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Editorial

Valerie Triggs and Kathleen Nolan, *University of Regina*

Our Spring 2026 issue of *in education* offers eight exciting research articles and one book review, each attending to educational experience from diverse perspectives and through an assortment of research designs and geographical contexts.

In several of these articles, the role of self-reflection is shown to be important for educators and students. **Mariam Farooq**, in her article titled *The Power of Reflection: An Exploration of Its Role in Learning and Teaching*, shares an autoethnographic journey of appreciating and practicing reflective writing as a graduate student and as a teacher. By delving into literature and personal experience about reflective writing, she highlights her evolving understanding over time and offers important observations about the transformative nature of reflective writing. **Johanathan Woodworth**, **Andrea Fraser**, and **Phillip Joy** also consider the transformative nature of written reflection in *Metaphor, Emotion, and Ethics: Arts-Based and Queer Pedagogy as Transformative Reflection*. Their research analyzes the structured reflections of 12 students following their engagement with queer-themed comics. Using arts-informed thematic analysis, these authors describe the ways in which emotion, metaphor, and ethical awareness indicate transformative learning in their study. Authors **Ingrid Rachel Strand**, **Unni Knutstad**, and **Mette Sagbakken** present a qualitative investigation from Norway in which self-reflection and self-assessment play an important role. In their article *Enhancing Self-Assessment and Reflection in Nursing Education: Insights from a Qualitative Study on Students' Professional Development in Clinical Practice*, Strand et al.'s research reveals that students' abilities to apply communication skills and clinical procedures are enhanced through reflection that not only reinforces practical proficiency but also theoretical understanding.

The next set of articles highlights the impacts of personal situations and perspectives on educational experience for teachers and students. Beginning with *Building Thinking Classrooms in Mathematics: Learning About Sustained Changes in Teacher Practice through the Interconnected Model of Teacher Professional Growth,* **Candy L. Jones** shares a professional development initiative in a Manitoba school division. The initiative was designed to improve teachers' sense of self-efficacy in mathematics instruction as well as to understand their desire to adopt research-based pedagogies in their classrooms. This case study focuses on cohorts of mathematics teachers/coaches over 2 years, finding that teacher contexts and personal situations are determining factors in their abilities to engage in sustained changes in practice. Concentrating on recruiting and retaining teachers in northern Manitoba, **Natalie Pegus** reports on a qualitative study examining the experiences of teachers new to working and living in northern and remote contexts. In her article *Belonging, Community, and Preparedness: Teacher Experiences of Working and Living in Northern Manitoba*, Pegus offers an integrated understanding of teacher recruitment and retention. Through her model of 'feeling at home in teaching,' Pegus claims that teacher perceptions of school-based belonging are central. In *The Art and Science of Teaching Reading: Understanding Teacher Mindsets About Teaching Reading and Salient Influential Factors,* **Robin Bright**, **Chris Mattatall**, and **Adam Browning** investigate how the mindsets of K-6 teachers, regarding reading development and instruction, influence student literacy achievement. Bright et al.'s mixed methods study involves open-ended questions and interviews, coded and themed using the constant comparative method. Data show that mindsets valuing *both* the science and art of

reading instruction had the strongest influence on student achievement. In *Learning to Teach Through Action Research: Teachers' Perspectives on Their Experiences as Preservice Teachers*, **Deborah Toope**'s qualitative research investigates teachers' perspectives regarding their experience in designing and conducting action research inquiry as preservice teachers. Data from semi-structured interviews, research proposals and lesson plans are analyzed to reveal how action research provides opportunities for preservice teachers to transform relationships with students, engage in reflective practice, and shape their teacher identities as they transition to becoming teachers. Lastly, in the article *Between Digital and Analogical: Familial Perspectives on Teaching to Develop 21st-Century Competences*, **María Mairal-Llebot**, **Cecilia Latorre-Cosculluela**, and **Marta Liesa-Orús** report on a large-scale study conducted in northeastern Spain. In the study, the authors examine the perceptions of the families of students aged 3-18 regarding teaching methods with and without the use of information and communications technology (ICT). Data from 720 families offer a large regional sample, highlighting the crucial role of families in supporting both traditional (analogical) teaching methods and ICT-based learning.

We close this sizable Spring/Summer 2026 issue with a book review by **Jennifer MacDonald**, who offers a rich engagement with the 2024 book entitled *Teaching Where You Are: Weaving Indigenous and Slow Principles and Pedagogies*, authored by Shannon Leddy and Lorrie Miller. MacDonald offers high praise for this book, noting its accessibility for K-12 pre-service and in-service teachers through the authors' style of compelling narrative writing and its importance in building decolonial literacy by highlighting the parallels between slow and Indigenous pedagogies.

As Editors-in-Chief, we would be remiss if we did not include two important acknowledgements in this editorial. Firstly, we offer our deepest appreciation to our managing editor, **Marzieh Mosavarzadeh**, who will be leaving her position following the publication of this issue. Marzieh has worked alongside Valerie and Kathleen for more than a year and a half, always conscientious, cooperative, and highly skilled at her tasks of manuscript copyediting and formatting, as well as journal production. She will be greatly missed.

Secondly, we wish to share that this is the final issue with **Valerie Triggs** as the journal's co-Editor-in-Chief. In December 2025, Valerie retired from her faculty position at the University of Regina, though she made the commitment to remain in her role with the journal until June 30, 2026. We recognize and thank Valerie for the enormous amount of work she has accomplished while serving in this role since November 2023; she has always approached her role as co-Editor-in-Chief with deep conviction, strong leadership, and a warm heart. Valerie will be deeply missed by Kathleen and the journal's editorial team. We wish her well in her new retirement ventures!

The Power of Reflection: An Exploration of Its Role in Learning and Teaching

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Abstract

This autoethnographic exploration traces my evolving understanding and practice of reflective writing, highlighting its significance in both personal and professional contexts. Initially, my exposure to reflective practices within South Africa's education system, and later as a university student, was surface level, with minimal guidance on engaging meaningfully in reflection. My early reflections were largely descriptive, recounting events rather than critically analysing them. It was during my Master of Education programme, while conducting action research to develop students' writing skills through portfolios, that I began to engage deeply in reflection, both as a student and as an educator facilitating reflective practices in others. Through this process, I realised that reflection requires explicit instruction and consistent practice, particularly in educational contexts that prioritise rote memorisation over critical thinking. As a university educator, I revised my approach to teaching reflection by incorporating guiding questions, peer review activities, and technology-based platforms to foster deeper engagement. This shift significantly improved students' reflective abilities, especially in fields such as nursing and education. Now, as a PhD student, reflection remains a central tool in my academic growth and research journey. Overall, this self-reflective journey highlights the importance of intentional and structured approaches to teaching reflection, ensuring it serves its transformative purpose in education by fostering critical thinking, self-awareness, and lifelong learning.

Keywords: critical thinking, higher education, life experiences, reflective writing

The Power of Reflection: An Exploration of Its Role in Learning and Teaching

In today's rapidly evolving educational landscape, the ability to reflect critically on one's experiences, beliefs, and learning processes is increasingly recognised as a key competency for success in higher education (Ryan, 2015; Sudirman et al., 2024). Reflective practice allows students to engage with their thoughts, emotions, and behaviours, linking academic experiences to real-world contexts. This process not only enables students to build on their current skills but also helps them identify areas for improvement and gain a deeper understanding of themselves as learners (Adie & Tangen, 2014; Taylor, 2023).

Reflection is a cognitive process that involves the deliberate consideration of experiences, actions, and outcomes, leading to deeper understanding and insight (Crane & Sosulski, 2020). The benefits of reflective activities have contributed to their growing popularity in higher education. Through metacognition, students can develop a better understanding of their learning preferences, strengths, and areas of challenge (Bharuthram, 2018). Additionally, reflective writing offers students the opportunity to connect theory to practice, thereby providing a platform for applying newly acquired knowledge to real-world settings.

A key component of effective reflective writing is the balance between descriptive writing and critical reflection. This balance allows students to go beyond merely recounting experiences to deeply analyse them, thereby maximising the impact of reflection (Ash & Clayton, 2009; Pais Marden & Herrington, 2022). Moreover, reflection encourages students to question why they hold certain views rather than simply stating their opinions, fostering stronger analytical skills.

In this autoethnography, I reflect on my personal journey of learning about reflective writing, beginning as a student and later transitioning into a teaching role. As a student, I discovered both the importance and the challenges of writing meaningful reflections. Now, as an educator, my focus is on helping students develop the skills necessary to write effective reflections, enhancing their academic growth while continuing to inform my own development as a teacher. By intertwining my experiences as both a learner and an educator, this self-analysis offers a dual perspective on the evolving nature of reflective writing in higher education.

The exploration in this article is guided by the research question: *How has my understanding of reflective writing evolved, and how can I help students develop effective reflective writing skills?*

Positionality

I was born in Karachi, Pakistan, and moved to Johannesburg, South Africa, at the age of ten. Completing most of my schooling and earning my bachelor's degree in South Africa provided me with a diverse academic and cultural foundation that deeply influences my worldview and pedagogical approaches. Growing up and studying in different cultural contexts exposed me to varied educational philosophies.

After completing my undergraduate studies, I returned to Pakistan and began teaching at a primary school. During these early years of teaching, I experienced numerous 'Aha' moments that inspired me to take risks, explore new possibilities, and push boundaries in my quest for both personal and professional growth. These moments became the foundation of my teaching philosophy: that educators, through empathy and reflection, can drive positive change in their students' lives. This belief deeply shaped how I approached teaching and how I encouraged my students to reflect on their own learning experiences.

After two years of teaching, I pursued a master's degree in education, further deepening my understanding of pedagogical theories and reflective practices. Soon after, I began teaching English for Academic Purposes (EAP) courses at the university level. Over the course of ten years, I guided undergraduate and graduate students in reflecting on their academic journeys, encouraging them to connect their personal experiences with theoretical learning. These experiences solidified my belief in the importance of reflective writing as a critical tool for both academic and personal growth.

In September 2023, I moved to Canada as an international student to pursue a PhD in Curriculum Studies. This shift allowed me to reflect deeply on my own learning process, especially as I navigated the role of a student once again in a new cultural and academic environment. My academic journey, both as a teacher and a student, has reinforced the vital role reflection plays in creating meaningful learning experiences. This positionality shapes the lens through which I examine and engage with reflective writing in this autoethnography.

Background to the Problem

As an educator and a student, I recognise the importance of developing strong academic reflections. My motivation to write about my experience arose mainly from my teaching practice, where reflective writing was a vital component of class assessment. I often incorporated different reflective activities in my classes; however, it was observed that many students were unfamiliar with the reflective writing process, and as a result, produced descriptive accounts of experiences or events. These descriptive accounts do not meet the true purpose of reflective writing, and as a result, students may find it either tedious or irrelevant, lacking the motivation to engage actively in the process.

As a student, I have become increasingly aware of different teaching styles and have noticed that instructors often assume students already possess the necessary skills for reflective writing or will develop them independently, an assumption that has shaped my own experiences with learning to write reflections. Consequently, instructors may not allocate instructional time to explicitly teach reflective writing techniques in their classes. This can become a significant barrier, as without proper guidance and practice, students may miss out on opportunities to enhance their critical thinking skills while writing reflections, which are crucial for academic success and lifelong learning.

In the Canadian context, reflective writing is integral across various educational levels, from K-12 to post-secondary education (Rolheiser & Ross, 2013). Despite its recognised importance, students continue to struggle with reflective writing, resulting in superficial reflections that do not fully engage with the learning process. The lack of explicit instruction in reflective writing contributes to this gap, highlighting the need for pedagogical approaches that support the development of these skills.

Literature Review

Reflective writing is recognised as a fundamental component of higher education, serving as a bridge between experiential learning and critical thinking. In recent years, educators and researchers have increasingly emphasised the importance of developing students' reflective writing skills to enhance learning outcomes and promote deeper engagement with course content. This literature review argues for the necessity of improving reflective writing skills in higher

education by synthesising existing research on theoretical frameworks, types of reflections, pedagogical approaches, and challenges students face during the reflective writing process.

Theoretical Frameworks

Scholars have discussed reflection from different perspectives for various purposes. Some of the earliest insights regarding the value of reflection come from John Dewey, who emphasised that education should aim to promote thoughtful reflection, as true learning is not automatic and occurs only when we reflect on our experiences (Holdo, 2023). Dewey's concept of reflective thinking involves actively, persistently, and carefully evaluating any belief or purported body of knowledge in light of the communities that endorse it and the conclusions it is likely to lead to in the future. Dewey viewed experiential learning as a spiral rather than a cycle, with learners progressing along a continuum of learning by using prior knowledge to guide present and future decisions.

Kolb's theory of experiential learning expands on Dewey's ideas. Students advance through four stages of Kolb's experiential learning cycle: active experimentation, abstract conceptualisation, reflective observation, and concrete experience (Kolb, 2014). These stages show how students' thinking becomes more sophisticated as they go through the cycle, emphasising the value of reflection in the educational process. Through reflective observation, students can advance their learning to new heights by analysing and drawing inferences from events.

Additionally, Schon (2017) defined reflection as the process by which a person deals with and attempts to make sense of "puzzling, troubling, or interesting phenomena" in addition to considering the understandings implicit in their actions, which they surface, criticise, restructure, and embody in further action (p. 50). According to this definition, reflective students analyse their methods, generate suggestions for enhancing their performance, and implement those suggestions. This cycle is known as admiration, action, and re-appreciation (Cheng, 2023).

Moreover, Eyler and Giles (1999) developed the Five Cs of effective reflection: connection, continuity, context, challenge, and coaching. Connection encompasses a wide range of experiences, from institutional links to personal connections with various social groups. Reflection leverages these connections because experiential learning does not happen in a vacuum. Continuity refers to reflecting at every stage of the process, with lifelong introspection being the ultimate goal. Context considers the topic of reflection as well as the location and timing of the reflection. Structural elements can significantly improve or hinder reflective practice. Challenge is based on the idea that while novel experiences foster more complex thought, they should be structured to avoid being overwhelming. Lastly, coaching describes the assistance needed for productive reflection. These elements integrate reflective practices with experiential learning, emphasising the importance of context and structured challenges to foster complex thought (Eyler & Giles, 1999). This theoretical framework collectively highlights the integral role of reflection in enhancing educational outcomes, forming the foundation for the necessity of improving reflective writing skills in higher education.

Reflective Writing and Types of Reflection

Reflective writing refers to the construction of new and deeper understanding and the articulation of knowledge in a more meaningful way (Marshall, 2019; Pais Marden & Herrington, 2022). It is a form of writing in which the writer actively examines and evaluates their own experiences, thoughts, or learning. Rather than simply describing an event, reflective writing involves thinking

critically about what happened, why it happened, and what can be learned from it**.** It links experience with meaning (Ramlal & Augustin, 2020). As per Schon (2017), there are two primary forms of reflection that are essential to learning and professional development: reflection on action and reflection in action. While people are actively involved in a situation, reflection in action takes place in real time. It entails developing a conscious awareness of one's feelings, ideas, and behaviours as they emerge. This kind of introspection improves a person's capacity for quick decision-making and adaptation by enabling them to modify their behaviour in response to current events (Cheng, 2023).

On the other hand, reflection on action takes place after the experience or event has ended, when people take a step back to think about and assess what happened. Retrospective reflection is more intentional and introspective, requiring people to go back over their experiences, assess the results, and consider different viewpoints or methods (Dewey, 1933). It promotes greater understanding of the fundamental causes of their behaviour, such as feelings, prejudices, and outside influences. Individuals can develop new ideas for future actions and obtain a deeper understanding of their professional practices by reflecting on their actions (Moon, 2013). Together, both types of reflection enable ongoing learning cycles that are vital for improving outcomes, abilities, and accomplishing career objectives in many academic and occupational settings.

Teachers' Support and Pedagogical Approaches

Teachers can help students develop reflective abilities by implementing strategic teaching interventions in the classroom and scaffolding skills pertinent to their current learning phase (Coulson & Harvey, 2013; Veine et al., 2020). Students require assistance and encouragement to engage in reflection; it is not something they do on their own. Support may depend on several factors, such as prior reflection experience, language barriers, and cultural variations in the conceptualisation of reflection. Therefore, teachers should provide prompts or guiding questions to scaffold students' reflections and focus their thinking (Moon, 2013). Incorporating peer review or group discussions can encourage collaborative reflection and diverse perspectives. Furthermore, offering feedback on students' reflections is essential to support their development and help them refine their reflective skills.

Challenges Associated with Reflections

Students' lack of experience with reflective writing presents challenges when it comes to reflective writing (Kis & Kartal, 2019; Veine et al., 2020). It has been noticed that students often tend to be superficial and merely descriptive in their reflections. Since students may not immediately recognise the benefit of reflection and have varied levels of exposure to it, this difficulty is emphasised in diverse settings (Dyment & O'Connell, 2010). It is therefore important to support students and make them aware of the importance of reflection for their learning through clear guidance and activities integrated into the course. It is also critical to make sure that reflection exercises and learning objectives are constructively aligned.

Thompson and Pascal (2012) specified that students may have feelings of vulnerability when sharing their reflections, which could impede candid and in-depth reflection. This may present additional challenges. To foster openness and trust, educators must provide a secure and encouraging environment. Furthermore, because reflective writing is subjective, grading it can be difficult; therefore, in order to maintain consistency and fairness, clear rubrics and standards are needed (Ryan & Ryan, 2013).

By utilising scaffolding techniques, educators can create an environment conducive to reflective practice, ultimately leading to improved educational outcomes and more engaged learners. This study aims to enrich the existing literature by providing a comprehensive, inclusive, and practical framework for enhancing students' reflective writing skills in higher education, ultimately contributing to more effective and meaningful educational experiences.

Methodology

Autoethnography is a qualitative research method that combines personal experience with cultural, social, and academic analysis to explore and reflect on a particular phenomenon (Adams et al., 2015). It is particularly suited to this paper's topic because it allows for an in-depth exploration of the researcher's experiences, providing a unique perspective on the intersection of teaching and learning. By engaging in self-reflection, the researcher is able to offer rich, personal insights that traditional research methods may not capture. Given that this study focuses on both the personal experiences of teaching and the reflective practices of students, autoethnography provides a framework not only to analyse the personal, subjective dimensions but also to understand them within a broader educational context (Ellis, 2016).

I chose autoethnography for this study because my personal teaching and learning journey forms the core of the inquiry, and the complexity of these experiences cannot be detached from my identity as both researcher and participant. Unlike other qualitative approaches that examine participants externally, autoethnography enables me to critically analyse my emotions, decisions, and interactions from within the context in which they occur. This method allows me to meaningfully connect personal narratives with broader educational themes, making it the most appropriate approach for examining reflective practices, learning dynamics, and transformative moments in my teaching experience.

Data Collection

The data were collected mainly through reflections on my lived experiences as both a student and a teacher, and also included reflections based on self-observations, analysis of students' reflective writing, and my feedback on their work.

The data were analysed holistically, integrating current memories and past events to provide a deeper understanding of the evolving teaching and learning process (Cooper & Lilyea, 2022). Rather than treating the data as purely objective, I approached the analysis reflexively, considering how my identity, positionality, and evolving understanding shaped both the experiences themselves and my interpretation of them. Ethical considerations were carefully addressed, ensuring the protection of the identities of my school, university, and students, with no names mentioned other than my own.

An Autoethnographic Narrative

I vaguely remember that during high school in South Africa, we were occasionally asked to write descriptive pieces after attending educational sessions led by guest speakers or going on school trips. However, I cannot recall whether those write-ups included any true elements of reflection. They were more about recounting what was said rather than critically engaging with what we had learned.

When I first started teaching at a primary school, teachers were required to submit weekly diaries documenting their learning from professional development sessions and classroom experiences. At that time, writing reflections felt like an extra task added to an already demanding

teaching schedule. Interestingly, the term *'reflection'* was never explicitly used, but we were provided with guiding questions to write about our weekly teaching practices. This structure hinted at reflective practice, yet the purpose behind it was not clear to me at the time.

It was not until my journey as an MEd student that I heard the word *'reflection'* formally introduced. This happened during a teacher practicum course when our faculty explicitly asked us to reflect on our teaching experiences. At that stage, I approached it mechanically, simply answering the questions provided by the instructor without a deeper understanding of what true reflection entailed. The feedback I received was that my reflections were too descriptive and lacked the evaluative depth expected at the graduate level. I often missed the critical component of analysing my learning and considering the broader implications of my experiences. As a graduate student, navigating much of my learning independently, I was not sure how to improve my reflections beyond following the given prompts. This early encounter with reflection planted the seed of understanding, but it was not until later that I truly grasped its significance.

Throughout my MEd program, reflections became a consistent component of our coursework. Every assignment seemed to include a reflective element. Even my thesis centred on creating a writing portfolio, where reflection played a key role. Over the two years, I slowly began to appreciate the value of reflection, though I did not initially see how it translated into practical teaching applications. I vividly recall our faculty urging us to maintain a diary during our teaching practicum, a space to document our thoughts, challenges, and learning experiences. At the time, I was naive and did not fully grasp the purpose behind this exercise. It felt like just another task on an already full plate. I was also hesitant to write openly about negative teaching practicum experiences, fearing that my honesty might impact my assessment marks. This fear of judgment led me to write cautiously, without truly engaging with what reflections were meant to uncover. I was essentially going through the motions without questioning the deeper purpose of reflective writing and wrote only positive aspects of my journey.

My transformative moment came during my MEd thesis when I conducted action research aimed at developing students' writing skills through the use of portfolios. As part of this study, I was required to teach lessons in a school setting, and my students were asked to include reflections in their portfolios. For the first time, I delved deeply into the concept of reflection, not just how to write it, but how to teach it effectively. This experience was eye-opening for me. I realised that throughout my education, we had been tasked with writing reflections, but we were never adequately taught how to engage in reflective writing meaningfully. This revelation sparked my interest in teaching reflective practices, and I began to explore how different activities, and pedagogical approaches could incorporate reflective elements into my lessons.

After graduating, when I began teaching at the university level, I quickly noticed that many of my students struggled with writing meaningful reflections as well. Their reflections were often purely descriptive, missing the critical, evaluative aspects essential for genuine reflective practice. Many students lacked the vocabulary to analyse their experiences effectively. Reflecting on this, I recognised that the educational context in which I was working placed a heavy emphasis on rote memorisation rather than critical thinking and self-reflection. This was particularly apparent in fields like engineering and commerce, where the focus was on formulas and finding the *'right'* answer, rather than reflecting on processes or personal growth. However, I primarily taught nursing and education students, where reflection was a vital part of the curriculum and professional practice.

To address this gap, I revised my teaching approach. I dedicated more time to helping students understand what reflection truly is and why it matters. Instead of simply handing out reflective prompts, I spent class time discussing the purpose and value of reflection. I introduced strategies to help students engage more critically with their experiences. For instance, I emphasise that reflection is not just a summary of events but a thoughtful process of considering what was learned, how it affected their thinking, and how it might inform future actions. I provide guiding questions to encourage deeper reflection, such as:

- *What did I learn from this experience?*
- *How did I feel during this experience, and why?*
- *What would I do differently next time?*
- *What connections can I make between this experience and what I've learned in class or in theory?*

I also teach students to analyse their experiences, not just describe them. Reflection involves examining what went well, what did not, and exploring why certain outcomes occurred. I encourage them to consider alternative actions and viewpoints, fostering critical thinking. To further support this process, I share model reflections and examples of effective reflective writing. We discuss these examples in class, highlighting the balance between personal insights and critical analysis, and how to connect experiences to broader academic concepts or professional frameworks. I provide detailed rubrics that outline clear expectations and offer regular feedback to students, focusing on how well they analyse their experiences, connect them to learning goals, and draw meaningful conclusions for personal and professional growth.

In addition to individual feedback, I incorporate peer review activities, allowing students to read and comment on each other's reflections. I feel this is an important step as peer feedback not only exposes students to different perspectives but also helps them refine their own reflective practices. Creating a safe and supportive environment for reflection is equally important. I make sure students feel comfortable sharing their experiences without fear of judgment or penalisation for expressing challenges or failures. I emphasise that reflection is a learning tool, not a performance metric. I also give students ample time and space for self-reflection, ensuring that the process is meaningful and not rushed.

To make reflective writing more engaging, I integrate technology into the process. I use platforms like Padlet, Google Forms, and online discussion forums to facilitate reflective exercises, making them interactive and accessible. These tools allow students to express their reflections in diverse ways through text, images, or even audio recordings, catering to different learning styles and preferences. For example, Padlet serves as a collaborative reflection wall where students post short reflections during lessons, respond to prompts such as *What challenged you today? What did you learn and how might you apply it?* and engage with peers' responses through comments and reactions. This creates a sense of shared learning and community, which is often missing in traditional pen-and-paper reflective journals. Google Forms, on the other hand, allows me to design structured reflection prompts that guide students from description toward deeper thinking questions like *What surprised you? Why do you think this is important?* or *How has this experience changed your view?* The submitted responses also provide quick insights into students' thinking, enabling timely feedback and instructional adjustments. Moreover, online discussion forums promote dialogic reflection where meaning-making occurs through interaction instead of isolated

writing and spontaneous responses. Compared to traditional reflection, these digital tools make the process more dynamic, visually engaging, and less intimidating, encouraging even quieter students to participate meaningfully.

As a PhD student now, I see how reflective writing continues to play a critical role in my academic journey. It's not only a tool for my development as a researcher but also a way to critically engage with my studies, analyse my evolving understanding, and shape my future work. Reflection has become essential in examining how my learning influences my research practices, methodologies, and academic contributions. It serves as a foundation for continuous professional and personal growth, both as a learner and an educator.

Reflecting on my experiences, I realise that context and culture significantly influence the development of reflective practices. In some countries, reflective writing is still not fully embraced or understood within educational systems. During my school years, it was not an integral part of the traditional curriculum, but this is changing. Educational systems worldwide are increasingly incorporating reflective activities, and teachers are being trained to understand and use reflection in their teaching. There is growing awareness of the importance of reflective practice, yet the question remains: *Are these reflections truly serving their intended purpose? Are students and educators genuinely engaging with reflection in a meaningful way, or is it just another box to check off on an assignment sheet?* These are questions I continue to explore in my own practice as both an educator and a researcher.

Analysis and Meaning-Making

This autoethnographic exploration of my journey with reflective writing highlights the transformative nature of reflective practice in both personal and professional contexts. The evolution of my understanding of reflection, from a task that initially felt burdensome to a critical tool for growth, illustrates how reflective writing is shaped by educational contexts, cultural expectations, and personal experiences.

Initially, my exposure to reflection in high school, primary school teaching in South Africa, and later as a graduate student was limited and superficial. Although reflective activities were embedded in various assignments, there was a lack of explicit instruction on how to engage in meaningful reflection. This aligns with the literature suggesting that students often struggle with reflective writing due to inadequate guidance and support (Ryan, 2015). My early reflections were descriptive, focusing on recounting events rather than critically analysing them. The feedback I received during my MEd studies, emphasising the absence of evaluative elements in my writing, became a pivotal moment in recognising the depth of reflection demands. This experience mirrored Ryan's (2015) assertion that reflective writing is often treated as a routine task, rather than a means to engage in deeper critical thinking.

The shift in my reflective practice occurred during my MEd programme, where I engaged in an action research study aimed at developing students' writing skills through portfolios. This writing experience allowed me to engage with reflection not only as a student but also as an educator facilitating reflection in others. It became evident that reflection is not an innate skill but one that requires positive reinforcement and practice (Sudriman et al., 2024). As I guided students in reflective writing, I realised the need for guidance and explicit teaching to ensure meaningful engagement. This was especially important because many students, like myself, initially struggled with reflecting beyond surface-level descriptions. The realisation that my students, much like me, struggled with reflective writing underscored the systemic gaps in teaching this skill. In

educational systems that prioritise rote learning and factual recall, reflective practice is often underutilised or misunderstood (Moon, 2013). The lack of scaffolding to develop reflective thinking further exacerbates this issue.

As I transitioned into university-level teaching, I recognised the importance of embedding reflective practices into my curriculum, particularly for nursing and education students, where reflection is integral to professional development. By revising my teaching approach to include explicit instruction on reflection, providing guiding questions, and creating a supportive environment, I observed significant improvements in my students' reflective abilities (Coulson & Harvey, 2013; Veine et al., 2020). In particular, the use of scaffolding strategies such as sharing model reflections and using rubrics to set clear expectations helped students understand how to move from descriptive to evaluative reflection (Smith, 2024). The incorporation of peer review and technology-based platforms like Padlet and online discussion forums further enriched the reflective process, allowing for diverse perspectives and more dynamic engagement. Peer review opportunities and online tools not only provided students with various modes of expression but also encouraged collaborative reflection, where they could learn from each other's experiences and insights (Boase-Jelinek et al., 2013).

In my current experience as a PhD student, reflection continues to play a critical role in my academic and professional growth. Reflection has evolved into a tool for critically engaging with my research, understanding my learning trajectory, and shaping my future work. This mirrors the broader scholarly consensus on the role of reflective practice in fostering critical thinking, self-awareness, and lifelong learning (Cheng, 2023). Reflection, in this context, has become more than a form of assessment; it is a cornerstone of my ongoing development as a researcher and an educator. As I refine my research practices and methodologies, reflecting on my experiences enables me to adapt, adjust, and improve my work with greater awareness and intention.

Reflecting on the cultural and contextual factors influencing reflective practices reveals that while reflection is gaining prominence globally, its implementation and reception vary significantly. In some educational systems, reflection remains a checkbox activity rather than a transformative process (Chan & Lee, 2021). This raises critical questions about how educators can foster genuine engagement with reflective practices. Are we, as educators and researchers, creating environments where reflection is meaningful, or are we perpetuating superficial compliance with reflective tasks? In my own practice, I have sought to provide my students with opportunities to engage with reflection more holistically, with an emphasis on its transformative potential. However, I am also aware that the institutional context and educational culture can heavily influence how reflection is embraced or sidelined (Chan & Lee, 2021). This is particularly true in fields where technical skills are prioritised over personal or professional development, such as engineering or commerce. In such contexts, the emphasis on finding the "correct" answers often limits opportunities for reflective engagement. Therefore, it is essential that educators across disciplines intentionally cultivate an environment where reflection is seen as integral to learning, not just an additional task to complete.

Conclusion

In conclusion, this autoethnographic narrative illustrates how my understanding of reflection evolved over time, from viewing it as a task embedded in school assignments to recognising it as a meaningful process that supports critical thinking, professional growth, and identity development as an educator and researcher. My experience reveals that reflective writing is not an innate skill

but one that develops through explicit modelling, guided practice, and intentional scaffolding. The critical shift occurred when I moved from completing reflections as a requirement to teaching and facilitating reflective writing for others. This dual perspective helped me understand reflection not only as a personal learning tool but as a pedagogical approach that requires structure, feedback, and a safe environment to thrive.

The analysis suggests that students, much like I once did, struggle with reflection when they are not taught what meaningful reflective engagement looks like. Technology integration, modelling, reflective prompts, and multimodal platforms can reduce barriers by making the reflective process more interactive, accessible, and collaborative. Tools and platforms such as Padlet, Google Forms, and online forum discussions provide space for dialogue and self-expression, supporting deeper thinking beyond descriptive recounting. Moreover, the critical narrative highlights how institutional culture and disciplinary norms shape students' willingness to reflect openly. When assessment is tied to perfection rather than growth, reflection risks becoming superficial, a checkbox rather than transformative learning.

Broadly, this inquiry emphasises the need for educators to move beyond assigning reflection toward teaching reflection**.** Intentional scaffolding, clear expectations, authentic feedback, and opportunities for peer dialogue enable learners to develop reflective competence. At a broader pedagogical level, this narrative contributes to ongoing conversations about fostering reflective literacy as an essential component of higher education, particularly within professional disciplines such as education, nursing, and applied sciences.

As I continue to navigate reflective writing in my PhD journey, I am reminded that reflection remains iterative, constantly evolving as one's experiences, contexts, and identities shift. This work invites further exploration into how reflective writing can be cultivated across disciplines, how technology can further enhance reflective practice, and how educators can ensure that reflection moves beyond description toward critical meaning-making. Ultimately, meaningful reflection is not a product, but a habit of mind that sustains growth, inquiry, and transformation throughout one's academic and professional life.

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Metaphor, Emotion, and Ethics: Arts-Based and Queer Pedagogy as Transformative Reflection

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Abstract

This study explores how arts-based and queer pedagogical frameworks can foster transformative learning in higher education through reflective writing. Situated within a required undergraduate course on cultural safety and structural competency, the research analyzed twelve students' structured reflections following engagement with queer-themed comics. Using arts-informed thematic analysis, the study examined how emotion, metaphor, and ethical awareness emerged in students' writing as indicators of transformative learning. Findings revealed four interrelated themes: affective and transformative awareness, unlearning and identity repositioning, care and professional ethics, and structural awareness and responsibility. Students used figurative language, such as metaphors of growth, constraint, and journey, to articulate emotional and ethical transformation, demonstrating that written reflection can function as an aesthetic and embodied mode of inquiry. Integrating arts-based and queer pedagogical principles enabled learners to translate discomfort into ethical insight and reimagine professional care as a practice grounded in empathy, relationality, and justice. Rather than treating reflection as a neutral record of learning, this study argues that writing itself became part of the learning event: a medium through which students named dissonance, worked through discomfort, and imagined more ethical forms of professional practice. The study concludes that language itself can serve as a transformative medium, enacting the affective, critical, and creative dimensions of arts-based and queer pedagogy.

Keywords: queer pedagogy, arts-based pedagogy, transformative reflection

Metaphor, Emotion, and Ethics: Arts-Based and Queer Pedagogy as Transformative Reflection

Higher education frequently reproduces normative assumptions about knowledge, professionalism, and identity. Conventional pedagogies privilege cognition over affect, linear reasoning over embodied knowing, and objectivity over relational engagement (Ellsworth, 2005; hooks, 1994). These traditions shape who is recognized as a legitimate participant in academic spaces and whose epistemic practices are marginalized (Kumashiro, 2002). Arts-based and queer pedagogies offer critical alternatives that position emotion, embodiment, and creative inquiry as valid modes of knowing.

Rigid disciplinary boundaries have long constrained opportunities for learners to engage uncertainty, vulnerability, and difference as productive forces (Boler, 1999). In professional programs such as health, business, or science, learning often remains instrumental rather than transformative. The emphasis on neutrality and standardization reproduces what queer theorists describe as normativity: the institutionalization of dominant assumptions about gender, sexuality, race, and ability (Bonnet et al., 2023; Britzman, 1995). As a result, the affective and creative dimensions of learning are often marginalized, limiting education's transformative potential.

This study positions arts-based and queer pedagogies as frameworks for reimagining higher education learning. Through narrative inquiry, it examines students' structured reflections following an arts-based activity. These reflections function as texts through which students articulated emotion, identity, and ethical awareness. Through language, they confronted tensions between self-perception and social expectation, visibility and erasure, and personal transformation and collective responsibility. Reflective writing thus demonstrates how language can enact the epistemic and affective possibilities theorized in arts-based and queer pedagogies.

The activity at the centre of this study asked students to engage with five comics from *Rainbow Reflections: Body Image Comics for Queer Men*, an anthology designed to bring queer men's body image research into dialogue with narrative art beyond conventional academic publication (Joy et al., 2019). The anthology frames body image not as a private psychological issue alone, but as something shaped by masculinity, social norms, stigma, and everyday experiences of visibility and exclusion (Joy et al., 2019). That framing matters here because students were not simply reacting to isolated stories, but rather, they were reading texts already structured to hold together embodiment, culture, and health. The comics also offered a distinct form of engagement: visual narrative slowed interpretation, drew attention to juxtaposition and silence, and seemed to invite more textured responses to vulnerability, bodily comparison, shame, and recognition than a more conventional classroom text might have done.

This study contributes to a growing body of research that treats creativity not as peripheral to cognition but as a primary means of engaging ethical and relational learning (Barone & Eisner, 2012; Clover & Stalker, 2007).

Arts-Based and Queer Approaches as Pedagogical Response

Arts-based pedagogy, rooted in Dewey's experiential education, situates aesthetic experience at the core of meaning-making (Dewey, 1934). Artistic creation serves as a process and method, integrating emotional, sensory, and interpretive knowing (Leavy, 2020). Even without direct art-making, interpretive engagement can promote experimentation, risk-taking, and openness to ambiguity, which are conditions for transformation (Rolling, 2013). This approach shifts attention

from mastery of content to engagement with process, emphasizing how learners construct meaning through affective and social encounters.

What arts-based pedagogy contributes here is not only the inclusion of art in teaching, but, more specifically, it offers a way of understanding how form, feeling, and interpretation work together. In that sense, the educational value of the comics does not lie merely in representing queer experience. It lies in the way visual and narrative form invite learners to dwell in tension, to notice what exceeds summary, and to respond with language that is itself often metaphorical, tentative, and emotionally charged.

Queer pedagogy complements this orientation by questioning the norms that shape educational life. Grounded in feminist and critical traditions, it interrogates what counts as knowledge and who produces it (Bonnet et al., 2023; Britzman, 1995). Discomfort becomes an opportunity for learning rather than a pedagogical failure (Kumashiro, 2002). Teaching becomes an act of unlearning, dismantling taken-for-granted truths and opening space for multiplicity and difference (hooks, 1994). Both pedagogies thus centre affect, ambiguity, and relationality.

Queer pedagogy, in turn, contributes more than a general concern with inclusion. Its sharper intervention is its insistence that educational spaces are structured by norms long before any student speaks. It asks what becomes visible, intelligible, or sayable in the classroom, and what remains disqualified as excessive, improper, or unintelligible. For this study, that matters because the reflections are not simply records of student opinion. They are traces of how students encountered, resisted, or reworked normative assumptions about bodies, masculinity, professionalism, and care.

Integrating these approaches allows educators to study how reflective writing embodies both expressive and critical functions. Arts-based pedagogy draws attention to tone, metaphor, and emotion, while queer pedagogy interprets these affective expressions as challenges to normativity (McDonald & Motala, 2022). Through this interaction, reflection becomes a creative and ethical inquiry capable of advancing transformative learning (Mezirow, 2000; Taylor, 2009). Collectively, these frameworks allow reflection to be read not as a transparent self-report, but as a site where students work through discomfort, revise assumptions, and begin to articulate ethical and professional reorientation.

