided by Deanna:[10]

> So, building the team – that's what I've done with the staff in the office, and … I'll *trust* this team to the bitter ends of the earth … What I love is that this group of people … are truly committed to the program. Not to their own little turfs. And they want what's best for the students. (Stovin, 2021)

For me, becoming part of the team was important. I wanted to earn the trust of staff, who had all been working in my new program area for many years, and that meant making sure they knew I trusted, valued, and respected them. It also meant taking actions that demonstrated this trust and that I, as an outsider, wasn't arriving with pre-conceived ideas of how things should be done that would involve immediately imposed change.

[9] I use the term communities of importance to refer to the various communities individuals interact with and within that are key influencers of their academic or personal-professional identity. It is, therefore, distinct from communities of practice although, of course, communities of practice may be among one's communities of importance.

[10] All participant names are pseudonyms.

One small thing I did, very early on, was to move the (vacant) departmental assistant position under a professional staff member's supervision, rather than my own. This person, despite having only recently been promoted to the position, was a primary support for me in my new role and had demonstrated organizational knowledge, skill, and ability. More importantly, perhaps, the professional staff member had demonstrated deep commitment to the students in the program and acclimatized me to the unique culture of our programs as well as its importance to our students' success. I therefore chose to support this staff member's desire to take on more responsibility by adding a little bit of supervision to the role and by having multiple staff members take responsibility for hiring a new team member who they would work closely with and train. Of course, this also was organizationally appropriate and efficient given that the frontline position was two or three steps away from me on the so-called org-chart and I could not effectively supervise or train a new person in that role.

Community building (students). My first academic year as an academic-administrator was during the pandemic, which resulted in an apocalyptic-like environment on campus. There were no employees, workers, faculty, or students on campus – and our campus is embedded in the city's downtown core, which also felt rather abandoned. With community partners, however, the year prior we had started a high profile pilot program that aimed, among other things, to help Indigenous students transition to their university studies as prospective teachers through an innovative cohort program. It was not easy or immediate, but I was able to successfully advocate for our students in this pilot program to be allowed to physically attend campus in our dedicated building (with safety protocols in place) given the significant negative effect that the sudden shift to online education had on the initial cohort, the purposes of the program (including fostering a supportive and shared Indigenous educational culture), and the significant funding and broader community groups involved.

Having the (now) two cohorts of young students together physically was an important first step in supporting their high school to university transition, but it was not enough on its own. As Deanna also said,

> Sometimes I'll just stop [everything]. I'll walk down a hallway and say 'Ok, it's time for cake!' [laughing] … but now everybody's bringing stuff, so it becomes – a really good culture. (Stovin, 2021)

In the extraordinarily difficult educational environment of the pandemic, it was important to foster a supportive culture – and self-supporting culture – between and among the two cohorts of young university students. Among the small things done was opening the year with a pizza party – and all staff were able to join and serve. In the middle of the year, we had a pot-luck feast between the two cohorts and our school division partners held both a dinner celebration and a pancake breakfast. The year was closed with another pizza party. Other actions included reestablishing a part-time Knowledge-Keeper in residence, working toward the creation of a part-time academic mentor position, and working closely and collaboratively with partner community organizations, including one which had direct roles with students related to providing cultural and educational experiential learning opportunities.

Relationships

This theme was expressed as fostering relationships with others. Every participant that I engaged with during my dissertation research highlighted key individuals who were instrumental at particular stages or crossroads in their career-life stories for helping them grow into the person they became. These were typically mentors, colleagues, family, and friends who "invited them in" to new experiences, encouraged and supported them in their endeavours, gave them healthy critical feedback, and valued them for who they were as a person. As academic-administrative leaders, in return they consciously fostered, valued, and were open to meaningful individual relationships with others.

Relationship building (staff). As Greg, another participant in my dissertation research said,

> If you foster relations. If you get out into the hallways, you go for lunch, coffee, you chat to colleagues, you're more inclined to hear about what they're up against and you're more inclined to be able to sometimes simply offer a reminder that I'm not actually surveilling

> you in that way [laughing], right? [That] maybe we're getting some of that from the very top, but that doesn't mean that we have to do it that way. (Stovin, 2021, 2023)

Although this was meant by Greg in relation to his faculty colleagues, in the unique environment of the long-established (and historically stand-alone) social justice oriented programs that I was now working within, it applied to both faculty and staff. Certainly, we did this as a staff group, with lunches and an end of year dinner that come to mind prominently. Also, individually, we made efforts to get to know each other personally and professionally. One of the staff members, in particular, with lengthy and deep experience in higher education, was the first to reach out to me upon my move to the city. During our coffee meeting he was both offering me some background context and, I was aware, "sussing me out." We spent a fair bit of time together during the first few months and got to know each other's interests and preoccupations personally, professionally, and academically. Greg's sentiment certainly applies here, if not the detail of actually being able to get out into the hallways (other than with students). In some ways, this may have been a benefit, as it supported out of necessity my preference for a management style that is not "tight" supervision and is characterized by high expectations for professional staff including in-scope independence and initiative. As we got to know each other this became understood and it "calmed the waters" as it was largely congruent with the past and with our programs' needs.

Relationship building (faculty). Greg continued,

> Sometimes, even if I don't want a coffee, it's just important to get up and go for a walk. [It is] physically and mentally important to do that … I will sometimes … [contact] somebody and … [invite] them along … So that works nicely to connect with issues, the buzz of the faculty, or sometimes … just a nice collegial friendly chat and a walk. (Stovin, 2021)

As noted above, it was not possible to "get out into the halls" with full-time program faculty members as almost all were not working in-person. One situation arose, however, where a full-time faculty member with joint responsibilities in two departments and faculties opted to leave the university for private sector work shortly before the fall term began. The person who filled this critical position was hired by my academic-administrator colleague in the other department and faculty – and he was exemplary. The urgent situation, however, allowed for an excellent working relationship to develop not only between me and the new faculty member but also between me and my colleague (i.e., the academic leader who provided hiring support) and more broadly between me and the other department. Beyond this, there were also opportunities to talk with part-time sessional faculty, some of whom had taught regularly in our programs for a long time. While I did not typically stop in and interrupt their courses, I often walked the halls around class periods and almost always had my door open, which was easily noticeable, so in-person faculty instructors would stop in my office regularly after teaching. Further to the point Greg was making in the quotation above, about the importance of intentionality in developing relationships, there were a few opportunities around online video calls where I was able to engage in extended conversations with faculty colleagues and I, of course, invited program faculty members for individual lunch meetings as allowed and if desired. The latter proved to be a very good way to begin working together, perhaps moreso than may be usual given that the pandemic had made such rituals much less common and people may have been lacking connection.

Relationship building (students). Greg continued to explain that,

> Invariably I'll see somebody along the [walk] …your students or [colleagues] … just seeing you as a daily presence … and [they] speak to you differently than they would in a classroom or a boardroom … It is a nice way to remove the façade of titles and just connect with people … on a more egalitarian basis … The worst thing that administrators can do is cloister themselves into that office. (Stovin, 2021)

During this first academic year, program staff and full-time faculty were mostly working remotely in accordance with university requirements. I was, therefore, a consistent daily presence. I opened building doors and turned on the elevator, welcomed students, and offered coffee. My door, as mentioned above, was almost always open and, as with the in-person instructors, students would stop in regularly. I made it known that I had cold beverages, granola bars, banana bread, and fruit in my office – tangelos were largely unknown to the students, and became quite popular. I also taught one full-year

course for the second year (initial cohort) students, and I did so with andragogical sensibilities (Stovin, 2025), which helped develop good personal-professional relationships with many students. Interestingly, however, most often students would stop by for seemingly no reason – maybe they would take a bottle of water even though a water cooler was right outside the door – and it became apparent that they just wanted to talk and needed to make a genuine connection with someone who was present, who cared, and who was experienced with university studies and norms. Even though these conversations with students occurred in the trappings of the large corner office, I set it up physically in as inviting a way as possible such that I could come out from behind my desk and sit with students more comfortably and for as long as they wished. The open set-up helped, and the cold beverages provided the excuse that was sometimes needed.

Commitments

This theme was expressed as personal-professional commitments to ideals and ideas. Unsurprisingly, associate deans had, as professional academics, developed academic commitments. There were shared professional academic commitments, such as to the ideas of academic governance and freedom in teaching and research, and personal academic commitments, such as to ideas of emancipation, egalitarianism, social justice, and reciprocity. Each associate dean held a unique combination of such commitments – and knew who they were relative to these beliefs and their chosen actions or decisions. When I reflected on the types of commitments that I had been making and acting upon, and that others had been working from for a long time within the program areas I was administering, they were primarily togetherness and shared goals.

Commitment making (togetherness). Deanna shared,

> I have 'go to' people, like my administrative team, that I can count on … at a moment's notice to be supportive, to support each other, and to support me and the work that we do. (Stovin, 2021)

I was joining a team of administrative staff who had served their programs for many years and had deep commitments to their students and the long-established culture of their educational community. Staff regularly went "above and beyond" and rarely had to be asked to do something or to do something differently. Administrative staff took initiative and made things happen that needed to happen. Certainly we had many conversations and the administrative team, as professionals, would bring matters to me as appropriate – but the bottom line was that it was not simply individuals being deeply committed to students within their particular scope of practice. Rather, it was individuals providing this type of support to each other, and to me, because of their commitments to the program areas as part of a shared community of which they were key members alongside faculty and, most importantly, students.

Commitment making (shared goals). Scott explained that,

> The experience I had … was one of working with these interested people to help them achieve what they wanted to achieve. I could bring to it some ideas … but it was going along with these individuals to have them discover, work out, what they thought was needed. (Stovin, 2021)

For me, this was done over time, through relationships that were being developed, and was ongoing. It involved sharing who I was, including my career-life and educational experiences as well as my beliefs, such as the andragogical perspectives I held that were in accordance with the community values and cultural beliefs strongly embedded in our program areas. It was important for people to know, both within our programs and beyond, that it wasn't just a community of convenience for me – that I believed deeply in what they had developed and in what they were doing with and for students. In other words, it was now a part of who I was and of my life, both my everyday life and my scholarship.

It needs to be noted, however, or shared, that it was not entirely as Scott explained above. While program faculty, staff, and I certainly had shared goals that were core to our programs' success, it was not always "going along with" others' wishes or ideas. It also involved honesty and forthrightness. That is, I also needed to let program faculty and staff know that things would not necessarily be the same as the (idyllic) past, but that together we could respect the existing shared values while we build and grow

in new ways. This particular year was extremely challenging administratively not only because I was new, an outsider, and a beginning scholar. The pandemic had brought, as it did to other institutions and programs, budgetary challenges and, for the programs we were administering, significant enrollment decline. With our programs being intentionally designed for small cohorts and small class sizes, and with significant recent turnover in central university senior academic and administrative leadership that might have led to loss of institutional memory or change in institutional commitments, I felt we had to be very aware of the possibility of program suspension or cuts and be proactive. So, in this case, the "working out what was needed" and the "achieving what was wanted" was more about stewarding the existing programs and doing things that might not have otherwise been done in order that our community would survive – and ultimately continue to thrive. The pilot program with the in-person young students transitioning to university studies is an example of this. It was not a natural fit, and not all – or perhaps even most – program faculty and staff were in agreement that this new program should join our other long-established programs that served adult or mature students. It was, however, an Indigenous education program and its students could benefit from the existing Indigenous educational culture established in our other programs as well as from the related strengths and expertise that our faculty and staff already brought. Despite the significant challenges and work-load demands that dove-tailing this new program into our existing programs involved, the potential long-term positive impacts and synergies became generally acknowledged – and team members made extraordinary (and largely unseen, but not unseen by me) efforts to make this a success.

Discussion

Let us call this academic letter, and the hermeneutically-based process that produced it, engaging in a structured ethno-narrative praxis. The structure falls into what Polkinghorne (1988) called paradigmatic narrative inquiry, which involves the researcher imposing on the narrative analysis, or working from the basis of, pre-existing theory or categories (i.e., in my case, the themes of community, relationships, and commitments used in my process of reflection). An important criterion for evaluating interpretive research and narrative accounts is the possibility of transferability. According to Dewey (1938/1997),

> as an individual passes from one situation to another, his world, his environment, expands or contracts. He does not find himself living in another world but in a different part or aspect of one and the same world. What he has learned in the way of knowledge and skill in one situation becomes an instrument of understanding and dealing effectively with the situations which follow. (p. 44)

Relatedly, Ellis (1998a) suggests that "to evaluate an [interpretive] account, one should ask whether the concern which motivated the inquiry has been advanced" (p. 30) and Packer and Addison (1989) claim that "a good interpretive account is one that advances the [researcher's] practical concerns … and one that works well with the other activities we are engaged in" (p. 291). Below I consider those questions as I weave my thoughts together.

My initial motivation, as stated at the beginning of this letter, was to dedicate some time to intentional reflection. In other words, I felt I needed to find a way to step outside the day-to-day busy-ness and give some concerted thought to what I had been doing in my academic-administrative role, what I wanted and needed to do, and why. The process that I engaged in allowed me to do that, and it also allowed me to further the commitments I had made through my earlier engagement in interpretive and narrative inquiry. I was able to remain engaged in the hermeneutical circle, and doing so publicly both ensured I did so in a good way and, potentially, will serve as an example for others. In these ways, my academic letter and associated process has advanced my practical concerns and has worked well with other activities I am engaged in.

With respect to transferability, I believe that – at least for me – the structure of community, relationships, and commitments, which I had learned from previous personal-professional experiences, proved useful as "an instrument of understanding and dealing effectively" with my situation that followed. The structure was comprehensive but not constricting. Of course using it, or any such framework that is useful, does not guarantee there won't be holes or important matters missed (more on that below). But it is a good place to start, and it – along with happenstance and good friendship – also

proved to be helpful in getting "unstuck" when obstacles (writer's block, perhaps?) arose. I hope that the structure may prove useful to others who also may wish to engage in reflective practice or for other situations or purposes.

The last statement of purpose I made at the beginning of this letter was "to help revive and encourage a wider variety of forms of academic writing and dissemination." I do not know what the response to this academic letter will be, but the presentation it is based upon was well-received. Following the presentation, a journal editor kindly invited a submission to their next issue (it was not this one, as I am only now, at the start of my sabbatical four years later, finding the necessary time to write). People who attended my (virtual) presentation seemed to appreciate the openness, forthrightness, and vulnerability inherent to the act of sharing while "in the midst" as well as the putting into practice of my previous research findings and commitments. This academic letter does not stray too far from what we are accustomed to with academic articles. It incorporates theoretical foundations and provides context, it explains the scholarly process and shares findings (or constructions), and it offers a discussion of results and contributions along with possible future directions. Even so, I hope it captures some of the action of engaging publicly, live, and that it demonstrates the importance of the freedom that this alternative format (and its associated narrative and interpretive approaches) provides. I hope, also, that it gives rise or support to more imaginative and creative alternative formats.

The final point to discuss involves the content of my reflections based on community, relationships, and commitments, as well as what that structure may have missed. It is important to re-iterate that this reflection was only an initial first step and not a fulsome audit of my entire year. It was first and foremost a test of whether this structure and process could be effective and practical – and I believe it passed this test. When considering the structured reflections above, it should be acknowledged that the small actions and small decisions recounted, such as responding to a staff member's desire for more responsibility, maintaining an open-door policy, walking the halls, hosting individual lunch meetings and community feasts, having intentional and organic personal-professional conversations within and beyond the program areas, and handing out tangelos are not, in and of themselves, innovative, unique, or unknown as administrative leadership strategies. There is no secret recipe being shared here, or that likely even exists, and I am not claiming there were no mistakes and no unsatisfactory situations. But, as above, it did provide a good way and afford an opportunity to think clearly about the past, present, and future.

In terms of what the structure may have missed, when I considered my initial reflections, I realized that my reflections around commitments were considered with the shared values and goals of my new educational community, which was certainly appropriate and necessary. I wondered, however, about my academic identity. In my dissertation research, I ended each participant's narrative account with, essentially, a narrative portrait that described their academic identity. With my initial reflection, shared in this letter, I had not considered my own academic identity – and whether or not it had changed, how it might have evolved, or whether I had been applying my academic identity in my role. Asking these questions led, in fact, to the next part of my journey as a researcher. I noticed that, like my dissertation participants, I preferred to take what I called a cultural approach to university organizations and leadership. [11] Continued thinking along these lines led to a major article in the excellent Canadian Journal of Higher Education that extended my dissertation research by proposing a model for understanding the development, maintenance, and application of academic identity in academic administration (Stovin, 2023). Similarly, this reflection on what might have been missed led me to understand that I needed to intentionally develop a new scholarly area congruent with the programs I was committed to and administering. With substantial and sustained effort, this resulted in a major paper

[11] I have yet to engage fully in a structured reflection on the questions posed here around my own academic identity. Composing this academic letter has brought forward the idea to apply my dissertation interview protocol to myself and share the findings in a future paper – or, perhaps, in a follow-up academic letter. Thank you to a reader of an earlier version of this paper for the suggestion.

that brought together much of the existing extant literature on our long-established programs, shared their histories and extraordinary community impacts, and offered insight into their Indigenous, andragogical, humanistic, and communitarian philosophical foundations (Stovin, 2025). This was not expected at the outset of the reflective process, but it had a very big impact on me, including on my career and on my case for tenure. Hopefully it also results in further-reaching and long-term positive impacts on others.

Conclusion

This academic letter has served multiple purposes. Among them was that it allowed me to build upon an earlier academic presentation through which I was able to step outside my daily experiences and reflect upon my first year of academic-administrative and scholarly practice. I called the process engaging in structured ethno-narrative reflective praxis. Engaging in this type of process, and doing so – in community – in a transparent and public way, is an uncomfortable, a risky, and, I think, a non-traditional scholarly activity. It is, at least, outside of the norm. This does not mean, however, that it isn't a worthwhile activity. On the contrary! Those descriptors – uncomfortable, risky, and non-traditional – tell me that this is an activity we scholars might want to, if not ought to, run toward. If taken up genuinely, with concerned engagement, it offers a creative and effective method for personal-professional growth and talent development.

Certainly, by choosing to share or disseminate my work in this way, there is risk that my actions, decisions, and thoughts may seem – and, indeed, for the most part are – small. Yet, after writing this letter, I am more confident than ever that through my, and our, students, these small yet consistent actions across many different areas add up to something not so inconsequential. The students who I get to work with in the programs I helped to administer are the ones taking big risks – and they are having very big impacts over many years on their communities and through the students they teach. It is for this latter reason, moreso than the important scholarly impacts that can also emerge, that I am encouraging and calling on others to write their own academic letters in this forum that reflect on their personal-professional practice. I will be thrilled if others choose to respond and use the process and thematic framework shared here, but there are, of course, many other ways to meet this call. For example, one could structure their reflection around the nine characteristics of agile academic leaders identified by Nolan and Hutchinson (2023) or around ideas such as talent-spotting, mentoring, culture, and relationships discussed by Harris et al. (2022). Regardless of the specific structure individuals may choose, as David Carr (1986) suggested, every once in a while we need to compose a narrative about our lives to understand the coherence in what otherwise might seem like just one thing after another (or non-sense). Creating and sharing such narrative accounts is not only good for the author, it is also good for their discipline(s), their communities, and others in a myriad of ways. As more people respond, a wealth of narrative accounts will be created over time that can result in ever greater impacts through the practice and scholarship carried out within this international and innovative community.

References

Carr, D. (1986). *Time, narrative, and history*. Indiana University Press.

Dewey, J. (1938/1997). *Experience and education*. Touchstone.