Purpose and Research Questions

This study investigates how written reflection, informed by arts-based and queer pedagogical principles, can foster transformative learning in higher education. It examines how reflective language enables students to explore the affective, ethical, and relational dimensions of learning and professional formation. The research is guided by three questions:

1. How do students use written reflection to articulate identity, assumptions, and emerging professional self-understanding within arts-based, queer pedagogical spaces?
2. What affective and transformative processes emerge through the writing of structured reflections?
3. How can reflective writing function as a catalyst for ethical and justice-oriented learning in higher education?

By recontextualizing data originally collected in a professional program, the study situates its analysis within broader discussions of teaching and learning in postsecondary education. It

contributes to scholarship that views transformation as emerging not from content transmission but from engagement with complexity, emotion, and relational experience (Caniglia & Vogel, 2023).

Significance and Contribution

This study bridges three domains, arts-based pedagogy, queer pedagogy, and transformative learning, whose intersections remain underexplored in higher education research (Sameshima et al., 2019). Bringing these concepts together clarifies how learning environments can challenge normativity while cultivating reflexivity, ethical awareness, and professional self-examination.

Arts-based pedagogy contributes methods for engaging tacit, affective, and embodied dimensions of knowing (Barone & Eisner, 2012). Queer pedagogy destabilizes assumptions about identity, knowledge, and power, revealing how inclusion and representation are politically structured (Bonnet et al., 2023; Britzman, 1995). Transformative learning adds a developmental account of how reflection and disorientation may yield new ways of knowing and acting (Mezirow, 2000; Taylor, 2009). Taken together, these frameworks suggest that transformation is not purely cognitive, but also relational, embodied, and affective (Boler, 1999; Braidotti, 2013; hooks, 1994).

Methodologically, the study advances reflective writing as an arts-informed mode of inquiry and shows how structured reflection can function as part of pedagogy rather than as a simple record of it. The students were asked to move through prior knowledge, reflection on learning, and implications for practice, while also responding in class to prompts about message, cultural reference, emotional response, and professional application. That structure mattered because it scaffolded movement from recognition to interpretation to ethical response.

Practically, the study contributes to conversations about inclusion and justice-oriented pedagogy in higher education. Arts-based and queer pedagogies engage learners intellectually, emotionally, and socially, while modelling care, critique, and reflexive responsibility. Treating reflective writing as both analytic and ethical shows one way these pedagogies can be enacted in professional education.

Literature Review

Transformative Learning and the Role of Experience

Transformative learning theory explains how learners reconstruct meaning through critical reflection and affective engagement. Mezirow (1978, 2000) described transformation as the reassessment of assumptions prompted by disorienting dilemmas. These emotionally charged experiences can lead to shifts in self-understanding and social awareness (Kreber, 2012).

Subsequent scholars expanded the theory to include emotion and embodiment (Dirkx, 2001). Clark and Dirkx (2008) treated emotion as integral to meaning-making, while Caniglia and Vogel (2023) argued that affective tension, rather than rational analysis, often initiates transformation. Within higher education, transformative learning supports engagement with complex topics such as identity and justice when discomfort is framed as productive rather than disruptive. However, institutional rationalism often discourages emotional inquiry, restricting transformative potential. More recent work also resists framing transformation as linear, outcome-driven, or purely cognitive. Instead, contemporary approaches emphasize affect, relationality, and process in shaping how learners come to re-evaluate assumptions and professional identities (Jonker, 2024). This orientation is especially important in fields such as dietetics, where pedagogical practices may reproduce narrow norms of health, behaviour, and bodily legitimacy.

Critiques of such normalization have called for 'body-becoming' pedagogies that emphasize process, affect, and the expansion of possibilities for embodiment through creative engagement (Rice, 2015). Arts-based and narrative methods can support this work by making emotional and embodied knowledge more available to reflection and interpretation (Denton & Cain, 2023; Joy, 2025).

Arts-based pedagogy responds to this limitation. Creative practice offers non-linear, affect-rich inquiry that invites learners to externalize and question assumptions (Barone & Eisner, 2012). Even when direct art-making is absent, written reflection can serve a parallel function by enabling affective expression through language. Aesthetic engagement with words, metaphor, and tone transforms sensory experience into a site of critical meaning-making (Leavy, 2020). This process extends Mezirow's framework by integrating emotion, material practice, and aesthetic expression as catalysts for transformation. Recent research reinforces this view by emphasizing creative practices as central to posthuman and affective approaches to learning (Norton et al., 2024; Sinervo & Freedman, 2022). In this study, written reflection substitutes for material art-making but performs a comparable function as a container for affective processing and interpretive synthesis.

At the same time, transformative learning is often written as though disorientation is enough on its own. It is not. Discomfort may open the possibility of revision, but it does not guarantee it. Learners still need a medium through which they can test language, reflect on feelings, and connect personal reactions to broader social patterns. In this study, structured writing appears to have served that mediating function. It gave students a way to move from reaction to articulation. That movement is important because the reflections show that emotional disturbance became educationally significant when students could name it, examine it, and connect it to future professional practice.

Arts-Based Pedagogy and Experiential Learning

Rooted in Dewey's (1934) philosophy of art as experience, arts-based pedagogy situates aesthetic creation at the heart of learning. It reframes artistic expression as embodied inquiry that unites perception, emotion, and cognition. Learners engage with ideas through creative and reflective means, deepening understanding through affective and sensory channels (Barone & Eisner, 2012; Leavy, 2020).

In higher education, arts-based methods support reflective practice across fields such as education, health, and social work (Clover & Stalker, 2007; Rolling, 2013). They allow students to visualize systems, explore ethics, and articulate marginalized perspectives. Similar to experiential learning's cycle of experience, reflection, and conceptualization (Kolb, 1984), arts-based pedagogy transforms creative engagement into conceptual insight, validating emotion as epistemic.

Although much research emphasizes visual or performative modalities, this study applies arts-based principles to written expression. Reflective writing functions as an aesthetic act through which students organize experience, emotion, and insight (Boncori et al., 2024). The process mirrors artistic creation by allowing learners to materialize feeling and thought through text. Arts-based pedagogies also create opportunities for students to engage complex social issues through visual, narrative, and embodied forms that extend beyond traditional modes of knowledge transmission. Such approaches can support critical inquiry and social inclusion by creating space for marginalized experiences to be encountered through counter-narrative and creative expression (Chappell & Chappell, 2016). They also challenge conventional assumptions about what counts as

valid knowledge by emphasizing reflexive, relational, and multimodal ways of knowing (McLean, 2022). In the present study, comics function as a specific arts-based medium that combines visual and textual storytelling, enabling students to engage with body image, identity, and social norms through an affective and interpretive form (Joy et al., 2020).

By prioritizing process over product, arts-based inquiry highlights the dynamic rhythm of tension and resolution, a structure paralleling transformative learning (Leavy, 2020). Through this lens, uncertainty and contradiction become generative sources of understanding rather than deficiencies (Sameshima et al., 2019). Written reflection sustains this rhythm through composing and revising, where language becomes a medium of inquiry. Recent scholarship demonstrates that reflective practices can engage digital and embodied dimensions of learning without requiring multimodal artefacts (Anttila et al., 2024; Aragón et al., 2025).

The present study also differs from much arts-based pedagogy research in a simple but important way: the students were not producing the primary artworks under analysis. They were responding to existing comics and then writing about that encounter. That distinction shifts the pedagogical emphasis from expression alone to interpretation, relation, and uptake. The learning does not happen only in making; it can also happen in reading, discussing, and then trying to render that encounter into words.

The approach, however, requires ethical attention. Uncritical use of arts-based methods may reproduce harm if emotional exposure is poorly supported (Boler, 1999; Clover & Stalker, 2007). Effective facilitation depends on trust, consent, and relational accountability. These principles apply equally to written reflection, where emotional vulnerability demands careful framing. Such ethical commitments link arts-based pedagogy to queer pedagogy's ethic of discomfort and care.

Queer Pedagogy: Disruption, Relationality, and the Ethics of Discomfort

Emerging from critical and feminist traditions, queer pedagogy interrogates how normativity structures knowledge and learning (Bonnet et al., 2023; Britzman, 1995). It moves beyond inclusion models to question heteronormative assumptions that define epistemic authority. Learning becomes a relational, political encounter that values uncertainty and ambivalence. Britzman (1995, p. 165) described queer pedagogy as "unsettling," and Bonnet et al. (2023) emphasized tension between knowing and not knowing as a condition for ethical reflection. Kumashiro (2002) likewise framed discomfort as essential to unlearning internalized norms.

This ethic parallels transformative learning's notion of disorienting dilemmas but expands its scope from individual cognition to collective and structural awareness. Queer pedagogy centres relationality, asserting that teaching and learning are co-constituted through affective exchange rather than transmission (McDonald & Motala, 2022). Difference and tension sustain thought rather than hinder it. Scholars such as Ahmed (2020) and Fraser and Lamble (2014) highlight queer discomfort as a critical force for inclusive higher education by exposing institutional power relations. Poststructural queer approaches further challenge fixed categories of identity by emphasizing embodiment, relationality, and the discursive production of norms (Marnell, 2017). This is particularly relevant in educational settings where heteronormativity and racialized otherness may be reproduced through institutional and pedagogical practice, often without being named directly (Selvaraj, 2021). Read in this way, queer pedagogy does not simply invite inclusion; it creates conditions for students to question how bodies, identities, and professional expectations are made intelligible in the first place.

Written reflection provides a textual site for these dynamics. Through narrative, students externalize affective tension and articulate moments of ethical struggle, materializing the uncertainty that queer pedagogy deems pedagogically valuable. Reflection thus becomes both process and evidence of queer learning. It challenges binaries between teacher and learner and between theory and practice. Yet institutional pressures for efficiency often conflict with the openness queer pedagogy requires (Bonnet et al., 2023; hooks, 1994). Sustaining such affective work necessitates dialogic ethics and structured support (Woolley, 2022). Facilitators cultivate safety through shared agreements and iterative reflection rather than neutrality.

What is especially useful about queer pedagogy for this study is its suspicion of tidy resolution. The student reflections often move unevenly. They contain uncertainty, partial recognition, and moments where students can sense a prior assumption breaking down but do not yet have a clean vocabulary for what comes next. That incompleteness is not a weakness of the data. It is part of what queer pedagogy helps make legible. Learning here is not a march toward mastery. It is a more unsettled process of noticing, questioning, and trying to respond differently.

Integrating Transformative, Arts-Based, and Queer Pedagogy

When combined, transformative, arts-based, and queer pedagogy produce a model of learning grounded in emotion, embodiment, and ethics. Transformative learning provides an account of disorientation and perspective change, arts-based pedagogy foregrounds expressive and affective ways of knowing, and queer pedagogy brings a critical attention to normativity, uncertainty, and power (Brookfield, 2024; hooks, 1994; Mezirow, 2000). Together, they frame learning as a co-created process shaped by social, affective, and political conditions rather than by cognition alone.

Across these concepts, discomfort is not treated as failure but as a condition of possibility. In transformative learning, disorientation can provoke reflection; in arts-based inquiry, tension can generate insight; and in queer pedagogy, discomfort can expose the norms that structure what is knowable and sayable (Boler, 1999; Bonnet et al., 2023; McMain, 2024). Emotion and embodiment further connect these traditions by refusing a sharp division between thought and feeling (Britzman, 1995; Springgay et al., 2005).

This integration is useful for the present study because it allows students' writing to be read as more than an opinion or a summary. It supports the interpretation of reflective writing as a site where feeling, critique, and professional imagination meet. The integrated framework also aligns with broader critical and participatory traditions in education, which emphasize reflexive engagement with power, inequality, and social justice (de Carvalho, 2025; Kindon et al., 2024). Within classroom contexts, arts-based inquiry has been shown to support more inclusive learning environments by interrupting binary and heteronormative assumptions and fostering alternative ways of knowing and being (Wargo, 2019). This orientation is especially relevant here, where queer comics and structured reflection were used not simply to transmit information, but to create conditions for critical, affective, and relational engagement with marginalized experiences. Comics have been theorized not only as sites of queer representation but also as a queer medium marked by multiplicity, instability, and resistance to fixed meaning (Scott & Fawaz, 2018). That understanding supports the methodological approach taken in this study, which reads students' written reflections as sites where meaning is constructed through language, emotion, and engagement with difference.

Methodology

This methodological approach follows directly from the conceptual framing outlined above. Because the study is grounded in arts-based, queer, and transformative pedagogies, students' structured reflections are treated not as neutral reports of learning but as situated acts of meaning-making through which affect, ethical awareness, and professional self-positioning become legible.

Research Design

This qualitative study employed an arts-informed interpretive design to examine how arts-based and queer pedagogical practices foster transformative learning in higher education. Arts-based research values creativity, emotion, and reflexivity as legitimate means of generating knowledge (Barone & Eisner, 2012; Leavy, 2020). The analysis focused exclusively on students' structured written reflections documenting their engagement with an arts-based classroom activity centred on cultural safety and structural competency. No visual or multimodal artefacts were collected.

This reanalysis extends prior work on the same dataset from a professional education context by applying an integrated framework connecting arts-based, queer, and transformative pedagogies. Written reflections were selected because they captured participants' metacognitive and affective responses, revealing how learners articulated transformation through language. Treating reflection itself as a creative medium demonstrates how textual analysis can illuminate affective and ethical learning.

The study followed a constructivist epistemology, viewing knowledge as co-created through interpretation and dialogue (Crotty, 1998). This stance aligns with transformative learning theory, which defines learning as revising assumptions through reflection (Mezirow, 2000), and with queer pedagogy, which foregrounds the affective and relational dimensions of learning (Bonnet et al., 2023; Britzman, 1995). Together, these frameworks informed a methodology attentive to emotion, identity, and ethics as central to transformation.

Because the data source was reflective writing rather than interviews or visual artefacts, the analysis did not treat students' texts as transparent reports of inner change. Instead, the reflections were read as situated acts of meaning-making through which students interpreted emotion, reconsidered assumptions, and connected classroom learning to imagined professional practice. This distinction is important to the present study's methodological contribution.

Setting and Context

The study occurred in a required undergraduate nutrition course at a Canadian university focused on cultural safety and structural competency. The course emphasized reflective practice and social justice within health professions education. Students participated in an arts-based learning activity titled *Understanding Culture through Art: LGBTQ2SP+ Cultural Safety and Structural Competency*, designed to promote perspective transformation through engagement with queer narratives concerning body image, stigma, and inclusion.

Participants were undergraduate students enrolled in a required third-year dietetics course in a Canadian university dietetics program. The course is an introductory professional practice course focused on client care, communication, counselling, and professionalism. The learning activity analyzed in this study occurred in the fourth week of the course, within a unit on cultural safety, equity, and structural competency, and invited students to reflect specifically on LGBTQ2SP+ health and dietetic practice. Although students had prior exposure to broader concepts of diversity and cultural safety in earlier coursework, this assignment represented a more

explicit engagement with LGBTQ2SP+ content. No participant-specific demographic data were collected for this study. However, Canadian dietetics cohorts are widely described as predominantly women and disproportionately white, and the present cohort likely reflects that broader pattern (Brady & Ng, 2025; Gheller et al., 2018). All participants were former students who had completed the course and received final grades before recruitment.

Educational Intervention

As part of the learning activity, students read five comics from *Rainbow Reflections*: 'Garden,' 'Little Fox,' 'Pieces I'm Keeping,' 'Blob,' and 'Through the Looking Glass.' These texts were selected to represent a range of queer experiences, body-image concerns, and visual narrative approaches relevant to the course themes of cultural safety and structural competency. Together, the comics engaged issues of racialized belonging, trans embodiment, bodily autonomy, fatness, stigma, masculinity, and social exclusion, while differing in tone, form, and affective register. This range was intended to support both emotional engagement and critical reflection by inviting students to encounter diverse experiences of embodiment and normativity through a multimodal arts-based medium. Although the comics were engaged as multimodal texts, the present study does not analyze their visual features as primary data; instead, it examines how students interpreted and reflected on those texts through structured writing. Students were introduced to the anthology as a collection of queer body-image comics, but the present study did not systematically examine how creator biography or autoethnographic framing shaped students' responses. Students were introduced to the assignment during the first week of class and were asked to read the selected comics in advance of the scheduled class discussion.

In small groups, students discussed the comics using structured prompts:

1. Identify the main message.
2. Describe relevant cultural or social references.
3. Note emotional responses.
4. Identify key insights about queer men's experiences.
5. Consider how comics might be used to discuss cultural issues with clients.

Groups then shared insights with the class in a facilitated discussion. This collective meaning-making process encouraged critical reflection on professional assumptions and empathy toward marginalized experiences**.** An individual learning reflection from each student was due one week later.

The structured prompts were designed to guide students from interpretation to cultural noticing, affective response, and professional application. In this sense, structure was part of the pedagogy rather than a neutral container for reflection. It also shaped the data available for analysis, as the written reflections often moved from prior assumptions to emotional responses to ethical or practice-based implications, mirroring the sequence of the activity itself.

Data Source and Analytic Approach

The data source was students' structured written reflections submitted after the activity. Each reflection included three sections: (1) prior knowledge of LGBTQ+ body image issues, (2) insights and implications for practice, and (3) key takeaways or intended professional actions. Submissions ranged from 800 to 1,500 words. Twelve students consented for their anonymized reflections to

be used in research. These texts provided rich data illustrating affective, ethical, and cognitive aspects of transformation. Data were analysed using thematic analysis (Braun & Clarke, 2006) guided by an arts-based interpretive lens. Although textual, the analysis attended to metaphor, emotion, and rhythm, which are qualities that characterize reflective writing.

In addition to thematic content, the analysis considered how students wrote: where they qualified claims, registered uncertainty, shifted tone, or relied on figurative language to make sense of discomfort and learning. This was especially important given the study's interest in reflective writing as an aesthetic as well as analytic practice.

Analytic Stages

1. Open Coding: Each reflection was read multiple times, and key phrases related to affect, identity, bias, and ethics were identified.
2. Axial Coding: Codes were clustered into conceptual categories reflecting affective awareness, unlearning, ethical care, and structural consciousness.
3. Thematic Synthesis: Broader themes were developed by connecting codes to theoretical constructs from transformative learning and queer pedagogy.
4. Reflexive Dialogue: Researchers revisited coded data collaboratively, reflecting on how positionality and assumptions influenced interpretation.

Analytic memos were used throughout to record interpretive decisions, link codes to theoretical concepts, and maintain transparency.

A further analytic concern involved distinguishing between stated aspiration and demonstrated transformation. Students frequently expressed intentions to act differently in future practice. These statements were treated as meaningful, but they were not automatically taken as evidence of durable change. Instead, they were interpreted as signs of ethical orientation and professional re-positioning within the context of reflective learning.

Researcher Reflexivity

Researchers responsible for coding and analysis were external to the course and had no prior interaction with participants, reducing potential bias from evaluative relationships. Interpretive analysis of affective and ethical content required reflexivity. Each researcher maintained a journal documenting assumptions, reactions, and evolving insights.

Team discussions served as peer debriefing to examine interpretive differences and maintain analytic integrity. The researchers adopted an ethic of care informed by Springgay et al.'s (2005) emphasis on relational and aesthetic inquiry, interpreting expressive language contextually rather than as neutral data. This commitment ensured participants' words were treated as meaning-making acts rather than as evidence to be objectified.

Analytic Transparency

To ensure coherence and rigour, a coding framework was developed to structure interpretation. Table 1 summarizes analytic categories, definitions, inclusion and exclusion criteria, and representative examples. The table provided both an interpretive guide and a record of analytic reasoning, linking participants' language to theoretical constructs while maintaining fidelity to student expression.

Table 1

Analytic Framework for Structured Reflections.

Code Category	Definition	Inclusion Criteria	Exclusion Criteria	Illustrative Example (Student Reflection)
Affective Awareness	Recognition of emotional response and its role in learning	Mentions of vulnerability, pride, empathy, or discomfort	Purely descriptive statements	"This was a very transformative learning activity that sculpted my views."
Unlearning Bias	Acknowledgment of internalized assumptions or stereotypes	Explicit reflection on previous misconceptions or bias	Statements about others without self-reflection	"It was uncomfortable to realize I have absorbed some of these stereotypes."
Ethical Reflection	Connection between learning and responsibility in practice	Mentions of care, advocacy, or inclusive practice	Personal growth without ethical application	"I feel empowered to advocate for ending gender stereotypes."
Structural Awareness	Understanding of social or institutional power relations	Mentions of privilege, normativity, or inequity	Emotional reactions without reference to systems	"Body image is not only about confidence but about social norms that privilege certain kinds of bodies."
Transformative Intention	Evidence of intended future change in action or perspective	Statements linking reflection to future behavior	General expressions of approval or satisfaction	"I want to ensure my future practice creates space for everyone."

This coding framework also helped contain overinterpretation. It required analytic distinctions between emotional response, critical self-recognition, ethical commitment, and structural analysis, which were related but not interchangeable across the dataset.

Trustworthiness and Ethics

Credibility was supported through peer debriefing and iterative code review. Dependability was ensured by maintaining an audit trail of coding and memo writing. Reflexive journaling established confirmability, and thick description of context enhanced transferability. Ethical care guided all stages of analysis. Reflections were anonymized before researcher access. Participants retained intellectual ownership, and written consent was obtained. Because reflections engaged personal and professional beliefs, interpretation prioritized contextual sensitivity and fidelity to meaning.

The analysis aimed to honour participants' agency while acknowledging that interpretation remains partial and situated.

Findings

The analysis of the twelve anonymized student reflections revealed four interconnected thematic patterns describing how arts-based and queer pedagogical approaches facilitated transformative learning in higher education. The themes were Affective and Transformative Awareness, Unlearning and Identity Repositioning, Care and Professional Ethics, and Structural Awareness and Responsibility. Together, they show how students used reflective and creative processes to confront assumptions, acknowledge bias, and articulate ethical commitments. The quotations below are drawn directly from verified student work, although minor grammatical adjustments were made for clarity.

Affective and Transformative Awareness

Many participants described the learning activity as emotional and self-reflective. The creative and reflective elements helped them process feelings that are often excluded from professional education. Students reported that the work was not only informative but also personally moving and perspective-changing. One participant wrote, "This was really a very transformative learning activity that sculpted my views on LGBTQ+ issues, mainly regarding body image and health care access." Another explained, "I feel empowered and motivated to advocate for and work towards ending gender stereotypes and practicing in a culturally safe manner, especially towards those among LGBTQ2SP+ communities." These reflections illustrate how the process fostered affective engagement that led to awareness of social responsibility.

Several participants explicitly described shifts in attitude and empathy. One reflection stated, "Reflecting on and acknowledging areas of personal bias, including those that are subconscious and hidden, allows one not only to become a better clinician, but a better person." This awareness aligns with transformative learning theory, which emphasizes reflection on assumptions and emotional dissonance as catalysts for change (Mezirow, 2000). The emotional tone of many reflections suggested that discomfort was necessary for learning. One student commented, "This training activity encouraged me to remember to approach new people and situations with an open mind, and to try not to stereotype or make assumptions about people." The language of humility and openness illustrates affective transformation through the recognition of prior bias.

At the same time, the affective work in the reflections was rarely limited to broad statements of empathy. Students often linked emotion to cognition and to practice. For example, one participant wrote that the comics and discussion "broadened my perspective" and made clear "the importance of empathy and to create a comfortable, non-judgmental space for LGBTQ+ clients." Another described the activity as "eye-opening," noting that it prompted reflection on "other gaps in my perspective with regards to prevalent issues communities may be facing." In these instances, feeling did not remain private; it became the basis for rethinking professional relations.

Unlearning and Identity Repositioning

The second theme reflected students' efforts to unlearn stereotypes and reposition themselves in relation to queer experience, professional responsibility, and their own assumptions. Many realized that they had absorbed cultural narratives about gender and body image that influenced how they

interacted with clients or peers. One student observed, "Going into a client meeting with the assumption you already know how a client may relate to their body does not leave room for an individual to express what their actual lived experience is." This statement demonstrates a shift from assumptions toward relational listening, a central element of queer pedagogy that emphasizes openness to difference (Britzman, 1995).

Several participants linked the activity to a broader understanding of how representation shapes practice. One reflection stated, "The comics exercise made me think about how we visualize bodies and what we consider normal. It made me realize that images also teach us what to value." This awareness shows how arts-based learning enabled students to connect aesthetic decisions with social implications. Through visual reflection, they examined how norms about bodies, gender, and health are reproduced through everyday professional practices.

The process of unlearning often involved emotional struggle. A participant explained, "It was uncomfortable to realize I have absorbed some of these stereotypes, but the project gave me a way to confront them without shame." The reflection shows that arts-based work allowed emotional exploration without judgment. As Kumashiro (2002) argued, discomfort can be a productive pedagogical space when learners feel supported to reflect critically. In this context, creativity offered safety and distance while sustaining ethical introspection.

The reflections were somewhat uneven, however, in the extent to which they documented identity negotiation strongly. What appeared more consistently was a re-positioning of the self as learner and future practitioner. Students wrote about becoming more open, more cautious about assumptions, and more attentive to how their own prior understandings had been shaped. One participant, for instance, reflected that they had previously stereotyped queer men as generally more body positive and later recognized that this assumption "does not leave room for individual experiences." Another acknowledged surprise at realizing they had connected insecurity and vulnerability to femininity, then described feeling "ashamed" of that tendency and newly committed to challenging it. These examples point less to a fully developed identity transformation than to a more provisional but still meaningful shift in self-understanding.

Care and Professional Ethics

A third theme concerned how students redefined professional care and ethical practice. Many connected the activity to an expanded understanding of empathy, cultural humility, and advocacy. Their reflections demonstrated that care involves both compassion and structural awareness. One participant wrote, "This activity helped to provide a framework for structural competency, in that it provided an example for how body image issues in queer men stem from societal pressures." This understanding aligns with the concept of critical empathy, which links personal awareness with systemic critique (hooks, 1994).

Others described the exercise as a way to reconnect them to their professional purpose. One reflection read, "I feel like this activity helped me remember why I wanted to go into this profession in the first place, to help people without judgment." This statement highlights how transformative learning can reaffirm ethical commitments through reflection on practice. For many participants, empathy became intertwined with accountability. In several reflections, students explicitly moved beyond general kindness toward a more demanding conception of care. As one student stated, "It made me realize that being kind is not enough. You have to understand the structures that make people feel unseen."

Several reflections connected emotional insight to practical change. One participant explained that, as a future dietitian, it is important to ensure that clients from the LGBTQ+ community "would feel open arms and a non-judgmental ear for whatever struggles they may be facing." Another wrote about the need to ask clients their preferred names and pronouns, avoid assumptions, and create a welcoming environment that allows clients to speak openly about body image and food-related concerns. Through creative reflection, students articulated ethical awareness as an ongoing, relational process rather than a fixed principle. This demonstrates how arts-based pedagogy encouraged learners to translate feeling into professional responsibility.

Structural Awareness and Responsibility

The fourth theme involved the recognition of social structures that shape experiences of body, identity, and health. Participants identified how cultural and institutional forces influence both clients and professionals. Several reflections revealed new awareness of intersectionality and systemic inequality. One student wrote, "This activity helped me realize that body image is not only about personal confidence but about social norms that privilege certain kinds of bodies." Another explained, "It made me think about how health care often assumes a straight, able, thin body, and that assumption leaves people out." This shift toward structural understanding aligns with transformative learning's later stages, in which insight broadens beyond the personal and begins to orient future action.

Participants recognized their roles within larger systems and described intentions to act more inclusively. One reflection concluded, "I want to use what I learned to make sure my future practice creates space for everyone, not just for people who look like me." The notion of responsibility appeared repeatedly in the dataset. Learners framed responsibility as ongoing rather than as a one-time ethical realization. One participant summarized, "It is not about feeling guilty; it is about staying aware and making changes every day." This emphasis on sustained reflection and practice supports Caniglia and Vogel's (2023) interpretation of transformation as continuous ethical engagement.

What is notable in these reflections is that students did not remain at the level of individual prejudice alone. They repeatedly named wider forces such as minority stress, stigma, discrimination, media ideals, and health care exclusion. Several connected queer men's body image concerns to social pressure, heteronormative standards, and institutional barriers to care. In this way, the reflections often moved from personal recognition to structural critique, suggesting that the activity opened a space for linking self-examination with broader social analysis.

Metaphor as Embodied Reflection

Across the reflections, students frequently used metaphors and figurative imagery to express emotional movement, ethical awareness, and transformation. These metaphors served as linguistic equivalents of the aesthetic processes characteristic of arts-based learning, translating affective experience into symbolic form. Through metaphor, learners articulated shifts in self-perception, awareness of others, and relational responsibility. Figurative language became a medium through which emotion and insight were materialized, demonstrating how reflective writing can function as an embodied art practice.

Several participants drew on metaphors of growth and emergence to describe transformation. One student interpreted the comic *Garden* as "the metaphor of growth and transformation… magnificently used to represent the self-discovery and acceptance of the

protagonist's queerness. The blooming of the garden represents gradual self-acceptance, considering societal pressures toward normalization." This description externalized emotional learning through natural imagery, framing self-understanding as a living and evolving process. The same participant extended the metaphor to professional ethics, observing that "self-acceptance itself is an empowering yet crucial step toward emotional and psychological well-being." Growth here became both personal and professional, signifying ethical maturation.

Metaphors of constraint and release appeared in students' depictions of bias and unlearning. A student reflecting on *Garden* explained that the character wished to "shrink himself to normalcy," linking the act of shrinking to internalized oppression. This image recurred across multiple reflections as learners described their own prior assumptions as limiting frames that had to be dismantled. Another participant wrote that the activity allowed them to "confront [stereotypes] without shame," suggesting a movement from constriction to expansion. The oscillation between shrinking and blooming functioned as a metaphorical vocabulary for transformation, mirroring the tension central to queer and transformative pedagogies: the movement from containment within normativity toward openness and relational agency.

Other students employed journey and spatial metaphors to express awareness and connection. One participant reflected that the exercise "encouraged me to remember to approach new people and situations with an open mind" and to "try not to stereotype or make assumptions about people." The language of openness and movement framed learning as an ongoing relational path rather than a static realization. Similarly, another student wrote that they aimed to "surround [themselves] with like-minded people" and to "find their place," expressing transformation through spatial imagery that evokes belonging and ethical orientation.

Several reflections also contained aesthetic and existential metaphors linking life, art, and empathy. One participant stated that "life is art and art imitates life," explaining that the comics were "an impactful way to educate… because the art helped to really bring the emotions to life." Another wrote that "the added visual effects and storytelling aspect of the comic make it more relatable and bring an emotional aspect… that is otherwise missed in other methods of knowledge transfer." These comments suggest that students experienced their own writing as a continuation of the artistic process, using language to render emotion visible. Reflection thus became both a record of interpretation and a creative act through which learners reimagined ethical and professional identity.

Importantly, the metaphor in these reflections was not ornamental. It often did the conceptual work that a direct statement could not easily accomplish. When students reached for blooming, shrinking, openness, and movement, they were not simply describing the comics; they were also describing their own learning as process, tension, and reorientation. In that sense, figurative language provided a means of registering transformation without reducing it to a single declarative claim.

Collectively, these metaphors reveal how learners enacted arts-based and queer pedagogical principles through written expression. Figurative language provided a symbolic grammar for articulating affective complexity and ethical aspiration. The imagery of blooming, shrinking, opening, and journeying demonstrates that transformation was experienced as movement, embodied, emotional, and relational, rather than as cognitive resolution. Through metaphor, students transformed reflection into aesthetic inquiry, enacting the very processes of embodiment, care, and critique that the pedagogy sought to cultivate.

Summary

Together, the four themes show how arts-based and queer pedagogical practices supported transformative learning through emotion, self-examination, ethical reflection, and structural awareness. The strongest evidence in the dataset lies in students' affective engagement, their reconsideration of assumptions, their ethical repositioning as future practitioners, and their growing awareness of structural inequity. Evidence of identity negotiation was present, but less consistently and less fully than these other dimensions. Overall, the reflections suggest that arts-based inquiry helped students translate discomfort into critique and reimagine professional care as a practice of empathy, responsibility, and justice.

Discussion

The findings suggest that structured reflective writing can serve as a meaningful site of transformative learning in higher education. Rather than emerging through rational reflection alone, the learning documented here took shape through the interplay of emotion, critique, uncertainty, and ethical self-positioning. The discussion considers four related dimensions of that process: emotionality and embodiment, queering pedagogy through reflection, the ethics of care and discomfort, and structural awareness in relation to educational practice.

Emotionality and Embodiment as Catalysts for Transformation

A central insight from this study is the role of emotion and embodied awareness in transformative learning. Across the dataset, participants described the reflective process as one that required vulnerability and empathy. As one student noted, "This was really a very transformative learning activity that sculpted my views on LGBTQ+ issues, mainly regarding body image and health care access." Another wrote, "Reflecting on and acknowledging areas of personal bias, including those that are subconscious and hidden, allows one not only to become a better clinician, but a better person." These reflections suggest that transformative learning here was affective as well as cognitive. Students described discomfort, empowerment, and self-recognition as turning points in their understanding, which aligns with Clark and Dirkx's (2008) claim that emotion is integral to meaning-making.

Dewey (1934) described art as a form of experience in which perception and reflection are unified. While this study did not analyse the comics themselves as visual data, the written reflections exhibited a related aesthetic quality. Through descriptive and metaphorical language, students translated emotional experience into reflective understanding. Their writing did not simply report learning; it became one way of processing it.

Embodiment entered the reflections less as explicit bodily theory than as professional and relational awareness. Students repeatedly connected empathy for marginalized groups to changes in how they imagined speaking, listening, and positioning themselves in practice. In that sense, written reflection became a space where cognitive, affective, and ethical dimensions of learning came together.

Queering Pedagogy Through Reflection

A second major insight arises from the ways students used reflective writing to challenge normative assumptions about identity, authority, and knowledge. The reflections demonstrate how learners enacted the principles of queer pedagogy by questioning the supposed neutrality of professional discourse and acknowledging the partiality of their own perspectives. One participant's reflection captured this shift: "Going into a client meeting with the assumption you

already know how a client may relate to their body does not leave room for an individual to express what their actual lived experience is." This statement reflects a movement away from professional certainty toward relational openness, consistent with queer pedagogy's aim to trouble hierarchies of knowledge and authority (Bonnet et al., 2023; Britzman, 1995).

Queer pedagogy calls for education that resists closure and embraces ambiguity. Students' reflections showed this openness as they grappled with contradictions in their learning. They questioned what it means to be "professional," how empathy and objectivity coexist, and how language itself can reinforce or challenge power. Reflection served as a site of queering because students used it to unsettle fixed understandings of their roles and assumptions.

One participant reflected on this process by writing, "It was uncomfortable to realize I have absorbed some of these stereotypes, but the project gave me a way to confront them without shame." The statement reveals that unlearning was not only intellectual but also affective and ethical. By articulating discomfort in writing, the learner performed the kind of productive uncertainty that queer pedagogy values (Kumashiro, 2002). Written reflection thus became a site for enacting queer pedagogy, transforming exposure to art into introspective and ethical learning.

At the same time, the data are stronger on assumption-checking and professional re-positioning than on identity negotiation in a full sense. Students often revised how they understood themselves as future practitioners, and sometimes as learners implicated in normative frameworks, but the reflections more rarely documented sustained identity reconstruction. Framed this way, the findings remain substantial while staying closer to what the dataset can support.

Metaphor as Embodied Reflection

The analysis of figurative language revealed that metaphor operated as a central mechanism of affective and ethical expression. Through metaphor, students materialized transformation, giving emotional and intellectual processes tangible form. These linguistic constructions paralleled the aesthetic modes of knowing central to arts-based pedagogy.

Participants frequently used natural and spatial imagery to convey transformation. One student described "the blooming of the garden" as representing "gradual self-acceptance considering societal pressures toward normalization," while another discussed the wish to "shrink [oneself] to normalcy." Such metaphors of growth and contraction rendered visible the movement from constraint toward openness that characterizes transformative learning. The recurrence of images such as blooming, shrinking, opening, and journeying suggests that students conceptualized their learning as embodied motion rather than abstract cognition. These metaphors also carried ethical force, allowing students to frame transformation as relational movement rather than as a purely private insight.

This finding extends transformative learning theory in a useful way. It suggests that metaphor can serve as a bridge between feeling and interpretation, especially when learners are trying to articulate change that is still emerging. It also supports queer pedagogy's resistance to closure, since metaphor allows movement, multiplicity, and partiality rather than forcing reflection into a single stable declaration.

The Ethics of Care and Discomfort

Findings in this study deepen understanding of how reflective writing mediates care, discomfort, and ethical responsibility. Participants consistently described emotional and moral tension as vital to their learning process. For many, empathy evolved into awareness of structural power and

privilege. One reflection stated, "This activity helped to provide a framework for structural competency, showing how body image issues in queer men stem from societal pressures." Another participant wrote, "It made me realize that being kind is not enough; you have to understand the structures that make people feel unseen." Such reflections illustrate hooks' (1994) vision of teaching with love as a practice of justice rather than sentimentality. Students articulated care as an active stance grounded in critical awareness rather than as an expression of comfort.

Through writing, learners were able to process discomfort safely and analytically. The act of composing allowed students to pause, reframe, and make sense of their feelings without withdrawing from them. This written mode of reflection aligns with Clover and Stalker's (2007) view that critical reflection can merge emotional engagement and social analysis. Students used language to narrate their ethical development, identifying moments when compassion evolved into a call for advocacy or professional change.

Rather than avoiding discomfort, students interpreted it as evidence of growth. One participant captured this in the statement, "It is not about feeling guilty; it is about staying aware and making changes every day." This reframes discomfort as generative rather than negative, positioning emotion as a foundation for sustained ethical practice.

Structural Awareness and Institutional Implications

Students' reflections also revealed growing recognition of how structural forces shape individual and professional experience. They moved from describing personal reactions to analysing institutional systems that perpetuate inequality. One participant wrote, "Body image is not only about personal confidence but about social norms that privilege certain kinds of bodies." Another observed, "Health care often assumes a straight, able, thin body, and that assumption leaves people out."