Doğan, S. (2025). Academic freedom and repression in the neoliberal authoritarian Turkish University: an academic letter to German philosopher Herbert Marcuse. *Globalisation, Societies and Education*, *24*(1), 194–204. https://doi.org/10.1080/14767724.2025.2478036

Ellis, J. (1998a). Interpretive inquiry as a formal research process. In J. Ellis (Ed.), *Teaching from understanding: Teacher as interpretive inquirer.* Garland.

Ellis, J. (1998b). Narrative inquiries with children and youth. In J. Ellis (Ed.), *Teaching from understanding: Teacher as interpretive inquirer.* Garland.

Ellis, J. (Fall, 2006). Researching children's experience hermeneutically and holistically. *Alberta Journal of Educational Research, 52*(3), 111-126.

Ellis, J., Janjic-Watrich, V., Macris, V., & Marynowski, R. (Spring, 2011). Using exploratory interviews to re-frame planned research on classroom issues. *Northwest Passage, 9*(1), 11-18.

Floyd, A., & Preston, D. (2019). Why do UK academics become associate deans and what are their future career plans? *Journal of Higher Education Policy and Management, 41*(4), 430-443.

Gill, R. (2009). Breaking the silence: The hidden injuries of neo-liberal academia. In R. Flood & R. Gill (Eds.), *Secrecy and silence in the research process: Feminist reflections* (pp. 228-244). Routledge.
Greenfield, T. (1979). Organization theory as ideology. *Curriculum Inquiry, 9*(2), 97 - 112.
Greenfield, T., & Ribbins, P. (1993). *Greenfield on educational administration: Toward a humane science*. Routledge.
Harris, J., Lane, J., Sun, J., & Baker, G. (2022). *Academic leadership and governance of higher education: A guide for trustees, leaders, and aspiring leaders of two- and four-year institutions* (2nd ed.). Stylus.
Nolan, S., & Hutchinson, S. (2023). Agile futures: Where will you go from here? In S. Nolan & S. Hutchinson (Eds.), *Leading innovation and creativity in university teaching: Implementing change at the programme level* (pp. 169-177). Routledge.
Packer, M., & Addison, R. (1989). Evaluating an interpretive account. In M. Packer & R. Addison, *Entering the circle: Hermeneutic investigation in psychology* (pp. 275-292). SUNY.
Polkinghorne, D. (1988). *Narrative knowing and the human sciences*. SUNY.
Polkinghorne, D. (1995). Narrative configuration in qualitative analysis. In J. Hatch & R. Wishnewski (Eds.), *Life history and narrative* (pp. 5-23). Falmer.
Ribbins, P., & Marland, M. (1994). *Headship matters: Conversations with seven secondary school headteachers.* Longman.
Riveros, A. (2009). Thomas Greenfield and the quest for meaning in organizations: A postponed dialogue with Ludwig Wittgenstein. *Journal of Educational Administration and Foundations, 20*(2), 51-68.
Stovin, D. (n.d.). A framework for understanding the personal-professional experiences of beginning teachers: Initial interpretive findings from its application to a survey of teachers. In P. Betts (Ed.) (forthcoming). International Centre for Innovation in Education [ICIE].
Stovin, D. (2016). Narrative, insight, and effective decision making in education. In P. Newton & D. Burgess (Eds.), *The best available evidence: Decision making for educational improvement* (pp. 47-61). Sense.
Stovin, D. (2021). *Stories of faculty who served as academic administrators: Career-life experiences and academic identities of five associate deans*. Doctoral dissertation. University of Alberta. https://doi.org/10.7939/r3-qbr8-bb16
Stovin, D. (2022). *Small decisions, small acts, big impacts: Reflections of a beginning university faculty member on the first year of academic administrative practice*. Presented during the Canadian Federation of the Humanities and Social Sciences [FHSS] Congress as part of the proceedings of the Canadian Society for the Study of Education [CSSE] and its sub-group the Canadian Association for the Study of Educational Administration [CASEA].
Stovin, D. (2023). It "made me who I am": Using interpretive and narrative research to develop a model for understanding associate deans' application and development of academic identity. *Canadian Journal of Higher Education, 52*(3), 59–72. https://doi.org/10.47678/cjhe.vi0.189691
Stovin, D. (2025). Creating tomorrow's institutional change through cultural leadership today: Three collaborative programs addressing the shortage of Indigenous teachers in Manitoba. In Z. Abawi, A. Eizadirad, S. Tuters, & A. Campbell (Eds.), *Activist leadership for inclusive schools: Canadian insights* (pp. 102-129). Canadian Scholars.
Wimmer, R. (2003). *Stories of teacher educators – The experiences of three teachers who became university professors*. Doctoral dissertation. University of Alberta.

About the Author

Dr. Derek Stovin is an Associate Professor in the Faculty of Education at the University of Winnipeg. He recently completed a 5-year term as Director of its Access Education programs, which make a profound difference in local communities and in the lives of future teachers by contributing to the diversification of the professional body of teachers.

Derek is also an active member of the Canadian Association for the Study of Educational Administration (CASEA) and an Associate Editor for its *Canadian Journal of Educational Administration and Policy* (CJEAP). He has broad policy research interests that generally involve academic identity, professional identity, and the exploration of career-life experiences as they may relate to educational and higher educational organization, leadership, and culture. He has employed both quantitative and qualitative methods but is now most often attracted to narrative and interpretivist approaches to research.

Derek thanks his three children for their love, understanding, kindness, and sacrifices that enabled him to follow his passion and his dreams.

Pioneering the Teaching of Creative Writing in Malta: An Interview with David Samuel Hudson

Daniel Xerri
University of Malta

Abstract

This article presents an interview with Maltese author and educator David Samuel Hudson, whose work positions creative writing as an accessible, teachable craft rather than an innate gift. Hudson discusses a pedagogy centred on practical development in voice, structure, characterisation, reading and constructive critique, while resisting approaches dominated by abstract theory. The interview also examines Malta's bilingual literary context, the legitimacy of writing in English, and the limited local pathways to publication. Hudson advocates preparing emerging writers for international markets and cultivating an inclusive, sustainable community capable of strengthening Malta's professional creative writing culture. The article concludes by relating Hudson's reflections to wider debates in creative writing pedagogy and identifying implications for educators seeking to connect craft, confidence, multilingual voice and literary community.

Introduction

David Samuel Hudson is a Maltese author and creative writing educator whose work spans literary production, teaching, editing and translation. He completed a master's degree in creative writing with distinction at Bath Spa University, where his novel manuscript was shortlisted for the Janklow and Nesbit Prize, and his fiction has received recognition in both the United Kingdom and the United States. His investigative journalism earned a national award, and he currently teaches creative writing at the Malta Society of Arts (MSA). His debut novel, *M*, was published in 2024. This combination of literary, pedagogical and professional experience informs his approach to teaching creative writing as an accessible craft and to supporting emerging writers seeking publication.

Hudson's work enters a field that has long struggled against the romanticised view that authorship is an innate, mystical gift rather than a structured, teachable craft (Ghidotti, 2020). This inherited dichotomy often sidelines the pedagogy required to nurture emerging writers, perpetuating the belief that creative talent cannot be cultivated (Manery, 2016). In contrast, scholars have long argued that creative writing should be integrated into language development, treating drafting, error and revision as fundamental components of the creative process (Young, 1984). This shift from 'writing as talent' to 'writing as craft' is a cornerstone of Hudson's pedagogical approach in the Maltese context. By demystifying the act of writing and treating it as an applied art akin to music or portraiture, Hudson challenges the assumption that creative writing is the preserve of the academically elite, aligning his practice with research that advocates for accessible, process-oriented instruction (Clifton, 2022; Thorpe, 2021).

The traditional workshop model, while intended to foster community, often reproduces hierarchical power structures that can silence students or privilege dominant aesthetic standards (Kearns, 2009; Suphap, 2023). Critics argue that conventional methods, where unfinished work is subjected to collective, often harsh, criticism, may expose participants to superficial feedback and discourage individual agency (Kennedy, 2012). To mitigate these risks, contemporary pedagogy encourages a move toward more dialogic models, where the instructor acts as a facilitator and participant rather than an

ultimate authority (McAbee, 2020). Hudson's approach reflects this, focusing on creating a dedicated space where critique is framed as a constructive tool for improvement rather than a personal judgement. This aligns with findings that effective feedback must be embedded in a supportive, process-oriented environment, ensuring students feel safe enough to experiment with narrative techniques, characterisation and personal voice (Daniels, 2026; Stone, 2025; Tyrou, 2026).



David Samuel Hudson (Photo Credit: James Bianchi)

A significant tension in creative writing pedagogy arises from the prioritisation of standardised curricula over individual attention (Beard, 2012). Hudson expresses scepticism toward university-led programmes that lean heavily into abstract theoretical frameworks, arguing that these often fail to equip students with the tangible skills needed for storytelling. Research supports this, suggesting that practical craft advice, when brought into dialogue with rhetorical narratology, provides writers with a shared vocabulary to understand how narrative elements, such as perspective and audience, create coherence and empathy (Jin, 2025). By stripping away the focus on postmodern theory and centring the 'basics' – hooks, world-building and dialogue – Hudson prioritises the student's ability to produce work. This methodological choice underscores the argument that theory should remain grounded in craft and lived experience, enabling students to become more deliberate, socially aware and adaptable writers (Badami, 2021; Stephens, 2018).

Hudson's work in Malta highlights the complexities of teaching creative writing to multilingual populations, particularly when English is viewed as a colonial remnant rather than a tool for expression. This raises the question of whether writing in an additional language can be as 'authentic' as writing in one's first language. Educational theory suggests that writers' voices emerge through the interaction of personal histories, language choices and individual agency (Zhao, 2015). Rather than treating non-standard or cross-linguistic features as deficiencies, educators should recognise that creative writing in an additional language enables writers to express distinctive identities and participate in real or imagined global communities (Chin, 2014; Lim, 2015). Hudson rejects the notion that English-language creative writing is the exclusive domain of native speakers with impeccable language skills, advocating instead for a view that treats diverse linguistic resources as sources of artistic agency (McCrary, 2023).

The path to publication serves as a vital, yet often overlooked, component of creative writing instruction. While workshops focus on the internal mechanics of a text, students also require vocational coaching to understand the practical realities of the literary field (Manery, 2015). Hudson's commitment to scouting talent and guiding students toward international markets reflects an understanding that professional identity is shaped by time, networks and publishing knowledge (Ghidotti, 2020). By combining reading as a writer with a focus on publication, Hudson aims to broaden students' professional identities (Dai, 2026). This pedagogical stance recognises that students' motivation and

writing processes are improved when they experience manageable challenges and opportunities for professional self-regulation (Syrewicz, 2023). Through this lens, the creative writing course becomes not just an exercise in expression, but a strategic pathway to professional engagement and community membership (Stone, 2025).

The interview with Hudson invites us to reconsider the purpose of creative writing education. If, as scholars argue, pedagogies reflect underlying assumptions about who writers are and what education should achieve, then teachers must continually reflect on their shifting roles (Charalambous, 2019). Hudson occupies a space between expert practitioner and change agent, attempting to build a writing culture in a context where, historically, the lack of English-language publication avenues has stifled development (Xerri & Hudson, 2024). By fostering an environment that values diverse voices and prioritises the craft over exclusionary prestige, his work aligns with the need for more equitable participation in creative writing (Lenhart, 2025). As he seeks to move beyond the colonial status quo, Hudson's experience demonstrates that effective teaching requires not only technical instruction but also an ethical commitment to empowering students to tell their own stories, regardless of the language in which they choose to write (Gilbert, 2021; Mayers, 2015).

Becoming a Creative Writing Teacher

Xerri: Can you tell me about your background and experience in teaching creative writing?

Hudson: In terms of my formal background, it stems from the master's in creative writing that I pursued after completing my BA. While I was doing my BA, Jim Crace came to the University of Malta as a writer in residence and organised a workshop for eight writers. Anyone, whether from within or outside the university, could submit a piece of short fiction. He selected the best eight submissions, and mine was one of them.

Jim Crace was very encouraging. He said, "You're a good writer. You have clearly read enough to know what kind of writer you want to be. I would suggest doing a master's in creative writing." I took up his suggestion and was accepted onto three of the leading master's programmes in the UK at the time: the University of East Anglia, City University London, and Bath Spa University. I chose Bath Spa because it had a beautiful campus.

I did very well there, and I was also selected to give readings and conduct workshops for young writers in Bath. So, although I was not formally trained as a teacher, I gained experience helping others while completing the creative writing programme. The thing is, a master's in creative writing can only teach you so much.

Xerri: Are you saying that it does not equip you to teach?

Hudson: Exactly. In my case, two of the lecturers, Gavin Cologne-Brookes and Richard Kerridge, were among the leading critics in their fields. They decided to handpick students who were particularly good at peer review and have them lead smaller groups focused on craft, critique, and the process of giving feedback. I was one of those students. We had a writers' space called the Barn, where we met every week to discuss one another's work. I was one of the students selected to help lead those workshops.

When I returned to Malta, I began teaching, although not formally at first. I started by giving online classes to younger people who were interested in creative writing. Later, when I began working as a journalist, seeing what was being published in Malta and becoming more familiar with the local literary field, I started to feel that something was missing: an understanding that creative writing is a craft rather than simply a talent, and that it can be taught.

I thought, "There is a vacuum here, and I could start teaching it." So, I approached the MSA. They already offered a range of courses in the applied arts, and I felt that creative writing could fit naturally within that context. The course has been doing very well.

Xerri: To your knowledge, were there other organisations offering something similar to the public before you started doing so?

Hudson: There were a handful of people offering creative writing workshops, including one-to-one sessions, but these were not provided under the umbrella of an educational or academic institution. Obviously, the University of Malta offers a number of study-units in creative writing, but it has never offered a complete course that covers the entire trajectory of developing, so to speak, a writer from scratch. I do not think there had ever been a course of this kind.

Xerri: What are your views on the place of creative writing in the Maltese context?

Hudson: There is a great deal of interest in creative writing. The success of my course shows that there is clearly both a place and a need for creative writing, as well as a desire for courses that teach it.

Over the years, both I and others interested in the subject have noticed that, even in non-fiction and journalistic writing, for example, many people do not know the basics of how to tell a story. This sometimes carries over into how we express ourselves in public and in verbal communication. Something is missing. It is as though we lack an understanding of how to structure a story from start to finish: how to introduce it, create a hook, and compel an audience.

I have also noticed that Maltese literature tends to be very personality-based. What we often get is the personality of the author spilling onto the page. So, while we do have writers in Malta, we rarely see creative writers constructing worlds from scratch or creating characters who are distinct from their own reality. I think this is missing from our collective consciousness when it comes to writing.

Xerri: Was this what led you to ultimately propose the idea of a creative writing course to the MSA?

Hudson: My genuine interest comes from the belief that there is a great deal of creative writing talent in Malta, but there are not enough avenues through which people can publish or otherwise express that talent. I think that, with the right guidance, with someone to encourage them and teach them the basics of storytelling, we could create a new writing culture alongside the one that already exists. It could broaden the existing culture of storytelling and perhaps enable Maltese writing in English to reach wider markets for the first time.

Xerri: How did you become aware of this pool of talent?

Hudson: I have always been a writer, so naturally I gravitated towards people who are artistic and creative. Since I was 14, 15, or 16, I have met many writers who showed me their work. So many of them kept saying the same thing: "I write in English, but what am I going to do with it?"

I was different in the sense that I understood there was no real market in Malta for Maltese writing in English, at least not at the time. So, I submitted my short stories abroad. I achieved a certain degree of success, but obviously I was competing against writers from all over the world.

Imagine if Malta not only cherished creative writing, but also encouraged Maltese writing in English and fostered work that could compete in international markets. It is possible. We are fluent in both languages. If I have achieved modest success abroad, I do not see why, with greater nationwide support, other writers could not achieve similar success.

Creative Writing as Craft

Xerri: Why was it that you approached the MSA specifically rather than some other organisation?

Hudson: I have always seen creative writing as a craft, as an applied art. I assume that many people would disagree with me about creative writing being an applied art, but I do see it as a craft. It is something that can be taught, and teaching it is distinct from examining the theoretical foundations of what constitutes good writing.

So, when I saw the MSA prospectus, I thought, "These people are teaching the craft involved in different art forms." They teach piano as a craft, sculpture as a craft, and nude portraiture as a craft. I believe creative writing should be approached in the same way.

When I think of the University of Malta's approach to creative writing, I imagine someone teaching postmodernism, for example, or examining creative writing in relation to posthumanist thought. That was not what I wanted to do. I did not want to teach students a school of thought or a theoretical framework and then provide examples of writing that illustrate it. In that kind of approach, writing itself would become a side issue rather than the main focus.

In fact, my master's was around 80% theoretical, and I would argue today that it did not teach me anything tangible about writing. What I gained in Bath was confidence. I was given enough confidence in my own work to take it seriously for the first time and send it to agents, publishers, and so on.

I therefore do not think that a master's programme in creative writing is necessarily the right way to teach the basics to students, both young and old, in Malta who have never had an opportunity to learn them. I think it is better to begin with a short, intensive course covering what it takes to create a good character, how to build a world, what a hook is, how dialogue works, and how to use language to compel people to keep reading. Without those foundations, knowing the theoretical background is of little use.

Xerri: In your sessions, you focus quite a lot on the practice of creative writing. Are the students familiar with this kind of technique, or do they come to it completely new?

Hudson: Most of them are quite shy about their writing and have never shown it to anyone before. For many, this is their first experience of sharing their work. The more difficult part of my job is giving them enough confidence to understand that, yes, we are going to be critical, but that criticism is not a reason to stop writing or to hide their work.

I begin by presenting writing that already exists. For example, if I want to teach voice, I explain that, in this day and age, it is impossible to be an author without having a distinctive voice. I spend the first hour of the session showing them examples of voice-rich narratives. We discuss them in class, critique them, and share our feedback with one another.

In the second half, two students whom I would have selected the previous week submit their work for discussion. For many of them, this is the first time their writing has been criticised. But if you frame critique as part of learning a craft rather than as an attack on the person, they understand it.

If you hit a wrong note on a piano, it is wrong, and you start again. That is why creative writing should be thought of as a craft rather than as something purely theoretical and abstract. Students begin to see that writing can be improved sentence by sentence. They start asking, "How can this sentence be made better?" Once they understand that, they become very open to feedback. In the classes I have taught, students have been very receptive to criticism and willing to read their work to the group. I think the approach has been very successful.

Designing the Course

Xerri: You have partially touched upon this already, but what are your objectives in running these courses?

Hudson: The objective is to give students confidence in their work for the very first time, so that they leave the course knowing that they do have talent, that they can write a story, and hopefully that they can pursue writing in a professional way.

Lately, though, I have gone a step further, because these students, so far in Malta, do not have an avenue to publish their work. Maltese publishers do not really publish writing in English. With the first group I taught, what I did was look at every single student's writing and give them a list of publications that would be appropriate for the kind of work they write. I gave them a list of publishers and magazines that might publish their work. It would be the first time that a group of Maltese writers had worked collectively to publish abroad and make a name for themselves internationally, which is what I am aiming for.

Xerri: We have already established that you are one of the first people who has offered creative writing courses for the general public. Why did you choose this specific audience rather than opting to offer these courses only to people who have, for example, a first degree or some specialisation in English, such as teachers, or people studying English, even at lower levels? Why the general public?

Hudson: That is a good question. I have met people who are writers but who have not necessarily followed a course in English, for example. That is certainly true of the groups I teach. None of them has a degree in English, and yet they are still good writers.