These insights represent a later phase of transformative learning, where awareness becomes socially and professionally oriented (Kasworm & Bowles, 2024). Students' reflections demonstrate that they came to view professional identity within larger structures of power and representation. Reflection thus became a medium for linking the personal and the political.

This has direct implications for educators and institutions. For instructors, the findings suggest that structured reflective writing can foster not only empathy but also systemic awareness when prompts move students beyond reaction and toward interpretation, critique, and application. For institutions, the study suggests that pedagogical designs of this kind deserve to be valued as intellectually serious work rather than as merely supplemental or affective add-ons. If higher education is committed to equity, then assessment frameworks must make room for learning that joins ethical reasoning, self-examination, and structural analysis.

The study also underscores that transformation occurs when learners connect introspection to action. Several participants articulated intentions to adapt their professional practices to better serve marginalized populations. Reflection, therefore, did not end with awareness but extended toward responsibility.

Synthesis

Overall, these findings suggest that written reflection can function as a powerful mode of transformative learning. Emotion acted as a catalyst, reflection served as the medium, and structural awareness emerged as a key outcome. More precisely, the study suggests that writing

about art, rather than producing it, can still create a meaningful space for rethinking self, power, and professional responsibility.

Limitations

This study was conducted within a single institutional and disciplinary context, which constrains the generalisability of the findings. The participants were all students in a professional dietetics program, and their engagement with queer and arts-based pedagogy occurred within a specific curricular moment. Consequently, the results should be understood as contextually situated rather than broadly representative.

As with all qualitative and arts-informed research, interpretation is shaped by the researcher's positionality and analytic lens. While reflexive strategies were employed to strengthen trustworthiness, the interpretive process remains partial. The data were derived from written reflections rather than observed interaction, interviews, or dialogic follow-up; as a result, some dimensions of embodied, interpersonal, or performative response may not have been fully captured. The study is therefore strongest in what it can say about reflective articulation, ethical orientation, and emerging professional self-positioning, and more limited in what it can claim about durable transformation beyond the writing itself.

Additionally, the study did not include longitudinal follow-up, which limits insight into whether the shifts described in the reflections persisted over time or translated into sustained changes in practice. Several students articulated intentions to act differently in future professional contexts, but those intentions remain aspirational within the bounds of this dataset.

Finally, while the metaphorical analysis illuminated the aesthetic and emotional dimensions of reflection, its inclusion emerged post hoc. This became analytically generative, but it also means that metaphor was not built into the original study design as an explicit analytic focus. That constraint may have limited the depth of theoretical triangulation across data sources.

Directions for Future Research

Future research should explore how arts-based and queer pedagogical concepts operate across disciplinary and institutional contexts. Comparative studies involving other professional programs, such as education, social work, or nursing, could clarify how disciplinary discourse shapes the affective and ethical outcomes of reflective practice.

Longitudinal designs would be especially useful in tracing how students' insights evolve as they move into professional practice. Such work could help determine whether the affective, ethical, and metaphorical shifts identified here lead to sustained behavioural change or remain primarily reflective achievements within the classroom.

Further methodological development is also warranted. Combining written reflections with creative artefacts, visual journals, interviews, or group dialogue could deepen understanding of how aesthetic and linguistic modes of expression interact. Because the present study suggests that students often worked through uncertainty in partial, figurative, and self-corrective ways, future research might also examine more closely how metaphor functions during discussion, revision, and collaborative meaning-making, rather than only in final written texts.

Finally, research that more explicitly attends to intersectionality, including race, gender, class, migration, and linguistic location, could further illuminate how arts-based reflection mediates complex forms of ethical and professional positioning. That question is especially

important here because some of the student reflections suggest that prior cultural context shaped how participants encountered queer content, but the present dataset does not support a fuller analysis of those differences.

Conclusion

This study examined how arts-based and queer pedagogical practices can support transformative learning in professional education through structured reflective writing. The analysis showed that students' learning was mediated not only through emotional and ethical reflection, but also through the metaphorical and aesthetic language that gave those experiences form. Reflection functioned as both a cognitive and creative process, enabling learners to translate affective response into insight and ethical awareness.

The findings suggest that transformative learning in this context involved an interplay of emotion, relational awareness, and critical examination of bias. Students' reflections showed that self-awareness and professional responsibility often emerged through discomfort, empathy, and growing attention to structural inequity. Metaphorical expression played a central role in this process, functioning as an aesthetic bridge between feeling and interpretation. Through figurative language, learners gave tangible form to processes of unlearning and ethical reorientation that align closely with arts-based and queer pedagogies.

The study contributes to scholarship on transformative learning by showing that written reflection can serve as an arts-informed mode of inquiry. Transformation here was not confined to visual or performative expression. It also occurred through language that enacted movement, growth, and relational connection. More precisely, the study suggests that writing about art can itself become part of the transformative event, not merely a record of it.

Pedagogically, the study affirms the value of integrating aesthetic and affective dimensions into professional education. Structured reflection anchored in creative material can support not only awareness of diversity and equity, but also the interior work required for more ethically responsive practice. If professional education is serious about preparing students for relational and justice-oriented work, then pedagogies that make room for uncertainty, feeling, and critical self-examination should not be treated as peripheral. They are part of the work.

Overall, the study extends the understanding of arts-based pedagogy as a practice of relational ethics and critical imagination. It suggests that language itself can be a site of transformation, where learners begin to rework professional identity through the intertwining of emotion, art, and reflection.

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Enhancing Self-Assessment and Reflection in Nursing Education: Insights from a Qualitative Study on Students' Professional Development in Clinical Practice

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Abstract

This study emphasizes the pivotal role of self-assessment in the professional development of nursing students, illustrating how educators can facilitate this process. The findings indicate that although clinical practice is essential for connecting theoretical knowledge and practical skills, the incorporation of reflective practice and structured guidance from professors and supervisors is equally important. The data comprises 30 in-depth interviews with students, professors, and supervisors. Analysis was conducted using Braun and Clarke's thematic analysis (2022). The study revealed that nursing students found self-assessment and reflection on their professional growth during clinical placements to be crucial for developing nursing skills. The results suggest that students who prepared for the mid-term assessment gained more from the assessment than their unprepared peers. Professors and supervisors often saw efficiency as a key nursing competency for students. This highlights a mismatch between supervisors' and professors' expectations and the time required for students to engage in meaningful learning processes. However, to support students in self-assessment, professors and supervisors facilitated learning by guiding them to recognize educational opportunities and activities within the clinical setting.

Keywords: self-assessment, professional growth, nursing profession, nursing students, clinical practice, qualitative research

Enhancing Self-assessment and Reflection in Nursing Education: Insights from a Qualitative Study on Students' Professional Development in Clinical Practice

Clinical practice is vital for nursing students to grasp the nursing profession and serves as a fundamental element of nursing education worldwide. According to European Union standards, a bachelor's program in nursing requires that 50% of the total study duration be dedicated to clinical placements. In the educational context, learning outcomes for a bachelor's program in nursing in Norway emphasize, among other things, the students' ability to self-assess (Regulation on National Guidelines for Nursing Education, 2019). The nursing education program plan at the university involved in this study includes assessing students' general competence in their ability to "critically reflect on personal professional development and engage in academic discussions with colleagues" (OsloMet, 2024). This focus on self-assessment and reflective practice is crucial for fostering a deeper understanding of clinical competencies and preparing students to navigate complex healthcare environments effectively.

Thus, throughout their clinical placements, nursing students are expected to engage in continuous self-assessment, allowing them to gain a deeper understanding of their nursing skills, strengths, weaknesses, and values (Manning, p. 4, 2020). This self-assessment entails evaluating their skills, knowledge, and attitude in comparison to the standards and competencies outlined in the course they follow. Engaging in self-assessment enhances students' awareness of their learning process and identifies professional development needs (Taylor et al., 2020). This reflective practice prompts students to contemplate their experiences, thereby enriching their learning and nurturing the cultivation of critical thinking skills. One essential part of self-assessment is being able to reflect, as well as pursue feedback on their thoughts, to better set a focus for future goals and professional development (Manning, 2020, p. 4). Metacognition and reflective thinking are linked. Flavell (1979) defined metacognition as a process of recognition, monitoring, feedback and adjusting factors affecting, for example, learning strategies. A study conducted in the Netherlands (de Vries et al., 2022) examined the effects of a teacher professional development program focusing on assessment for learning (AfL) for secondary math instructors in Belgium, Cyprus, Greece, and the Netherlands. The study found that students' ability to self-assess is closely linked to their capacity for metacognition.

Research indicates that advanced nursing students' self-assessment of clinical competencies can reveal areas needing further education and development (Taylor et al., 2020). However, previous studies highlight that the ability to reflect and perform self-assessment requires experience and substantial time spent in clinical practice (Taylor et al., 2020), and this ability improves annually for baccalaureate nursing students (Kajander-Unkuri et al., 2020). Additionally, studies show that students often rate their competence higher than it may be, likely due to insufficient training in self-assessment during their education (Gardulf et al., 2016; Kajander-Unkuri et al., 2016; Kajander-Unkuri et al., 2020). Panadero`s (2015) review on issues related to students' self-assessment (SSA) identified five key components: SSA typologies, accuracy, the role of expertise (professors and clinical supervisors), the expectations of, and the varying effects of SSA on different students. According to Panadero (2013, 2015), the accuracy with which a student can self-assess their own work, or achievement, represents a form of validity in SSA.

Another perspective on self-assessment suggests it may be ineffective for students to demonstrate their strengths in clinical competencies (Baxter & Norman, 2011). According to Kruger & Dunning (1999), low-performing students often overestimate their clinical performance, while high-performing students do the opposite. Known as the Dunning-Kruger

effect, this bias occurs because individuals with limited expertise often lack the metacognitive ability to recognize their own incompetence. This concept underscores the significance of self-awareness and accurate self-assessment across various domains, as those lacking competence may be less likely to perceive their own limitations (Kruger & Dunning, 1999). The support and involvement of supervisors in clinical practice is crucial for fostering students' critical reflection and subsequently self-assessment, particularly during challenging periods of clinical training (Alvsvåg & Førland, 2006, p. 37). In a meta-analysis of 46 studies, Baars et al. (2020) found that for students to make accurate monitoring judgements about the association between their effort during learning and their progress, the need for instruction is essential.

A systematic review on self-assessment in surgical training revealed that time and age are crucial for more accurate self-evaluation, with factors like stress negatively impacting the ability to assess one's clinical skills (Nayar et al., 2019). A study from the Czech Republic, involving 274 final year nursing students assessing their own competence, found that the majority (80.3 %) rated their competence as good or very good. Two key factors positively influenced students' self-assessment: prior work experience in health care and positive experiences with their clinical supervisors. These factors significantly contributed to students' confidence in evaluating their own competence (Zeleníková et al., 2023).

Systematic self-reflection during the learning process can enhance patient safety and care (Ambrose & Ker, 2014; Lucas, 2023; Strandbygaard et al., 2013; Sweet et al., 2019). Pai (2015) conducted a longitudinal study in Taiwan that found six months to be vital for nursing students to improve their learning, nursing competence, and professional socialization. Based on Pai`s findings, it is reasonable to assume that time is essential for students to effectively self-assess their clinical performance and professional development. However, previous research also indicates that the ability to reflect and self-assess requires experience, which varies among nursing students in undergraduate programs (Taylor et al., 2020).

When students lack clarity about their path in the learning process, it becomes challenging for them to effectively self-assess their clinical competence. For instance, nursing students often struggle to grasp which learning activities are associated with specific learning outcomes, partly due to the abstract language used in these outcomes (Finstad et al., 2022). A Norwegian quantitative study with 1500 respondents revealed that supervisors in clinical practice have limited time to familiarize themselves with student learning outcomes and to adequately supervise students (Norwegian Nursing Association, 2018). As a result, supervisors may also be unsure about the content of the learning outcomes. However, a Finnish study suggests that learning activities, such as systematic reflections and assessments, have a greater impact on guiding student learning than the descriptions of intended learning outcomes (Hailikari et al., 2022). Additional research recommendations include encouraging nursing programs to emphasize the importance of self-assessment in identifying clinical competency levels (Taylor et al., 2020). A barrier to fostering student self-assessment is the limited understanding of the metacognitive mechanism that underpins it, especially how students monitor and regulate their evaluative judgements. In the absence of this knowledge, designing effective supports to develop students' self-assessment is not yet possible (Richey et al., 2025).

Ontological and Epistemological Approach

This study is grounded in a social constructivist ontology and views reality, including self-assessment and professional development, as socially constructed and context-dependent. Ontology concerns the nature of reality, and in this study approach, self-assessment is seen as an emergent phenomenon, shaped by the interplay between individual agencies and broader social and institutional structures. Thus, this study highlights the importance of contexts, such

as clinical placements, and addresses divergent expectations—where students may need time for reflection, while supervisors often prioritize efficiency.

Aligned with this ontological foundation, the study adopts a constructivist epistemology, which explores how knowledge about self-assessment and professional development is co-constructed. Epistemology concerns how we come to know a certain reality, and in this study, knowledge is recognized as a shared, collaborative process shaped through dialogue, reflection, and experiences. This philosophical stance guided the choice of methodology, focusing on subjective experiences and co-constructed meanings through methods such as semi-structured interviews and observations.

The Rationale of the Study

A multi-database literature search specifically found a lack of studies examining the perspectives of both students, professors, and clinical supervisors, and how these educators facilitate students' ability to reflect on and evaluate their own progress. This gap underlines the need to explore how self-assessment is shaped through social interactions and institutional contexts.

Study Aim and Research Questions

This study aims to explore the experiences of students, professors, and supervisors in reflecting on, assessing, and supporting the students' learning processes and adaptation to the nursing profession during clinical practice. Specifically, the focus is on understanding how students engage in self-assessment of their professional development and how professors and supervisors facilitate this process. Based on this, the study addresses the following research questions:

1. How do students self-assess their own professional development?
2. In what ways do professors and supervisors facilitate students' ability to self-assess their professional development?

Methodology

This study is part of a larger qualitative research project with a hermeneutic approach, focusing on the assessment of nursing students during clinical practice. Rooted in a constructivist epistemology, the overall project includes data from both observations and interviews. This specific study, however, focuses on the analysis of data derived from 30 interviews.

Recruitment and Participants

It was essential to include data reflecting the experiences of nursing students, university professors, and clinical supervisors (registered nurses) to ensure that all three key stakeholders involved in students' assessment during clinical practice were represented.

Information about the study was sent to nursing professors and students at one of the largest universities in Norway, via e-mail and through an oral presentation at a faculty meeting. The professors taught in the bachelor's nursing programme at the university, representing all three years of the programme. Both male and female professors were invited to participate. It was essential that professors participating in the study were actively supervising students in clinical practice during the following months. These professors became gatekeepers to recruit nursing students as participants. Information regarding the focus of the study was presented to students in a pre-clinical setting. The study sample comprised 30 respondents:

The nursing professors included in the study consisted of two males and nine females, aged between 57 and 70 years. They worked with students in different clinical settings,

including elderly care homes, medical, surgical, psychiatric units, and home care services. The student participants included four males and eleven females, aged between 25 and 59 years, all of whom were in clinical practice within one of these settings. The students were enrolled in the first, second or third year of the bachelor's program in nursing. Additionally, six female clinical supervisors, aged 25 to 59 years, agreed to participate in the study. These supervisors were responsible for six of the 16 students who were interviewed.

Table 1

Participant Characteristics.

Who	# & Gender of Participants Interviewed	Year of program in 1st/ 2nd/ 3rd yr	Age range
Professors	9 (7F/2M)	3/3/3	57-70
Students	15 (11F/4M)	4/3/8	20-58
Supervisors	6 6F	1/2/3	25-59
Total	30	30	20-70

Note. F-female M-male

Setting

Some of the questions in the interview guide focused on experiences with the mid-term assessment (MTA). The MTA takes place midway through the students' clinical placement, typically four to five weeks into their rotation. The three participants in the MTA are the students, the university professor, and the clinical supervisor. The assessment is centered around a form outlining the learning outcomes specific to that clinical placement, which the student completes in advance. The purpose of the MTA is to assess whether the student has reached the expected learning outcomes and to identify areas for improvement during the remainder of the placement. The interviews were conducted after the MTA, either in a private room at the university or in a clinical setting.

Data collection

Thirty in-depth interviews with students, professors and supervisors were conducted. A semi-structured interview guide was used for the interviews. The students were asked about their experiences of being assessed, including self-assessment and its role in clinical practice, their relationship with their supervisor, and their overall experiences related to being a student in clinical practice. The professors and the supervisors were asked questions regarding their experiences of supervising students in clinical practice, including assessing students' clinical practice and their role in facilitating students' self-assessment. The interviews had a median duration of 45 minutes.

The interview guide was not derived from a specific theoretical framework; rather, it was developed collaboratively by the three researchers in conjunction with the broader research group. A pilot test was conducted to evaluate the clarity and relevance of the questions, and the guide was subsequently refined based on the pilot findings.

Table 2

Examples of Questions from the Final Interview Guide.

Examples of Questions from the Interview Guide	
To Student/s	Can you tell a little about the expectations you had for the mid-term assessment?
To Student/s	Can you tell how you prepared for the midterm assessment?
To Student/s	Did you get help from a clinical supervisor during practice or a professor from university (to prepare ahead of mid-term assessment)
To Student/s	Who spoke during the evaluation? Is there anyone you think should have spoken more/less
To professor/s and Clinical Supervisor/s	Can you describe a typical assessment situation, how it takes place?
To Professor/s and Clinical Supervisor/s	What do you do beforehand (Midt-term assessment), any follow-up work, the contact you have with both the student and the Clinical supervisor/professor during practice?

Ethical Considerations

In August 2017, the Norwegian Centre for Research Data (now SIKT) approved the project (case number 54821). Permission to conduct interviews was also obtained from the programme coordinators for years 1-3 of the University's Bachelor of Nursing programme, as well as from the department head. In addition, the directors and departmental managers of the participating healthcare institutions and units approved to conduct interviews. The purpose and specific objectives of the study were clearly communicated, both verbally and in writing, to all participating students, professors, and clinical supervisors. The researcher emphasized that participation was voluntary and that they could withdraw at any time without negative consequences. Written informed consent was obtained from all participants. All data were securely stored on an encrypted memory stick, which was kept in a locked drawer in accordance with a risk and vulnerability analysis.

Analysis

The six-step thematic analysis method developed by Braun and Clarke (2006/2022) was used to analyze the data. As the interviews were transcribed, the initial reading of the material took place. During the transcription process, comments and preliminary codes were created, with a specific focus on self-assessment and facilitators for self-assessment. All data were uploaded into NVIVO, a qualitative analysis software, to assist in organizing the text.

During the second reading, the data were manually reviewed line by line, and significant text snippets related to various aspects of nursing students' self-assessment in clinical practice were coded in NVIVO. In the initial phase of analysis, an inductive approach was employed, allowing themes to emerge directly from the data. In the second phase, noteworthy excerpts were organized into new codes, with particular attention to themes surrounding self-assessment and its facilitation. During the third reading, the codes were further condensed and refined, aligning them with the research questions. This phase involved an iterative process of moving

back and forth between excerpts, initial codes, and the development of more focused, condensed codes.

During the analysis process, themes related to students' reflections and self-assessment of their clinical competencies were identified and coded. Additionally, themes concerning how professors and supervisors facilitated students' understanding of clinical competencies were also coded. Through further rounds of theme condensation, three overarching themes emerged, guided by the research question. These themes were: i) Students' self-assessment and reflection on their professional development, ii) Preparedness, and iii) The role of professors and supervisors in facilitating students' self-assessment. All three authors of this article reached a consensus on the final themes as requested by Braun and Clarke (2022).

The following section will elaborate on the findings. Quotations will be cited using codes to identify the participants: students will be labelled as ST1, ST2, professors as P1, P2 and clinical supervisors as CS1, CS2.

Findings

Students' Self-assessment of Professional Development

While students reflected on their professional development within the nursing profession, they provided various examples of how they had integrated and applied their theoretical knowledge. These examples ranged from communication and interaction skills to specific procedures like measuring blood pressure. As they shared their reflections, they appeared surprised at their ability to manage different skills learned in school and apply this knowledge in clinical practice. To illustrate this ongoing reflection, a first-year student stated during an interview:

> "Everything from heart rate and blood pressure to respiration. We have practiced a lot of the concepts we went through in school here (in clinical practice), and I feel like I have excellent control over them" (ST1). The student's expression of having "excellent control" over these skills serves as a form of self-assessment, highlighting their professional growth in clinical competencies. Another example is the application of communication to clinical abilities, as described by one student: "But now that you see the many perspectives of communication, how to act around someone who has dementia, and requires more time [...] it has become apparent" (ST2).

These findings indicate that clinical practice provided students with valuable insights into the nursing profession and various approaches to patient care, although these were not always apparent in the initial weeks. This was particularly noted in psychiatric units due to the lack of concrete tasks. Initially, the students viewed supervisors and co-workers as merely sitting with residents in the living room. However, they gradually realized that these professionals were actively employing clinical observations, knowledge, and interaction skills, even when they appeared to be 'sitting still.' This understanding was exemplified by a second-year student during an interview:

> "You feel like you're just sitting around doing nothing, so it took me a while to grasp what they're actually doing here […]. Simply watching how a resident seems today and then discussing it. Then I reflected, 'Oh yes, they have noticed, sure, right.' ... there is a lot more (of nursing skills/clinical competencies) than you might imagine" (ST3).

Thus, being able to understand the rationale behind activities, such as why and how to interact with patients, or how to communicate with patients in settings like a psychiatric ward or with individuals with dementia, was described as essential to be able to reflect on relevant personal skills. As one student stated:

> "There is now greater clarity regarding communication theories, including guidance on appropriate interaction with individuals with dementia who may require additional time" (ST4).

In other words, understanding the reasoning behind patient interaction and communication, particularly in complex settings like dementia care, was seen as crucial for fostering self-reflection and personal skill development.

Preparedness for the MTA

Students who familiarized themselves with the assessment form and were prepared in advance of the MTA demonstrated a stronger understanding of self-assessment. In terms of preparations for the mid-term evaluation, where students are expected to perform a self-assessment of their professional development, there was considerable variation in their preparatory activities and overall readiness. The findings revealed a spectrum from students who were thoroughly prepared to those who were inadequately prepared for the mid-term evaluation. Illustrating the lack of preparation, a first-year student commented during an interview:

> "I wasn't prepared at all... I just showed up" (ST5).

> A student shared a similar perspective on not being adequately prepared: "I hadn´t spoken with my clinical supervisor about the mid-term assessment because I thought she could simply show up to the assessment and observe how it unfolded. [...]. I approached the mid-term evaluation with an open mind and few expectations" (ST6).

Conversely, some students reported being well-prepared, as exemplified by one student's statement:

> "I had generally noted every single learning outcome and what I had done in relation to it, along with the theoretical aspects" (ST2).

This approach could help students connect learning situations and activities to the learning outcomes in the ward, enabling them to better self-assess whether they have achieved the expected outcomes.

> Another student highlighted the use of theoretical knowledge as a method of preparation for the mid-term evaluation, expressed during an interview:

> "I had read extensively" (textbooks related to the curriculum) (ST7). The student emphasized the value of reading to be prepared, and thus also being able to respond to the learning outcomes with a deeper and contextual understanding. Other students prepared for the mid-term evaluation by engaging in discussions about their learning experiences with their clinical supervisor. One student shared how she prepared for her self-assessment to be demonstrated during the midterm evaluation: "Before the mid-term evaluation, the supervisor and I discussed my views regarding my experiences with the others, and when I was working independently, how it went, and my thoughts on it" (ST8).

Students were self-assessing their perceived performance in relation to specific assessment criteria, as addressed by another student:

> "I summarized my perceived performance against the criteria established beforehand. I felt confident about meeting these criteria and maintaining control, which was subsequently confirmed as satisfactory" (ST9).

Some students considered how they might have been better prepared for the mid-term assessment, which would assist in evaluating their professional development. One student identified a potential area for improvement:

> "Perhaps I should have read more or engaged in further discussions with my nursing supervisor" (ST10).

Another student shared her thoughts while considering possible improvements:

> "I could perhaps have been even more explicit about the nursing concepts (in the learning outcomes), as those concepts eventually encompassed quite a lot" (ST11).

This statement reflects a student's realization about the complexity and breadth of nursing concepts embedded within the learning outcomes. It illustrates the student's awareness of the challenges in mastering comprehensive nursing concepts and her commitment to enhancing her professional development.

To summarize, students' preparedness for the mid-term assessment (MTA) varied widely, ranging from thoroughly prepared to inadequately prepared. Those who reviewed the assessment form and prepared in advance demonstrated stronger self-assessment skills. Effective preparation strategies included mapping clinical experiences to learning outcomes, extensive reading of relevant theory, discussing progress with clinical supervisors, and summarizing performance against predefined criteria. Some students arrived unprepared, expecting to 'see how it unfolds,' while others later identified gaps, such as needing more reading, discussion, or clearer articulation of nursing concepts. Overall, readiness enhanced the quality of self-assessment and facilitated a deeper, more contextual understanding of learning outcomes.

Professors and Supervisors' Role in Facilitating Students' Self-assessment

Some professors and supervisors believed that encouraging students' independence would enhance their ability to connect learning outcomes with related clinical tasks, thereby facilitating self-assessment. To cultivate this independence, students needed opportunities to experience, reflect, and understand the connection between theoretical knowledge and clinical practice. Professors saw it as their duty to assist students in applying theoretical knowledge to clinical tasks pertinent to the ward, guiding them in interpreting their knowledge during patient interactions and enhancing professional development. One supervisor said during an interview:

> "It was quite productive because when the teacher bases the evaluation on the student rather than a set of standardized questions, I think it is more beneficial for the students in terms of what they should focus on moving forward" (CS1).

Several supervisors highlighted the role of language as a key element in bridging the gap between theoretical knowledge and practical application, offering a clear connection. To ensure coherence for students, supervisors stressed the importance of using everyday language, particularly for those whose first language was not Norwegian. A supervisor emphasized this during an interview:

> "Maybe we just have to use ordinary words" (CS2), referring to the general language in the learning outcomes, and how a practical language could be more suitable for clinical activities.

One supervisor gave a concrete example during an interview:

> "Students knew a lot about it (aesthetics), but they were not familiar with the word. Before understanding the content of the word aesthetics (through teacher and

supervisors' explanation), they were completely paralyzed and didn't dare mention it" (CS3).

This example illustrates how the supervisor and teacher facilitated students' self-assessment of clinical competencies by providing practical examples of words like aesthetics in clinical practice. Supervisors also acknowledged the difficulty of translating theoretical concepts into practical activities, drawing from their own experiences as students. One supervisor highlighted this challenge during an interview:

"I understand as a student, and I remember well as a student myself that…just decoding the concepts in the assessment form is a process" (CS4).

The supervisor reflected on her prior experiences as a student, including how to navigate the assessment form, informing her understanding of the challenges students encounter when completing it. Professors reported that clinical supervisors often described students as 'intelligent,' 'skilled,' and 'fitting in well' when evaluating their professional development during the MTA. Although professors understood the intended context of these remarks—typically referring to effective communication with patients and colleagues—they regarded such characterizations as insufficiently specific to support students' self-assessment and achievement of learning outcomes. Interview data indicated that professors facilitated greater precision by encouraging supervisors to specify behaviours, provide concrete examples, and reference criteria when evaluations were vague. Professors interpreted general remarks about students' performances such as 'so effective,' 'it goes so smoothly,' and 'the student is so bright'—as reflections of the students' ability to assess their own skills. As one professor explained:

"I have to challenge the supervisor, (and ask) 'what does that mean?" (P1).

An alternative approach for professors in facilitating students' self-assessment of their professional development was through engaging in a dialogue with the student during the mid-term assessment. This was highlighted by a student in an interview:

"There weren't many concrete questions; instead, it felt like a conversation around topics so he could assess whether I had gained anything and learned from the situations I had encountered" (S12).

This quote underscores the importance of time and flexibility in the learning and assessment process. Rather than adhering to a rigid format with specific questions, the supervisor opted for a more conversational approach. This flexibility allows for a deeper exploration of the students' experiences and understanding, fostering a more comprehensive assessment of their personal development.

Providing time during mid-term assessments for students to reflect and self-assess their professional development was therefore described as essential. The quote below reflects a student's perception of the balance of contributions between themselves and the teacher during the assessment. By expressing this interaction in percentages, the student indicates that they feel they are taking a slightly larger role in their assessment:

"If I were to express it in percentages, I would estimate that it was 60-40, with me contributing 60% and the teacher contributing 40%" (ST13).

The interviews also show the need for structured support and clearly defined expectations to facilitate meaningful self-assessment and active engagement in clinical practice. By setting clear expectations and providing consistent feedback, teachers and supervisors seem to be better able to make students take their clinical placements seriously and engage deeply in their learning process, ultimately fostering the development of skilled and

reflective practitioners. However, such conditions were not always present. Some students emphasized how the lack of expectations from the teacher and/or supervisor prevented students from entering a critical self-assessment process, as exemplified by a student in the quote below:

> "I suppose I would have taken this clinical placement much more seriously (with higher expectations). Unfortunately, I haven't managed to take it very seriously" (ST14).

Similarly, another student emphasized how the lack of expectations of theoretical knowledge was something that did not encourage active preparedness:

> "We asked whether there was anything we needed to read before the mid-term evaluation, and he said, 'No, no, we won't be discussing anything like that'" (ST15).

Overall, these quotes highlight the importance of setting expectations that encourage students to engage with both the theoretical and practical aspects of their education. By offering clear guidance and emphasizing the relevance of theoretical knowledge, educators can support students in becoming more active and prepared participants in their clinical learning experiences, while also facilitating the assessment of their professional development.

Discussion

This study explores nursing students' self-assessment of their professional development, from the perspectives of both students, professors, and clinical supervisors. Further, the study also explores how these educators facilitate students' ability to self-assess their progress. As Baars et al. (2020) and de Vries et al. (2022) underline, the students' ability to self-assess depends on their capacity for metacognition. When students are well-prepared, they are better able to engage in metacognitive activities such as planning, self-monitoring, and reflecting on their clinical performance (Baars et al., 2020; de Vries et al., 2022). One dimension of self-assessment was related to preparedness. Our findings show that preparation for mid-term evaluations revealed a wide range of readiness among students, with some feeling thoroughly prepared and others being inadequately prepared. Well-prepared students reported a deeper understanding of learning outcomes during mid-term assessment. Conversely, a lack of preparedness can hinder metacognitive thinking, leaving students feeling unsupported and stressed. Accordingly, fostering preparedness through clear guidance, time for reflection, and structured assessment tools is essential in helping nursing students develop both their practical skills and their metacognitive abilities.

In general, the findings highlight the importance of nursing students' self-assessment in the process of developing their nursing skills. The findings also underscore the vital role of clinical practice in bridging theoretical knowledge with practical skills. The importance of integrating theoretical knowledge with practical application was underscored, and students recognized the need for clear expectations and structured support from professors and supervisors to facilitate meaningful self-assessment.

Students were pleasantly surprised by their ability to apply communication skills and clinical procedures in real-world settings. Through reflective practice, they gained deeper insights into their growing proficiency and understanding of various nursing competencies. This reflection not only reinforced their theoretical knowledge but also highlighted their progression in effectively bridging theoretical knowledge with practical patient care. Our findings are in accordance with Manning (2020), who underscored the importance of reflection during clinical practice and how self-assessment plays an important role in identifying strengths and areas for improvement, ensuring continuous learning, thus contributing to continuous professional development and secure patient care. Further, continuous self-assessment enhances personal accountability and ownership of decisions made in clinical practice.

Our study also highlighted challenges, such as the lack of clear expectations from educators, which hindered students' ability to critically assess their progress. By setting expectations and providing consistent feedback, educators can encourage students to engage with both theoretical and practical aspects of their education, ultimately fostering skilled and reflective practitioners. It is, however, important to note that some students were capable of ensuring their progress, without any expectations from their professors in assessment situations, such as mid-term assessment, underlining the importance of taking responsibility for their own professional development. As our findings indicated, another study demonstrated that increased competence and experience in the skill or knowledge being evaluated is a significant factor in enhancing the accuracy of self-assessment (Panadero et al., 2015).

According to Kruger & Dunning (1999), those who are low-performing students tend to overestimate their clinical performance, whereas high-performing students tend to underestimate it. This phenomenon, known as the Dunning-Kruger effect, arises because those with limited expertise often lack the metacognitive ability to recognize their own shortcomings. However, our findings do not provide a clear link between students' performance levels and their capacity to accurately evaluate themselves against the learning outcomes. Instead, the issue seems to revolve around preparedness, thus responsibility, and the extent to which supervisors and professors facilitated the students' professional development.

Thus, students should be provided with genuine opportunities to prepare, develop, and practice their self-assessment skills (Kajander-Unkuri et al., 2020). According to Taylor et al. (2020), the capacity for reflection and self-assessment necessitates experience, which includes significant time engaged in clinical practice. This ability is observed to enhance annually among nursing bachelor students (Kajander-Unkuri et al., 2020). This is in accordance with the findings in our study, where time was seen as essential to be able to reflect and thus gain a deeper understanding of the different nursing tasks and related skills.

However, the students' need for time often conflicts with supervisors' expectations for efficiency in tasks such as patient communication or morning care, where efficacy is considered a key nursing skill. This discrepancy between supervisors' and professors' expectations and the students' learning needs may potentially create a gap between learning and performing concrete nursing tasks. According to Taylor et al. (2020), there is a necessity for a transitional space between learning and working. To integrate the student into this transitional space, the supervisor plays a crucial role by assisting students in reflecting and critically evaluating their own or their co-workers' clinical performances. Furthermore, engaging in self-assessment also helps the students to identify their professional development needs. Our findings show that professors and supervisors play a crucial role in facilitating students' self-assessment by encouraging independence and providing opportunities to connect theory with practice. Engaging students in dialogue during assessments further promoted a deeper exploration of experiences and personal development. However, supervisors often used vague expressions such as 'so effective,' 'it goes so smoothly,' 'the student is so bright,' or 'slides right into the environment' when assessing students. These ambiguous phrases made it difficult for students to critically evaluate their professional development or measure their performance against specific learning outcomes.

These findings align with a study by Zeleniková et al. (2023), which highlights the critical role of supervision during clinical practise as a key factor influencing students' ability to evaluate their own competencies. Similarly, other studies suggest that a contributing factor to challenges in self-assessment may be the lack of systematic integration of self-assessment practices within the formal education system (Gardulf et al., 2016; Kajander-Unkuri et al., 2016; Kajander-Unkuri et al., 2020).

These challenges in self-assessment, compounded by the use of vague feedback, highlight the critical role of professors and supervisors in creating a supportive learning environment. One key finding in this study is that when professors and supervisors fail to recognize the importance of time and reflection, students may feel unsupported in their learning journey, potentially prolonging their development due to a lack of guidance and feedback on their clinical performance. Research indicates that stress adversely affects learning (Nayar et al., 2019). Consequently, pressuring students to prioritize efficiency over reflection can hinder learning, causing additional stress as they strive to meet supervisors' expectations. Providing students with adequate time for reflection to self-assess their clinical competence not only strengthens their professional development but also enhances patient safety and quality of care (Ambrose & Ker, 2014; Strandbygaard et al., 2013; Sweet et al., 2019).

Conclusion

In conclusion, this study underscores the critical role of self-assessment in nursing students' professional development, highlighting how educators can facilitate this process. The findings reveal that while clinical practice is indispensable for bridging theoretical knowledge with practical skills, the integration of reflective practice and structured support from professors and supervisors is equally vital. Students' abilities to apply communication skills and clinical procedures in real-world settings were enhanced through reflection, reinforcing their theoretical knowledge, and advancing their practical proficiency.

However, the study identifies challenges such as inconsistent expectations from educators, which can impede students' ability to critically assess their progress. Educators need to establish clear expectations and provide consistent feedback to promote effective self-assessment. The variance in student preparedness for mid-term evaluations further illustrates the need for genuine opportunities to develop self-assessment skills. The research also explores the Dunning-Kruger effect, where less experienced students may overestimate their abilities, while high-performing students might underestimate theirs. Despite this, no definitive link was found between performance levels and self-assessment accuracy, suggesting that the focus should be on preparedness and the role of educators in facilitating professional growth. Insufficient preparation may impede metacognitive processes, leading students to perceive inadequate support and heightened stress.

Overall, this study advocates for a more structured approach to self-assessment within nursing education, emphasizing the critical role of educators in bridging the gap between theoretical learning and practical application, as well as facilitating meaningful reflections on clinical experiences.

Implications

This study highlights the importance of structured self-assessment processes in nursing education to facilitate the development of clinical competencies. Educators should prioritize creating clear expectations and providing consistent feedback to help students effectively integrate theoretical knowledge with practical application. By incorporating regular opportunities for reflection and dialogue, both in the classroom and clinical settings, educators can enhance students' ability to critically assess their progress. This approach not only aids in bridging the gap between theoretical learning and practical application but also supports students in identifying their professional development needs. Furthermore, balancing the demand for efficiency with the need for reflective practice can mitigate stress and improve learning outcomes, ultimately leading to better patient care. Supervisors should recognize the importance of transitional spaces for learning and working, where students can critically

evaluate their clinical performance, thereby fostering skilled, reflective practitioners who are well-prepared for the complexities of patient care.

Limitations and Suggestions for Future Research

Limitation

This study primarily relies on qualitative data from one educational institution in Norway, which may limit the transferability of the findings across different educational contexts and institutions. Additionally, the study focuses on self-assessment processes within a specific cultural and educational framework, potentially overlooking variations in practices and expectations in other regions. The sample size and the diversity of participants may also affect the breadth of insights, as they may not fully capture the range of experiences encountered by nursing students globally. On the other hand, self-assessment is a significant topic in many professions, and the findings may therefore be beneficial for other educational programs.

Future Research

Further research should explore the impact of structured self-assessment processes on long-term clinical competence and professional development across diverse educational settings. Quantitative studies could provide a broader understanding of how different self-assessment approaches affect learning outcomes and patient care. Additionally, examining the role of technology and digital tools in facilitating self-assessment and reflection could offer innovative strategies for enhancing educational practices. Research should also investigate the perspectives of educators and supervisors on the challenges and benefits of integrating self-assessment into nursing curricula, providing insights into effective implementation strategies across various contexts.