The reason I offered the course to the general public is that, over the years, I have met people who are interested in writing and who take their craft seriously, but who do not wish to study English formally. It is also a little bit personal, because looking back, I would not have done a master's in creative writing. That is not to say that it was not useful, and obviously I am proud of what I achieved, but I would rather have done a master's in something else, something that would have been beneficial in the workplace, for example, or that would have opened up new avenues and opportunities. Later I could have done a crash course in creative writing, or a master's online, or something similar.

Xerri: Knowing your target audience and the teaching context, what were your main considerations when you were designing this creative writing course?

Hudson: I thought about writing on a very basic level. I thought about structure: introduction, character, voice, paragraphs, conclusion. Essentially, what I did was take a story, a David Foster Wallace short story, and ask myself: how could I teach students who have no idea about creative writing to write something similar to this?

What they need to know is how to create a hook, how to keep the writing compelling, how to build a character who is rich, real, and vivid, and how to create a setting that makes sense, a setting that feels real. In this way, I am assuming that they are interested in creative writing, but that they do not yet know how to produce publishable work. I think starting with the short story is appropriate because it is the most basic writing goal: to write a short story that is compelling and that can be sold, essentially.

Xerri: After running the course a few times, did you feel the need to adjust your expectations or your teaching approach, given what you saw your students being able to do?

Hudson: Yes. In the first iteration of the course, I followed a very rigid format, because that was the format I had. By the second iteration, I had learned to adapt more. So, if I have poets in the group, for example, I focus more on rhythm and metre.

With one particular group, I noticed that they did not really know what voice was, and that they struggled to develop voice in their writing. I decided to spend less time on character, for example, because they already understood that. We had spent two hours on it, and I thought, okay, with voice I am going to have to do something different. So, I gave them creative writing exercises that I did not give other groups.

I also presented works that are very voice-rich, such as Susanna Clarke, whereas previously I might have chosen Ursula Le Guin. I do adapt. With classes like these, where you have a mix of students and you are not expecting them to come with a degree or prior knowledge of writing, you might have people who are more interested in science fiction, for example, and others who are poets. So, you have to adapt.

Xerri: You mentioned that they struggled with voice. Is it your experience that some of your students are not very well read? How well read are they as aspiring writers?

Hudson: More often than not, the students who come to the course do not understand that, in order to be a good writer, you need to be a reader. I always tell them that good reading does not make you a good writer; it makes you a good reader. But you cannot break the rules of a genre if you do not know the rules in the first place.

I usually use voice to make this point. I tell them: imagine you are writing a horror story, but the voice is jovial and cheery. It is going to jar. It is going to put off your readers. So, in order to know what horror is, you need to have read at least a couple of horror books. You need to know how they are doing the storytelling.

More often than not, students do come with some reading experience. They obviously have their preferred genres, but they do not always understand that they need to read far more widely to become better writers.

I have had students like this. Once, for example, I had a poet who did not read poetry at all. I mentioned Ted Hughes and Robert Frost, and he was lost. You could tell from reading his poetry that he was not well versed in poetry. I tell students that if you want to know how to write something, you need to read it.

Language, Voice and Identity

Xerri: You are teaching these courses in English to people who want to write in English. English is obviously an official language in Malta, but it is one of two official languages, the other being Maltese, which many people associate closely with Maltese identity. Why did you opt to teach creative writing in English rather than in Maltese, given that you can speak and write Maltese?

Hudson: The rules of creative writing do not depend on the language. A good story in Maltese would also be a good story in English. The language is simply the medium I chose. But I did specifically choose to teach the course in English for a couple of reasons.

One reason is that the material that is going to inspire these students, and that inspires me, is mostly in English. The texts I use in class to teach an excellent form of voice, for example, are in English. There are thousands of examples in English literature of good characterisation and good world-building. In Maltese, not so much. You are obviously much more limited.

I also chose English because many of the students, I would not say most, but around 50%, are foreign. That is understandable, because Malta is now a different country from what it was 20 years ago. We have a lot of people living in Malta who do not speak Maltese, but who understand English, at least at a basic level.

What I am interested in, when it comes to writing, is what influences students and informs their technique. It is their experience, the way they perceive the world, the way they observe the world around them, their passion for the subject, and their willingness to write a story.

More often than not, these students submit some of their best work. Their English is not necessarily up to scratch, but the storytelling aspect of the writing is there. The technique is there. All they need is to brush up on their English, and that can be done. It is not an issue.

Xerri: But obviously, people who disagree with you would argue that your first language, the national language, is the vehicle for your identity. So, if you want to express what being Maltese means, then Maltese should be the vehicle. Similarly, if we were talking about a Serbian student, then Serbian would be that vehicle. In other words, you should use your first language. What are your thoughts on this? How do you respond to these beliefs?

Hudson: What I tell students when they bring this up is, "Write in the language you are comfortable with." It is absurd to me to think about identity in writing if you feel obliged to write in a language you are not comfortable using. To me, identity is tied to comfort. If you feel comfortable writing in English, but your story is Maltese, then it is a Maltese story. It is a valid Maltese story, just written in a different medium.

What I tell them is to absorb the rules and techniques that we are looking at in class and discussing together, and then apply them to whichever language they choose. There is nothing stopping them from understanding character or setting in English and then applying that understanding in Maltese. The language, again, has nothing to do with whether they can write a good story.

I can use my own example. I am Maltese. I am predominantly Maltese-speaking. I speak Maltese with my friends, with my family, and so on. But I choose English to write my stories. The reason is probably very simple: the source language that inspires me most is English. Almost everything I have read since I was 14 has been in English. I would say 95% of it was in English.

Xerri: Is it also that you feel more comfortable writing in English? You mentioned the importance of being comfortable in the language one chooses to write in. Is that something that applies to you personally?

Hudson: Yes, I do feel more comfortable in English. I think it would be a mistake to choose a language to write in if that language somehow slows down your writing process or, God forbid, damages it.

Again, I do believe that if I write a story in English, if I write an authorial work in English, there is nothing stopping translators from translating it into Maltese. You might think that is absurd, but we are living in a globalised world where most people understand English, and where even more of the world will understand it as we move forward.

The minority language issue is very interesting. Francis Ebejer, if you do not mind me going on a bit of a digression here, has an essay about this. As you know, he published works in English about Malta, and he said that the Maltese writer is like Janus, looking in two directions. He can write in English and he can write in Maltese, and Ebejer considers this a blessing. He says that it is a blessing that we can choose which language to write in.

I am quite the opposite. I do not think it is a blessing, because I feel that it is imposed on me anyway. I do not have the choice that he thinks I do. I cannot write in Maltese. I can try, but it would not be the same kind of writing, because I am not comfortable writing in it. What inspires me is in English. I prefer it as a language. I think it is vaster. There is more to say in English. The vocabulary is richer. So, to me, it is a curse, not a blessing, to have that in my mind. People might assume that it is a choice, but to me it is not a choice at all.

Xerri: Earlier, you were talking about voice and the challenges students face in expressing it. Is it a challenge for you to help students activate their voice in English specifically, given that they are either Maltese or foreign students, and that all of them have a first language other than English? Is that an additional layer of difficulty?

Hudson: It would be. You notice, for example, that some foreign students who come to the sessions have a voice that feels very Russian. What does that mean? I cannot really break it down and tell you exactly why it feels Russian, but when you read their writing, you notice certain references, certain idiomatic expressions.

Their Russian idiom, for example, or their Italian or French idiom, might spill over into their English writing. Whenever I am faced with that situation, I always say that it does not matter if it does not feel English. Write it anyway, and incorporate it into the voice of whichever character you are trying to build.

The same applies to me. If I am writing a Maltese character, as I did in my debut novel, I cheated a little bit. I gave them Maltese dialogue. In the future, I would not do that. I would still use English, but I would somehow give the character the voice of a Maltese speaker without having to make him speak Maltese in order to show that he is Maltese.

I encourage my students to focus on one language. If you are comfortable writing in Russian, write in Russian. If you are comfortable writing in English, write in English. But do not feel that you have to correct your language to fit an English idiom. Give your writing whatever identity you feel comfortable with at the time. Voice is essentially unique.

Xerri: Some people believe that, in order to write creatively in English, one's English has to be impeccable. They see creative writing in English as the preserve of those who have a very strong command of the language, or who have perhaps studied it at a very advanced level. What are your thoughts on this?

Hudson: No, that is ludicrous. I really do not believe in that at all. In fact, that is why I teach creative writing as a craft, because it is teachable across borders, across languages, across identities.

I do not understand Italian as well as I understand English, for example, but I tried reading Italo Calvino in Italian. The experience of reading *If on a Winter's Night a Traveler* in Italian was transcendent to me. I understood that reading it in English was one thing, and reading it in Italian was something completely different. Both are great pieces of writing. Both are great pieces of storytelling. The English version does not lose its value as storytelling, but the Italian version carries something different: the identity, the voice. In Italian, obviously, the Italian-ness of the text comes across far more deeply and richly. That is in translation. Obviously, translated Italian work would be up to scratch.

But what about a starting writer who does not have a strong grasp of the language? I have students like this in my class. As I said, their English might not be up to scratch, but they have understood the craft and structure of storytelling so well that I can see what they are trying to do. All they would require, by the end of their short story, is an editor, essentially: someone who understands the language, understands what they are trying to say, and can edit the work accordingly without changing the voice at all.

These people have their own identities. I have had, for example, a Russian student who wanted to write about her experience of travelling from Russia to Malta and finding her home here. She wanted to do it in English, and you could tell that her English was perhaps not the best it could possibly be, but it did not need to be.

First of all, it was true to who she was as a writer. If she is writing from her own perspective, as a Russian who is not a native English speaker, who came to Malta and is trying to learn the language, then it may actually come across as more authentic if her writing is not perfectly polished.

Secondly, her writing was top-notch. Her stories were top-notch. She had a valid story to tell about her experience. She did not need to be an expert. If we expect these students to be experts, we risk missing out on so many great stories that could be told by them.