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Building Thinking Classrooms in Mathematics: Learning About Sustained Changes in Teacher Practice through the Interconnected Model of Teacher Professional Growth

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Abstract

The Building Thinking Classrooms (BTC) Initiative, a sub-group of a larger Critical Friends Model of teacher professional development (PD) in an urban Manitoba school division, was designed to improve teachers' sense of self-efficacy in mathematics instruction and to promote the adoption of optimal, research-based pedagogical practices. Cohorts of 29-30 primarily math teachers/coaches worked with Dr. Peter Liljedahl (as a critical friend) over a series of six PD sessions each year (one in-person and five virtual) to engage with his research-based classroom practices for enhancing student learning and enact them in their own classrooms. The case-study research described in this paper examined data over two years (2022–2023 and 2023–2024) to look at the impact of the BTC initiative on teaching practice(s), effective elements of the PD model in supporting and sustaining changes in practice, and perceptions of impacts on student engagement, achievement, and self-efficacy. Through the use of Clarke and Hollingsworth's (2002) Interconnected Model of Teacher Professional Growth (IMTPG), change processes were modelled, emphasizing four additional influences on the domains of the teacher's world in the IMTPG, suggesting that contextual and personal influences are critical considerations in the planning of effective PD.

Keywords: Building Thinking Classrooms, Interconnected Model of Teacher Professional Growth, mathematics, professional development

Building Thinking Classrooms in Mathematics: Learning About Sustained Changes in Teacher Practice through the Interconnected Model of Teacher Professional Growth

In the 2022–2023 school year, an urban school division in Manitoba, Canada, embarked upon a pilot project to improve teachers' sense of self-efficacy in mathematics instruction, and to promote the adoption of optimal, research-based pedagogical practices in Grades 5–12 mathematics. This project, which was known as the Building Thinking Classrooms (BTC) Initiative, was part of a larger Critical Friends Model of teacher professional development (PD) that brought cohorts of teachers together to work directly with pedagogical experts to learn about classroom strategies for improving student learning. In the case of the BTC Initiative, a cohort of 30 teachers worked with Dr. Peter Liljedahl, a professor from British Columbia, Canada, who wrote the 2021 book titled *Building Thinking Classrooms in Mathematics: 14 Teaching Practices for Enhancing Learning* (Liljedahl, 2021). Over a series of six sessions (dispersed throughout the 2022–2023 school year), teachers engaged with Liljedahl's pedagogical strategies for enhancing student learning in mathematics, trying them out in their own classrooms and debriefing together at their sessions.

Two divisional employees (a Numeracy Specialist and a Continuous Improvement Coordinator) in charge of the BTC Initiative reached out to me in my role as a middle and senior years (Grades 5–8 and 9–12) mathematics methods instructor at a local university to see if I would be interested in partnering with the division to do some research on the project. Because the goal of the BTC initiative was to improve teachers' sense of self-efficacy in mathematics instruction and to promote the adoption of research-based, optimal practices, it was important to assess the impact of the initiative on students and teachers in the division. As a result, the following research questions were collaboratively framed to guide the study:

1. How has the pilot project impacted teachers' classroom practice(s)?
2. To what extent (if at all) has the project improved teachers' sense of efficacy in meeting mathematics outcomes?
3. What elements of implementation of the pilot initiative were effective in changing practice? What elements of the pilot initiative fostered continuation of these changes in practice over time?
4. To what extent (if at all) has the project improved student engagement, achievement, and sense of efficacy in mathematics?

For the purposes of this paper, emphasis will be placed on changes in teacher practice; elements of the initiative that were effective in changing (and sustaining changes in) classroom practice; and perceived impacts on student engagement, achievement, and sense of efficacy.

In addition to the research questions mentioned above, I was curious as a researcher about how this model of PD fits within broader understandings about effective teacher professional development (PD), how it promoted changes in teacher practice(s), and the extent to which such changes in practice were sustained over time. As a result, I utilized both literature from the field on effective teacher PD and Clarke and Hollingsworth's (2002) Interconnected Model of Teacher Professional Growth (IMTPG), a model that illustrates teacher change, to conduct a case study of the BTC Initiative in the hopes of answering the research questions and learning more about effective teacher PD and teacher change.

Literature on Effective Teacher Professional Development in Mathematics

Many school divisions/districts across Canada (and elsewhere) incorporate professional development initiatives as an approach to improving mathematics teaching and student numeracy skills. Such initiatives frequently involve the introduction of pedagogical (mathematics) strategies and approaches by experienced speakers, researchers, coaches, and the like via presentation or through experiential means in a workshop-type format. The idea is that teachers then incorporate these "new" strategies and approaches in their own classrooms. Literature on effective teacher PD, however, generally does not support initiatives that are "stand-alone" or "one-off" in nature (Campbell et al., 2017; Darling-Hammond et al., 2010; Hardy, 2009). In fact, the elements of effective teacher PD are both well-researched and numerous, as is indicated in Table 1.

Table 1

Characteristics of Effective PD Evident in Literature.

Characteristics of Effective PD	Supported in Literature
Focused on student learning	Campbell et al. (2017); Guskey (2003); Harwell (2003); Higgens & Parsons (2009); Hunzicker (2010a); Learning Forward (2011); Mundry (2005); Murray (2014); Reeves (2010); Skyhar (2018, 2020); Timperley (2008); Whitcomb et al. (2009)
Includes subject-specific content and pedagogical content knowledge	Bredeson (2002); Campbell et al. (2017); Harwell (2003); Higgens & Parsons (2009); Hunzicker (2010a, 2010b); Mundry (2005); Murray (2014); Porter et al. (2003); Quick et al. (2009); Skyhar (2018, 2020); VanDriel & Berry (2012)
Aligned with school, district, curricular, and individual teacher goals	Bredeson (2002); Campbell et al. (2017); Hunzicker (2010a, 2010b); Murray (2014); Porter et al. (2003); Quick et al. (2009); Skyhar (2018, 2020)
Opportunities for active learning	Campbell et al. (2017); Darling-Hammond & McLaughlin (2011); Hunzicker (2010b); Porter et al. (2003); Quick et al. (2009); Skyhar (2018, 2020); Timperley (2008); Villegas-Reimers (2003)
Collegial and collaborative learning environment characterized by respect, trust, safety, and accountability	Bredeson (2002); Bruce et al. (2010); Campbell et al. (2017); Darling-Hammond & McLaughlin (2011); Goos et al. (2011); Hargreaves & O'Connor (2018); Harwell (2003); Hunzicker (2010a, 2010b); Learning Forward (2011); Murray (2014); Nelson et al. (2010); Porter et al. (2003); Quick et al. (2009); Skyhar (2018, 2020); Timperley (2008); VanDriel & Berry (2012); Whitcomb et al. (2009)
Embedded in the daily life of schools	Bredeson (2002); Bruce et al. (2010); Campbell et al. (2017); Darling-Hammond & McLaughlin (2011); Goos et al. (2011); Hunzicker (2010a, 2010b); Mundry (2005); Murray (2014); Quick et al. (2009); Skyhar (2018; 2020)

Ongoing in duration	Campbell et al. (2017); Darling-Hammond & McLaughlin (2011); Harwell (2003); Hunzicker (2010a, 2010b); Murray (2014); Porter et al. (2003); Quick et al. (2009); Skyhar (2018, 2020)
Scalable and sustainable	Loucks-Horseley et al. (2010); Skyhar (2018, 2020); Timperley (2008); Whitcomb et al. (2009)
Adequate support in terms of time, resources and leadership	Bredeson (2002); Campbell et al. (2017); Darling-Hammond & McLaughlin (2011); Goos et al. (2011); Hunzicker (2010a, 2010b); Learning Forward (2011); Mundry (2005); Quick et al. (2009); Skyhar (2018, 2020); Timperley (2008); Villegas-Reimers (2003)

Given the characteristics of effective teacher PD listed in Table 1, it follows that effective teacher PD in mathematics should be not only aligned with divisional goals of improving student numeracy skills but also focused specifically on mathematics content and pedagogy as well as student learning. In addition, effective teacher PD in mathematics should include ongoing, job-embedded, active PD opportunities in which teachers are able to come together in a collegial and collaborative environment to learn and dialogue about mathematics, mathematics teaching, and student learning. Such experiences should occur throughout the year and include adequate time and resources for teachers to embed their learning within their own classroom contexts.

The BTC Initiative

The BTC Initiative embodied most (if not all) of the characteristics of effective teacher PD identified in Table 1. The initiative brought together 30 volunteer teachers/coaches, comprised of 4 Senior Years (Grades 9–12) teachers, 18.5 Middle Years (Grades 5–8) teachers, 6.5 Academic/Numeracy Support Teachers, and 1 SY Continuous Improvement Coach (note that some teachers had dual roles and were counted as 0.5 according to their dual roles). The cohort was co-led by two divisional employees, a Numeracy Specialist and an Administrator of Continuous Improvement, and met six times over the course of the 2022–2023 school year for full-day (9 am – 3 pm) PD sessions with Peter Liljedahl (one in-person in the spring and 5 virtual). At these sessions, Liljedahl, as a critical friend, shared pedagogical practices (actively and experientially) with cohort teachers/coaches from his research and the book published about it. Teachers/Coaches were provided with his book, vertical non-permanent learning surfaces (VNPSs) in the form of laminated white sheets (Wipebooks), and dry-erase markers and encouraged to try out his pedagogical strategies in their own classrooms between sessions. They were then allowed to reflect on their experiences when they met, before learning about more pedagogical practices for implementation. As a result, the BTC Initiative was ongoing in duration; focused on mathematics, mathematics pedagogy and student learning; aligned with divisional numeracy goals; and provided time, resources, and leadership. Teachers worked within a collaborative cohort, engaged in active online and in-person experiences with Liljedahl, and worked to implement strategies within the contexts of their own classrooms (job-embedded). Finally, the cohort model allowed for the initiative to be scaled up and sustained over time, as more teachers joined cohorts, creating a critical mass of teachers in the division that had experienced Liljedahl's practices for enhancing student learning.

Liljedahl's Pedagogical Practices for Enhancing Learning

In his 2021 book, Liljedahl describes how he noticed in his observations of teaching and learning that students weren't thinking, and teachers were planning their teaching based "on the assumption that students either couldn't or wouldn't think" (p. 6). This is what spurred him to spend the next 15 years working with "over 400 K–12 teachers to try to break through the non-thinking behaviours and get students to think" (p. 12). What ensued was a series of classroom experiments with teachers, searching for "local optimal practices" (p. 15) that could be scaled up to work for any teacher. Weeks were spent fine-tuning each "optimal practice for thinking," and the result was a book with a chapter on each of fourteen strategies that impact thinking in a classroom.

Of the optimal practices described in the book, one of the most significant changes to traditional mathematics teaching is the use of VNPSs. Liljedahl proposes in the book that teachers decenter the classroom and have students work standing at VNPSs in groups of three. This, according to Liljedahl, promotes thinking and engagement and decreases reliance on the teacher. Tasks are given to students shortly after entering the room, and rather than modelling through showing students how to solve problems (e.g. at the front of a whiteboard or via PowerPoint) and expecting them to mimic procedures (e.g. on practice questions), teachers require students to approach novel problems at VNPSs that are open and easily extended. Once students are working, teachers only provide hints and extensions needed to help students think, as opposed to answering questions about how to solve the problem or verifying that students have the correct answer. Learning is consolidated in such an approach by looking at the work of various groups, noting commonalities and unique approaches, and having students explain their thinking and the thinking of others. Finally, notes and homework, frequently used in traditional classrooms, are optimized in Liljedahl's 'thinking classrooms' as well, as they are personalized and suggested (not required) for students, giving them autonomy and choice in how they document and solidify their learning.

The Six PD Sessions

The six sessions that were led by Liljedahl broke his fourteen practices down into smaller chunks known as "toolkits" (see Table 2 below).

Table 2

BTC Toolkits.

Toolkit 1	Thinking tasks, random groupings, vertical non-permanent surfaces (VNPSs)
Toolkit 2	Defronting the classroom, answering only keep thinking questions, give thinking tasks (early, standing, verbally), CYU questions, mobilize student knowledge
Toolkit 3	Use hits and extensions to maintain flow, consolidate from the bottom up, have students write meaningful notes
Toolkit 4	Evaluate what I value, help students see where they are and where they are going, grade based on data not points

Sessions tended to focus on one toolkit (and section of chapters in the book) at a time, allowing Cohort teachers to be introduced to them, work with Liljedahl, and then put them into practice in their classrooms in between sessions. In this way, the practices were gradually introduced over the course of the school year with a focus on the implementation of new learning

in a practical setting. By the end of the first year of the BTC Initiative, all 30 teachers had worked through all four of the toolkits with Liljedahl and been encouraged to try the practices in their own contexts.

Year 2 of the BTC Initiative

In 2023-2024, two groups essentially emerged in relation to the BTC initiative: the Original Cohort, which consisted of 8 MY teachers/coaches of the original 30 who continued to meet with the Numeracy Specialist to work on implementing Lildjedahl's pedagogical practices; and the Secondary Cohort, a new group of 29 teachers who started a new series of 6 sessions (1 in-person in the fall and 5 virtual) with Liljedahl. While the content of the Secondary Cohort sessions with Liljedahl was similar, two important changes in structure were made in response to feedback provided by the 2022-2023 Cohort. The first was that the spring in-person session with Liljedahl was moved to the fall in order to 'see' Liljedahl's strategies enacted (by him, in-person) sooner in the year. The second important change in structure for the Secondary Cohort was that time was built into the afternoons of two of the sessions to debrief and unpack what had been said, and to plan for classroom implementation. This was also done in response to teacher feedback.

In terms of the meetings held for the Original Cohort in the second year, a total of three full-day sessions were held in 2023–2024, led by the Numeracy Specialist. During these sessions, participants reviewed the fourteen BTC practices (including micro moves), reviewed new BTC research, shared task resources, and created tasks, navigation instruments, and check-your-understanding (CYU) questions. Participants had the opportunity to share how things were going in their own classrooms, ask questions of their colleagues and the Numeracy Specialist, and hear about new things shared by Liljedahl at the Secondary Cohort meetings. They were also afforded much-needed time to work collaboratively on resource development.

Research Methods

A single case study design, an appropriate methodological choice for an in-depth study of a single unit or bounded system (Creswell, 2007; Flyvbjerg, 2011; Merriam, 1998; Stake, 1995), was utilized for this study. The BTC project provided a bounded case that was both unique and revelatory (Yin, 2009), allowing for insight to be gained into the approach to professional development taken, its impact on the instructional practices of divisional teachers, and the resulting influence of the project on student engagement, achievement and sense of self-efficacy in mathematics (note that one teacher also used the strategies in a Physics context). In order to gain such insight, both primary and secondary data were collected over the first two years of the initiative (see Table 3 below).

Table 3

Data Sources.

Primary Data (Year 1)	Primary Data (Year 2)	Secondary Data Provided by Division
6 teacher/coach interviews: 1 high school teacher, 4 middle years teachers and 1 middle years teacher/coach	4 teacher interviews: 1 high school teacher and 3 middle years teachers (3 were interviewed in previous year, 1 was not)	Financial information

3 student focus group conversations with students of teachers/coaches interviewed: 1 high school and 2 middle years focus groups (4-5 students each)		Notes and summaries of activities from Numeracy Specialist & Continuous Improvement Administrator
2 interview(s) with pilot project co-leads - Numeracy Specialist and Continuous Improvement Administrator	2 interview(s) with pilot project co-leads - Numeracy Specialist and Continuous Improvement Administrator	Anonymous survey data from teachers participating in the pilot (after Year 2)

Teachers/Coaches and co-leads were recruited to participate in semi-structured interviews for the study in both the first and second year via email (with attached letter of invitation). Teacher/Coach semi-structured interviews focused on questions about what their practice looked like prior to the BTC Initiative, what it looked like after, effective elements of the PD initiative, impacts on their sense of efficacy as teachers, and perceived impacts on student engagement, achievement, and self-efficacy. Co-lead semi-structured interview questions focused on elements of the initiative and perceived impacts on teachers' practice(s) and student engagement, achievement, and self-efficacy in mathematics.

Students of the teacher interviewees in the first year were recruited through the use of a physical letter of invitation to parents and students. All participants (and their guardians if under 18 years of age) signed a consent form prior to participation. Focus group questions with students focused on perceived changes in their teachers' practices and their own perceptions of their self-efficacy as math students, their achievement in the class, and their engagement with the new pedagogical and learning strategies experienced.

Interviews and focus group discussions were audio-recorded and transcribed for analysis, and all interview participants were provided with copies of their transcript(s) for editing/adjusting and verification prior to its/their use as data for the study (member-checking).

Secondary data in the form of reports, notes, files, summaries and survey data were also provided annually by the co-leads of the initiative following their individual interviews. The school division approved both the study and the forms of data collected prior to the commencement of the research, as well as all changes made to the research methods and protocols in the second year.

The first round of data analysis utilized reflective thematic analysis, a process involving the following six phases: 1) familiarizing yourself with the data set, 2) coding, 3) generating initial themes, 4) developing and reviewing themes, 5) refining, defining, and naming themes, and 6) writing up the findings (Braun & Clarke, 2022, p. 35-36). Following transcription and member-checking of interviews and focus group conversations each year, the researcher familiarized herself with the data and performed initial coding (Saldaña, 2009) using topics related to literature about effective teacher PD and the collaboratively designed research questions. Coding was also extended to include emergent themes from the data before codes and themes were refined into broad categories or themes. A second round of coding and data display also took place, utilizing charts/tables and Clarke and Hollingsworth's (2002) IMTPG model, as changes in practice for

each teacher were organized into categories and an overall trajectory of teacher change was displayed using the model.

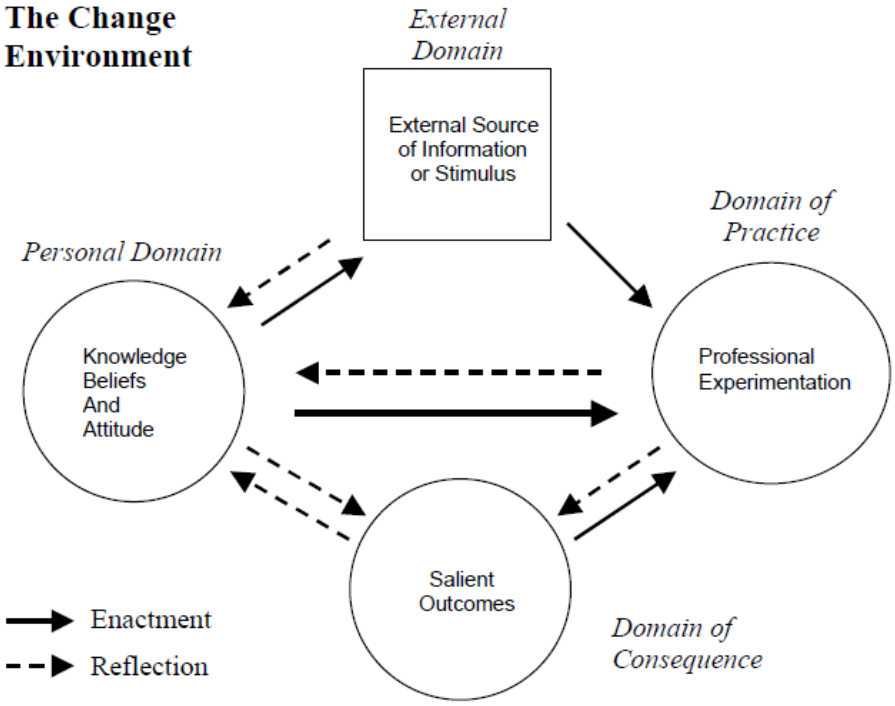
Theoretical and Conceptual Frameworks

The research conducted draws on social constructivist theory, which acknowledges that individuals (including teachers engaging in PD) construct understandings of new phenomena as they engage in actions (experiences, activities, dialogue and reflection) that allow new ideas to rub up against existing understandings, beliefs and attitudes (Richardson, 1997, 1999). All of this happens within a social context that cannot be separated from the individual learning that occurs (McCullagh, 2012; Pitsoe & Mailia, 2012; Richardson, 1997, 1999). Within the context of mathematics teachers engaging in PD as cohorts, this means that the actions they engage in together, including the new information they are exposed to, the conversations they have together, and the experiences have in their own classrooms and then unpack together in sessions, foster the individual construction of new understandings, beliefs, and attitudes that are influenced in complex ways by the social context in which the learning takes place.

As a conceptual model, Clarke and Hollingsworth's (2002) IMTPG model illustrates the complex process of social construction of new understandings, beliefs, and attitudes through the process of 'enactment' and 'reflection' across the four domains of the teacher's world: the external domain, the personal domain, the domain of practice, and the domain of consequence (see Figure 1). As a result, it is a useful tool for both thinking about teacher change and for looking at data for evidence of this change.

Figure 1

The IMTPG (Clarke & Hollingsworth, 2002, p. 951)



Findings

Findings from the study are broken down into five sections: changes in the classroom practices of teachers; elements of the initiative effective in changing and sustaining changes in practice; barriers to affecting changes in practice and suggestions from teachers; illustrating teacher change with the IMTPG, and impacts on student engagement, achievement and efficacy. These sections align with the collaboratively designed research questions that guided the study. The findings from the study are also followed by a discussion of their importance in terms of what is known about effective teacher PD and teacher change.

Changes in the Classroom Practices of Teachers

After the second year of the BTC initiative, a survey was sent out to all participants in the BTC initiative by the Numeracy Specialist. Of the 59 participants in the initiative, 41 responded to the survey. The survey focused on gathering information about the degree to which participants planned to implement the 14 BTC practices outlined by Peter Liljedahl in the future. Of the respondents, 35 planned on implementing the fourteen practices in the 2024-2025 school year, although to varying degrees (19 indicated they would implement *some* of the practices, 10 indicated they would implement *most* of the practices, and six indicated they would implement *all* of the practices). Six of the respondents indicated that they would not be implementing the practices in the following year (five of these were no longer teaching math/their teaching assignment had changed, and one felt they did not have enough time to adapt their lessons to the BTC style, given their other commitments).

In addition to the survey data, interviews conducted with participants in both years of the study further explained what classroom changes had taken place for the Original Cohort (within broad thematic categories identified through the coding process). In particular, the trajectory of four of the participants highlighted the varying levels of changes that took place over 2022-2023 and 2023-2024. Participant 1, for example, implemented many of the 14 practices consistently, beginning prior to the BTC Initiative and extending through both years. In addition, they utilized their own assessment methods, opting to use an 'ungrading' strategy in their high school physics courses.

Table 4

Participant 1 (High School Physics/Math) – Interviewed in both years.

	Prior to BTC	Year 1	Year 2
Classroom	Physics lab with immovable tables. Smartboard at front.	Room remained the same with the addition of VNPSs and "scientist" labels for random groupings.	
Instruction	Fairly traditional. Examples on Smartboard at front: "I do, We do, You do"	Started before BTC initiative. Utilized visibly random groups, moved between Smartboard and VNPS.	Continued to use VNPSs and visibly random groups daily.

Student work	Individual whiteboards used during lesson. Independent work after board work. Cumulative exercise packages created by teacher (20 problems) – Do every odd one, even if nec.	Math - Used problem sets to create VNPS tasks. Students did them collaboratively at VNPSs. Physics – a couple of scaffolded problems (would previously have done as examples on board) done at VNPSs.	Not teaching math. Physics – a couple of scaffolded problems (would previously have done as examples on board) done at VNPSs.
Clarifying/ Consolidating	Go over questions the next day related to the problems.	Worked on consolidation at VNPSs after seeing Liljedahl in person.	Improving consolidation skills at VNPSs.
Notes	Notes packages.	Tried out Liljedahl's methods for note-taking.	Liljedahl's four corners note-taking method.
Homework	Not assigned. Up to student to do as many questions/problems as needed.	Math – doing problems at the VNPS and more specialized problems as independent work. Physics – 3-4 specialized problems (attempt from multiple perspectives).	No longer teaching math. Physics – 3-4 specialized problems (attempt from multiple perspectives).
Assessment	Moved from traditional tests (written, outcomes-based) to 'ungrading' (portfolios, interviews, skills-based, students self-assess and negotiate grade with teacher). Mostly in physics. Math remained more traditional.	Continued with ungrading in physics and traditional tests in math.	No longer teaching math. Continued with ungrading in physics.
Planning		Math – Used the cumulative exercises as a starting point for thin slicing tasks. Physics – Used previous examples and materials to create tasks. Also consulted a lot of websites and online resources.	

Participant 5, on the other hand, had limited implementation of BTC strategies in their Grade 7 classroom. While they were able to dabble with the strategies in the first year and work collaboratively with a Coach at the beginning of Year 2 of the initiative (about six weeks), competing PD initiatives (ELA) and changes in personnel with whom they were collaborating made it difficult to fully implement the BTC practices. Participant 5 continued to use the VNPSs in their classroom; however, primarily for review purposes.

Table 5

Participant 5 (Grade 7) – Interviewed in both years.

	Prior to BTC	Year 1	Year 2
Classroom	Desks facing front or table groups (with defined front).	Defronted – no table groups facing the front (facing all directions).	
Instruction	First 20 minutes – mental math game. Next 20 minutes – Teacher introduces new concepts.	Tried the VNPSs approximately 10 times over the course of the year. This involved a 5-minute introduction followed by 30-40 min. of VNPS work before coming back together to consolidate.	Began the year partnering with a numeracy specialist for 6 weeks. Began with non-curricular tasks and extended into curricular tasks. Tried a thin slicing lesson in October. Continued use of VNPSs for Review.
Student work	20 minutes – students work independently on practice.		Utilized Mild/Medium/Spicy with VNPS work in reviews.
Clarifying/ Consolidating			
Notes	These were not discussed in the interviews.		
Homework			
Assessment			
Planning			When no time to plan, used the banner (at VNPSs) and reviewed concepts.

Participants 6 and 10 became strong collaborative partners in Year 2. While Participant 10 had their position change partway through Year 1 of the initiative, they returned to a Grade 5/6

classroom in Year 2 and partnered with Participant 6 to fully implement all Lilijedahl's toolboxes. Participant 6 had the experience of moving from Grade 5 to Grade 6 over the two years (8 out of 24 students made the move with them). Participants 6 and 10 met weekly on Tuesdays after school to plan together and spent a lot of their own time on evenings and weekends creating materials for use in their classrooms (which they shared both with each other and to a lesser extent at the Year 2 sessions that met 3 times in 2023-2024). Both teachers began their second year fully implementing Liljedahl's strategies, having tried several of them out in their first year in the BTC project.

Table 6

Participant 10 (Grade 5 /6) – Only interviewed in Year 2.

	Prior to BTC	Year 1	Year 2
Classroom			Room defronted. Desks in groups facing different directions. Whiteboards around classroom.
Instruction	Instruction at the front (PowerPoint). Used manipulatives. Individual whiteboards.	Tried lessons with VNPSs a handful of times. Was pulled out of classroom halfway through the year.	Full implementation of Liljedahl strategies from first day of the year. Almost every day (tasks, thin slicing). Worked a lot on routines and expectations (also employed video for this). 10 days of non-curricular tasks and then into place value. Used VNPSs in other subjects as well.
Student work	Individual whiteboards. Paper-pencil tasks. Used manipulatives.	.	Daily at the boards (used cards with answers on the back) and then levelled choices (CYU) in their notebooks (mild, medium, spicy). Focus on justifying thinking. Finds the notebook provides lots of information about student understanding.
Clarifying/ Consolidating			Consolidated at VNPSs and then moved to CYU questions.
Notes			Implemented notes to your future forgetful self for each topic in the unit. Started out

		fairly guided in the beginning, becoming more independent.
Homework		
Assessment	Written assessments.	Used the CYU in notebooks in addition to 1–2-page written assessments. Students allowed a notes page/cheat sheet for written assessments. A lot of work (self/group) assessing norms and expectations at VNPSs and of work.
Planning		Worked with Participant 6. They met once a week (Tuesdays) throughout the year to plan together plus spent several hours on their own creating tasks and materials. Participated in Year 2 group of 7-8 participants (3 meetings over the year).

Table 7

Participant 6 (Grade 5 Year 1, Grade 6 Year 2) – Interviewed in both years.

	Prior to BTC **Grade 5/6**	**Year 1** **Grade 5**	**Year 2** **Grade 6**
Classroom		Groups/Centers/Clusters of desks defronted.	
Instruction	Centers used – each group has a math menu with 2-ish must do activities for a 30 min. class. Lessons taught through center groups or full class.	Continued with centers (but not math menus). Began to implement lessons with VNPSs and CYU questions (mild, medium and spicy). (2X per week).	8/24 students experienced VNPSs the previous year with the teacher. Full implementation of Liljedahl strategies from first day of the year. Almost every day. A lot of

		Tried some thin slicing and banners.	thin slicing and larger curricular tasks at VNPSs.
Student work	Math Menus – 'Must do' activities (lesson with the teacher, find the error, etc.) and 'may do' activities once finished (e.g. sudoku, Esti-mysteries, which one doesn't belong, etc.). Collaborative or independent.	Began to implement Check Your Understanding (CYU) questions with levels – mild, medium and spicy.	Daily at the VNPSs and then levelled choices (CYU) in their notebooks (mild, medium, spicy), noted this helped identify struggling students and misconceptions. Also used Fullerton's Big 4 this year – 4 big questions on the topic (not leveled).
Clarifying/ Consolidating		Started some consolidation when trying VNPS tasks.	Consolidated at VNPSs and then moved to CYU questions.
Notes	Teacher directed.	Used scaffolded notes where notes were given and students found errors in problems. Also had students find their own examples.	Implemented notes to your future forgetful self for each topic in the unit. Started out fairly guided in the beginning, becoming more independent. Employed Liljedahl's four corners/quadrant note-taking method.
Homework	Did not assign homework		
Assessment	Written assessments for each grade (5 and 6).	Tried outcomes-based learning maps/checklists suggested by Liljedahl. Started to include leveled questions (mild, medium, spicy) on assessments.	Continued with leveled questions on written assessments. Students allowed a notes page they made on blank template. Students self-assess their group work skills.

Planning	Worked with Participant 10. They met once a week (Tuesdays) throughout the year to plan together plus spent several hours on their own creating tasks and materials. Participated in Year 2 group of 8-9 participants (3 meetings).

Overall, these tables illustrate the varying degrees of implementation and change among teachers in the BTC initiative. Some teachers dabbled in using the strategies, while others engaged in sustained, ongoing growth and change over the 2022–2023 and 2023–2024 school years.

Elements of the Initiative Effective in Changing and Sustaining Changes in Practice

Participants in the study identified many elements of the initiative that were effective in changing practice and supporting student learning, and that contributed to the continuation of changes in practice over time. Included in the effective elements were several factors related to support in the working environment, such as the support provided by peers (other Cohort teachers/coaches), the Numeracy Specialist, Numeracy Coaches in the division, administrators, and Liljedahl, himself (particularly when in-person). Additionally, participants found working in an environment with like-minded colleagues (colleagues in the same school or who were also part of the Cohort) especially beneficial (at sessions and in the Year 2 follow-up), although they noted that having a personal commitment to the process, including a willingness to spend hours of personal time to create tasks, plan and collaborate, was also important. Overall, teachers liked the accessibility of the online sessions, despite a few technology issues, and noted that the ongoing nature of the PD promoted change as is evident in the following statement: "I did like the idea of it being like a yearlong, kind of ongoing, ongoing process, as opposed to like, doing it one day, and then kind of, you know, forgetting about it, almost" (P5 Interview, Year 2). Finally, one of the participants noted that elements of crossover between other Critical Friends Model PD sessions (specifically one focused on developing an understanding of the 'numerate learner') were also helpful.

Barriers to Affecting Changes in Practice and Suggestions from Teachers

In addition to identifying effective elements of the model, teachers/coaches also identified several challenges/barriers to affecting and sustaining changes in practice. For example, Participant 1 noted that high school teachers were not included in the three Year 2 follow-up sessions offered to middle years teachers in the Original Cohort (minimizing their ability to continue with the support of colleagues). In addition, while participants understood the financial constraints in the division, they noted that it was much more beneficial to work with Liljedahl in person than virtually, due to technology glitches and the isolating nature of working online. Several participants, including the Numeracy Specialist and Continuous Improvement Coordinator, also acknowledged varying levels of buy-in from teachers, attributing this to a variety of factors such as complex classroom/working environments (e.g. challenging student behaviors, background gaps due to COVID, heavy

workloads, lack of substitute teachers to attend PD sessions, competing PD initiatives and service work, lack of time to collaborate with others, lack of access to colleagues in the same building to plan with, and lack of BTC-related resources/tasks), and individual teacher factors (e.g. lack of personal time to plan, and level of personal commitment, including a tendency to revert to traditional methods).

In analyzing the changes in practice evident in the interview data and the effective elements and barriers described by teachers alongside the literature on effective teacher PD, it is evident that the BTC Initiative (overall) aligned very well with many characteristics of effective PD. In particular, its alignment with the division's numeracy goals and other initiatives in the division (teachers spoke about crossover) was effective for teachers, as were both the collaboration with peers (or like-minded colleagues) and the ongoing nature of the PD (six sessions over the course of the year). Even though working with Liljedahl online posed some technical difficulties, the many sessions over the course of the year, supported by the leadership of the Numeracy Specialist and Continuous Improvement Coordinator, were described as effective by teachers consistently. As discussed in the next section, teachers also found the strong focus on student engagement and learning alongside the specific pedagogical strategies (actively) presented particularly effective, aligning with what is known about effective PD as well; and although teachers didn't explicitly speak about the scalability of the initiative, some were able to sustain significant changes in practice over time. Interviews with the Numeracy Specialist and Continuous Improvement Coordinator also described the division's plan to scale up the initiative at length, indicating that there were strong elements of scalability and sustainability built into the model.

Despite very strong alignment with what is known about effective teacher PD, there was still variance in terms of both the depth of changes in practice seen and the degree to which changes were sustained over time. These differences largely reflected individual circumstances (personal and/or in terms of classroom/school/divisional context). Table 8 outlines four primary influences on teachers' ability to make changes in practice and/or to sustain changes in practice over time (along with descriptions of how they were evident in the study data).

Table 8

Influences on Teacher Change.

Influence	Description
Personal Time	The two teachers (Participants 6 and 10) who engaged in robust growth and implementation of the Liljedahl strategies in year 2 of the study spent an incredible amount of their own personal time to keep the cycles of growth going. Teachers with small children at home or without the personal time to devote to this growth may not have been able to continue as effectively over time.
Personal Commitment	Some teachers in the project did not have a high level of commitment to the strategies they were exposed to. The reasons for this were varied (e.g. skepticism about the research, concern about student behaviour, being 'voluntold' to participate in the initiative rather than volunteering themselves). Those teachers who didn't have a high level of commitment were not able to continue with the strategies effectively over time.

Classroom Environment	Changes in teaching assignments altered teachers' ability to engage in ongoing, sustained change, as did the students and student behaviours. Teachers made decisions about how much to implement the practices based on perceived student needs. For example, one teacher interviewed in the first year (Participant 7) elected to use the strategies only for enrichment. In addition, positive student experiences (e.g. students in FG 2 who were the students of Participant 1) also fostered continuation of teacher changes in practice over time.
School/ Divisional Environment	The broader environment in the school/division also impacted what teachers were able to manage in terms of changes in practice. For example, competing initiatives impacted the Domain of Practice for some teachers (e.g. Participant 5) overtaxing their capacity for engaging in PD, for being away from the classroom, and for implementing new classroom strategies. This interrupted networks of growth and/or made ongoing growth difficult. Other divisional initiatives (e.g. PD related to developing a vision of the numerate learner) fed into the growth network as additional external information/stimulus, thereby fostering change/growth.

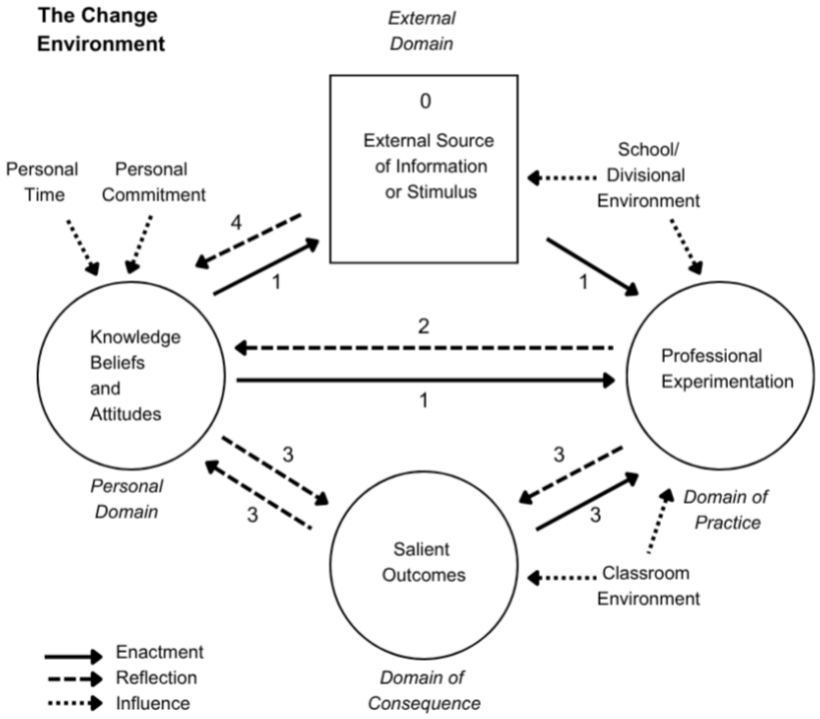
In terms of elements of effective teacher PD, these four influences impacted aspects of several of the elements, including: alignment with teacher goals, teacher accountability, the sustainability of both changes in practice and engagement with the PD/Initiative, and the amount of time that was available for ongoing learning. Such impacts decreased the effectiveness of the PD for individual teachers.