Pathways to Publication

Xerri: Earlier, you were talking about the challenge of teaching your students to activate their voice. What other challenges are you experiencing in teaching creative writing in Malta, and doing so in English, from your perspective as a tutor?

Hudson: Another big challenge is helping students understand what it takes to publish abroad. Most writers come to me asking, "Do you have a magazine in mind when you start writing a short story?" They are literally in the dark about how to get their work into print.

The challenge is to teach something beyond creative writing, beyond technique. It is also about perseverance and knowing your audience. These things cannot be taught as such, but you can push students in the right direction and encourage them to educate themselves. For example, I always suggest a list of books at the beginning of every course. In the first session, I tell them, "These books teach you about the craft of creative writing." One of them is the *Writers' & Artists' Yearbook*, which includes a list of agents, publishers, and short fiction magazines that publish writing in English, as well as what they are interested in. Some might be interested in thriller writing, for example, while others might be interested in biographical work.

I essentially introduce students to the publishing world and to what publishing expects of them. You do not just submit to any old magazine. You need to understand your market. That has been quite tough. How to sell their writing and how to navigate publication, for example. Some of them are completely clueless about what to do. Some of them have already completed a manuscript and ask, "What am I going to do with it?" So, I tell them, "Understanding who your audience is, is the most fundamental question. Once you understand where your audience is, you can submit your work to the appropriate market."

Xerri: Is that also a challenge associated with the Maltese publishing industry as such? I mean the limitations of the publishing industry in Malta, the fact that priority is often given to writing in Maltese, and that if you want to publish something in English, it can be very difficult to make it happen.

Hudson: For some reason, Maltese publishers have obstinately kept claiming that Maltese writing in English does not sell as well as writing in Maltese. My personal view is that Maltese pulp books do sell. They have an appropriate audience, an ageing audience perhaps, but they have an audience. Of course, we should keep publishing them.

But in Malta, we do not really understand what an imprint is. So, you would have, for example, my book placed alongside pulp books, and it does not make sense. I would suggest to publishers, and they know this, that they introduce imprints into their catalogues. They do not have to stick

to a very rigid audience. There are newer readers, and the next generation of readers are expecting writing in English more than writing in Maltese.

With *M*, that was my target audience: students and young people who are interested in Maltese literature, but who either do not understand Maltese as well as they would like, or who want literature that understands that Malta is bilingual and that we code-switch all the time. Nobody in Malta speaks exclusively one language or the other. We speak a mix of both, especially young people.

Publishers are faced with this reality, and they are panicking about it. I have heard this from the horse's mouth, and I have also heard it through the grapevine. At any book festival, at any book fair in Malta, more and more young people are gravitating towards the stands that sell international titles, while Maltese titles are losing readers. Publishers have to come to terms with the fact that English books, or English-language novels, sell more than Maltese-language novels. It is just that we have not been marketing them at all.

Xerri: What you seem to be suggesting is that publishers assume Maltese literature sells more, when in reality at least part of the reading public is looking for literature in English, and publishers are not capitalising on that opportunity.

Hudson: They are not yet. I remember when I was 16, I approached a major Maltese publisher with a manuscript, and the first thing he asked me was, "Is it written in Maltese?" I said, "No, it is in English," and he said, "We will not publish it, then." I asked why. Obviously, at 16, I had a lot of hubris, but I was genuinely interested in the reason. The answer the publisher gave me was, "Because there are plenty of novels in English anyway. How can we compete?" My response at the time was, "My story is going to be different from all the other stories that have already been published in English. The language does not matter." It stopped there, but I have kept thinking about that for a long time.

There is no reason, arguably, why we should not compete against foreign titles. We should, in theory, be fluent in both Maltese and English. If the writing is good, we should, in theory, be able to compete with these titles. Why not? If we do not capitalise on this, I think we are losing out on two demographics: first, writers, whether Maltese or people living in Malta who are not Maltese, who have valid stories to tell in English; and second, readers who would genuinely buy English-language novels published in Malta.

Building a Writing Community

Xerri: What aspirations do you have for the teaching of creative writing in Malta?

Hudson: That is quite a difficult question, because at this stage I am not aware of many people whom I would consider, and whom others would consider, credible enough or experienced enough to teach the subject. That is not to say that I am the only person who can teach creative writing, but I have met many writers who do not share my philosophy or theory about teaching it: that it has to be taught as a craft. Any other way of teaching it would be a missed opportunity. If we are going to design some kind of course, even at master's level in Malta, it has to begin from the point that writing is a craft that can be taught. Otherwise, we are going to fail.

My aspiration is that we build communities of people who write in English in Malta. I am trying, in my own way, to scout people and find those who are good at what they do. They write in English; we promote them; we encourage them; they try to publish abroad, or they publish in a local anthology, and then they submit work abroad. In this way, we build a sort of repertoire of Maltese writing in English. Suddenly, we'd have people with experience, a pool of authors who can actually teach the subject.

So, my aspiration is that we first build a repertoire, a publication catalogue, of Maltese writers who are published abroad, not Maltese writers who have been translated. That is different, because translation is a whole other kettle of fish. Writing directly in English and publishing abroad is extremely difficult, because you are competing against the whole world. If you manage to publish abroad, that says something about your writing and about how seriously you take your craft. If we have a handful of such people, we'd have the foundations, and we can start building a more serious kind of creative writing course.

I do believe that there is plenty of Maltese talent. It is just that we have never harnessed it. Publishers have never harnessed it because we do not publish writing in English. There is so much competition in Malta, and the pool is so small, that the moment someone obtains a name or some form of celebrity, they control the status quo. This is dangerous. I have had students tell me that they have been ostracised or discouraged from joining certain events because they write in English. They were made to feel isolated because certain egos did not like it.

If you have these kinds of ego, then we are never going to have the inclusive environment that I envision in the future. In order to have a successful collective culture of writing, we need to support each other, irrespective of language. Language should not be a way of dividing us further. That was the colonial version of ourselves. We are past that, hopefully.

Conclusion

Hudson's reflections return us to several of the concerns raised at the beginning of this article, while also showing how these debates acquire particular significance in the Maltese context. The literature on creative writing pedagogy challenges the persistent belief that authorship is primarily a matter of innate talent, arguing instead for approaches that make craft, process, revision and reflection visible to learners (Clifton, 2022; Ghidotti, 2020; Manery, 2016; Mayers, 2015; Young, 1984). Hudson's account strongly echoes this position. His insistence that creative writing should be taught as an applied art, comparable to music or portraiture, reframes writing as something that can be practised, improved and discussed through shared techniques. It shifts attention from talent as a gatekeeping concept to pedagogy as a means of enabling more people to understand how stories work.

At the same time, the interview complicates the literature's critique of workshop-based teaching. Scholars have warned that workshops may silence writers, reproduce hierarchies, or expose emerging authors to damaging forms of criticism (Kearns, 2009; Kennedy, 2012; Suphap, 2023). Hudson, however, does not reject the workshop; rather, he adapts it by embedding critique within a craft-based and confidence-building environment. His students are often sharing work for the first time, so feedback has to be framed not as judgement on the person but as part of learning how to improve a sentence, develop a voice or strengthen a story. For educators, workshop practices are most valuable when they are carefully structured, emotionally safe and explicitly linked to the writer's development.

A further point of convergence concerns the relationship between creative writing, language and identity. The literature on second-language and translingual creative writing argues that multilingual writers' language resources should be treated as sources of voice and agency rather than as deficiencies (Chin, 2014; Lim, 2015; McCrary, 2023; Zhao, 2015). Hudson's position aligns with this view, particularly in his rejection of the idea that English-language creative writing belongs only to those with impeccable English. His examples of Maltese, Russian, Italian and other voices entering English-language writing suggest that linguistic difference can enrich rather than weaken literary expression. In Malta, where English and Maltese carry complex historical, cultural and political meanings, this has important pedagogical implications. Creative writing educators need to help students write in the language in which they feel most creatively able, while also recognising how voice may be shaped by bilingualism, code-switching, translation and local experience.

The interview also extends the literature by foregrounding publication as a central concern in a small literary market. While much creative writing pedagogy focuses on craft and workshop practice, Hudson repeatedly points to the limited local pathways available to writers producing work in English.

His teaching therefore includes a vocational dimension whereby students are encouraged to understand audience, identify appropriate magazines or publishers, and imagine themselves as participants in wider literary networks. This resonates with arguments that creative writing courses should support professional identity formation and practical knowledge of the literary field (Dai, 2026; Ghidotti, 2020; Manery, 2015). The implication for educators is that teaching craft without also addressing publication, readership and literary infrastructure may leave emerging writers without the tools needed to sustain their practice beyond the classroom.

Hudson's experience indicates that creative writing education in Malta necessitates more than the adoption of established workshop models or university-based approaches. It requires a locally responsive pedagogy that treats writing as craft, builds confidence, values multilingual voice, supports constructive critique and attends to the realities of publication. His work points to a broader implication for creative writing educators, namely that effective teaching involves more than helping students produce individual texts. It also involves building the conditions in which writers can see themselves as part of a community, develop sustainable practices, and contribute to a more inclusive literary culture.

Acknowledgements

I would like to thank David Samuel Hudson for granting me the interview and for his comments on an early draft of the article.

References

Badami, S. (2021). The golden rules. In D. Adelaide & S. Attfield (Eds.), *Creative writing practice: Reflections on form and process* (pp. 29–50). Palgrave Macmillan. https://doi.org/10.1007/978-3-030-73674-3_3

Beard, R. (2012). Outside the academy. In D. Morley & P. Neilsen (Eds.), *The Cambridge companion to creative writing* (pp. 171–180). Cambridge University Press.