Illustrating Teacher Change with the IMTPG

As part of the second round of data analysis, Clarke and Hollingsworth's (2002) IMTPG Model was used to model/illustrate teacher changes in practice as described in the study data. The characteristics of the BTC Model, including the elements of effective PD it incorporated in its design, allowed for significant changes in teacher practice to take place; for improvements in student engagement, achievement, and sense of efficacy to occur; and for growth in teacher knowledge, beliefs and values to transpire. Such a change, along with the influences described in Table 8, could be illustrated using the IMTPG model as follows:

Figure 2

Changes in the BTC Initiative as Illustrated Using the IMTPG Model



The numbers superimposed on the IMTPG model in Figure 2 illustrate the change process (as evident in the study data) through what Clarke and Hollingsworth (2002) call *change sequences* and *growth networks*. Change sequences, according to Clarke and Hollingsworth (2002), can be described as follows:

> A change sequence consists of two or more domains together with the reflective or enactive links connecting these domains, where empirical data support both the occurrence of change in each domain and their causal connection. A change in one domain may not lead to a change in another. Where it does, we employ the term "change sequence." Such a change may be fleeting, a single instance of experimentation, quickly relinquished. (p. 958)

Participant 5's experience of trying out Liljedahl's strategies but relinquishing them except for during unit reviews is an example of a change sequence in which the *Domain of Practice* was temporarily changed, but in which the *Personal Domain* and *Domain of Practice* were not changed long-term. Growth networks, however, are more lasting in nature, according to Clarke and Hollingsworth (2002), and can be described in the following way:

> The term "growth" is reserved for more lasting change. This does not preclude a changed practice or belief from being further adapted or refined. Indeed, the adoption of a growth perspective conceives of change as ongoing. Where data have demonstrated the occurrence of a change that is more than momentary, then this more lasting change is taken to signify professional growth. A change sequence associated with such professional growth is termed a "growth network". (p. 958)

In the case of participants in the BTC Initiative (e.g. Participant 6 and 10), growth networks (through the processes of *enactment* and *reflection*) could be described by the numbers superimposed on Figure 2 as follows:

0. Participant reads Liljedahl's book and attends initial PD session(s)
1. Participant reflects on own knowledge, beliefs and attitudes about effective mathematics teaching and learning and implements the first toolkit in the classroom (utilizing both own understandings and the information gathered from Liljedahl's work).
2. Participants reflect on what they experience as they enact the toolkit, informing their knowledge, beliefs and attitudes about effective mathematics teaching and learning.
3. Participant observes/assesses student engagement and understanding of curricular outcomes, which impacts their next steps in practice and their knowledge, beliefs and attitudes about effective mathematics teaching and learning.
4. Participant accesses further information through additional PD sessions, own research, discussions with other teachers, collaboration, etc., and the cycle begins again (with new information/toolkits/knowledge)

It is important to note that the strongest growth networks, like the one illustrated by the number sequence in Figure 2**,** included accessing external information in a cyclical, ongoing way. It was important in the BTC project to not only have PD sessions over a year, but for teachers to continue learning through their own research, planning, discussion and reflection. The ongoing nature of the BTC initiative, along with its cyclical integration of new toolkits, fostered multiple, interrelated change sequences that created an environment in which growth networks could emerge. For those teachers who were able to continuously engage (e.g. Participant 6 and 10) over the two years (including spending significant amounts of their own time in between sessions), deep changes in practice resulted. For those who didn't have ongoing support for reflection and enactment in the second year (e.g. Participant 1), changes in practice were sustained but didn't necessarily grow further. And for those who were not able to continuously engage in cycles of enactment and reflection (e.g. Participant 5), little lasting change was possible. Personal and contextual influences, such as commitment to the initiative, personal time available outside of the sessions to continue the work, and classroom/school/division contexts, played a significant role in the robustness and sustainability of growth networks that supported lasting change.

Student Perceptions of Impacts on Engagement, Achievement and Efficacy

Impacts on student engagement, achievement and sense of efficacy in mathematics/science were evident in both student focus group comments and in the teacher/coach interviews. Table 9 (below) summarizes key themes found in student comments from the focus group discussions.

Table 9

Student Comments Related to Engagement, Achievement and Efficacy.

	Summary	Sample Student Comments
Engagement	Students found the BTC strategies engaging.	"When she first told us we were going to start working at the whiteboards and stuff, most of the people in our class didn't think it was going to be fun or anything. And then when we started it, it gets kind of fun. Like if she said, "No more whiteboards; We're not

		doing whiteboards anymore," I don't think any of us in this class would be happy" (Student 1, FG 1).
		"Booklets are boring, whiteboards are not boring" (Student 3, FG 1).
		"Yeah, because like it's generally like associated with a hard course, but [teacher] makes it fun and easy" (Student 1, FG 2).
		"It's [check your understanding questions] optional, so I'll do it. I don't know. It just makes me want to do it more" (Student 1, FG 2).
		"It's fun!" (Student 3, FG 3).
	The BTC strategies fostered connection between students.	"I just really like people telling me why they did certain things. You get to learn your board mates' . . . strengths and weaknesses" (Student 2, FG 3).
		"Everyone in the class mostly knows each other by this time because there is not one person you haven't . . . sat down beside in class, so it just helps the entire class just like get to know each other" (Student 3, FG 2).
Achievement	Students' comments about achievement were inconsistent. Some students (usually with high marks already) felt their marks were the same. One student in Physics noted Physics was their lowest mark. Some students felt they were doing better.	"Well, I always get the same 100%. . . But I study at school and also at home" (Student 5, FG 1).
		"My physics has, I'd say the same as last semester" (Student 3, FG2).
		"I have the lowest mark [92%] from all of my classes in physics class" (Student 4, FG 2).
		"I was mediocre at math, and I feel like I'm kind of better now" (Student 1, FG 1).
		"I used to be okay at math and now I'm a lot better [up 15-20%]" (Student 3, FG 1).
		"I feel like I'm doing way better than in the last physics class" (Student 2, FG 2).
		"[I did] 100% better. Doing that on a piece of paper was just a pain" (Student 4, FG 3).
Efficacy	Students felt safer to take risks in front of their peers.	"You can trust the other person to criticize you. You're open to their criticism, which is nice because now you know that, oh, I'm wrong and now I know the right thing" (Student 1, FG 3).
		"Because then if you make a simple mistake and they realize, then you don't get it wrong because you just made a mistake. Then they can correct you and help you learn it better" (Student 2, FG 3).
	Students indicated that working with their peers helped	**"**More working with friends. If you can try your best, you make mistakes, there's people who help you" (Student 5, FG 1).
		"We just learn better together" (Student 3, FG 1).

them learn math/science. Students felt capable of problem solving/engaging in thinking tasks in their classrooms.	"Honestly, we can figure this out together" (Student 2, FG 3). "This was a big difference [from other classes], but it wasn't that hard to get used to because you get to actually come to class, relax, and look at each topic on its own and see what you have to do to get better information" (Student 3, FG2).

In addition to student comments, teachers/coaches also described many ways in which they noticed improvements in student engagement, achievement and efficacy in mathematics/ science in both years of the study. Table 10 (below) identifies the frequency of teacher/coach perceptions of student improvements identified in the interviews conducted each year.

Table 10

Teacher/Coach Perceptions of Student Improvement.

Themes in Year 1 Interviews	Frequency	Themes in Year 2 Interviews	Frequency
Improved engagement	6	Improved engagement	3
Opportunities for success for students who may not traditionally have experienced success	5	Improved collaborative/problem solving culture	3
Increased confidence and risk-taking demonstrated	4	Students feel more successful	2
Improvements in social and/or collaborative skills	3	Improved awareness of own learning	2
Improved resilience/stick-with-it-ness/struggle	3	Program growth	1
Evidence of academic improvement	2	Culture of problem solving	1
Improved ability to show work/use mathematical notation	2	Dropping failure rates	1
Students traditionally demonstrating memorization/mimicking improved problem-solving skills	2		
Improved language (EAL) opportunities and skills	1		
Increased enrolment in high level courses (e.g. physics, advanced calculus)	1		

Discussion

As previously outlined, the BTC Initiative contained many elements of effective PD as outlined in the literature. What is interesting in the data is the variability of growth that occurred for the teachers interviewed. According to Clarke and Hollingsworth (2002),

> The context in which teachers work (the Change Environment) can have a substantial impact on their professional growth. The school context can impinge on a teacher's professional growth at every stage of the professional development process: access to opportunities for professional development; restriction or support for particular types of participation; encouragement or discouragement to experiment with new teaching techniques; and administrative restrictions or support in the long-term application of new ideas. (p. 962)

The impact of classroom/school/division contexts was evident in the interview data of several participants. For example, Participant 5 cited competing initiatives and changes in colleagues as negatively influencing their ability to make significant changes in practice. Participant 1 also noted a lack of colleagues to collaborate with in their school, tempering their ability to engage in robust growth. Further, Participant 7 elected to use Liljedahl's strategies only for enrichment purposes. This was done largely due to the way they and their colleague divided up the students in their classes (they worked with the stronger group). In these ways (and as illustrated in Figure 2), classroom context impacted both the *Domain of Practice* and the *Domain of Consequence*. Similarly, school and divisional context influenced both the *External Domain* (stimulating growth) and *the Domain of Practice* (when teachers made choices about whether or how to engage with the strategies shared).

In addition to the influence of context on teacher change, personal circumstances also profoundly impacted teachers' ability to engage in growth networks and sustained changes in practice (through the *Personal Domain*). The personal time teachers had available to work on changes in practice and their commitment to the PD and implementing new pedagogical strategies were significant factors. Those teachers who had significant personal time and were committed to the process (i.e. Participants 6 and 10) were able to engage in robust growth and change. Those who did not experienced decreased impacts on practice.

In terms of the BTC Initiative and the school division involved in the case study, these findings suggest that several factors should be considered when recruiting teachers in their Critical Friends initiatives. First, the classroom environment of teachers, including their student makeup, should be considered. For participants in the study, additional sessions on topics such as problematic behaviours, attending to diversity in learning styles, and addressing background holes due to the COVID-19 pandemic would have been helpful. Moreover, attention should be paid to ways of fostering opportunities for collaboration within schools (such as recruiting teachers in pairs/teams), and ways of avoiding competing initiatives. Finally, the personal commitment of teachers to making changes in practice and the amount of personal time they have to engage in such change are of critical importance. Interviewing teachers prior to having them sign up to assess these factors could be helpful, as could clear expectations about engagement, ongoing support and encouragement. Moreover, finding ways to increase time provided for teachers to engage in the work of change (e.g. follow-up sessions or additional time to plan and create) could decrease the burden on the personal time of teachers, making PD more accessible.

In terms of what is known about effective teacher PD, the findings from the study highlight the importance of personal and contextual factors in supporting and sustaining changes in teacher practice. While the BTC Initiative checked many of the boxes in terms of what is known about effective teacher PD; and although the initiative resulted in significant changes in practice for some teachers and positive perceptions of student engagement, achievement and efficacy; the success of the BTC project for individual teachers came down to the contexts in which they worked, their personal commitment to the initiative, and the time they had available to engage in the difficult work of change.

Limitations and Future Directions

While the findings of this case study are limited due to the nature of the case study, making it impossible to extrapolate findings to PD in other contexts, they do call into question what can be done to strengthen the positive (and minimize the negative) influences of personal and contextual factors on teacher change. Others providing teacher PD that checks many (or all) of the boxes in terms of what is known about effective teacher PD may want to pay close attention to these factors to help support teachers, thereby optimizing individual teacher change. Future research in the areas of teacher motivation and decision-making around changing practice may be helpful to understand how best to support teachers. Moreover, further analysis of the personal and professional time spent engaging in changes to practice, as well as effective strategies for carving out more time in the professional lives of teachers, could also be helpful in both improving the effectiveness of PD initiatives and the individual success of teachers making robust and sustained changes in practice.

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Belonging, Community, and Preparedness: Teacher Experiences of Working and Living in Northern Manitoba

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Abstract

Recruitment and retention of teachers remain persistent challenges for school divisions in northern Manitoba. This qualitative study examines the experiences of teachers new to working and living in northern Manitoba, with attention to recruitment, retention, preparedness, and sense of belonging. Findings highlight the central role of professional and social connections in shaping teachers' early experiences and influencing decisions to remain in the region. The study also advances a conceptual understanding of what it means for teachers to 'feel at home' in their profession, demonstrating that this experience has multiple, interconnected personal and professional dimensions. Recognizing these varied needs has important implications for recruitment, preparation, and retention strategies in northern and remote contexts.

Keywords: sense of belonging, northern Manitoba, teacher preparedness, teacher recruitment, teacher retention

Belonging, Community, and Preparedness: Teacher Experiences of Working and Living in Northern Manitoba

Teachers transitioning to new schools and communities frequently encounter challenges related to isolation, professional identity, workload, and integration into school culture (Anhorn, 2008; Hellsten et al., 2011; Kutsyuruba et al., 2014). These challenges are often intensified in remote and northern contexts, where limited resources, geographic isolation, and overlapping professional and personal roles can contribute to stress and early-career attrition (Bjorklund, 2023; Wotherspoon, 2008). In northern Canada, teacher retention remains a persistent concern (Greenslade, 2023; Kutsyuruba et al., 2014).

In Manitoba, northern school divisions continue to struggle to recruit and retain qualified teachers despite financial incentives and targeted recruitment initiatives (Greenslade, 2023; Manitoba Teachers' Society, 2021). While signing bonuses and salary incentives may support initial recruitment, they reportedly have a limited impact on long-term retention (Kitchenham & Chasteauneuf, 2010; Walker, 2024; White, 2019). Teachers who relocate to northern or remote communities may experience culture shock, limited access to professional development, and assignments outside their areas of specialization, which can further complicate their adjustment to their new roles (Hellsten et al., 2011).

Despite a somewhat growing body of research on teachers' experiences in northern Canada (Bowman, 2018; Danyluk & Sheppard, 2015a; Kitchenham & Chasteauneuf, 2010; Walker, 2024), there is less research on teachers' experiences in northern Manitoba specifically (Janzen, 2019), and to date, no research on larger northern centres such as Thompson. Thompson, located on Treaty 5 Territory, serves as an important regional hub for education, health care, and other services in northern Manitoba. Although it arguably offers more amenities than many surrounding communities, it continues to face substantial challenges related to teacher recruitment and retention (Greenslade, 2023).

This qualitative study explores the experiences of teachers new to working in Thompson, Manitoba, to better understand how to improve recruitment and retention strategies in Northern Manitoba. More specifically, this study addresses the following research questions:

1. What challenges do teachers new to northern Manitoba experience?
2. How do teachers new to northern Manitoba experience belonging within their schools and the broader community?
3. In what ways are teachers prepared to live and work in northern contexts?
4. What factors influence teachers' decisions to remain or leave northern Manitoba?

By examining teachers' sense of belonging, preparedness, and perspectives on the challenges they face, this study makes an important contribution to the growing body of research on recruitment and retention in northern Canada. Understanding how new teachers navigate northern communities through a lens of belonging may inform recruitment practices, induction programs, and professional support systems to strengthen educational sustainability in northern Manitoba.

Literature Review

This literature review aims to present and critically discuss previous research that has laid the groundwork for this study. It is organized into three thematic sections aligned with the research topics. The first section highlights the experiences of teachers working in northern and isolated communities in Canada. As noted earlier, research on teachers' experiences in northern Manitoba is sparse. Therefore, the scope was extended beyond Manitoba's borders to other provinces, territories, and rural parts of Canada, from which relevant experiences can be drawn in similar contexts. Relevant research outside Canada was also examined. The second section explores a sense of belonging in teaching, which has been understudied until recently. The final section highlights teacher preparation for working in northern Canadian communities, focusing on Manitoba's education programs, given the limited available research.

Teaching in Northern Communities of Canada

Kitchenham and Chasteauneuf's (2010) longitudinal study in British Columbia, Alberta, the Yukon, and the Northwest Territories laid important groundwork by documenting and underscoring chronic staffing shortages in northern Canada. Although Manitoba was not included in their research, this work elaborates on pertinent issues teachers may face in the more northern and isolated regions of our country. Kitchenham and Chasteauneuf's research on northern Canada focuses on external issues that teachers may encounter, such as a lack of professional development and teaching outside one's area of expertise. However, more recent research has adopted a different approach in examining not only the challenges encountered by teachers working in northern or remote Canadian communities, but also the emotional aspects of relocating to a new community and the motivations for staying or leaving (Janzen & Cranston, 2015).

Janzen and Cranston (2015) assert that recent studies are insufficient in representing the complexities of teacher career choices. Their emphasis on community integration and the emotional and social needs of teachers helped inspire and lay the groundwork for this research. Janzen and Cranston also recognize that much of the existing literature and discourse on teaching in the North is positioned within metropolitan-centric views and can hold negative assumptions and misunderstandings about the North. This acknowledgment is important and, as an educator originally from northern Manitoba, is appreciated. The way in which teaching is framed in northern and rural locales is crucial, as 'deficit' views perpetuate inequities. White (2019) urges that teacher education should expand beyond the perspective of 'classroom-ready' to 'community-ready.' Looking towards the benefits of teaching in contexts different from our own is a helpful reframing.

Important insights emerge from rural literature, since northern and rural communities often face similar challenges in recruitment and retention (Hellsten et al., 2011; Saunders, 2022; Walker, 2024; White, 2019). However, the assumptions about what it means to reside in a rural Canadian environment differ greatly from those about living in Canada's North. Although certain parallels can be drawn from northern and rural literature—such as deficit narratives—it is important to recognize that these regions are distinct (Janzen, 2019). What it means to live North of the 53rd parallel differs greatly from living in a rural setting outside a large urban centre. While rural literature offers useful parallels, it ultimately reveals a gap: the North remains underexamined as a distinct context, particularly in relation to teachers' lived experiences and sense of belonging.

Sense of Belonging in Teaching

Belonging has been conceptualized as a fundamental human need that supports psychological well-being, identity development, and motivation (Allen, 2020; Baumeister & Leary, 1995; Maslow, 1968). In school contexts, research has traditionally focused on students' belonging (Falkenberg & Heringer, 2024; Filstad et al., 2019); however, emerging studies indicate that teachers' sense of belonging is equally significant (Allen et al., 2025; Bjorklund, 2023; Özdogru, 2022; Wator et al., 2025) and often predicts a student's sense of belonging (Allen, 2020). Recent research (Allen et al., 2025; Bjorklund, 2023) also reports that collegial relationships and leadership practices shape a teacher's sense of belonging, findings that *this* research further reinforces.

Allen et al. (2025) propose that there are interrelated factors which promote a teacher's sense of belonging. To further explore this, a conceptualization of what it means to 'feel at home' was developed from this study (Figure 1), which examines the multiple needs of teachers in a northern context. While analyzing the interview data, it became evident that teachers' needs span many levels that must be addressed for them to feel at ease in their work. Teaching in a northern environment adds a unique layer to this, which has not been explored in previous studies.

Teacher Preparation for the North

Teacher education programs are responsible for preparing teachers to work in diverse geographic settings, yet many education programs in Canada remain urban-centric (Janzen, 2019; White & Reid, 2008). It therefore seemed worthwhile, in this study, to examine current field experience options for teacher candidates living in southern Manitoba. Accordingly, the 2025-2026 practicum handbooks for the University of Manitoba, University of Winnipeg, and Brandon University were reviewed. The University of Manitoba handbook is the only one that clearly offers northern practicum options with financial support, though this support is not guaranteed. Unsurprisingly, northern communities struggle with recruitment and retention when university students are not guaranteed diversity in their practica (Kutsyuruba et al., 2014). Facilitating and encouraging northern practicum options would improve teacher candidates' understanding of the North, expose future teachers to other career options, and help retain quality teachers in northern communities (Brandon, 2015; Janzen, 2019).

Choosing a teaching position in northern Manitoba means living in an area home to a large Indigenous population, including First Nations, Métis, and Inuit peoples (Janzen, 2019). Recognizing the North as an area of Canada with unique cultural and historical elements is important. Teacher candidates need to understand the region's diversity and would benefit from specific, meaningful preparation for this distinct northern culture (Danyluk & Sheppard, 2015b). Janzen (2019) asserts that teacher candidates having access to and proper preparedness for northern practicums is a starting point for addressing the inequities of student learning in the North. However, she acknowledges that simply offering northern practica options is insufficient. Teacher candidates need to be culturally prepared. Danyluk and Sheppard (2015b) argue that Indigenous-centred education programs can effectively prepare teacher candidates to work and live in northern and rural communities in Canada with larger Indigenous populations. Their research on Laurentian University's education program demonstrates the importance of teacher candidates building relationships with rural and Indigenous communities throughout their program. Programs such as Teach for Canada have sought to address staffing shortages through accelerated training models, yet critics argue that such approaches risk reinforcing colonial and deficit-based narratives

(Canadian Teachers Federation, 2015). The literature is clear that adequate preparation for teaching in rural and northern communities is essential, and that reshaping how teacher candidates are prepared may be imperative.

Methods

This section outlines the methodological approach guiding the study. It begins with an overview of the theoretical and conceptual framework, including the study's grounding in belonging and the emergent concept of 'feeling at home in teaching'. The research design is then described, followed by details on participant recruitment and characteristics. The remaining sub-sections describe data collection procedures and the processes used for data analysis and management. Finally, ethical considerations are addressed.

Theoretical and Conceptual Framework

This study explores the experiences and preparedness of teachers new to working in Thompson, Manitoba, with the aim of informing recruitment and retention strategies in northern communities. It addresses four research questions: (1) What challenges do teachers new to northern Manitoba experience? (2) How do teachers new to northern Manitoba experience belonging within their schools and the broader community? (2) In what ways are teachers prepared to live and work in northern contexts? and (4) What factors influence teachers' decisions to remain or leave northern Manitoba?

Theory of Belonging and 'Feeling at Home in Teaching'

Belonging has been defined and operationalized differently across studies (Allen et al., 2021). Despite needing more consistency and conceptual clarity in defining belonging, there are commonalities across perspectives and studies. One commonality across studies is that an individual's sense of belonging is often tied to their perception of a chosen group or place (Allen, 2020; Allen et al., 2025; Bjorklund, 2023; Mahar et al., 2014). Beyond social belonging, a connection to *place* and culture is also essential to recognize (Allen et al., 2025; Janzen & Cranston, 2015). For this study, the exploration of belonging focuses on one's relationship to community: the workplace community (Bjorklund, 2023) and the broader community—to place (Janzen & Cranston, 2015). Teachers' relationships within their school community and the broader community of Thompson, Manitoba, were explored.

Although research is beginning to burgeon regarding belonging for teachers (Allen et al., 2025; Özdogru, 2022; Wator et al., 2025), more could still be known (Bjorklund, 2023; Pesonen et al., 2021; Skaalvik & Skaalvik, 2011), especially while examining certain regions of Canada that struggle with retention. Highlighting a teacher's *sense of belonging* has yielded unique results in the northern context of this study. What started as an exploration of a teacher's sense of belonging in Thompson evolved into a broader exploration of not only what it means to belong but to 'feel at home' in the teaching profession.

Research Design

This qualitative study was guided by a constructivist paradigm, emphasizing participants' subjective meanings and socially situated experiences (Creswell & Creswell, 2018). This approach was well-suited to exploring teaching experiences within a small northern community characterized by distinct social, cultural, and historical contexts.

Participants and Recruitment

An invitation to participate in this study was sent to school principals at the six elementary schools and one high school in Thompson, who then distributed it to their teachers. Interested teachers contacted me directly. Four teachers met the inclusion criteria: they were new to teaching in Thompson, Manitoba, though not necessarily new to the profession.

The group of participants included three elementary teachers (middle years) and one high school teacher, representing a range of experience levels and backgrounds. Two participants were in their first year of teaching, while the other two had prior teaching experience in Canada or internationally. The group included two male and two female participants.

Given the study's origins as graduate research, a small sample size was intentionally maintained to allow for in-depth exploration of participants' experiences. Participant characteristics are summarized in Table 1:

Table 1

Background Information of Participants.

Participant	Years of Experience Teaching	Grades Taught in Thompson
Participant A	First year	Middle Years
Participant B	First year	Senior Years
Participant C	Fourth year	Middle Years
Participant D	Seventeenth year	Middle Years

Data Collection

Data were collected through individual semi-structured interviews conducted via Microsoft Teams between May and June 2025. An interview guide with open-ended questions was used to explore participants' experiences of belonging, preparedness, recruitment, and retention. Interviews lasted approximately 50–60 minutes, were audio- and video-recorded with consent, and were transcribed verbatim. Participants were provided with the opportunity to review their transcripts for member checking, and they were invited to clarify or amend their responses.

Data Analysis and Data Management

Data were analyzed using thematic analysis informed by In Vivo coding (Chase & Martin, 2021), which emphasizes participants' own language. Transcripts were reviewed iteratively to identify recurring patterns related to preparedness, belonging, recruitment, and retention. Although belonging and preparedness were not initial focal themes, they emerged as central during analysis and were informed by existing literature (Allen et al., 2025; Bjorklund, 2023).

Recordings were stored on the UM network drive during this study. The interview data were kept confidential using pseudonyms (participants A, B, C, D), and the schools were not named individually. A code list connecting the actual names to the pseudonyms, along with the Microsoft Teams interview recordings, was kept securely on the UM network drive. Names and identifying information about individuals or schools were removed from the transcript as an additional step to safeguard confidentiality. Recordings were conducted via Microsoft Teams, stored on the UM network drive, and deleted at the end of August 2025 after transcription.

Ethical Considerations

All participants provided informed consent and were assured of confidentiality and the right to withdraw before data aggregation. Pseudonyms were used, and identifying information was removed from transcripts. Ethical approval was obtained from the University of Manitoba Research Ethics Board, and institutional permission was secured from the participating school division.

Findings and Discussion

This section presents an integrated analysis of findings in relation to the existing literature, organized around five interconnected themes: recruitment, sense of belonging, preparedness, challenges, and retention. These themes align with the study's guiding questions, addressing the challenges teachers face in northern Manitoba, how they develop a sense of belonging within their schools and communities, how they are prepared for northern contexts, and the factors that influence their decisions to remain or leave. Although discussed separately, these dimensions were experienced as overlapping and mutually reinforcing in participants' accounts. Collectively, they reveal that teacher retention in northern contexts is not driven by a single factor but by an evolving process through which teachers come to 'feel at home' in their professional and community lives.

Recruitment to Thompson

Across all four interviews, recruitment was relational. It was not primarily job postings or financial advertisements that persuaded these teachers—it was people. This aligns with broader research on northern recruitment, which implies that decisions to teach in northern communities are often influenced by social and emotional considerations rather than financial ones alone (Janzen & Cranston, 2015; Kitchenham & Chasteauneuf, 2010). In this study, teachers were more willing to relocate when they could imagine connection and support waiting for them.

For Participant B, siblings already living in Thompson spoke positively about life in northern Manitoba and encouraged her to join them. Her earlier experience substituting in the community during the summer months also strengthened her comfort with returning. She reflected that she was "blessed with connections" and that these relationships helped root her decision. Participant C, a newcomer to Canada, also had family living in Thompson, which eased his relocation and reduced some of the uncertainty associated with moving to a new country and region.

Participant D's pathway was different but equally relational. After struggling to secure stable employment in Toronto, where positions were often part-time or substitute-based, he accepted a position in Nunavut before eventually moving to Thompson. He learned about opportunities in Thompson through a friend already working there. A simple conversation—"they were looking for teachers"—led him to contact the superintendent directly. This informal connection became the bridge to formal employment.

Participant A did not initially have family in Thompson, but she described being deeply influenced by conversations with professors and others who encouraged her to view teaching in the North as an opportunity for growth. That encouragement reframed the move as a possibility rather than a risk. She also acknowledged that finding a position in her specialty area closer to home would have been difficult, which made her more open to stepping outside her comfort zone.

As confirmed through previous literature (Kitchenham & Chasteauneuf, 2010; Walker, 2024; White, 2019), financial incentives did play an initial role, particularly the $4,000 moving

allowance, which was described as 'attractive' by Participant D. Participant D acknowledged that financial compensation helped offset the sacrifices involved in moving north—distance from family, climate, and fewer amenities. However, these incentives were not described as decisive in and of themselves. Rather, they functioned as practical support layered onto an already relational decision. The financial bonus made the move feasible, but it did not make it meaningful. This aligns with White's (2019) assertion that financial incentives are not enough to attract teachers to certain locations.

An important pattern emerges when recruitment is considered alongside belonging and retention. For three participants, prior relationships with people in Thompson eased their early adjustment and likely contributed to their initial sense of belonging. Even before arriving, they had a connection—someone who spoke positively about the community or personally encouraged them. Recruitment shaped teachers' initial sense of belonging.

Sense of Belonging

How did the participants of this study experience a sense of belonging within their schools and the broader community? As identified in the literature, belonging is a fundamental human need (Allen, 2020; Maslow, 1968) that significantly influences well-being, mental health, and decision-making (Allen, 2020; Baumeister & Leary, 1995). The experiences shared by participants in this study strongly reinforce the importance of belonging, particularly within the immediate school environment, as teachers navigated both professional and personal transitions in a northern context.

All participants emphasized that collegial relationships were foundational to their sense of belonging within their schools. One teacher explained, "I work in a good environment with seven other teachers in my department. I feel a sense of community in my department." Another similarly noted, "I get along really, really well with my department, and we hang out and have made friends with teachers from other schools." Across interviews, supportive colleagues and administrators were described not as incidental benefits, but as essential to feeling settled and accepted.

The importance of administrative support also emerged clearly. One participant reflected, "The support didn't just stop after being hired," explaining that administrators checked in regularly throughout the year. Another shared, "No one will turn you down or not welcome you." These comments illustrate how belonging was not confined to informal peer relationships but was reinforced structurally through leadership practices. This finding aligns with Allen's (2020) assertion that the quality of a teacher's relationship with their principal significantly shapes their sense of belonging. In one case, a participant's decision to accept a position in Thompson was influenced by a positive and welcoming interview experience: "Just from doing the interview, I think maybe that sold me… speaking to the principal and the previous vice-principal… made me feel like, 'Wow, I want to work with these people.'" This early interaction in building relational trust demonstrates how the seeds of belonging can begin to form even before formal employment starts.

While literature on northern education often emphasizes the importance of a "relationship to place" and broader community integration (Janzen & Cranston, 2015), participants in this study primarily located their sense of belonging within their school communities. As participants acclimated to life in Thompson, the immediate professional environment appeared to act as a crucial anchor. Conversations about belonging consistently centred on relationships with colleagues and administrators, rather than on external community connections.

At the same time, some participants described belonging as an active process. One teacher explained that stepping outside her "comfort zone" by attending teacher events, socializing with colleagues, and participating in recreational sports was essential: "It's gonna be what you make it… If you don't kind of push yourself outside of your comfort zone, it's going to be lonely." Although she acknowledged feelings of homesickness, she ultimately concluded, "It ended up working out a lot… I'm OK." This reflects Johnston and Dewhurst's (2021) framing of belonging as an "act of doing" and aligns with Danyluk and Sheppard's (2015a) findings that intentional engagement can accelerate integration in northern contexts. Belonging was not entirely passive; it required participation, vulnerability, and effort.

For one participant transitioning to Canada, belonging was initially complicated by cultural shock and distance from family. However, the openness of students and staff played a critical role in easing that transition. He recalled a student interacting with him on his first day, "as if he knew me for a long time," and repeatedly emphasized the supportive nature of the school board office staff, describing them as treating him "like you are totally… familiar with them." These experiences highlight the interpersonal dimension of belonging identified by Allen (2020): feeling recognized, welcomed, and accepted within relational spaces.

For teachers new to Thompson, belonging was primarily cultivated within the school community. While all teachers experienced belonging differently within their school and broader community, strong collegial and administrative relationships seemed to buffer against other stressors associated with relocation, cultural adjustment, and geographic isolation (Skaalvik & Skaalvik, 2011). Broader community integration improved belonging for some participants, though it was not a priority for all.

In northern Manitoba, where recruitment and retention remain ongoing challenges, fostering relationally rich school environments may be one of the most impactful ways to support new teachers. Belonging, as demonstrated in this study, is not incidental—it is foundational.

Preparedness

Teacher preparedness emerged as a complex, layered theme, revealing significant gaps between formal teacher education and the lived realities of teaching in Thompson, Manitoba. Most participants reported feeling culturally underprepared to work in a northern context. These findings align with research indicating that Canadian teacher education programs remain largely urban-centric (Janzen, 2019; White & Reid, 2008), often leaving candidates insufficiently prepared for the cultural, environmental, and social dynamics of northern communities.

Three participants, regardless of background, stated that they did not feel culturally prepared to teach in Thompson. One participant reflected, "My university integrated Indigenous perspectives, but it doesn't quite prepare you for what's in person." Although Indigenous content had been included in coursework, it did not fully equip her for the lived reality of working in a community where Indigenous traditions were embedded in daily life. She contrasted this with her prior experience in a predominantly white community, where land acknowledgments felt more symbolic than integrated. This reflects Janzen's (2019) concern that including Indigenous content in teacher education may not be sufficient if it does not meaningfully prepare teachers for the relational and contextual realities of northern Indigenous communities.

Another participant similarly noted, "I didn't feel prepared through university, more so, just through, you know, people talking and the news." Her perceptions of the North had been

shaped in part by media portrayals, contributing to apprehension and uncertainty. She acknowledged that during her degree, she would have felt "very, very scared" at the idea of completing a practicum in the North—if one had been offered—due to distance isolation, and lack of connection. Although both Canadian-trained participants indicated they were generally pedagogically prepared, their concerns centred more on cultural unfamiliarity and the social-emotional adjustment required when relocating.

Preparedness also intersected strongly with prior experience. One participant, who had previously taught in Nunavut, described his initial move to northern Canada as "kind of shocking," particularly adjusting to extended periods of darkness. He had not anticipated how environmental factors, such as prolonged winter nights, would affect both his own well-being and student learning. However, by the time he relocated to Thompson, he felt relatively adaptable, stating, "I've experienced a lot of different situations… I've learned to adapt and change." For this participant, prior northern experience functioned as a preparatory bridge, reducing the intensity of adjustment and limiting the support he required during his transition.

In contrast, the participant who was newest to Canada faced a multi-layered transition. His adjustment involved not only adapting to a northern and Indigenous context but also learning the mechanics of Canadian pedagogy. He proposed that beginning as a substitute teacher or educational assistant might have eased his transition: "If you work as a sub or an educational assistant, then you will learn a lot from the teacher. If you work as a permanent teacher directly, you have to learn a lot. You have to face a lot of challenges." His experience illustrates how preparedness cannot be understood as a single dimension. For internationally trained teachers, professional, cultural, and personal transitions occur simultaneously, intensifying the complexity of the first-year experience.

The findings reveal a gap between theoretical preparation and practical readiness for teaching in the north. While universities may provide foundational pedagogical training and incorporate Indigenous perspectives, participants' experiences suggest that authentic exposure to northern contexts remains limited. The absence of northern practicums—often restricted due to logistical challenges—contributed to uncertainty and apprehension. Without direct experience, candidates may rely on media narratives or second-hand accounts, which can distort perceptions and heighten anxiety.

Challenges

Participants described a range of personal and professional challenges during their first year in Thompson, reflecting differences in background, experience, and prior exposure to northern contexts. Several participants identified climate as an initial difficulty, particularly the length and severity of winter. Participant C, a newcomer to Canada, explained, "First of all, it's very cold… the second one is cultural difference." Participant B similarly noted that "winter as a whole was long."

After adapting to environmental conditions, participants described challenges related to professional identity, pedagogical adjustment, and personal well-being. Participant A emphasized that her primary concerns were connected to her status as a beginning teacher rather than to northern living. She reflected, "I was worried about what my colleagues thought of my teaching," noting that these concerns were unwarranted and diminished over time.

For Participant C, who was new to both teaching in Canada and the local community, professional and cultural challenges were closely intertwined. He described learning classroom management and pedagogical practices within an unfamiliar educational system, stating, "I didn't have any kind of experience of the Canadian education system." He also observed that other internationally trained teachers faced similar difficulties and emphasized the importance of mentorship from experienced colleagues. These professional challenges were compounded by geographic distance from family, contributing to feelings of isolation: "I miss my family a lot… It's kind of a feeling of isolation." As Canada continues to welcome an influx of internationally trained teachers, we must find a way to support them so they thrive, not just survive.

In contrast, Participant D, who had several years of teaching experience and prior experience teaching in Nunavut, reported fewer instructional challenges. Instead, his concerns centred on community and lifestyle factors, including limited transportation options, access to culturally familiar food, and the cost and distance associated with travel. He explained, "If I want to get out of Thompson, it's not as easy as it might seem… you'll need a heavy wallet."

Participants' challenges reflected shifting needs across career stages and personal circumstances. For less experienced teachers and those new to Canada, challenges are centred on pedagogical adaptation, classroom management, and cultural adjustment. For more experienced teachers, concerns were more closely tied to lifestyle, mobility, and community integration. As teachers gain professional confidence and cultural familiarity, the nature of their challenges evolves, with broader community and quality-of-life factors becoming increasingly salient.

Retention

Teacher retention in Thompson cannot be understood as a uniform or static outcome. Rather, it emerged in this study as a dynamic process shaped by teachers' backgrounds, prior experiences, cultural familiarity, and evolving personal goals. While all four participants expressed intentions to remain teaching in the North for the upcoming school year, their long-term trajectories revealed more complex considerations, including family proximity, professional aspirations, and lifestyle preferences.

In the short term, the findings paint an encouraging picture. Each participant described generally positive experiences living and working in Thompson and planned to continue teaching in northern Manitoba. This immediate retention appears closely linked to the strong sense of belonging cultivated within their schools. Supportive colleagues, welcoming administrators, and inclusive school cultures helped teachers feel settled and capable in their roles.

However, long-term retention was shaped by broader life considerations. Two participants expressed intentions to eventually move closer to family. Participant A anticipates returning to Winnipeg to pursue a master's degree and reconnect with friends and relatives. Participant D envisions returning to his home country to be closer to his mother, though he emphasized that if he were to remain in Canada, he would stay in Thompson. Participant B expressed curiosity about exploring larger communities with additional amenities. These reflections suggest that retention is influenced not only by professional satisfaction but also by life stage, relational ties, and long-term identity formation.