Charalambous, Z. (2019). *Writing fantasy and the identity of the writer: A psychosocial writer's workbook*. Palgrave Macmillan. https://doi.org/10.1007/978-3-030-20263-7

Chin, G. V. S. (2014). Co-constructing a community of creative writers: Exploring L2 identity formations through Bruneian playwriting. In D. Disney (Ed.), *Exploring second language creative writing: Beyond Babel* (pp. 119–138). John Benjamins Publishing. https://doi.org/10.1075/lal.19.07chi

Clifton, G. (2022). Critical-creative literacy and creative writing pedagogy. *University of Toronto Quarterly, 91*(1), 51–66. https://doi.org/10.3138/utq.91.1.04

Dai, F. (2026). English-language creative writing pedagogy and international exchanges: A case study of Sun Yat-sen University's creative writing. In R. M.-L. Leung (Ed.), *Exploring the intersection of creative writing and creative arts in Asia: Converging horizons* (pp. 177–189). Springer. https://doi.org/10.1007/978-981-95-2488-4_9

Daniels, E. B. (2026). *Creative writing pedagogies in basic writing classrooms: Faculty approaches and perceptions at the City University of New York* [Doctoral dissertation, Temple University]. https://doi.org/10.34944/390c-3a20

Ghidotti, C. (2020). Creative writing courses are useless: Creative writing programs and the Italian literary system. In I. Kiriya, P. Kompatsiaris, & Y. Mylonas (Eds.), *The industrialization of creativity and its limits: Values, politics and lifestyles of contemporary cultural economies* (pp. 61–74). Springer. https://doi.org/10.1007/978-3-030-53164-5_5

Gilbert, F. (2021). Why teach creative writing? Examining the challenges of its pedagogies. *Changing English, 28*(2), 148–168. https://doi.org/10.1080/1358684X.2020.1847043

Jin, Z. (2025). What craft advice, rhetorical narratology, and psychology of aesthetics can do for each other. *Narrative, 33*(3), 382–398. https://doi.org/10.1353/nar.2025.a971663

Kearns, R. M. (2009). Voice of authority: Theorizing creative writing pedagogy. *College Composition and Communication, 60*(4), 790–807. https://doi.org/10.58680/ccc20097197

Kennedy, A. L. (2012). Does that make sense? Approaches to the creative writing workshop. In D. Morley & P. Neilsen (Eds.), *The Cambridge companion to creative writing* (pp. 201–214). Cambridge University Press.

Lenhart, L. (2025). *Understanding the effects of creative writing's shifting pedagogy: Cultural capital, linguistic diversity, and community membership in the new workshops* [Doctoral dissertation, Arizona State University]. ProQuest Dissertations & Theses Global.

Lim, S. G.-L. (2015). Creative writing pedagogy for World Englishes students. *World Englishes, 34*(3), 336–354. https://doi.org/10.1111/weng.12148

Manery, R. (2015). Revisiting the pedagogy and theory corral: Creative writing pedagogy teachers' conceptions of pedagogic identity. *New Writing, 12*(2), 205–215. https://doi.org/10.1080/14790726.2015.1040030

Manery, R. (2016). *The education of the creative writing teacher: A study of conceptions of creative writing pedagogy in higher education* [Doctoral dissertation, University of Michigan]. https://hdl.handle.net/2027.42/133407

Mayers, T. (2015). Creative writing and process pedagogy. In A. Peary & T. C. Hunley (Eds.), *Creative writing pedagogies for the twenty-first century* (pp. 30–51). Southern Illinois University Press.

McAbee, D. (2020). Shifting the power dynamics in the creative writing workshop: Assessing an instructor-as-participant model. *New Writing, 17*(3), 244–252. https://doi.org/10.1080/14790726.2019.1586959

McCrary, M. (2023). *Teaching cultural dexterity in creative writing*. Bloomsbury Academic.

Stephens, G. (2018). Transferable skills and travelling theory in creative writing pedagogy. *New Writing, 15*(1), 65–81. https://doi.org/10.1080/14790726.2017.1369128

Stone, R. (2025). *Fostering creativity through a signature creative writing pedagogy* [Doctoral dissertation, Indiana State University]. https://scholars.indianastate.edu/etds/3159

Suphap, W. (2023). Workshopping failure pedagogy for creative writing studies. *New Writing, 20*(2), 244–258. https://doi.org/10.1080/14790726.2022.2106246

Syrewicz, C. C. (2023). The motivations that improve the creative writing process: What they might be and why we should study them. *New Writing, 20*(2), 178–200. https://doi.org/10.1080/14790726.2022.2051563

Thorpe, R. (2021). *Teaching creative writing to second language learners: A guidebook*. Routledge. https://doi.org/10.4324/9781003043492

Tyrou, I. (2026). Foreign language creative writing approach: A literature review. *New Writing, 23*(1), 98–124. https://doi.org/10.1080/14790726.2026.2622039

Xerri, D., & Hudson, D. S. (2024, March 27). No one's ego is worth more than the literary industry. *MaltaToday*, 8–9. https://www.maltatoday.com.mt/arts/books/128348/no_ones_ego_is_worth_more_than_the_literary_industry

Young, A. (1984). Learning the craft: Creative writing and language development. *Journal of Aesthetic Education, 18*(1), 51–58. https://doi.org/10.2307/3332572

Zhao, Y. (2015). *Second language creative writers: Identities and writing processes*. Multilingual Matters. https://doi.org/10.21832/9781783093014

About the Author

Prof. Daniel Xerri is an Associate Professor in Applied Linguistics and TESOL at the University of Malta, and the Chairperson of the ELT Council. He has published widely on different areas of English language education and has conducted several interviews with poets and other creative professionals across the anglophone world. One of his main research interests consists of creativity education. His most recent book is *The Rise of English as a Glocal Language: Reimagining its Role in an Era of Deglobalisation* (Springer, 2026). www.danielxerri.com

e-Mail: daniel.xerri@um.edu.mt

Submission Guidelines

Manuscripts submitted to the **IJTDC** should contain original research, theory or accounts of practice. Submission of a manuscript to the **IJTDC** represents a certification on the part of the author(s) that it is an original work, and that neither this manuscript nor a version of it has been published previously nor is being considered for publication elsewhere. If accepted by this journal, it is not to be published elsewhere without permission from the **IJTDC**. However, conference papers included as part of conference proceedings may be considered for submission, if such papers are revised in accordance with the format accepted by this journal, updated if need be, and full acknowledgement given in regard to the conference or convention in which the paper was originally presented.

Electronic submission

Authors should send the final, revised version of their articles in electronic form. Submit the final version to the journal's editorial office.

All submitted papers are assessed by a blind refereeing process and will be reviewed by at least two independent referees. Therefore, avoid clues in the text which might identify you as the author. Authors will receive constructive feedback on the outcome of this process. Please note that the process will take two to three months in duration.
Manuscripts should be written in accordance with the publication manual of the American Psychological Association (**7**th Edition). For example, the following should be adhered to:

Title page

Include title of paper, name(s) of author(s), affiliation, mailing address (include postal codes, if applicable also e-Mail address and fax-number) and a running headline. The title page will be removed by the Editor-in-Chief prior to the refereeing process to allow for a masked review.

Abstract

Should consist of a maximum 200 words on a separate page. The abstract must, if the result of empirical research, briefly outline theoretical basis, research question(s) (in one sentence if possible), methodology and instrumentation, sample(s) and pertinent characteristics (e.g., number, type, gender, and age) as well as the main findings of the study (if applicable include statistical significance levels). Also, include conclusion and the implications or applications.
An abstract for a review or a theoretical article should describe in no more than 150 words the topic (in one sentence), the purpose, thesis or organising structure and the scope of the article. It should outline the sources used (e.g., personal observation and/or published literature) and the conclusions.

Length

A paper submitted should not exceed 7000 words including abstract, keywords, references, and illustrations.

Language

The **IJTD**C is an international scholarly journal and papers should be written in English. It is recommended that non-native English speakers have their papers checked in regard to language accuracy prior to submission. British spelling, as well as American spelling is accepted.

Manuscript

Papers must be word processed, and printed or photocopied with a clear print, double-spaced and with margins of at least 4 cm (approximately 1.5 inches) on all four sides. Use one side of the page only.

Statistics

Are an aid to interpretation and not an end in themselves. If reporting statistics, include sufficient information to help the reader corroborate the analyses conducted (cf APA-manual).

Qualitative data

If submitting a qualitative study, be sure to include a discussion on the stringency observed whilst obtaining and analysing the data (e.g., biases, analysis model, transcription keys, validation of results and so on). Include sufficient data to help the reader, as far as possible, to corroborate the analyses conducted.

Footnotes
Should be kept to a minimum or preferably avoided completely. If used, they should be numbered consecutively with superscript Arabic numerals.

Abbreviations
Must be kept to a minimum and not followed by a full stop, for example cm (not cm.), kg (not kg.)

References
See the APA-manual for a full description of how to make references and how to quote other research or other sources. The reference list should be double-spaced like the rest of the paper, alphabetically sorted with names and journal titles. Note that journal titles may not be abbreviated.

Illustrations
Authors should follow APA-format in designing tables and figures and consider the fact that illustrations supplements - not duplicates - the text. In the text, refer to every table and figure and tell the reader what to look for.

Figures
Must be computer drawn or photographed and submitted on separate pages in the manuscript; not included in the text. Note that they must also be included as separate computer files (jpg, jpeg or gif format). Figures should be identified with Arabic numbers and an explaining text, and their approximate place in the text should be clearly indicated in the manuscript.

Tables
Should be placed on separate pages; not included in the text. Note that tables also should be submitted as separate file(s). Tables must have an Arabic number, an explaining text and a title. Their approximate place in the text should be clearly indicated in the manuscript. Observe also that templates for tables provided with most word processing software may not be used unless templates follow APA-format. Spreadsheets, while inevitable when constructing diagrams with software such as for example Microsoft Excel of SPSS, should not be used as basis for table construction in the paper.

Proofs
One proof will be sent to the author(s) to be corrected and returned—within three days of receipt—to the Editor-in-Chief. The cost of corrections in the first proof resulting from extensive alterations in the text will be charged to the author.