The advice participants offered to the school division further illuminates the conditions that support retention. Participant D explained, "If you hire somebody and put them here, you should not assume they are OK because not everybody will come forward and say, I need help." He

stressed the importance of proactive support and attention to teacher mental health, noting the risk of burnout if needs go unnoticed. A couple of participants also recommended creating newcomer-specific gatherings specifically for newcomers to Thompson. Participant C explained: "When you meet the new people who are also new to the place, then you feel like you are not alone. You can share your feelings that they may also feel." The participants acknowledged many opportunities for teacher socialization through events organized by the local teachers' union; however, they remarked that they felt overwhelmed by meeting only 'veteran' teachers at these gatherings.

The significance of mentorship also emerged. A participant who had not previously taught in Canada noted that structured opportunities to work alongside experienced teachers would ease the adjustment, particularly in areas such as classroom management. Although the division had recently introduced a mentorship initiative, not all participants were aware of it or eligible to participate. This gap suggests that access, communication, and criteria for support programs may influence their effectiveness. Tailored mentorship that accounts for varied entry backgrounds may strengthen both confidence and long-term commitment.

Participants also highlighted the importance of community integration. Recommendations such as offering guided tours of the town, increasing school division visibility at out-of-province career fairs, and encouraging extracurricular involvement underscore the relational nature of retention. Teachers who built connections beyond their classrooms described feeling more rooted and less isolated. Two participants advised new teachers to "put yourself out there," emphasizing that engagement in sports, music, or community events deepened their attachment to the North.

Teacher retention cannot be understood as a one-size-fits-all issue. Instead, participants' experiences were shaped by interconnected needs influenced by prior experiences and cultural familiarity. Teachers who completed their education in Canada did not need to adjust to a new pedagogical system; their challenges were more often related to classroom management, emotional well-being, and long-term career considerations. In contrast, participants who immigrated to Canada navigated a broader range of challenges, including adapting to an unfamiliar educational system, learning new cultural norms, and developing classroom management practices, all while managing the practical realities of settling into a new community.

These layered experiences highlight the need for supports that are both flexible and responsive. Approaches to retention that acknowledge the varied ways teachers come to feel at home in their profession are more likely to address their needs and encourage long-term commitment.

'Feeling at Home in Teaching'

The conceptual model presented in Figure 1 below emerged directly from the themes and experiences shared by participants throughout the interviews. While the above findings were organized into the broad discussion themes of recruitment, preparedness, belonging, challenges, and retention, the five overlapping areas in the model below represent the underlying conditions that participants described as shaping whether they came to feel "at home" in teaching in northern Manitoba. These conditions included basic external needs, cultural and contextual adaptation, pedagogical confidence, sense of belonging, and professional growth. Rather than being experienced independently, participants described these areas as interconnected and continually influencing one another throughout their personal and professional adjustment to northern life and teaching. This overlapping structure of the model reflects the fluid, relational, and evolving nature of these experiences.

Figure 1

'Feeling at Home in Teaching'

1. **Basic External Needs**: Housing, transportation, winter clothes
2. **Cultural & Contextual Adaptation:** Understanding northern and Indigenous contexts, adjusting to local norms.
3. **Pedagogical Confidence:** Curriculum familiarity, classroom management, student engagement
4. **Sense of Belonging:** Supportive colleagues, inclusive school culture, community connection
5. **Professional Growth:** Mentorship, leadership opportunities, advanced education

The above figure illustrates an interconnected model of what it means for teachers to feel at home in their profession**.** Rather than representing teacher needs as a linear or hierarchical progression, this model reflects the overlapping and relational nature of the experiences shared by participants in this study. At the centre of the figure is the concept of 'feeling at home in teaching,' surrounded by five interrelated areas of need: basic external needs, cultural and contextual adaptation, pedagogical confidence, sense of belonging, and professional growth. Together, these areas reflect the conditions that supported teachers as they navigated their personal and professional lives in northern Manitoba. This model could perhaps be applied to other teaching contexts.

The circular and overlapping nature of the figure emphasizes that these areas do not operate in isolation. Rather, they continually interact, reinforcing one another in ways that help a teacher feel settled, supported, and committed to the profession over time. For example, when basic external needs such as stable housing or reliable transportation are unmet, teachers may find it

more difficult to fully engage in their professional roles or invest in relationships within the school community. Similarly, pedagogical confidence is often strengthened through a sense of belonging, as supportive colleagues and administrators provide guidance, reassurance, and opportunities for collaboration. Feeling accepted within a school culture can, in turn, encourage teachers to take professional risks, seek mentorship, and pursue leadership opportunities that support ongoing professional growth.

Cultural and contextual adaptation intersects with all other areas of the model. As teachers develop a deeper understanding of northern and Indigenous contexts, they often feel more confident in their teaching practices and more connected to their communities. This understanding supports stronger relationships with students and colleagues, reinforcing a sense of belonging and purpose. Professional growth is also shaped by these interactions, as teachers who feel culturally grounded and professionally supported are more likely to envision a future for themselves within their school division. The figure illustrates that 'feeling at home in teaching' is not achieved by any single factor but by the ongoing interaction of personal, cultural, and professional supports that collectively sustain teacher well-being, engagement, and retention.

Implications

The findings of this study offer several implications for educational institutions, school divisions, and future research concerned with teacher recruitment and retention in northern contexts. Viewing participants' experiences through a lens of belonging highlighted the relational and contextual factors that shaped how teachers adapted to living and working in northern Manitoba. The following sub-sections outline practical considerations for supporting teachers in northern communities and identify areas where further research may deepen understandings of belonging, preparedness, and retention in the North.

Implications for Practice

Teacher recruitment and retention in northern Manitoba are shaped by many interconnected factors. Rather than viewing recruitment and retention as isolated challenges, institutions may benefit from considering how teachers come to feel at home in their profession.

Across participants' experiences, a strong sense of belonging within the school emerged as central to short-term retention. School leaders play a critical role in fostering inclusive and supportive environments where new teachers feel welcomed and valued. Structured opportunities for collegial connection, accessible mentorship, and intentional onboarding processes that extend beyond the classroom may help reduce isolation and strengthen professional confidence.

Recruitment efforts may also benefit from emphasizing relational approaches. Word-of-mouth encouragement and personal connections were influential in participants' decisions to move North. Recruitment strategies that include authentic storytelling, visible representation at career fairs, and opportunities for prospective teachers to connect directly with northern teachers may resonate more deeply than formal job postings alone.

Universities likewise have an important role in shaping preparedness. While participants often felt pedagogically prepared, many described gaps in cultural and contextual readiness. Expanding access to northern practicums, embedding Indigenous perspectives more meaningfully throughout teacher education programs, and explicitly preparing candidates for the environmental and social realities of northern communities may reduce culture shock and strengthen resilience.

Professional organizations, including the Manitoba Teachers' Society, can further support retention by increasing visibility in northern regions and offering professional learning opportunities that reflect the specific realities of teaching in the North. Context-responsive supports may help ensure that northern teachers feel represented and professionally sustained.

Implications for Future Research

This study highlights several areas for further inquiry. First, the role of collegial relationships warrants deeper exploration, particularly in northern and remote settings where professional and social networks often overlap. Understanding how belonging develops within school communities may offer important insights into retention beyond northern and remote teaching areas.

Second, the layered experiences of internationally educated teachers in northern contexts deserve focused attention. As Canadian school systems become increasingly diverse, research should examine how institutions can better support teachers navigating multiple transitions simultaneously.

Finally, the conceptual model of 'feeling at home in teaching' introduced in this study may provide a useful framework for future research. Investigating how teachers' needs evolve over time—and how institutions can respond to these shifts—may contribute to more sustainable recruitment and retention strategies in northern and remote communities.

Conclusion

This study contributes to research on teacher experiences in northern contexts by centring belonging as a key lens for understanding how teachers navigate recruitment, preparedness, challenges, and retention. While prior research has examined teaching in northern Canadian settings (Bowman, 2018; Janzen & Cranston, 2015; Kitchenham & Chasteauneuf, 2010; Walker, 2024), belonging has not been consistently foregrounded in this way. Focusing on northern Manitoba, the findings show how school-based belonging shapes teachers' adjustment, sense-making, and decisions to remain in the North. The concept of 'feeling at home in teaching' extends existing discussions by framing belonging as dynamic and evolving across personal, cultural, and professional dimensions, offering a more integrated understanding of teacher retention in northern communities.

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The Art and Science of Teaching Reading: Understanding Teacher Mindsets About Teaching Reading and Salient Influential Factors

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Abstract

During a period of heightened attention to the science of reading, shifting curricular landscapes, and growing public and political discourse about literacy, the purpose of this study was to investigate the mindsets of elementary teachers about their understanding of reading development and instruction. A mixed-methods approach was used to conduct this study. Quantitative data were collected through the *Literacy Acquisition Perception Profile* (LAPP) Survey, and qualitative data through open-ended questions from the LAPP Survey, pre- and post-study interviews, and teacher feedback obtained during professional development (PD) sessions and site visits. Responses from the open-ended questions and the interviews were coded and themed, using Corbin and Strauss's (1998) constant comparative method, which involved multiple steps (Saldaña, 2021), comparing incidents in the data to refine codes, categories, and thematic relationships. Through open, axial, and selective coding, we traced how teacher perceptions clustered around broader conceptual themes. Our data showed that teachers' mindsets about teaching reading were significantly impacted by two main factors: their knowledge of a skills-based approach that incorporates phonemic awareness and phonics as important to the development of early reading, *and* knowledge of a contextual-based approach that values sociocultural contexts, the role of writing, choice and quality of children's literature, and rich literacy environments. In this sense, their understanding of reading requires valuing both the science and the art of reading instruction. While our findings suggest that teacher knowledge from multiple domains may interact with perceptions of efficacy, the current study does not establish causal relationships between these constructs. Professional development played a central role in shaping teachers' sense of promise and efficacy. Teachers consistently identified sustained, collaborative PD—particularly that which connects theory with classroom application—as a key influence on their understanding of reading instruction. Understanding these realities is critical for policymakers, school leaders, and PD providers who seek to support teachers in improving student literacy achievement.

Keywords: teacher efficacy, effective practices, foundational literacy skills, professional development

The Art and Science of Teaching Reading: Understanding Teacher Mindsets About Teaching Reading and Salient Influential Factors

Introduction

Learning to read is a cognitively complex task which requires the oral language regions of the brain to be co-opted to recognize, manipulate and create orthographic representations of sound and meaning (Dehaene, 2009). It does not occur naturally, as speech does, and requires direct, explicit and systematic teaching of reading (Adams, 1990; Ehri, 2022; Moats & Foorman, 2003). Although the home environment and parental influence can have a significant impact on a child's ability to learn to read, it is often the classroom teacher who has the greatest influence on children learning to read (Reutzel & Cooter, 2024; Right to Read, 2022). An effective classroom teacher has knowledge about reading development and how reading is acquired (Moats & Foorman, 2003), what some would identify as the *science* behind reading development, and is the teacher who has the ability to teach reading to a diverse group of students with a wide range of experiences, knowledge and capability (Reutzel & Cooter, 2024), or what some would call the *art* or *craft* of teaching reading.

Across North America, public and professional discourse about the 'science of reading' has intensified, often framing reading instruction in binary terms: either rooted in skills-based practice or grounded in contextual, meaning-oriented literacy work. This binary framing is problematic; it oversimplifies a large, multidisciplinary research base (Aukerman, 2024; Shanahan, 2024; Tierney & Pearson, 2024). Teachers must navigate this landscape while simultaneously responding to evolving curriculum mandates, diverse classroom needs, and pressures emerging from media narratives claiming that the science of reading is 'settled.'

Mindset—understood here as the beliefs, assumptions, and internal dialogue that shape teachers' instructional decisions—plays a critical role in how teachers interpret and enact reading instruction (Tay et al., 2023). Teacher mindsets shape confidence, perceived efficacy, and the degree to which teachers feel capable of influencing student learning (Donohoo, 2016). Understanding teacher mindsets about reading, therefore, provides an important avenue for examining how knowledge, experience, and PD intersect with daily instructional practice.

Research Focus

This study investigated elementary teachers' mindsets regarding reading development and instruction, focusing on how teachers understand reading, the factors influencing their beliefs, and the professional learning conditions that shape their confidence and practice. The study also examined these mindsets within a sociopolitical context in which reading debates have become tied to governance, policy agendas, and curriculum reform. Given the polarized discourse, this research sought to document the nuance and complexity of teachers' current thinking.

The research question guiding this study was:

> Are teachers' mindsets influenced predominantly by a particular pedagogical or epistemological stance on reading instruction, as evidenced through an online survey and interviews? The two dominant approaches are: 1) a skills-based approach that incorporates phonemic awareness and phonics, as well as the ability to read phonetically irregular words, as important to the development of early reading, or by a 2) contextual-based approach that incorporates psychological factors such as motivation and engagement,

sociocultural context, writing, choice and quality of children's literature, and rich literacy environments?

Literacy Acquisition Perception Profile (LAPP)

The Literacy Acquisition Perception Profile, originally developed by McMahon, Richmond, and Reeves-Kazelskis (1998/2001), contrasts early conceptions of 'reading readiness' with 'emergent literacy' philosophies. Previous studies (e.g., Giles & Tunks, 2015; Mardhani-Bayne & Shamchuk, 2022) have used the LAPP to examine whether teachers lean toward skills-based or contextual-based conceptions of early literacy. For the purposes of this study, 'reading readiness' aligns roughly with skills-based approaches (though not perfectly) and "emergent literacy" aligns roughly with contextual-based approaches (though not perfectly). We clarify that these constructs do not map identically onto contemporary reading debates, but they provide a useful lens for examining teacher instructional preferences. The survey includes Likert-scale items measuring teachers' agreement with statements representing each approach.

This research also sought to understand the relationship between teachers' mindsets and their years of experience, grade level, PD, curriculum, and self-efficacy in affecting students' reading achievement (Beachy et al., 2023). Employing a mixed-methods structure, this study occurred over three phases. We used an iterative methodological design wherein we conducted a literature review, gathered quantitative data (surveys) and qualitative data (interviews), analyzed data using [thematic coding, open coding, etc.], and engaged in collaborative discussion of findings before the commencement of the writing phase. The first phase of this research began in Fall 2023 with the administration of the *Literacy Acquisition Perception Profile* (LAPP) (McMahon et al., 1998) survey and pre-study interviews.

Phase two continued into Spring and Summer 2024 with site visits, PD – described later - based on the results of the LAPP survey and interviews, and included gathering feedback from teachers about their experiences teaching reading. Phase Three included post-interviews, data analysis, and writing the research findings.

In the literature review, we detail the current understanding of reading science, the ways in which reading develops, and research-informed instructional practices. In addition, we discuss the role of teacher self- and collective efficacy in teaching reading, and the importance of professional development that is collaborative, context-specific, and sustainable in order to support teachers in their work in teaching reading.

Literature Review

A Research-Based Science of Reading

The teaching of reading has benefited from research from a variety of fields, including education, educational psychology, linguistics, neuroscience, and socio-cultural scholarship, contributing to a broad body of research pertinent to reading instruction. According to Shanahan (2024), a research-based science of reading "should [therefore] refer to all empirical studies of any aspect of learning to read, write, and spell in any language" (para. 7). Despite this breadth, media reporting and some advocacy groups have narrowed the term 'science of reading' to emphasize foundational skills, often portraying these as the only legitimate route to early literacy learning. This framing has contributed to teacher uncertainty, professional doubt, and, at times, demoralization (Aukerman, 2024; Reinking et al., 2023).

This has led to a misunderstanding of reading science as narrowly emphasizing skills-based approaches over other robust contextual-based approaches that include phonics, comprehension, writing, and other forms of literacy learning that motivate young learners. This is, according to Aukerman (2024), an error in sufficient understanding of the nuanced and expansive field of reading science and unfairly discredits contextual-based approaches such as 'balanced literacy,' which have predominated instruction over the past twenty years.

Researchers Tierney and Pearson note that "never have we witnessed anything like this current push for a return to foundational skills that flies under the banner of the 'Science of Reading'(SoR)" (Shanahan, 2024, para. 7). This perspective has been countered by many in the field of reading, indicating the current fragmentary dissemination of elements of the broad field of SoR and does not present a complete picture of how reading is taught (Aukerman, 2024; Bowers, 2020; Reinking et al., 2023); while contributing to the denigration of teachers' professional knowledge and questioning decades of peer-reviewed research. Several researchers and educators have spoken recently about the 'pendulum swinging' in reading, having witnessed historical shifts in how teachers approach reading pedagogy (Gear, 2021; Tierney & Pearson, 2024). The 'balanced literacy' advocates have acknowledged the importance of phonemic awareness and phonics in early reading instruction but have also recognized a wide variety of other factors that affect reading achievement, such as oral language development, background knowledge and experience, motivation, and broader social factors such as poverty and hunger.

In addition, a recent Ontario Human Rights Commission report, *Right to Read* (February 2022), posits that some teachers may not be teaching reading satisfactorily in schools because they are not being shown how to teach reading properly (pp. 190-198). Other highly publicized reports, such as the one told through Emily Hanford's podcast, *Sold a Story: How Teaching Kids to Read Went So Wrong* (beginning in late 2022) have circulated widely in the public discourse and in teacher circles and may be causing teachers to question what they know about teaching reading and doubt whether or not they have sufficient knowledge to help children to learn to read.

Furthermore, several Canadian provinces and US states have introduced new language and literacy curricula or the elementary grades. Ontario's 2023 language curriculum foregrounds structured literacy and prescriptive phonics sequences, while New Brunswick's 2023 revisions similarly emphasize decoding benchmarks and standardized early screening—illustrating how curriculum change has become intertwined with public pressure and political agendas surrounding reading achievement.

It appears the reading field is once again a site of debate and controversy—first appearing nearly 200 years ago (Tierney & Pearson, 2024)—and it is in this context that we examined what teachers know and believe about reading development and the teaching of reading and their role in enacting it. This research answers the call for more studies on teachers' thinking and on teaching practices and what might be done in different contexts to enhance reading instruction (Seidenberg, 2023).

Models of Reading Development

There is little disagreement that reading is a complex, multidimensional process (Catts, 2018). A great deal is known about the nature of the reading process (Dehaene, 2009; Wolf, 2008), though less about how best to teach reading. While acknowledging the value of basic research, which "has been distinguished from applied science based on its apparent distance from practical problems" (p. 238), Shanahan (2022) warns against drawing pedagogical conclusions from non-instructional

studies. So, to explain how reading develops, we examined four main reading models (although there are others), from Gough and Tunmer's Simple of View of Reading (1986) to Scarborough's Reading Rope (2001), to the Componential model (Joshi & Aaron, 2012), and finally to Duke and Cartwright's Active View of Reading model (2021). Each of these theories provides insight into how reading develops and leads to greater understanding of what the reader does in learning to read. However, these are theories of reading, not theories of reading instruction. These reading models undoubtedly inform teachers in deepening their understanding of reading, but they also need to be aware of the findings of instructional studies that help to identify efficient ways to teach a broad audience of learners. In other words, while helpful to educators on the level of understanding reading, these theories do not, in and of themselves, help teachers understand the best ways to teach reading to a diverse group of students. As Kirschner and Hendrick (2020) emphasize, epistemology (how learning occurs) is not pedagogy (how instruction should be enacted).

Teaching reading is complex work (Mausbach & Kazmierczak, 2023). Jeanne Chall (1979) declared that it is "the teacher that makes the difference" (p. 6), adding that skilled teachers understand what their learners need at a given point in time. Yet, the current dialogue on teaching reading has caused many teachers to lose confidence and feel like their needs to address students' learning are being ignored. Accordingly, we are interested in knowing: Do teachers understand how reading develops? If so, how does their understanding influence their mindset about the reading instruction they provide? If teachers are influenced by either a skills-based or a contextual-based view of reading development, how will that affect their instruction? It makes sense that teachers who hold a skills-based understanding of reading development may offer instruction that focuses on cognitive skills such as quick letter and sound knowledge, phonemic and phonics skills, as well as phonetically irregular words, and perhaps on syntactic comprehension and figurative language. Teachers who hold a contextual-based view of reading development might expand instruction to include psychological and sociocultural factors such as motivation, engagement, classroom and home environment, and semantics. We wondered, is it possible for teachers' reading instruction to be influenced by both approaches?

Balanced literacy approaches, while often criticized in recent public discourse, draw on robust evidence supporting the role of oral language development, background knowledge, motivation, engagement, and children's literature in the reading process. Aukerman (2024) argues that balanced literacy, when thoughtfully enacted, reflects a comprehensive, research-informed approach rather than a rejection of skills-based instruction. Nuance is therefore essential: the debate is not between skills and context, but perhaps about how to integrate both meaningfully.

Teacher buy-in, effort, and desire to teach reading in specific ways, as well as their beliefs about how successful they will be in teaching reading and reach the goals they have set for their students, determine their behaviours, or what we refer to as efficacy, will likely be influenced by how they view reading development. What is believed about how reading develops will likely guide decisions about which programs and resources to use and which instructional practices to embrace. Yet, it must be acknowledged that teachers may be compelled to adopt specific programs, attend PD, and implement resources that do not align with their instructional beliefs.

Teacher Self-Efficacy and Knowledge

Teachers' sense of self-efficacy, combined with their knowledge, positively correlates with the quality of the instructional activities they employ (Holzberger et al., 2013) as well as student

achievement (Ashton & Webb, 1986). Bandura coined the term "self-efficacy" when referring to a person's belief in their capability to perform in certain situations (Ryan & Hendry, 2022). Using Bandura's social cognitive theory, Ryan & Hendry (2022) studied teacher efficacy in teaching reading, concluding that high levels of teacher efficacy correlated with student achievement and teachers' enhanced wellbeing and commitment to their profession. The relationship between teacher knowledge and effective instruction has been well established, and teacher knowledge contributes to feelings of confidence and self-efficacy in teaching reading (Ryan & Hendry, 2022). According to Cantrell and Hughes (2008):

> preservice and in-service educators would do well to pay attention to personal efficacy as an important disposition that should be developed. Because middle and high school teachers often express lower levels of efficacy related to teaching literacy in the content areas, their sense of personal efficacy with literacy teaching should be considered and fostered to promote higher levels of content literacy implementation. (p. 123)

What does teacher knowledge about reading entail? According to Louise Moats (1999), it is the ability to understand areas such as linguistics, cognitive psychology, neuroscience, and education in order to teach reading effectively or what she calls the "linguistic foundations" of reading. It is being able to understand: the language structures of phonology, the study of the patterns of sounds in a language; semantics, the study of word meanings; syntax, the study of how words are ordered to convey meaning; morphology, the study of the structure of words; and pragmatics, the study of how language is used in specific situations. Other researchers have called upon teachers to have additional domains of knowledge when it comes to reading, including "usable" knowledge, meaning understanding how foundational knowledge about reading can be applied in instruction (Carlisle et al., 2011). Such knowledge encompasses motivation and engagement, as well as sociocultural influences, and might best be characterized as encompassing a contextual-based understanding of reading. In addition, teachers need to understand the "components of reading" (National Reading Panel, 2000). The NRP report linked these components to effective reading instruction: 1. Alphabetics (phonemic awareness instruction and phonics instruction), 2. Fluency, 3. Comprehension (vocabulary instruction, text comprehension, and teacher preparation and comprehension strategies instruction), 4. Teacher Education and Reading Instruction; and 5. Computer Technology and Reading Instruction.

According to Aukerman (2024), comprehensive, research-informed literacy instruction would not only include attention to the components of reading, but would necessarily include content literacy goals, child-centred approaches, attention to culture, context, and developmental appropriateness, social interaction and opportunities for rich student talk, and techniques to improve reading motivation and self-efficacy. This stance suggests that a comprehensive curriculum "orchestrates synergies among a range of necessary developmental facets."

Classroom complexity further shapes teachers' perceptions of efficacy. Classroom complexity refers to the simultaneous, layered demands of meeting linguistic diversity, learning needs, behavioural needs, curriculum requirements, and instructional pacing (Burns & Ysseldyke, 2009). High complexity can diminish teachers' perceived influence and compromise instructional coherence, particularly in early literacy classrooms.

Professional Development

Teacher self-efficacy and professional development (PD) are often the "keys" to teachers developing foundational knowledge about reading and its effective instruction. Several influential

reviews and meta-reviews have converged on the position that teacher PD is more effective when it is "sustained, collaborative, subject specific, draws on external expertise, has buy-in from teachers, and is practice based" (Sims & Fletcher-Wood, 2020, p. 47). While teachers enter the profession with a variety of skills and strengths, it is important to know how to support those strengths in order to help them grow and feel rewarded in their work (Mausbach & Kazmierczak, 2023). In recent years, it has become apparent that PD opportunities need to fulfill certain requirements in order to be effective. These include leadership support that provides time for collaboration, the promotion of self- and collective efficacy, and teacher modelling for student success.

Leadership Support and Collaboration

There is a demonstrable relationship between instructional leadership and student success. As might be expected, school leaders' sense of efficacy relates to teachers' sense of self- and collective efficacy for teaching their students, resulting in greater student learning (Goddard, Bailes, & Kim, 2021). In a study exploring teachers' self- and collective efficacy in teaching reading, teachers indicated that support from school leadership enhanced their confidence in their ability to teach reading. They identified a variety of forms of support, including listening to their requests for help in overcoming challenges, suggesting reading resources and strategies; though these can be subject to budgetary conditions and ministry directives, and showing trust in their abilities to be successful in their reading instruction (Ryan & Hendry, 2022). Leadership also has a role to play in the development of a school culture that supports a collaborative approach to teaching reading. Aspects of school culture that contributed to teachers' confidence include: a safe environment in which to take risks and try new ideas, opportunities to engage in professional learning promoted by leadership, and encouragement to make instructional judgments and decisions in their reading programs (Cantrell & Hughes, 2008). Effective leadership strategies provide extended PD by helping connect teachers to experts, reading professional literature, offering school residencies for modelling and sharing teaching strategies, and overcoming barriers due to external factors such as lack of home support or decreased levels of motivation.

Self- and Collective Efficacy and Modelling

Teachers' self-efficacy in this context is one's personal belief in their capability to successfully perform and be effective in their reading instruction practice. Self-efficacy leads to higher levels of student achievement, motivation, and positive attitudes (Skaalvik & Skaalvik, 2007). Equally important is teachers' collective efficacy, or the belief in their abilities to positively affect student learning when working as a team or members of a school staff (Cantrell & Hughes, 2008; Donohoo, Hattie, & Eels, 2018; Eels, 2011). Influences on collective efficacy are similar to those that enhance self-efficacy. For instance, support and trust from leadership matters, as do student achievement, access to professional learning with opportunities to view the modelling of practices and strategies, and collaboration among teachers.

Studies on the strengths of collective efficacy in teaching reading demonstrate the value of having an entire staff working together on reading achievement, or what we would call 'everyone rowing in the same direction.' It has been demonstrated that collective teacher efficacy may be more influential than individual teacher efficacy beliefs (Tschannen-Moran & Barr, 2004). When collective teacher efficacy is achieved, teachers credit PD in helping them develop a shared understanding of reading and what constitutes effective instruction. They also point to the importance of opportunities and time to collaborate to determine what effective reading strategies

would look like in the context of their own schools and classrooms. Mausbach and Morrison-Kazmierczak (2023) point out that teachers themselves are not all starting at the same place in their mindsets about reading development. Years of experience and grade levels taught could, according to these researchers, have a bearing on teachers' skill level, confidence, and knowledge.

Another way to achieve collective efficacy is through "layered learning," where opportunities are provided concurrently for professional development to occur in large groups, small groups and in one-on-one learning settings. Mausbach & Morrison-Kazmierczak (2023) call this "blanketing" teachers with support to learn and grow. It is a deliberate approach designed to start where teacher mindsets are and connect professional development to classroom practice. Teacher autonomy is an important aspect of this approach. Cochran-Smith and Lytle (2009) propose that teachers occupy what they call an 'inquiry stance' in order to align their work with others. Teachers refer to the practice of having one another "model" strategies or use team-teaching in order to share ideas, analyze evidence, and provide feedback in a supportive way as particularly valuable. This collaborative work uses teacher knowledge, analysis, and planning to empower teachers to determine not only how to improve their practice but also to increase student achievement.

Student Success

Several studies highlight a "clear and positive relationship between teachers' level of self-efficacy and the quality of students' learning" (Tschannen-Moran & Barr, 2004, as cited in Ryan & Hendry, 2023), highlighting the importance of teacher mindsets about their collective ability to teach reading. In these studies, teachers indicate that when they observe their students' success in reading as a result of their teaching, their confidence in their ability to teach reading increases. Hattie (2008) calls these 'quick wins' and suggests that they motivate teachers to do more and believe in themselves to affect student learning. Ryan and Hendry (2020) note that this was particularly true when teachers discussed working with students who were struggling with reading. These findings suggest the value of understanding teacher mindsets and providing support for them to improve their abilities to teach reading and foster student success. This is an important issue that needs resolution, given the tone of public discourse around teaching reading and the value of teachers' professional knowledge and PD.

Purpose/Objectives

The purpose of this research was to document teachers' mindsets about how reading develops and, as a result, how they believe they ought to teach reading. Based on previous research findings (Giles & Tunks, 2015; Mardhani-Bayne & Shamchuk, 2022), we hypothesized that there would be a dichotomy between teachers' preferences to hold either a mostly skills-based or mostly a contextual-based approach to teaching early literacy and that these preferences would likely be a result of teachers' years of experience, the grade levels they taught, curriculum changes and the accompanying politics associated with curricular reform, engagement in PD, and their sense of self-efficacy.

Methodology

This research drew upon a mixed methods approach to investigate teacher mindsets of reading development and reading instruction (Cresswell & Garrett, 2008). The survey employed quantitative and qualitative data-gathering techniques with open and closed questions to determine teachers' preferences for skills-based or contextual-based approaches to teaching reading. At the

end of the survey, respondents were asked if they were interested in participating in an interview at the beginning of the study and a follow-up interview six months later.

Mixed methods were also important because public and scholarly discourse around the 'science of reading' has become highly charged, with some research and commentary relying on emotional or polarized narratives (Reinking et al., 2023). By triangulating survey responses with interviews and open-ended comments, our approach mitigated the influence of anecdote or ideology and produced a more nuanced, credible understanding of teacher perspectives.

Researcher Positioning

The researchers in this project served dual roles as both investigators and professional development (PD) facilitators. While this dual role is common in practitioner-oriented educational research, it carries potential influence. We explicitly acknowledged this with participants, clarified voluntary participation, ensured anonymity in data handling, and emphasized that PD participation was not linked to research participation.

Our role as PD facilitators also provided unique insight into teachers' evolving thinking over time; however, because the LAPP survey was administered only once, the quantitative portion of this study captures a 'snapshot' rather than a measured change in mindset. The pre- and post-interviews, along with PD field notes, helped elaborate on this snapshot, allowing us to understand teachers' perspectives with greater contextual insight.

Ethical Considerations

Participation was voluntary. No identifying information was collected in the LAPP survey, and interview data were anonymized during transcription. The dual researcher–facilitator role was disclosed, and participants were reminded that comments from PD sessions would not be reported in ways that identified individuals or schools.

The three phases of research:

Phase 1: (September to December 2023)

Gathering Evidence Phase. During this phase, we examined teachers' experience, grade level, and mindsets about reading and its instruction and about changes in the literacy curriculum. Between June 1st and December 4th, 2023, The *Literacy Acquisition Perception Profile* (LAPP; McMahon et al., 1998) survey was distributed to approximately 100 K–5 teachers across four school divisions (two in Alberta and two in British Columbia). This number is approximate because the survey was disseminated by school leaders, and it is not possible to confirm whether all principals forwarded the survey to their teachers. The LAPP survey was hosted through Qualtrics, a secure online platform commonly used in educational research. A link to the survey was distributed by school administrators, along with an explanation of confidentiality and voluntary participation. All individual responses were aggregated, and no school or teacher was identified in any reporting. Teachers were given one month to complete the online survey. A total of 38 teachers responded, yielding an estimated 38% response rate. This return rate is consistent with other online professional surveys reported in literacy research (e.g., Giles & Tunks, 2014). Of the 38 participants:

- 28 teachers taught in K–3 classrooms
- 10 teachers taught in grades 4–5

At the end of the survey, teachers could indicate interest in participating in two interviews (pre- and post). Eight teachers volunteered and completed both interviews.

Semi-structured interviews focused on teachers' experiences teaching reading, including the strategies and resources used. They were asked to describe their understanding of how reading develops, as well as the impact of possible curriculum changes. Teachers were asked to identify the challenges and successes they encountered in teaching reading, and their perspectives about the discourse around the science of reading. Insight from the surveys and pre-interviews helped to guide the PD provided in Phase two of the research.

Phase 2: (October 2023 to March 2024)

Professional Development Phase. Between October 2023 and March 2024, the research team provided PD through workshops, symposia, and school-site sessions. Two sessions were facilitated in BC school divisions and two in Alberta school divisions. These sessions addressed concepts of reading development, components of reading, and instructional strategies. Approximately 400 teachers participated in at least one PD session across the divisions involved. Feedback forms, collaborative group artifacts, and field notes served as data sources for this phase.

Phase 3: (March to June 2024)

Pedagogy Conversations and Reporting. In this phase, we conducted several school visits, held meetings with teachers and administrators to discuss the teaching of reading, and post-interviews were conducted with the eight volunteer teachers. Semi-structured questions invited teachers to describe their understanding of how reading develops, the challenges they faced, the influence of curriculum and public discourse, and the impact of PD. Although the interview sample was small, the open-ended format allowed for rich insight into teachers' perspectives. Linking survey and interview data was not always possible because teachers often focused on pressing contextual challenges. Allowing these discussions to emerge was necessary for understanding the lived reality of their literacy instruction.

Analysis

The LAPP survey provided descriptive statistical and qualitative results. The qualitative results were further examined through the use of *NVivo* software for initial analysis, followed by a collaborative process involving the researchers and a research assistant. Specifically, data were analyzed using Corbin and Strauss's (2015) constant comparative method, which involves iterative cycles of open, axial, and selective coding to identify relationships among concepts and refine emerging themes. This systematic, comparative approach aligns closely with Saldaña's (2021) multi-cycle coding framework, in which first-cycle descriptive and NVivo codes are synthesized into second-cycle pattern codes that consolidate analytic categories. Together, these approaches provided a rigorous, structured process for interpreting the qualitative data.

Based on previous *Literacy Acquisition Perception Profile* (LAPP) survey results (Giles & Tunks, 2015; Mardhani-Bayne & Shamchuk, 2022; McMahon et al., 1998/2001), our original hypothesis anticipated that teachers' understanding of teaching reading would be influenced by: 1) a skills-based approach, 2) a contextual-based approach, and 3) curriculum changes, compounded by years of teaching and grade level experience. We wanted to know to what extent teachers valued these approaches/influences in their own instruction, or if they attributed their knowledge to teaching experience, professional development, revisions to the curriculum, or a combination of all the above. We predicted that teachers with more years of teaching experience

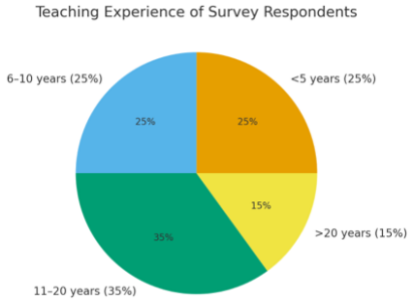
would demonstrate greater knowledge of reading and its instruction and understanding of curriculum changes, and value both a skills-based and a contextual-based approach.

Results and Discussion

In presenting the quantitative results, descriptive statistics were used to represent responses, which are helpful in providing general themes or agreement amongst survey respondents (Fisher & Marshall, 2009). Teachers with less than 5 years of teaching experience made up 25% of the respondents to the survey, and teachers with 6 to 10 years of experience made up 25% of the respondents; 35% had 11 to 20 years of experience, and 15% had more than 20 years of teaching experience.

Figure 1

Teaching experience distribution among survey respondents.

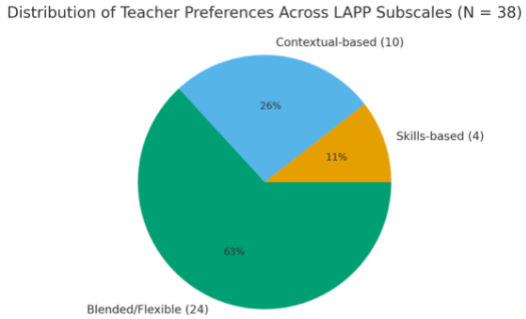


Overview of Quantitative Findings

Descriptive statistics from the LAPP survey revealed that teachers' mindsets did not fall neatly into a dichotomy between skills-based and contextual-based approaches. Instead, most teachers endorsed elements of both, suggesting a more nuanced understanding of early reading instruction than contemporary polarized discourse implies. A one-way ANOVA explored relationships between teachers' years of experience and their endorsement of skills-based and contextual-based subscales. No statistically significant differences were found. Similarly, no meaningful differences emerged between teachers of K–3 and teachers of grades 4–5. This finding contrasts with earlier U.S.-based studies using the LAPP (e.g., Giles & Tunks, 2015), which reported clearer divisions aligned with years of experience and initial teacher preparation.

Figure 2

Distribution of teachers' responses across the two LAPP subscales.



This distribution—4 teachers primarily favoured skills-based approaches, 10 teachers primarily favoured contextual-based approaches, and 24 teachers endorsed both approaches, indicated a blended or flexible mindset and suggests that teachers in this sample resisted the polarized 'choose a side' framing prevalent in recent discourse about the science of reading. Instead, most appear to draw on a hybrid model that integrates skills instruction with contextual and motivational elements.

In addition, the LAPP results did not show statistical significance in terms of years of teaching experience or grade level. An analysis of variance was conducted using a one-way ANOVA to compare teachers' mindsets on the accumulated skills-based and contextual-based literacy subscales with the length of their teaching experience. We found no statistical significance with either subscale of these two ways of understanding reading development and its instruction based on teachers' years of experience. A one-way ANOVA was used to compare teachers' experiences at various grade levels (respondents with experience in either Kindergarten-grade 4 or experiences in grades 5 and above), with similar results. Our statistical findings show there was less of a dichotomy than we might have anticipated based on current dialogue about reading in school. This finding is particularly salient given the present-day discourse prompted by reports and media pointing towards what they identify as the superiority of skill-based approaches and recent changes in curriculum that represent these approaches (Gear, 2021; Routman, 2023). It contrasts with Giles & Tunks' study (2015), whereby teachers with similar years of experience favoured either skills-based or contextual-based approaches, which the researchers ascribed to the prevalent pedagogical views when they were first trained in their teacher educator programs.

The teachers in this study appeared to embrace aspects of both approaches in their pedagogy. This is important because it suggests that the teachers demonstrated a nuanced approach to teaching reading, one that recognizes that science is always evolving (Tierney & Pearson, 2024). Seidenberg (2013), as referenced in Alexander (2020), thoughtfully articulates this approach, indicating that reading does not begin or end with phonics or whole-word instruction, and that reading is viewed as broader and more complex than might be suggested by recent media depictions of reading science. Through an analysis of individual responses and across responses to three open-ended questions on the survey, we viewed further elaboration of teachers' mindsets and identified key themes about what teachers are most confident and challenged about in teaching reading. We also gained insight into the role of PD in teacher mindsets about reading. The open-ended questions posed on the LAPP survey were:

- What are you most confident about in teaching reading?
- What are your challenges in teaching reading?
- What education, practices, resources, or professional development have been the most significant to you and your literacy instruction?

We found that teachers showed high levels of confidence in teaching the foundational areas of literacy—phonological awareness, phonics, vocabulary, and comprehension. They also relayed confidence in creating language-rich environments, supporting high expectations, and promoting student engagement in learning. Teachers identified the areas of student success and student engagement as providing them with high levels of self-efficacy and excitement.

Teachers identified their greatest challenges as meeting varied learner needs and classroom complexities, organizing for instruction, structuring effective intervention for struggling readers,

and finding sufficient time to support students most in need. Although our PD sessions emphasized foundational reading skills, teachers frequently used discussion periods to raise concerns about the increasingly politicized climate surrounding reading instruction—particularly mandates promoting specific programs or materials and the perception that certain skill-based approaches were being imposed. These concerns were openly addressed within PD, underscoring teachers' desire for professional learning that not only strengthens instructional skill but also acknowledges the broader sociocultural and political contexts in which they work. This aligns with recent scholarship noting that teachers are navigating literacy debates shaped by public discourse, advocacy pressures, and policy agendas (Aukerman, 2022; Reinking et al., 2023), pointing to the need for PD that attends to both instructional practice and contextual realities.

Perceived self-efficacy and the perceived direction of literacy instruction—in their school divisions and their provinces, as well as media coverage about reading—all affected their confidence and challenges in teaching reading. Teachers with more experience (11 years or more) were less challenged with the varied learning needs of students and providing intervention strategies, which might be expected and suggests the value in pairing novice teachers with experienced teachers in schools for mentorship. With regards to the question about what has been most significant to teachers' understanding of reading and its instruction, opportunities for PD provided by their school divisions were referenced as having the greatest impact on them and their practice.

Pre- and Post-Interview Results

The pre- and post-interviews with teachers were conducted and analyzed, and the results are consistent with those from the LAPP survey, with some notable exceptions. Eight teachers participated in the pre-interviews in the fall of 2023 and the post-interviews in the spring of 2024, ranging in teaching experience from three to twenty-two years. Our analysis identified four major themes in the interviews. We refer to these as the '4-Ps of Teaching Early Reading.' These are: 1) passion, 2) purpose, 3) pain, and 4) promise.

The teachers spoke passionately about wanting to see each of their students become readers, and interestingly, they all spoke about being ardent readers themselves. Each of the teachers valued reading for the role it plays in their own lives and wanted the same for their students. The teachers' attitudes towards teaching reading epitomized the phrase, 'when I know more, I do better,' and they shared that they found purpose in the work they did in teaching their students not only how to read, but also in developing the motivation for and love of reading. They appeared to be guided by this 'purpose' in seeking PD for themselves, through working collaboratively with colleagues, and by being intentional in their instruction. The interviews revealed the "pain" and challenges associated with teaching early reading. They mentioned the lack of clear instruction at the post-secondary level for reading instruction, but acknowledged that they themselves often 'guarded' their ELA teaching when supervising student teachers, contributing to the problem of helping new teachers learn to teach reading in their practicum experiences. They discussed the problems caused by teacher turnover; for instance, they mentioned losing colleagues due to cuts in funding, reassignments, relocations, attrition, and leaves (mental health and maternity were both mentioned). The three most important aspects the teachers said caused pain were lack of time, lack of resources, and class dynamics. These areas of concern were also observed in responses to the open-ended questions on the LAPP survey, pointing to the need for politicians to more fully address classroom complexity, time for teachers to plan instruction, and more support from paraprofessionals in the classroom. A common lament was, "I do need to

read more one-on-one with my students. I just need to find time." These finding replicates those from Chambers Cantrell & Hughes (2008), who concluded "in this study, the greatest barrier to improved efficacy was time—time to teach, time to collaborate, and time to learn" (p. 122). The teachers also discussed the importance of accessing resources that meet students' needs. One teacher commented, "I would love to have more money to buy books that I know my students would like to read."

Seven of the eight teachers mentioned how classroom dynamics affected both the quantity and quality of their instruction: two factors identified by Shanahan (2023) as essential to impacting reading development. "The dynamic changes everything, because I have different students in attendance each day," "more and more, I have children who don't speak English," and "it is only me in the classroom and I want to work with some students who are really stuck on a skill but others are ready for more challenging reading and that's hard" are typical of the kinds of situations that the teachers discussed in their interviews.

Lastly, the theme of 'promise' emerged particularly from the post-interviews. By promise, teachers talked about the value of PD, collaboration with colleagues, receiving support from their school administration, and maintaining a positive outlook when teaching reading. Research tells us that ongoing PD and support are crucial to ensuring that all teachers know how to implement excellent literacy instruction (Snow, Griffin, Burns, and the NAE Subcommittee on Teaching Reading, 2005). Shanahan (2024) identifies key aspects of professional development that need to be addressed in order to be effective in impacting student learning. These include the following: 1) PD leads to teacher learning and improvements in practice, 2) PD leaders are knowledgeable about research-informed practices, 3) teachers are empowered and supported in their efforts to implement PD, and 4) PD in one area does not weaken strengths in other areas of literacy.

Though the interview sample was small, these themes align with prior research and illustrate the contextual factors shaping teacher mindsets. These comments did not always map directly onto the LAPP subscale categories because teachers focused on the practical and emotional realities of their work. Allowing this flexibility was important for documenting teachers' authentic perspectives.

The most striking finding from this study is the lack of polarization in teachers' responses. Unlike U.S.-based studies, where teachers often aligned with one philosophical stance, teachers in this Canadian sample showed blended orientations. This may reflect:

- less politicization around reading instruction in Canada (though signs of polarization are emerging)
- evolving provincial curricula that integrate both structured skills instruction and broader literacy practices
- longstanding Canadian commitments to balanced literacy frameworks

Teachers' resistance to polarized categorization suggests that, in practice, they do not view reading instruction as a binary choice. Teachers may be drawing on varied knowledge sources to make instructional decisions in complex classrooms.

This mindset is similar to that articulated by the researcher, P. David Pearson, who considers himself in the 'radical middle' between the skills-based (what he terms phonics) and the contextual-based (what he terms whole language) reading camps. The binary nature of the current reading discourse does not appear to dominate these teachers' mindsets about reading and its

instruction. Indeed, this discourse is not serving students, and teachers appear to know this and avoid it in their practice.

Hattie (2017) identified a list of factors related to student achievement, and 'collective teacher efficacy' is listed as the top influence on 'what works best in education.' The recent curriculum changes do not appear to be one of the factors that impacts teachers' mindsets and efficacy as evidenced in their interviews, although it could be argued that teacher confidence in addressing the components of reading (phonemic awareness, phonics, fluency, vocabulary, and comprehension) could be affected by changes to the curriculum, particularly in Alberta, which identify these as 'organizing ideas.' Indeed, if teachers adopt either, but most likely both of these approaches, changes to curriculum do not account for predicting how well students will learn to read. Instead, teacher knowledge about how reading acquisition occurs in children (the science of reading acquisition), along with an understanding of what constitutes a comprehensive research-informed reading/literacy instruction program (the art of teaching reading), seems to account for teachers' efficacy. Equally important, these mindsets—embracing both the science *and* art of reading—can be strengthened through high-quality PD and division support.

Conclusions

Our findings indicate that the impact of teacher mindsets in teaching reading in K to grade six classrooms cannot be overestimated. Our data suggest that teacher mindsets are influenced by knowledge of both skills-based and contextual-based approaches, and that this knowledge may relate to perceived efficacy. However, the study design does not allow us to establish direct causal links between knowledge levels and self- or collective efficacy. Further research is needed to explore this relationship more explicitly.

Teacher mindsets and their actual and perceived knowledge often mix to produce a teaching practice. If teachers' daily teaching practices are filtered through the belief that they can do very little to influence student achievement, then it is likely these beliefs will manifest in their practice (Donohoo, 2016). If a classroom teacher understands the science behind how a child acquires reading ability, and if that understanding culminates in teaching methods that are predictably known to be effective—even when challenges come to bear on the teaching process—classroom teachers can be confident that what they know and do will produce reading achievement in their students.

The role of resources was important to teachers in how they teach reading. On this front, teachers appeared to be open to using a variety of resources and indicated they used Heggerty, UFLI, Jolly Phonics, LETRS, and Secret Stories, to name a few. Teachers themselves indicated that they needed more support in the areas of meeting a variety of learner needs, addressing learning complexities, organizing for instruction, and having more time to support students most in need, and this is where school divisions can make a difference. Teachers overwhelmingly identified PD as the strongest influence on their developing understanding of reading instruction. With approximately 400 teachers attending PD across divisions in this study, this finding is consistent with research demonstrating that sustained, collaborative PD enhances teacher confidence and shared instructional vision.

This can be achieved by partnering with PD leaders and researchers, providing opportunities for teacher collaboration, and offering in-class coaching (Audisio et al., 2023). By understanding the differences among instructional studies, observational studies, and research that utilizes one approach and attempts to generalize results, we can "avoid overconfidence, selective memory, lack

of systematicity, lack of reliable evidence, incorrect causal attribution, and the narrowness of individual experience" (Shanahan, 2018, para. 6). Likewise, building confidence (and having confidence) in teachers—through knowledge acquisition or trust in their professional judgement—empowers them to try new ideas they've learned through effective and ongoing PD. This bolsters confidence, raises teacher self-efficacy, and creates a culture where solutions to difficult learning situations in teaching beginning reading can be found.

Limitations of this study, including the small interview sample, the one-time administration of the LAPP, and the dual researcher–facilitator role, suggest the need for cautious interpretation. Nonetheless, the study provides valuable insights into teachers' strengths, challenges, and instructional reasoning. Teacher comments about areas such as classroom complexity, resource constraints, and contextual realities offer important contributions to understanding literacy instruction, even when not directly tied to LAPP constructs.

Future research should explore how teacher mindsets evolve over time, how PD influences changes in instructional practices, and how policy shifts affect teacher efficacy and beliefs. Comparative studies between Canadian and U.S. contexts may further illuminate the role of national literacy cultures in shaping teacher orientations. Additional research could also examine how mandated programs interact with teacher knowledge, particularly when district budgets or ministry directives constrain teacher autonomy.

It has to be acknowledged that when it comes to teaching reading, the research is clear about some things, but our knowledge continues to develop and evolve. It is imperative that we remain open to new understandings that will guide teachers in making the best instructional decisions for their students.

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Learning to Teach Through Action Research: Teachers' Perspectives on Their Experiences as Preservice Teachers

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Abstract

This article reports on a qualitative study that investigated teachers' perspectives on their experiences designing and conducting an action research (AR) inquiry as preservice teachers. As part of their two-year teacher education program, they learned about teacher research and AR methodology. For this study, they were invited to reflect on their learning as preservice teachers conducting AR and the impact, if any, this had on their subsequent practice. Using data generated from semi-structured interviews, AR proposals, lesson slides, and notes, I demonstrate how, as preservice teachers, AR provided them with opportunities to transform their relationships with students, engage in reflective practice, and shape their teacher identities as they transitioned to becoming teachers.

Keywords: action research, preservice teachers, teacher education, reflective practice

Learning to Teach Through Action Research: Teachers' Perspectives on Their Experiences as Preservice Teachers

More than ever, preservice teachers need to engage in critical thinking in response to the increasing demands of teaching and learning. Early career teachers are called upon to take up this challenge as confident practitioners, knowers, and agents of change. School districts and departments of education expect teachers to engage in culturally responsive practices within inclusive learning environments (Government of Nova Scotia, 2024). However, what is less clear is how preservice teachers learn to teach in ways that enable them to think critically and responsively, in a manner that can sustain them throughout their careers. How might teacher education programs prepare preservice teachers to enter the field with confidence, and knowing that they are capable of generating the knowledge they need to teach responsively with agency (Cochran-Smith, 2020; Cochran-Smith & Lytle, 1999a, 2001, 2021; Miller et al., 2012)?

The transformative potential of teacher research to shape teachers' identities and professional practice has been well documented over the past three decades (Black, 2021; Cochran-Smith & Lytle, 1991, 1993, 2009; Darling-Hammond, 2012, 2017; Derakhshan & Nazari, 2024; Goodnough, 2010, 2011; Kitchen & Stevens, 2008; Nazari, 2022; Nichols & Cormack, 2017; Van Katwijk et al., 2021; Zeichner & Noffke, 2001). When teachers engage in research, they are positioned as researchers, knowers, and change agents (Cochran-Smith & Lytle, 1999a, 1999b; Comber, 2005). Teacher research is defined as a "systematic and intentional inquiry about teaching, learning, and schooling carried out by teachers in their schools and classroom settings" (Cochran-Smith & Lytle, 1993, p. 27). Teacher research is historically linked to AR (Cochran-Smith & Lytle, 1999b; Noffke, 1997) and is viewed as a practical methodology for teacher research (Sachs, 1999). In Canada, AR has had a long and well-established history as a path for teacher learning and changing practice (Clausen & Black, 2020). AR is understood as a form of self-inquiry into one's practice that can be done in collaboration with others to bring about a collective desired change or improvement of practice (Brown & Jones, 2001; Clausen & Black, 2020; Kemmis, 1991; McNiff & Whitehead, 2002; Noffke, 1997; Smith et al., 1997; Somekh, 1995).

In the context of this study, AR was an integral part of preservice teachers' educational experience in a Bachelor of Education (BEd) program, which aimed to engage them in inquiry through reflection on praxis (Cochran-Smith & Lytle, 1999). While AR is seen as a way for preservice teachers to take reflective action, and is included as a component of some preservice teachers' educational experiences (Black, 2021; Clausen & Black, 2020; Darling-Hammond, 2010; Kennedy-Clark et al., 2018; Munthe & Rogne, 2015; Ryan, et al., 2017), few studies have followed up with former preservice teachers to find out what impact, if any, AR has had on their current practice. Additionally, there is a need to unpack further the complexities of preservice teachers' perspectives, experiences, and knowledge generated through AR, and how this might inform teacher educators' practice in teacher education programs (Black, 2021).

The purpose of this qualitative study was to investigate the perspectives of teachers who designed and carried out an AR inquiry project as part of their preservice teacher education program. The primary objective of this study was to gather teachers' perspectives on their experiences with AR and to explore, if any, the effects this had on their subsequent teaching practice. This research centred around the following three questions:

1. What are teachers' perspectives on their experience with designing and carrying out an AR inquiry in their teacher education program?

2. What impact, if any, does this have on their current practice?

3. How did learning through AR impact preservice teachersô identities and relations with knowledge?

In this paper, I will discuss teachersô perspectives on their experiences with AR and how these experiences inform their practice. Specifically, I discuss how AR enabled them to become reflective practitioners, transform their relationships with students, and shape their teacher identities as confident knowers and change agents. I begin with a brief description of the studyôs context. Then, I will review some relevant literature and provide an overview of the research design. Next, I will present some research findings, discuss key themes pertinent to the research questions, and offer concluding comments.

Background and Context

Teachers who participated in this study were members of two different cohorts at a university in eastern Canada. There was a combined enrolment of 22 preservice teachers. Each cohort had completed their education program between one and two years before the commencement of this research and had begun their teaching careers. As preservice teachers, they were part of a two-year BEd program with a certificate in STEM. A significant component focused on learning through inquiry. A central part of their learning over the two-year program was teacher research. I was their instructor for the teacher-research components and supervised their AR inquiries during their final semester. In the first two semesters, we explored topics such as engaging in reflective practice, developing an inquiry approach towards practice, posing research questions and wonderings, documenting observations during practicums, and using inquiry to inform their teaching. In the second year, the teacher research component involved preservice teachers designing an AR inquiry based on their wonderings.

Designing an AR inquiry involved a series of reflections over several weeks, scaffolded to build toward an AR proposal. Preservice teachers engaged in weekly discussions and reflections, which included identifying a research topic, posing problems, writing AR questions, conducting initial literature reviews, deciding on data collection methods, planning for data analysis, developing an initial action plan, and addressing required ethical components, including seeking permission from school administration, discussing their plans with partner teachers, and writing informed consent letters for parents. Once I approved their initial research plans, I sought ethics approval from the facultyôs internal ethics review committee as part of a course assignment. Following the approval of the internal ethics review committee, I applied to conduct research with the local school district. Upon district approval, preservice teachers contacted the school principals and practicum partner teachers for approval before sending informed consent letters to parents of students in their classrooms. Preservice teachers had informally talked about their ideas with their partner teachers before formally requesting permission. Once signed informed consent letters were received from parents, preservice teachers began their AR inquiries.

There were a variety of STEM-related topics, including the use of childrenôs literature in science, strategies for developing mathematical vocabulary, and the integration of digital technologies. While all preservice teachers in both cohorts designed an AR proposal, some were unable to conduct their research in classrooms for various reasons (personal circumstances, challenges with COVID-related restrictions, and scheduling issues). All participants in this study implemented their AR inquiries in K-6 classrooms.

Literature Review

Inquiring, Learning, and Knowing

Practitioner inquiry, teacher research, and AR are all terms used in the literature to refer to various forms of teacher research (Black, 2021; Cochran-Smith & Lytle, 2009; Goodnough, 2011; Kamler & Comber, 2008). Miller et al. (2012) question what counts as knowledge in teacher education and argue for courses in education that position teachers as "agents of change" (p. 221). Teacher research is viewed as a means of elevating teachers' professional status by incorporating teachers' knowledge into the educational knowledge base (Cochran-Smith & Lytle, 1999a, 2021). Teacher research is also viewed as a meaningful path for learning that is embedded in practice (Cochran-Smith & Lytle, 1993, 1999, 2021; Comber, 2005; Elliott, 1991, 1993; Kemmis, 1991; Noffke, 1997; Zeichner, 2003).

Following a three-year study into relationships of "inquiry, knowledge and professional practice," Cochran-Smith and Lytle (1999a) proposed an "inquiry as stance" approach to teacher learning (p. 288). Within this conceptualization of teacher learning, teachers continually investigate and interrogate their theories and practices, as well as those of others, in response to their experiences with students. Taking an "inquiry as stance" approach towards practice enables teachers to generate knowledge for teaching through their interactions with students. What is significant about this approach to teacher learning is how teachers are positioned in relation to knowledge. Instead of being passive recipients of knowledge from someone outside their practice, teachers are actively engaged in producing knowledge through inquiry within communities of practice (Wenger, 1998). Within this conceptualization of teacher learning, emphasis is placed on exploring theory-practice relations (Cochran-Smith & Lytle, 1999a).

Comber (2005) discusses the potential of teacher research as a way for teachers to engage in the theoretical work of teaching. She suggests that "teacher researchers assemble repertoires over time, layering theories one upon the other," enabling them to "explain and envision their work in productive, doable ways" (p. 52). AR is a way for preservice teachers to engage in systematic research and make connections between theory and practice (Kennedy-Clark et al., 2018; Ryan et al., 2017). An "inquiry as stance" approach disrupts binaries such as formal-practical knowledge and theory-practice (Cochran-Smith & Lytle, 2021, p. 102). Rather, Cochran-Smith and Lytle (2021) contend that 'inquiry as stance' foregrounds "the nature and extent to which those who teach and learn from teaching by engaging in inquiry interpret and theorize what they are doing" (p. 102). In this paper, I will demonstrate how, through AR, preservice teachers adopted an 'inquiry as stance' approach to their practice, which influenced their understanding of theory-practice relations by capturing how they worked to change practice in the interest of social good.

Action Research and Reflective Practice

AR has been an integral part of some preservice teacher education programs for decades and has shown its benefits for preservice teachers (Black, 2021; Phillips & Carr, 2009; Ryan, 2013). There is ample evidence to suggest that AR can shape teacher identities (Derakhshan & Nazari, 2024; Nazari, 2022; Taylor, 2017) and enable preservice teachers to "tell their own stories" (Phillips & Carr, 2009, p. 208) about becoming teachers. Across various teacher education programs, preservice teachers are positioned to take up different roles, including those of students, teachers, researchers, learners, guests, and mentees (Phillips & Carr, 2009). They often negotiate complementary, competing, and contradictory subject positions as they learn to become teachers.

However, the subject positions available to preservice teachers depend on the program and on the experiences made possible by their learning.

AR is described as a form of critical pedagogy (Gore, 1993). Critical research can be viewed as an ongoing process of reflection and action (Crotty, 1998). Engaging in inquiry from a critical perspective can be understood as a form of praxis (Crotty, 1998). Praxis involves a process of reflecting and acting upon the world to bring about change (Freire, 2002). Schön (1983) described reflective practice as a process in which practitioners can experience "surprise, puzzlement, or confusion" that arises from particular situations (p. 68). Reflection is also seen as a way of thinking and knowing in practice (Dewey, 1933; Schön, 1983). Dewey (1933) recognized the connection between learning and reflective practice as a means to bring about growth and change.

Reflective practice through systematic inquiry brings together theory and practice, opening possibilities for generating new knowledge about practice (Cochran-Smith & Lytle, 1999a). In this sense, knowledge is produced through and embedded in teachers' lived experiences (Britzman, 2003). While reflective practice is not new, designing experiences that enable preservice teachers to engage in reflection directly connected to action, such as AR, is not always possible. In this paper, I will highlight how reflective practice within AR was intentional and connected to change as part of the inquiry process (Dana & Yendol-Hoppey, 2009). I will show how engaging in reflective practice shaped their teacher identities by providing them with "a means to sort the present and/or present the past in personally meaningful ways" (Ryan et al., 2017, p. 3) as they learned to teach through AR.

Research Design

For this study, I employed a qualitative research design to explore preservice teachers' perspectives on their experiences with AR within a BEd program. I was guided by critical and sociocultural perspectives, which enabled me to capture the complexity of participants' lived experiences and to gain a deeper understanding of how engaging with AR influenced their emerging teacher identities, their relations with knowledge, and their classroom practices. A narrative-informed approach foregrounded participants' reports, centring their voices as they reflected on their engagement with AR in both coursework and subsequent practice (Clandinin, 2006). I wanted to hear stories about participants' lived experiences with AR within their teacher education program (Clandinin, 2006).

Theoretical Perspective

This study was informed by critical pedagogies (Freire, 2002; Giroux, 2022; Lather, 1992) and sociocultural perspectives of learning (Gee, 1989; Lankshear & Knobel, 2007; Wenger, 1998). Critical pedagogy is defined as "that which attends to practices of teaching/learning intended to interrupt particular historical, situated systems of oppression" (Lather, 1992, p. 121). Critical pedagogy draws attention to the political aspects of pedagogy, which centres on power-knowledge relations and agency (Giroux, 2022). From a critical perspective, this study was guided by emancipatory aims to address inequities in educational knowledge. Particularly, how teachers' voices are often left out of the knowledge base of education. I wanted to hear what teachers thought about their experiences with AR as preservice teachers and any impact this had on their subsequent practice. I aim to highlight the stories of preservice teachers and their relationships with knowledge through their experiences with AR during their education program.

Sociocultural approaches recognize that learning is social and occurs through interactions with others, facilitated by authentic experiences connected to everyday life within 'communities of practice' (Wenger, 1998). A sociocultural view of learning recognizes the interconnectedness of individuals as they participate in communities and engage in practices within situated contexts (Lave & Wenger, 1991). A sociocultural lens also draws attention to teachers' relationships with knowledge and how they come to know through their lived experiences within the context of their practice (Schön, 1983). This involves recognizing that individuals shape and are shaped by their lived experiences, including those within family, societal, and cultural groups (Gee, 1989). In the context of preservice teacher education, this means considering how preservice teachers engaged in situated learning as they conducted AR inquiries in K-6 classrooms, and the impact this had on the formation of their teacher identities (Lave & Wenger, 1991; Wenger, 1998).

Method

I employed qualitative methods to investigate teachers' perspectives on their experiences with AR during their BEd program. Qualitative research centres on describing a social phenomenon and focuses on the meanings participants ascribe to it (Creswell, 1998; Denzin & Lincoln, 2000; Yin, 1984). Qualitative researchers are concerned with analyzing and interpreting data centred on the meanings participants bring to their experience of a phenomenon (Denzin & Lincoln, 2000).

Participants

Participants in this study are practising teachers who carried out AR inquiries as a component of the BEd program with a certificate in the STEM program. These teachers had completed their BEd Programs one to two years prior to the start of this study. As preservice teachers, they were part of two different BEd cohorts. While all preservice teachers in the program designed an AR project, not all were able to conduct research in classrooms for various reasons. Out of the ten who were able to conduct AR inquiries, seven volunteered to participate in this study.

Data Generation

Narrative can be seen as a means of discussing and organizing experiences into meaningful events (Richardson, 1997). The interview provided participants with opportunities to reflect on their experiences with AR, what they learned from those experiences, and to discuss their current practice. I shared individual transcripts with each of the seven participants to confirm that they accurately captured their stories and to engage in member checking to ensure the authenticity of our findings (Creswell, 2009). Other data included their initial AR proposals, lesson slides and notes.

Semi-Structured Interviews

Data collection consisted of individual, semi-structured, open-ended interviews with seven participants, conducted and recorded via Zoom. Each participant took part in a one-on-one interview lasting approximately 60 minutes. The interviews were designed to elicit rich, reflective narratives about participants' experiences with AR and to gain insight into teachers' perspectives on these experiences and the impact, if any, on their current practice. Sample interview prompts included:

- Could you tell me about how you went about designing and conducting your inquiry?
- Talk a little about what you learned from your inquiry.

- What do you think about action research being part of a pre-service teacher education program?

I used follow-up questions to clarify, elaborate on initial responses, and invite further storytelling.

Initial Action Research Proposals

As a secondary data source, participants' written AR proposals provided insight into their early wonderings, understandings, questions, and research intentions. These documents served as artifacts of their learning processes and supplemented the triangulation of interview data.

Lesson Slides and Notes

I used my lesson slides and notes as a reference point for clarification on dates and topics introduced to students, such as being a reflective practitioner, data collection methods, and ethical considerations. These served as a reference for the scaffolding of topics in relation to initial research proposals.

Data Analysis

Data analysis focused on understanding participants' perspectives by examining transcripts and interpreting their stories. Initially, I read through each transcript and wrote a summary vignette for each participant. Next, I reread each transcript to generate preliminary categories that emerged from the data. I recorded keywords and phrases in the margins to signal emerging categories (e.g., reflective practice, confidence, and responding to students). I used these categories to create initial codes and used these codes to triangulate evidence across participant transcripts (Creswell, 2009). Then, I reread each transcript at least twice, highlighting essential excerpts related to my research questions, identifying categories, and recording themes. I set up separate Word documents with labels representing these themes. I copied specific excerpts related to each theme into those documents (e.g., learning to teach, reflecting on practice, coming to know).

I also employed tools of critical discourse analysis to conduct a closer reading of selected excerpts (Fairclough, 2013). I examined specific linguistic features, including pronoun use, subject position, and metaphor. This practice enabled me to explore more closely the language participants used to describe their experiences, paying particular attention to the words and phrases they used to discuss their practice (Jennings & Graham, 1996). From a critical perspective, engaging with CDA enabled me to interrogate the subjectivities and discourses that shape teacher identities and their relations to knowledge (Britzman, 2003).

Findings

Transforming Relationships

AR has the potential to transform teacher-student relationships by placing students at the centre of teaching and learning. All participants in this study highlighted how AR enhanced their relationships with students. Through AR processes such as inquiry, questioning, observation, documentation, reflection, and analysis, they transformed their relationships with students by repositioning them as co-constructors of knowledge. My analysis sheds light on three ways AR impacted preservice teachers' relationships with students: personally connecting with students, utilizing students' knowledge, and engaging students' voices. In what follows, I am using pseudonyms for participants instead of their actual names.

In reflecting on their experiences with AR as preservice teachers, participants highlighted the significance of relationships. In particular, making personal connections with students was central to their AR inquiries. In my analysis of the data, I found that teachers cultivated more reciprocal and democratic relations with students.

> So, it [AR], it also helps you create relationships with kids, and that is the number one thing that you need to do in teaching. All of this stuff in the book, and the curriculum, curriculum guides, are not even close, it's not even close to the thing that matters…what matters is how you talk to them, how they feel, and if they feel loved or safe or not, you know. And I think this [AR] project gives you opportunities for that, it doesn't just teach you these 'skills' or like a curriculum, you know, it teaches you how to, how to talk to kids and be able to relate to them. (Karen)

As action researchers, preservice teachers take an "inquiry as stance" towards their practice (Cochran-Smith & Lytle, 2021). Taking an inquiry approach requires inviting students to share their thinking and feelings about their learning experiences. Karen noted that getting to know her students was a higher priority than curriculum documents. Through AR, she discovered that what matters most in teaching and learning is relationships.

Maya also highlighted the importance of cultivating relationships with students as a key takeaway from her AR inquiry. Here, Maya makes a connection between relationships and learning. Within AR, teachers and students are co-constructors of knowledge, and learning is a relational process. It is not just a matter of passing down information; it is about connecting on a deep emotional level with love and respect.

> What I learned in my action research, and what is my biggest, like, take away from that experience, is that relationships are key to any learning…You've got to appreciate them for who they are. (Maya)

Another participant, Lucy, shared her perspectives about how AR enabled her to get to know her students more deeply. Lucy said, "I think that it just makes me think about, like I said, the way students, what they like, what they're good at, what comes naturally to them." AR afforded opportunities to engage students' knowledge, interests, and strengths and provided teachers with the information they needed to respond to students within context. Tom also discussed the importance of adapting to changing situations by being responsive to students.

> So, I had to take a step back and look at where they are and what they already know. You need to be responsive to where they're at in their learning and to constantly adapt to the situation. (Tom)

Through AR, Tom used data to draw on students' knowledge and inform his practice. Tom learned that the ability to 'constantly adapt' to situations as they arise is a key component of teaching.

Jill highlights how AR helped her learn how to observe and document learning more closely.

> The benefits are definitely the fact that you, you definitely get to engage more with your students…you just get to learn how to create and build those relationships and connections. And to see how kids are innovating, and also how they interact with other students. (Jill)

As action researchers, learning to observe and pay attention to what students are doing and saying becomes part of teaching. Taking time to observe students closely enabled Jill to build stronger connections with them, and this remains part of her current practice.

As preservice teacher researchers, these teachers collected data from multiple sources, including interviews, surveys, and focus groups. These data collection methods provided numerous opportunities to discuss students' learning experiences and their feelings about learning. They invited students' opinions and listened carefully to what they had to say. More importantly, they used information gained from conversations with students to inform and make changes to their practice. When teachers engage students' voices, there is an expectation that they will listen and respond. Maya said, "You're listening to your kids, you're responding to what they need." What appears to be significant here is the idea that teaching begins with listening to students first, followed by the use of curriculum documents.

Through their AR, preservice teachers were keenly interested in hearing students' voices and making use of what they had to say as part of the teaching and learning process. Karen discussed learning the importance of giving students a voice and choice in their learning and how this impacts her current practice. Karen said, "I am more willing to allow kids to figure things out on their own than I ever would have been if I didn't have to go through this experience." Through AR, she came to understand that students needed opportunities to construct their knowledge, to 'figure things out.' She alludes to the significance of student agency in the next excerpt.

> Ahh, I also give them more freedom in their, in their projects, and learning… like I have more opportunity to give my students agency in their own learning. They get to decide a lot of the projects they do, and realizing that this is inquiry-based, hands-on learning, has such a profound effect. I wouldn't, I don't think I would have known, no matter how many times that my teachers, that you guys told us, it doesn't really hit you until you see it. (Karen)

Karen's use of the words 'freedom' and 'agency' signals a shift in power-knowledge relations. Here, students have a voice and make decisions about the projects they are interested in doing. Karen said that it wasn't until carrying out her own AR inquiry that she understood this, even though she had heard about it from teachers. Her use of the words 'it doesn't really hit you' speaks to the impact engaging in AR can have on transforming relationships between teachers and students.

Reflective Practice

Throughout their two-year BEd program, preservice teachers engaged in reflective practice in multiple ways as they documented their experiences during their AR inquiries. All participants in this study discussed how they learned to reflect and how this impacts their current practice. As researchers, daily reflection became a regular part of their teaching, learning, and praxis, enabling them to take action.

As these preservice teachers carried out their AR, their reflections were systematic, intentional, and connected to their ongoing actions. Their reflections involved carefully considering the effects of their teaching on students, enabling them to pose questions for further inquiry. Through AR, Lucy reported she learned that reflection is a key component of effective teaching.

> Reflection, if that makes sense…Ah, I could kind of reflect on, okay, how did that go? How could I make it better when I go in tomorrow? What will I do differently? Ah, and I think that's a big part of teaching anyway, is reflection. And how can I improve? (Lucy)

For Lucy, daily reflection was integral to AR. Her reflections were deliberate, guided by questions related to her research topic and teaching practice. Lucy thought carefully about what happened in class each day and used this to design lessons for the following day. Her reflections informed her practice and were strongly connected to her agency.

Emma's reflections were also intentional and informed by her observations of students' learning. Again, reflection was more than just thinking about what happened; it involved the intentional analysis of data to generate evidence to bring about a desired change.

> I had to go in and talk to the kids to find out what they knew... Do they know anything? What can they tell me? What can they not tell me? What am I seeing in the classroom? What am I not seeing in the classroom? …So, it was kind of like, with my data, I was able to, almost able to see inside their brains, to see their thinking. (Emma)

Through reflection, Emma gained insight into children's thinking about mathematics. She was specific about the kinds of questions she raised during her close analysis of the data.

> And it was unreal to look back, because when you're in the classroom, you kind of, like, have blinders on, focusing on kind of one thing, but when you have all the data in front of you, you're just like, whoa! Like you need to step back, take it bit by bit, and focus on little bits, and then you kind of get to analyze it. (Emma)

Utilizing the data generated from her inquiry was an essential part of Emma's ongoing reflections. Emma's reflections were planned, deliberate, and informed her teaching.

In the next excerpt, Maya distinguishes between being reflective and reflecting in order to take action.

> And before then (AR), I never, like, I did in a sense because I've always been a bit reflective, but not intentionally... Like I always had feedback, but it wouldn't be like, oh, they said this so I should change this. It was always like, oh, okay, I could do it better. But I, I tried to, like, pinpoint things that they (students) were trying to tell me and fix those specific things. (Maya)

For Maya, reflection meant more than just feedback; it was about changing practice. Maya's word choices signal intention—change, pinpoint, and fix. These words all emphasize the action. Within AR, reflection served a purpose and was an integral part of the design. Maya also highlighted the importance of reflective practice that is connected to action.

> And reflective practice is really the only practice to me. It's, it's, it's not thinking that you're right, and it's thinking how can I do that better. It's how can I make it more towards that student? I mean, I look back, and I'm like, ohh, there's so much more, things that I didn't think about back then, that even now, reflecting on it, I could have changed so much. And that could have been so much better for some, for certain kids. And I don't know everything, so that could have easily made it worse for other kids, you know. Like, but all of that comes from my action research. (Maya)

For Maya, reflective practice is about ongoing learning and professional growth. Maya is implying that AR is a way of 'looking back' and moving forward. It is the back-and-forth motion

of learning and changing over time. What stands out here is that reflection did not end when Maya completed her AR project; it lingered over time and continues to impact her practice. Maya says, 'even now,' that she is a teacher, she continues to think about how she might have done things differently and how she might do things differently.

Evidence from my analysis of transcript data demonstrates how AR provided preservice teachers with opportunities to become reflective practitioners. Within AR, reflective practice was embedded in teaching and learning. Their reflections were guided by self-questioning and close analysis of data generated through their AR inquiries. In AR, reflective practice is intentional, systematic and directly connected to making changes to improve practice.

Becoming Confident Teachers

Within the teacher research component of their two-year program, there was a strong focus on adopting an "inquiry as stance" approach to practice (Cochran-Smith & Lytle, 2009, p. 119; Cochran-Smith & Lytle, 2021). Preservice teachers were encouraged to pose questions and problems, observe, reflect, investigate, and document their experiences. Positioning preservice teachers as researchers, knowers, and change agents influences the kind of teachers they might become, where teachers theorize practice, utilizing theory to inform their practice, and, in turn, practice informs and generates grounded theory (Cochran-Smith & Lytle, 2009, 2021; Miller et al., 2012).

AR processes included reflecting on observations and wonderings from their practicum experiences and selecting a topic that they wanted to understand more deeply. I identified three ways in which AR influenced preservice teachers' identities: positioning them as learners, helping them see themselves as knowers, and enhancing their confidence.

Teaching is viewed as a learning profession (Darling-Hammond & Sykes, 1999). Through AR, preservice teachers can take up the subject position of 'teacher as learner.' Positioning teachers as learners means deemphasizing the notion that teachers need to be experts and embracing the idea that new knowledge is possible through interactions with students. Teachers shared their perspectives on being open to new learning and not having to know it all.

> Well, like I said, I think that's one of the most important things, not to go in there and think you know everything, and there's no room for improvement in yourself. It's important for you to understand that you have a lot to learn yourself, as a teacher. And you're always learning. (Tom)

Tom raises a caution about entering a classroom thinking you know it all. As a learner, Tom is open to learning that spans over a lifetime. He understands that he does not have to know it all to teach and that it is critical to be open to the kind of learning that comes from practice. For Tom, learning through AR meant being able to make improvements. Willie also referred to learning as 'not doing things' as 'going through the motions,' but to learn by doing.