Early electronic offprints
Corresponding authors can now receive their article by e-mail as a complete PDF. This allows the author to print up to 50 copies, free of charge, and disseminate them to colleagues. In many cases this facility will be available up to two weeks prior to publication. A copy of the journal will be sent by post to all corresponding authors after publication. Additional copies of the journal can be purchased at the author's preferential rate of US$25.00 per copy.

Copyright
As of volume 10, authors of accepted manuscripts retain their copyright, and grant IJTDC the right to publish, reproduce, display and distribute their articles under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International (CC-BY-NC-SA 4.0) license. Authors, may, of course, use the article elsewhere after publication, providing that they cite the original version of the publication in IJTDC. Authors are themselves responsible for obtaining permission to reproduce copyrighted material from other sources.

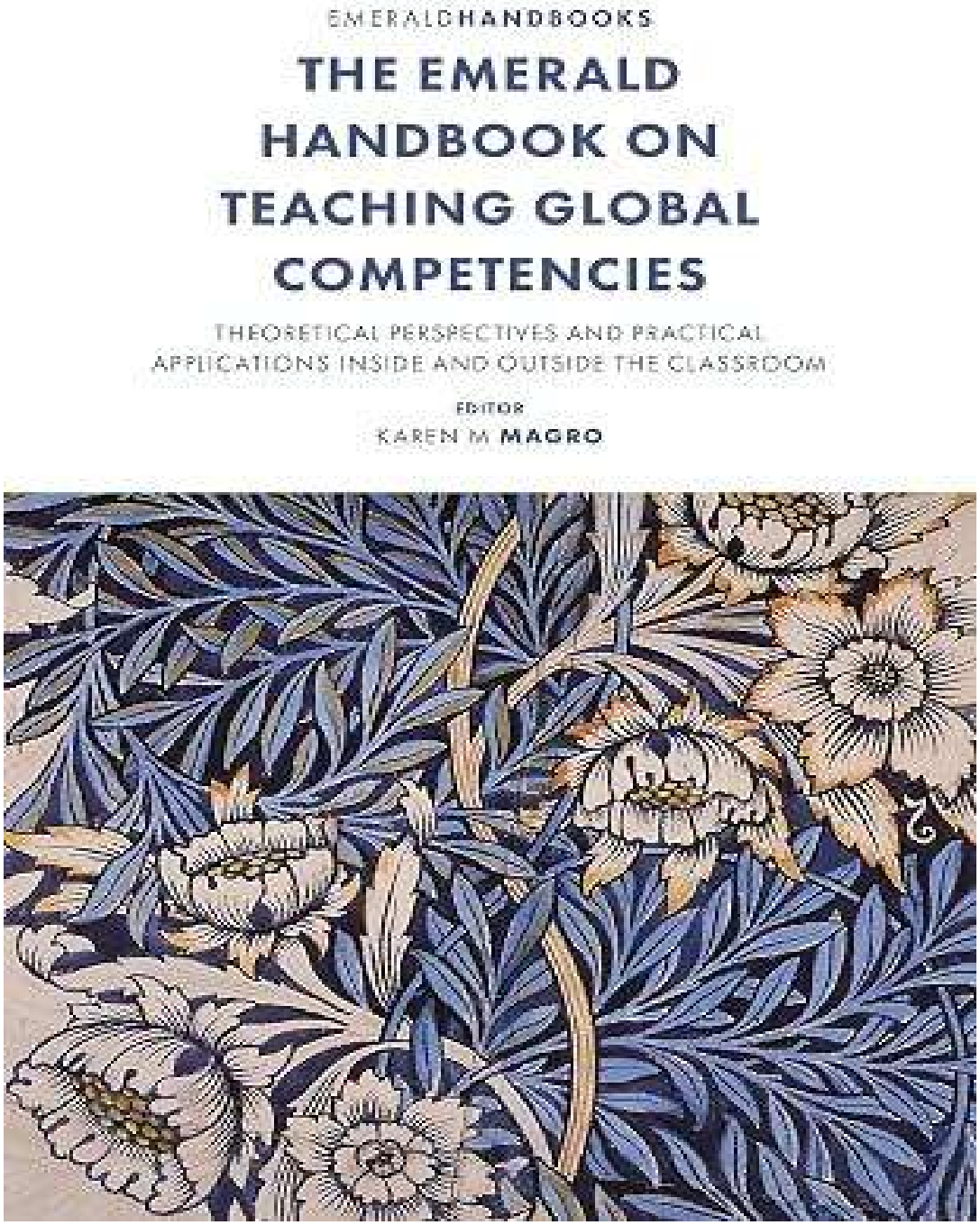
Submission
Please send manuscript(s), which will not be returned, to the Editor-in-Chief:

Editor-in-Chief:
Prof. Dr. Karen Magro;
Faculty of Education, University of Winnipeg, 515 Portage Avenue;
Winnipeg, Manitoba, R3B 2E9, Canada.

e-Mail: k.magro@uwinnipeg.ca

The Emerald Handbook on Teaching Global Competencies:

Theoretical Perspectives and Practical Applications Inside and Outside the Classroom



Karen M. Magro (Editor). Emerald Publishing Limited.
DOI: https://doi.org/10.1108/978-1-80686-247-4.
ISBN electronic: 978-1-80686-247-4. **ISBN print:** 978-1-80686-248-1 (2026).

Worldwide, educational institutions at every level are increasingly recognizing that learners must cultivate and demonstrate key global competencies - skills that seamlessly translate across work, academic, and community settings. Offering a timely and rigorously researched exploration into the future of learning, *The Emerald Handbook on Teaching Global Competencies* redefines citizenship by revealing how cultural, linguistic, and technological transformations are reshaping our collective identity and suggests that education must transcend traditional, geographically bound disciplines to fully equip learners for the challenges and opportunities of a rapidly evolving global landscape.

In this comprehensive work, interdisciplinary research meets practice. The Emerald Handbook on Teaching Global Competencies champions an integrated approach that fosters emotional and social intelligence, creative problem solving, and interdisciplinary thinking, while also valuing transcultural insights and Indigenous knowledge. Through a rich array of case studies, empirical research, and innovative pedagogies, chapter authors demonstrate how dynamic, multimodal, lifelong learning environments can cultivate the key global competencies needed to bridge cultural divides, empower communities, and promote sustainable development.

An essential resource for academics, educators, and policymakers, this volume offers not only a critical synthesis of theory and practice but also an inspiring vision for reimagining educational spaces. Chapter authors challenge conventional models and call for a transformative rethinking of what it means to be educated in the 21st century, where learning is a catalyst for creating resilient, inclusive, and globally engaged communities.

In This Issue

From the Founders:

- The Architecture of Knowledge Production and Dissemination

From the Editor's Desk:

- Advancing Scholarly Reflection in a New Era of Education: Encouraging Creativity and Connection Across the Disciplines

Articles:

- Extending Knowledge and Learning through the Prism of Cosmopolitan Education: International Perspectives.
- The Past We Inherit, the Future We Build: Some Thoughts on Creative Thinking Past, Present and Future.
- Cyber-Creativity in Education: Human-AI Pedagogies in the Space-Time Continuum.
- Personal Integrative Thinking as a Cognitive Asset in a Complex World.
- Shaking up Shakespeare: A Reflective Essay on a Legacy of Playful and Relational Teaching Across K-12 and Post-Secondary Education.
- The Effects of Context-Based Learning on Gifted Students' Transformative Potential in Addressing Environmental Issues.
- Cultural Aspects in Motion and Arts as Staging: Arts-Based Pedagogy for Cultural Learning in Adult and Higher Education.
- AH-HA Moments: Remembering the Way Forward – Creating the Way Back.
- Global Competencies: Fostering Creative Learning and Critical Thinking Through Artificial Intelligence, Promises and Perils.
- Engaging K-12 Students in STEM via Planetary Exploration.
- The Multilevel Criticality Framework: A Pedagogical Guide for Developing Global Competencies, Critical Literacy, and Democratic Agency in Adult Education.
- Incorporating Inquiry-Based Learning and Analytical Psychology into the High School Classroom.
- Using Creative Problem-Solving Strategies in Classrooms: Pre-service Teachers' Perspectives.
- Well-Being in Education: An Ecological Systems Perspective.
- From Self-Awareness to Collaboration Across Difference: A Developmental Framework for Identity-Centered Global Competence Development.
- Creativity in Gifted Education: Educational Practices at the Institute for Creativity & Giftedness.
- We don't know what we don't know: Primary Teachers' Attitudes to Academic Full-year Acceleration for Children in China and New Zealand.
- We don't know what we don't know: Rethinking Giftedness and Talent Terminology.
- Our Student Success Initiative: From Hypothesis to Contribution to Major Impact.
- Stories that Teach: Dialogue, Narrative, and the Construction of Educational Knowledge in We Make the Road by Walking.
- "She Noticed Me": Retrospective Accounts of Relational Teacher Noticing among Canadian University Academics.
- Legacy in the Making: Mapping a maker of art, research and teaching, with reference to Make Medway Community Makerspace in Kent, England.
- From Iron to Gold: The Forge of Imagination Reflections on a Life in Education
- Reflections of a Lifelong Learner.
- Small Decisions, Small Acts, Large Impacts: A Letter Reflecting on a Beginning Scholar's First Year of Academic Administrative Practice.

Interview:

- Pioneering the Teaching of Creative Writing in Malta: An Interview with David Samuel Hudson.

The official journal of the International Centre for Innovation in Education (ICIE) and of the Lost Prizes International (LPI)

International Journal for Talent Development and Creativity

(*12*(2); *13*(1&2); *14*(1&2) 2026)



Volume 12 Number 2
Volume 13 Number 1
Volume 13 Number 2
Volume 14 Number 1
Volume 14 Number 2

ISSN: 2291-7179

ISSN: 2563-6871 (Online)

International Journal for Talent Development and Creativity

(*12*(2); *13*(1&2); *14*(1&2) 2026)