A sociocultural view of learning recognizes the situated nature of learning within a particular context. This view of teacher learning is embedded in their interactions with students and affords new relations with knowledge.

> I went into it thinking that I would teach them everything. Like I, I've researched it all, and I knew what I was teaching… But it was just like, I don't know, eye-opening, what you can actually do as a teacher! And eye-opening, what you can do when you reflect on what you

> can do, if that makes sense…It made me aware that it wasn't all, it wasn't all known, and it doesn't have to be. And you just got to 'trust your gut'. (Maya)

Positioning teachers as learners can transform teacher-student relations in powerful ways. Maya began to think that she had a solid plan but was surprised by the possibilities of not knowing. Maya became okay and excited when she trusted herself to be fine, even if she didn't know why. This highlights the interconnections between knowing and praxis. Karen's words speak to the power of generating knowledge of practice (Cochran-Smith & Lytle, 1999a).

> You know, if things are easy, if you just study for a test, where somebody has already given you the information for it, and you put it back up on a page. But when you have to find the answers without googling them, you know, you've got to see it, and do it, and change your mind, and then change your mind again. (Karen)

Through Karen's experiences with AR, she came to understand the distinction between the knowledge that comes from outside practice and knowing that comes from practice. Karen alludes to a different kind of knowing, the kind that knowers see, do, and feel. This is her knowledge and not someone else's. Karen's knowledge comes from her questions and through inquiry. Here, theory and practice are intertwined in the doing of teaching and learning.

Participants shared how they gained confidence in their ability to teach through AR. What seems significant here is how they talk about their experiences with AR as preparing them to teach.

> Yes, I think it (AR) definitely had an impact on my confidence… knowing that I could do it even when things get tough, this project really helped that. (Karen)

Karen learned that she could work it out when 'things get tough' and gained confidence in her ability to solve problems. Below, Maya explains that through AR, she came to know she could teach.

> And then you know…like this is crazy, like I can't do this! But then, when I got to do my action research, and I finished my action research, and I did the video…I was like 'Whoa, like, wow!'…It [AR] gave me such confidence, and it gave me time to practice, and make mistakes, and to figure out what my teaching would be, and what my classroom would be, what do I want for my students, what kind of teacher do I want to be?… Honestly, it was one of the main experiences that really shaped and showed me what I wanted to be, and where I wanted to go with my kids. Like the things I needed to remember when I'm teaching on my own. (Maya)

AR enabled Maya to practice, make mistakes, figure things out, and consider the kind of teacher and learning environment she wanted for her future students. Maya's preservice experience with AR shaped her teacher identity and afforded opportunities to learn more about the kind of teacher she was becoming and wanted to be. Like Maya, Lucy expresses that she did not feel like a teacher until doing AR.

> I feel appreciative to have this before I became a teacher…because I have nothing to compare to, because I wasn't a teacher before I did this (AR). (Lucy)

The phrase 'wasn't a teacher before I did this' is a powerful statement. Learning to teach through AR afforded Lucy and other preservice teachers' opportunities to practice teaching.

Karen offered her thoughts about preservice teachers doing AR as part of their teacher education program.

> I still remember that [AR] better than any lecture I've ever attended, right? So, I think yeah, that's how you learn through doing these projects, and you also learn how to deal with adversity, which we need a lot of… But this action research project was a little bit like that. It was a little glimpse of what it's like to be thrown out to sea, you know…There's nobody who has done this before that can tell you how it goes. So, it was good. It was an experience that I think you really need. They're going to have to figure it out in your first year of teaching, right, or the second, or the third. Somewhere along the way, you have to face those things. (Karen)

The metaphor 'thrown out to sea' evokes the idea of having to do it on her own. Karen implies that this type of experience is something every preservice teacher should have, as it reflects the reality of teaching. In AR, nobody told Karen what to do; she was in charge, she had to figure it out on her own, which prepared her for the realities of teaching.

Jill expressed a similar perspective when discussing her current teaching context in a multigrade setting.

> Like, I don't think I'd be able to juggle as many grades and as many things as I do, as I have been doing now, than if I didn't do it before in my project. So, it kind of gave me a more open perspective…it (AR) basically allows you to just step into it, before you step into the actual teaching. (Jill)

For Jill, AR is a way to 'just step into' teaching and to practice and learn. Maya summarized learning to teach through AR by saying, 'It's like, it really helps solidify what you have learned, and gives you the confidence. Yeah, I know what I am doing! I know how to teach!' Others noted a similar experience.

In the excerpt below, Emma enthusiastically responds to an interview question about what she learned from her AR project.

> That I can teach!! I remember I was so nervous. I was talking to my internship teacher, and she was writing a sub plan. She wasn't going to be there the next day, and I said, I don't know if I'd be able to teach…I remember sitting at my own table with these kids running my own centre, and I was just calling the shots, and I felt great, and I was like I am a teacher! (Emma)

Emma is expressing the kind of professional confidence that comes from knowing she is in control and able to make decisions.

Discussion

The findings of this study highlight the transformative potential of action research in preservice teacher education. Participants reported significant growth in three key areas: increased professional confidence, the development of reflective and action-oriented practices, and a shift toward more democratic relationships between teachers and students. This kind of knowledge is significant to teachers' agency (Miller et al., 2012). Collectively, these findings suggest that action research can serve as a powerful pedagogical approach in preparing educators who are more critical, empowered, and socially responsive. In addition, it can add to the research on how preservice teachers can be "supported in constructing identities as teacher researchers" (Taylor, 2017, p. 17).

First, adopting an "inquiry as stance" approach towards practice afforded opportunities to transform their relations with students (Cochran-Smith & Lytle, 2021, p. 100). Teachers reported a difference in their relationships with students. AR required preservice teachers to observe and listen closely to what students were saying and doing. This led to more democratic relations as they came to understand their learning more deeply. They were genuinely interested in hearing their students' perspectives, understanding them, and involving them in the learning process. As researchers, they posed questions, sought out students' opinions, and used this information to inform their practice. They were open to learning alongside students, and learning and knowing became embedded in practice. They learned how to be okay with not knowing and to co-construct knowledge with students.

Second, teachers reported that, through action research, they became more reflective practitioners, and this was strongly connected to their agency. They reported becoming more intentional in their teaching, making decisions based on data they had generated and analyzed. Taking an "inquiry as stance" meant moving forward and taking action to improve their practice. Engaging in AR as preservice teachers enabled them to continue to make changes through reflection and action.

Third, AR provided teachers with opportunities to practice teaching, which enabled them to become more confident. They reported that AR gave them more confidence in knowing they could teach. Through AR, they were positioned as producers of knowledge, empowering them to use their own knowledge to inform practice. This finding adds to previous research (e.g., Cochran-Smith & Lytle, 2009) that underscores the empowering nature of practitioner inquiry in teacher education.

These findings also carry important implications for teacher education programs. Embedding action research into preservice curricula can help bridge the theory-practice gap by positioning preservice teachers as researchers, inquirers, critical thinkers, knowledge producers, and agents of change. Also, learning through inquiry and engaging in AR, can potentially impact teachers' learning throughout their careers.

Given the small sample size and short duration of preservice teachers' action research projects, future research could explore the sustained impact of action research over time and investigate how institutional and contextual factors support and limit teacher inquiry. By fostering confidence, reflection, and action, as well as more democratic pedagogical relationships, AR holds the potential to cultivate responsive teaching practices that can sustain teachers throughout their careers. In teacher education, it is important to consider pedagogy as the process of knowledge production (Britzman, 2003).

Conclusion

This small-scale research study involving interviews with seven teachers about their experiences conducting action research as preservice teachers offers valuable insights but also has some limitations. On the one hand, the in-depth interviews afford a deeper understanding of how preservice teachers perceive and engage with action research, providing insights into the potential impact on their subsequent teaching. These insights can inform teacher education programs by highlighting the conditions under which school districts and departments of education can support AR as an investment in teachers across their careers. I acknowledge that having seven participants constrains the generalizability of the findings, as this may not be representative of the broader population of preservice teachers across different contexts, and that relying on self-reported data

introduces potential bias. However, there is ample evidence across participant accounts to suggest significant benefits of AR in preservice teacher education, particularly in learning to teach in ways that promote more democratic relationships between teachers and students, strengthen connections between reflection and action, and enhance teacher identities as knowers and change agents.

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Between Digital and Analogical: Familial Perspectives on Teaching to Develop 21st-Century Competences

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Abstract

In recent decades, education has transformed due to new demands, requiring constant updates to teaching methods. Training in 21st-century competences is essential for preparing students for a changing future. Education 4.0, driven by Information and Communication Technologies (ICT), plays a key role in this process. However, some argue that a blend of traditional methods and technology enhances learning. This study examines the perceptions of families of students aged 3-18 on adapting teaching with ICT versus traditional methods to promote the development of 21st-century skills. It also explores how family relatives' education levels influence their views on the best methodologies for teaching these competences. Data from 720 family relatives were collected through an online questionnaire. The analysis showed that families see a clear connection between the competences studied. However, there were significant differences in their perceptions of teaching methods with and without ICT for developing certain skills. The study also found that family relatives' education levels affected their views. Overall, the research concludes that a balanced approach, integrating ICT with traditional teaching methods, is essential for enriching education and preparing students for the future.

Keywords: 21st-century competences, family relatives, ICT, analogical resources

Between Digital and Analogical: Familial Perspectives on Teaching to Develop 21st-Century Competences

Over recent decades, education has undergone a transformation owing to the rapid social progress, demands and challenges that people must face (González-Pérez & Ramírez-Montoya, 2022). Nowadays, society's expectations (e.g., emphasizing digital literacy and collaborative problem-solving) demand skills and competences that extend beyond conventional educational approaches (i.e., lecture-based teaching and standardized testing) (Ghavifekr & Wong, 2022). Therefore, this context highlights the need to adopt pedagogical methods aligned with these emerging demands, thus encouraging education systems to focus on preparing students integrally so that they acquire the necessary competences to face a complex and rapidly changing future (Ghavifekr & Wong, 2022; Karakoyun & Lindberg, 2020; Kornytska et al., 2023; Koul & Nayar, 2020).

The recent social and educational transformation brought about by integrating Information and Communication Technologies (ICT) (Schlomann et al., 2020) has led to different phases of Internet evolution known as Web 1.0, Web 2.0, Web 3.0 and Web 4.0 (Huk, 2021; Maria et al., 2018). These phases are closely linked with the changes in education known as Education 1.0, 2.0, 3.0, and 4.0, reflecting the growing influence of technology on teaching and learning. Education 1.0 refers to a teacher-centred model focused on knowledge transmission and memorization. Education 2.0 emerged with early internet use, allowing limited interactivity and some learner engagement. Education 3.0 introduced more participatory and collaborative approaches, promoting active learning and digital content creation. Education 4.0, the current phase, emphasizes personalized learning, real-time feedback, integration of AI and big data, and the development of competences aligned with the OECD Learning Compass and ATC21S frameworks (Ghavifekr & Wong, 2022; González-Pérez & Ramírez-Montoya, 2022; Griffin et al., 2012; Himmetoglu et al., 2020; Huk, 2021; Maria et al., 2018; OECD, 2019).

Education 4.0 goes beyond the mere presence of technology, requiring profound transformations in educational approaches to respond to contemporary and future demands. Strongly supported by digital technologies, this phase promotes the integration of ICT as pedagogical tools to create flexible curricular systems aligned with current needs and guided by frameworks such as DigComp and DigCompEdu, which provide structured guidelines for developing digital competences in both students and teachers (González-Pérez & Ramírez-Montoya, 2022; Prasojo et al., 2019; Redecker, 2017; Vuorikari et al., 2022). Effectively incorporating these tools into teaching and learning processes is therefore essential to strengthen education and foster the development of 21st-century competences (Agaoglu & Demir, 2020; Ghavifekr & Wong, 2022; Huk, 2021; Karakoyun & Lindberg, 2020).

It is important to acknowledge that many competences now considered essential for the 21st-century have been cultivated within traditional educational approaches long before the widespread integration of ICT (González-Salamanca et al., 2020; Willis et al., 2018). However, the inclusion of ICT enriches these competences by introducing new dimensions, such as digital literacy and citizenship, which are vital for effective participation in modern society. While ICT may not be indispensable for all competences, they are powerful tools for enhancing learning efficiency, motivation, accessibility, and personalisation. Therefore, several authors advocate approaches that combine digital and analogue resources to optimise the educational process and meet diverse learning needs (Agaoglu & Demir, 2020; Lytvyn et al., 2020; Willis et al., 2018).

These competences correspond to skills considered necessary to face future challenges and participate effectively in society (Ghavifekr & Wong, 2022; González-Salamanca et al.,

2020; Kornytska et al., 2023). Interrelated and complementary 21st-century competences jointly contribute to holistic development, as highlighted in frameworks such as the OECD Learning Compass and ATC21S (González-Pérez & Ramírez-Montoya, 2022). Developing such competences is essential to manage today's challenges and to promote significant personal and professional progress in a complex and interconnected world (González-Pérez & Ramírez-Montoya, 2022; Karakoyun & Lindberg, 2020).

Although ICT offer benefits for future training (Carrión-Martínez et al., 2020; Das, 2019; Lawrence & Tar, 2018; Prasojo et al., 2019), some researchers emphasize the importance of integrating conventional and digital tools (Agaoglu & Demir, 2020; Lytvyn et al., 2020; Willis et al., 2018). Such integration enriches the education experience by providing teachers and students with a diverse series of tools to provide more effective learning (Lytvyn et al., 2020). It is also important to distinguish between education and training, which, although related, are distinct processes: education encompasses holistic development across multiple domains, whereas training focuses on developing specific practical skills. ICT play a valuable role in both areas by enhancing theoretical understanding and practical skill acquisition.

Moreover, family perception plays a critical role in the educational process, which is not shaped solely within the school environment. Students' development and engagement with both conventional and ICT-based learning are strongly influenced by the family, understood as the primary context for early learning and socialization. As the first setting for human development, the family plays a decisive role in children's growth and learning across multiple areas of life (Bolaños & Rivero, 2019; Meza Rueda & Páez Martínez, 2016). This central role of the family can be understood through Bronfenbrenner's (1979) bioecological model, which posits that individual development is shaped by the interaction between various immediate environments. Within this framework, the family functions as the primary microsystem, and its alignment with the school environment constitutes a critical mesosystem. Furthermore, according to the Hoover-Dempsey and Sandler (1995) model, parental involvement is fundamentally driven by their 'role construction' and their perceptions of their own skills to support learning. Consequently, familial perceptions regarding 21st-century competences are not merely isolated opinions; rather, they are fundamental factors that determine the efficacy of Education 4.0 implementation within the domestic sphere.

In the Spanish Autonomous Community of Aragón, the integration of ICT into education is supported by national and regional policies, such as the LOMLOE curriculum (BOE, 2020) and the Digital Education Action Plan of Aragón (Gobierno de Aragón, 2021). These policies provide the infrastructure, teacher training, and curricular guidance necessary to develop students' 21st-century competences. By linking these policies explicitly to the research objectives, this study analyzes how family relatives perceive the effectiveness of ICT-based versus conventional teaching methods.

Despite the central role of families, relatively few studies have explored how they perceive education delivered through ICT compared to conventional methodologies, particularly regarding the development of 21st-century competences. This constitutes a relevant gap in current research, especially within the Spanish context. In the Autonomous Community of Aragón, ICT integration in education is supported by both national and regional policies, including the LOMLOE curriculum and the Digital Education Action Plan. Schools in the region generally have access to digital devices and internet connectivity, and ongoing teacher training initiatives—aligned with the European DigCompEdu framework—reinforce a commitment to digital competence and technological innovation.

Considering these aspects, the present study aims to analyze perceptions of family members of students aged 3-18 years in Aragón regarding the suitability of education delivered

through ICT compared to conventional teaching methods for developing 21st-century competences. The relevance of this study lies in focusing on families' viewpoints—a perspective that remains underrepresented in the literature—and in exploring a topic of growing importance: how different educational methodologies are perceived in relation to the development of competences regarded as fundamental for students' present and future.

Objective of This Study

In general terms, and by considering the aforementioned theoretical background, the objective of this study was to analyze the perceptions of the family relatives of students aged 3-18 years from Aragón regarding the suitability of ICT-based and conventional teaching methodologies for fostering 21st-century competences. To fulfil this overall objective, the following specific objectives were set out:

1. Evaluate family relatives' perceptions of the suitability of ICT-based teaching methodologies for fostering 21st-century competences
2. Examine family relatives' perceptions of the suitability of conventional teaching methodologies for fostering 21st-century competences
3. Examine whether family members consider analog teaching more or less suitable than ICT-based teaching for developing specific 21st-century skills.
4. To analyze the differences in the perception of family members regarding the suitability of analog and ICT-based teaching methodologies for promoting 21st-century skills according to the educational level of the family members.

Method

Participants

The sample in this work consisted of the family relatives of students aged 3-18 years from Aragón (Spain). For the purpose of this research, the term "family relatives" encompasses parents, guardians, and other close family members who play an active and significant role in the educational and developmental processes of the students. The only eligibility requirement for participation was having at least one child currently enrolled in school within the 3-18-year age range. Families were invited to participate through the Parents' Associations of the different schools in the region, as well as directly via the schools, which helped disseminate the information among families. The study's objective was communicated by email, providing participants with the option to participate voluntarily and assuring that all data would remain confidential. The invitation also included a web link giving direct access to the questionnaire. The instrument was designed and developed using Qualtrics software. After reviewing the valid questionnaires for our research, there were 720 participants, whose characteristics are reflected in Table 1. In addition to the variable concerning the relative's educational level, which is directly related to one of the main objectives of the research, information on other variables was collected to characterize the sample and facilitate the interpretation of the generalisability of the findings. The final sample size was considered appropriate for the descriptive and comparative analyses planned, in line with the exploratory scope of the study and the diversity of the target population.

Table 1

The Sample's Socio-Demographic Characteristics (N=720).

Variables	N	% of the sample
Gender		
Female	574	79.7
Male	146	20.3
Age (M=45.88; SD=5.53)		
Between 18-32 years old	7	0.97
Between 33-42 years old	169	23.47
Between 43-52 years old	470	65.28
Between 53-62 years old	74	10.28
Province		
Huesca	121	16.8
Zaragoza	557	77.4
Teruel	42	5.8
Highest level of education attained		
Primary/Secondary	84	11.6
Baccalaureate	81	11.3
Vocational training	194	26.9
University	361	50.1
Type of school your children attend		
Public school	75	10.4
State school	645	89.6
Children's school environment		
Municipality with less than 2,000 inhabitants	77	10.7
Municipality between 2,000 - 10,000 inhabitants	201	27.9
Municipality with more than 10,000 inhabitants	441	61.3
Total	720	100

Definition of Variables

The variables that the present study took as an analysis object were the so-called 21st-century competences. The literature offers no unanimous definition of this term (Loução & Pedro, 2023; Tight, 2020). However, 21st-century competences are understood as a set of essential skills to face future challenges and requirements. Although the employed terms may change, the basic idea is that these competences are crucial for making people capable and enabling them to actively participate in society (Ghavifekr & Wong, 2022; González-Salamanca et al., 2020; Kornytska et al., 2023).

These competences include creativity, critical thinking, problem solving, decision making, communication capacity, teamwork, seeking and organising information, digital citizenship, ICT competences, adapting to changes, initiative-taking capacity, productivity, leadership capacity skills and the capacity to be enterprising (Agaoglu & Demir, 2020; González-Pérez & Ramírez-Montoya, 2022; González-Salamanca et al., 2020; Koehorst et al., 2021).

For this study, educational approaches were classified as ICT-based or analogue. ICT-based education integrates digital technologies, such as online platforms, educational apps, or interactive whiteboards, whereas analogue education relies on traditional, non-digital methods like printed books, notebooks, and face-to-face instruction.

Instrument

The instrument employed to collect data was designed *ad hoc* by taking the available literature about the study theme as a basis. Having written the first version of the instrument, it was judged by a panel of experts to determine the suitability, match and wording of items. During this process, 10 professionals with experience in the academic university domain came from different disciplines (inclusive education, use of technologies in the education context and methods of research). The instrument was also delivered to 10 mothers and fathers of students aged 3-18 years to collect their opinions about its formulation and understanding. The aim was to check if the vocabulary and instructions in the instrument were easy for family relatives to understand. For this stage, family relatives with different incomes, levels of education and socio-cultural levels were intentionally selected. In this research, the term "suitability" was understood as the judgments made by family relatives regarding the appropriateness of both ICT-based and conventional teaching methodologies in supporting the development of 21st-century competences in their children, which was a central focus of the instrument's evaluation. These judgements were considered as expressions of perception, understood here as subjective evaluations shaped by beliefs and attitudes towards the effectiveness of different teaching approaches.

Based on this analysis, and bearing in mind the contributions provided, the next stage involved restructuring the instrument to obtain its definitive version. With this final version, the instrument was divided into two sections: the first part centred on collecting data about the participants' socio-demographic characteristics; the second part included the indicators that family relatives had to score. This second part contained 14 items that, on two Likert-type scales from 0 to 10 points, had to be valued by the participants according to how they perceived the adaptation of teaching with ICT and by analogical teaching (i.e., without ICT) for students to develop and acquire 21st-century competences. The full wording of the questions, the scale points, and the grouping of items into subscales are provided in Appendix A.

Data Analysis

The data collected with the instrument were coded and analysed using version 22.0 of the SPSS statistical package. According to the research objectives, descriptive statistics were applied (in terms of means and standard deviations), as was the inferential type. Differences in means (Student's t) were applied for paired samples, given that the same participants evaluated both analogical and ICT-based teaching methodologies. To analyze differences according to the educational level of family relatives, one-way analyses of variance (ANOVA) were performed. When the ANOVA results were statistically significant, *post hoc* multiple comparisons using Tukey's HSD test were conducted to identify which groups differed significantly from each other. Pearson's correlation coefficient was employed to establish linear relations among the 21st-century competences set out in the questionnaire.

Results

Table 2 (Appendix B) provides the data obtained from the descriptive statistics in terms of means (M) and standard deviations (SD). It also includes results on the perceived suitability of analogical and ICT-based teaching for developing 21st-century competences.

Regarding perceptions of the suitability of analogical teaching, the competences that received the highest scores were teamwork (M = 7.62; SD = 1.92) and communication capacity (M = 7.53; SD = 1.93). Conversely, family relatives more negatively evaluated the adaptability of teaching without digital resources for developing digital citizenship (M = 5.18; SD = 2.58) and ICT competences (M = 4.9; SD = 2.55). Notably, these competences also showed the highest SDs, reflecting greater variation in how participants perceived the suitability of analogical teaching to support 21st-century competences.

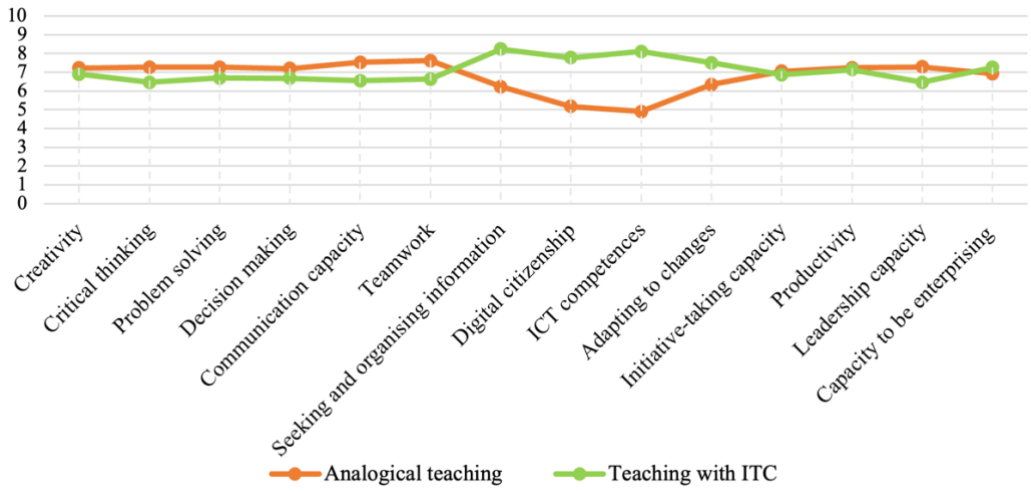
Regarding the results obtained about adapting ICT-mediated teaching to work on 21st-century competences, the highest scores were for seeking and organizing information (M = 8.24; SD = 1.87) and ICT competences (M = 8.11; SD = 1.8). These scores presented comparatively lower SDs, indicating greater consistency in participants' perceptions of ICT-mediated teaching. Conversely, the more negatively valued competences were critical thinking (M = 6.46; SD = 2.06) and leadership capacity (M = 6.46; SD = 2.19).

A paired-sample t-test revealed statistically significant differences in how family relatives perceived the suitability of analogical teaching and ICT-mediated teaching methods. Table 2 presents these results, and Figure 1 graphically represents them. Regarding competences where analogical teaching was perceived as more suitable than ICT-mediated teaching, family relatives rated creativity ($t = 2.99$; $p < .01$), critical thinking ($t = 8.06$; $p < .001$), problem solving ($t = 5.80$; $p < .001$), decision making ($t = 5.41$; $p < .001$), communication capacity ($t = 8.03$; $p < .001$), teamwork ($t = 9.21$; $p < .001$), and leadership capacity ($t = 8.25$; $p < .001$) as significantly more suitable.

Conversely, for competences where ICT-mediated teaching was perceived as more suitable than analogical teaching, the highest ratings were observed for seeking and organising information ($t = -17.87$; $p < .001$), digital citizenship ($t = -21.02$; $p < .001$), ICT competences ($t = -26.63$; $p < .001$), adapting to changes ($t = -10.74$; $p < .001$), and being enterprising ($t = -3.44$; $p < .001$).

Figure 1

Comparing the Means between Analogical Teaching and Teaching with ICT



Pearson's correlation analysis was used to examine the relationships among the 21st-century competences studied. As Table 3 shows (Appendix C), the obtained results evidenced strong positive correlations, which consistently appeared among this set of variables. Nevertheless, it is worth pointing out that some relations stood out for their marked significance. The strongest positive correlation emerged between critical thinking (CAN 2) and ICT competences (CAN 9) ($r = 0.838$; $p < .01$). Strong positive relations were also found between digital citizenship skills (CAN 8) and ICT competences (CAN 9) ($r = 0.785$; $p < .01$); leadership capacity (CAN 13) and capacity to be enterprising (CAN 14) ($r = 0.774$; $p < .01$); and problem-solving capacity (CAN 3) and decision-making skill (CAN 4) ($r = 0.749$; $p < .01$).

Although all correlations were positive and statistically significant, some were weaker in magnitude, including communication capacity (CAN 5) with ICT competences (CAN 9) ($r = 0.275$; $p < .01$); communication capacity (CAN 5) with digital citizenship (CAN 8) ($r = 0.282$; $p < .01$); problem solving (CAN 3) with ICT competences (CAN 9) ($r = 0.331$; $p < .01$); and teamwork (CAN 6) with ICT competences (CAN 9) ($r = 0.342$; $p < .01$). Despite being comparatively lower, these correlations also indicate meaningful relationships among competences.

Next, an inferential analysis was performed by applying the ANOVA test and considering the independent variables referring to the surveyed family relatives' highest level of education (Table 4, Appendix D). *Post hoc* comparisons using Tukey's HSD test were conducted to determine which education-level groups differed significantly from each other. The results generally revealed more pronounced differences across education levels in perceptions of analogical teaching than ICT-based teaching.

Significant differences were observed in perceptions of the suitability of analogical teaching for developing creativity ($F = 4.809$; $p < .01$), problem solving ($F = 2.934$; $p < .05$), seeking and organising information ($F = 4.305$; $p < .01$), and productivity ($F = 2.662$; $p < .05$), with contrasts emerging mainly between participants with Primary/Secondary education and those with university studies. For digital citizenship ($F = 7.234$; $p < .001$) and ICT competences ($F = 11.023$; $p < .001$), significant differences also appeared between Primary/Secondary and university education groups and between Vocational Training and university groups.

For suitability linked to adapting to changes ($F = 4.304$; $p < .01$), significant differences were found between participants with Primary/Secondary and university studies, and between Primary/Secondary and Vocational Training studies. Finally, perceptions related to being enterprising ($F = 4.583$; $p < .01$) showed significant differences between Primary/Secondary and Higher Secondary Education groups, and between Vocational Training and university groups.

For ICT-based teaching, significant differences were found only for communication capacity ($F = 3.460$; $p < .05$) and ICT competences ($F = 3.496$; $p < .05$), both appearing among relatives with Vocational Training and university studies. These results suggest that education level influenced perceptions more clearly in relation to analogical teaching than ICT-based teaching.

Discussion and Conclusions

Using appropriate statistical techniques, this study described how students' family members perceive the suitability of conventional teaching methods compared to ICT-mediated methods for fostering 21st-century competences throughout the educational process. These findings directly address the study's aims, particularly those related to comparing both teaching approaches and analyzing how they support competence development. This study goes beyond

descriptive parental surveys by directly comparing analogue and ICT-mediated methodologies across competence domains in a large regional sample spanning ages 3–18.

The research works by authors like González-Salamanca et al. (2020) and Willis et al. (2018) point out that some 21st-century competences were already present even before technology emerged in our lives and in different education stages. These authors highlight competences such as critical thinking, problem solving, decision making, communication skills, and teamwork. They argue that these skills were effectively developed even before ICT was integrated into education. Consequently, researchers ensure that technologies are not essential for dealing with these competences but can be very useful tools for improving the process of acquiring and developing them. This improvement would take place in terms of efficiency, motivation and personalization of learning.

In relation to this, family relatives perceived that conventional teaching methodologies might be more suitable for promoting and developing the competences mentioned in this section compared to ICT-guided teaching. This perception appears to align with the perspectives discussed by González-Salamanca et al. (2020) and Willis et al. (2018), who note that these competences have historically been developed without relying on technology. These patterns are consistent with cognitive development theories, suggesting that families may prefer analogical methods for competences like creativity, communication, and teamwork due to their alignment with children's developmental trajectories and prior parental experiences. From a socio-cultural perspective, such preferences may also reflect families' beliefs about learning as a socially mediated and relational process, in which face-to-face interaction, dialogue, and shared experiences play a central role. This supports Objective 2 of the study, as relatives attributed greater suitability to conventional teaching for fostering competences linked to learning processes. Apart from critical thinking, problem solving and decision making, communication capacity and teamwork, family relatives added creativity and leadership capacity to this list.

It is also relevant to consider insights from cognitive development and neuroscience, which suggest that human cognition and brain function are closely linked to analogical processes, particularly in early childhood. Children's neurological networks mature progressively, and as such, certain cognitive abilities develop over time. This developmental trajectory implies that ICT-based methods may not be as beneficial or appropriate during very early educational stages, where hands-on, analogy experiences could better align with children's evolving cognitive capacities. Families' preferences for analogue approaches may therefore be informed not only by tradition, but also by intuitive judgments about age-appropriateness and developmental readiness, addressing the study's focus on perceptions across the 3–18 educational range.

It is important to highlight that the literature categorizes 21st-century competences based on their focus or area of application. The competences that refer to critical thinking, problem solving, decision making, communication capacity and teamwork have been grouped by several authors (Agaoglu & Demir, 2020; González-Pérez & Ramírez Montoya, 2022; González-Salamanca et al., 2020) under the heading of "skills or capacities for learning". These competences are those that the participating family relatives point out as those that can be developed without relying on ICT; that is, they could potentially be worked on from a more conventional educational approach. This thematic alignment strengthens the interpretation of Objective 2 and clarifies why analogical methodologies were rated as suitable for these competences.

Another broadly recognized category includes 'digital literacy skills,' which cover ICT competences as well as abilities related to searching for and organizing information (Agaoglu

& Demir, 2020; González-Pérez & Ramírez Montoya, 2022). Indeed, according to the perceptions of the family relatives who participated in this study, ICT seem to be perceived as indispensable as tools for developing these competences. Apart from them, family relatives added other closely linked competences, such as digital citizenship, to the list of competences that might require ICT in the classroom. This distinction suggests that families differentiate between competences grounded in experiential or interpersonal learning and those inherently linked to technological environments, directly responding to Objective 1 by demonstrating that participants viewed ICT-guided methodologies as more suitable for developing digital-related skills. From the perspective of the TPACK framework (Mishra & Koehler, 2006), these findings suggest that while families recognize the technological component, they may not yet perceive the effective integration of pedagogy and content through digital means for complex "soft skills". This indicates a tendency to view ICT as a tool for information access rather than a medium for high-level cognitive and creative development.

Regarding students' use of ICT for holistic competence development, numerous authors highlight the benefits technology offers in delivering education geared towards future needs (Carrión-Martínez et al., 2020; Das, 2019; Lawrence & Tar, 2018; Prasojo et al., 2019). Some authors (Hafifah, 2020; Schlomann et al., 2020) have recently reported that for today's society and that of the future, acquiring skills in ICT could be considered an unavoidable need. Emphasis has also been placed on the skill to browse with and efficiently apply digital tools because they are not only useful in the professional area but are also essential to fully participate in day-to-day living. Those with technological skills not only have advantages in the present but will be better prepared to face the challenges and to make the best of the opportunities that the digitized future will present (Hafifah, 2020).

The literature supports the idea that integrating ICT into teaching practices and curricula is likely to be essential for developing certain 21st-century competences (Ghavifekr & Wong, 2022; Huk, 2021). Consequently, ICT-guided methodologies will not only empower education quality but will also contribute to reinforcing essential skills for students in the present and the future; that is, to develop 21st-century competences (Agaoglu & Demir, 2020; Ghavifekr & Wong, 2022; González-Pérez & Ramírez-Montoya, 2022; Huk, 2021; Karakoyun & Lindberg, 2020). Taken together, these findings reinforce relatives' perception that ICT plays a critical role in fostering future-oriented competences, echoing the framework guiding this study.

Although family relatives in this study believe conventional analogy methods better promote some competences, and ICT-based methods are highly effective for others, some authors stress the importance of leveraging the benefits of both approaches in education. Agaoglu and Demir (2020), Lytvyn et al. (2020), and Willis et al. (2018) acknowledge that the complementarity between analogical and digital methods might significantly empower the educational process. This integrating approach seeks to make the best of both worlds by favouring an enriched pedagogical environment that attends to learners' diversity through a wide range of tools and strategies. This perspective helps explain why families' preferences are not necessarily contradictory, but context-dependent, aligning with the comparative objectives of the study while avoiding overgeneralized conclusions.

Similarly, the results of this study show that students' family members perceive a strong interconnection among different competences. According to González-Pérez and Ramírez-Montoya (2022), 21st-century competences are not isolated aspects, but interdependent components that converge to shape global development. This integrating approach of competences promotes an educational paradigm that goes beyond merely acquiring knowledge, a perspective that some researchers consider should be ruled out (González-Pérez & Ramírez-Montoya, 2022; Kornytska et al., 2023; Koul & Nayar, 2020) to encourage significant learning

that falls in line with today's demands. This interpretation responds to Objective 3 by demonstrating that relatives recognized significant relationships among competences, consistent with the correlational findings.

The results regarding the differences in perceptions based on educational level also merit discussion and conclusion. Bolaños and Rivero (2019) point out that the family is the first socialization context in which the bases for children's academic and personal development are set. Ludeke et al. (2021) emphasize the influence that the family setting has, particularly mothers' and fathers' level of education, because it plays a key role in their children's educational process. The present research work verifies differences in the perceptions regarding the suitability of analogical teaching compared to ICT-mediated teaching to deal with 21st-century competences, which could interfere with students' education according to the aforementioned authors. This finding directly addresses Objective 4 by demonstrating that relatives' educational level influenced perceptions of teaching suitability. These differences may also reflect unequal access to digital resources, varying levels of confidence in supporting ICT-based learning, and distinct forms of engagement with schools. This variation aligns with the 'second-level digital divide' (Hargittai et al., 2019; Scherder et al., 2017), suggesting that higher educational levels correlate with greater digital capital and a more positive perception of ICT's pedagogical value.

These differences are evident when comparing family members with Primary/Secondary education, who tend to favour conventional methods, with those holding Vocational Training or University degrees, who generally prefer technological approaches. Authors like Shafie et al. (2019) stress the importance of teaching training in competences from earlier education stages. Nonetheless, many studies (Abelha et al., 2020; Sá & Serpa, 2018; Sousa & Wilks, 2018) attach importance to dealing more specifically with 21st-century competences in the education stages that prepare students for the labour market; that is, Vocational Training and University. This may help explain why relatives with higher education levels show greater alignment with ICT-mediated approaches, as these have been more prominent in their own academic and professional trajectories.

At this point, it is necessary to revisit the idea of González-Salamanca et al. (2020) and Willis et al. (2018), which was previously considered. They suggest that some competences presently identified as being typical 21st-century ones have existed for years and do not need to rely on ICT. Based on this premise, this finding suggests that family relatives with Primary/Secondary studies tend to prefer conventional methods based on the personal experience that they acquired when they were students, which allowed them to develop such competences without technology. Some other previously mentioned authors (Abelha et al., 2020; Sá & Serpa, 2018; Sousa & Wilks, 2018) indicate that people with Vocational Training and University studies highlight the value and importance of 21st-century competences, and also emphasize the growing presence of technology in education today (Carrascal et al., 2021; Carrión-Martínez et al., 2020; Das, 2019; Khattri, 2021; Lawrence & Tar, 2018; Prasojo et al., 2019; Willis et al., 2018). These ideas contextualize why relatives with higher levels of education may view ICT-based methodologies more positively, deepening understanding of Objective 4.

Considering all these factors, this study suggests that while the literature supports ICT integration to prepare individuals for a digital future, family members hold differing preferences. For example, the family relatives with Primary/Secondary education favour what is traditional, while those with higher education studies are more inclined to prefer ICT. What these differences suggest is that family relatives' level of education is related to how they perceive different methodologies. From a school–home partnership perspective, these findings

underline the need for differentiated communication and support strategies that acknowledge families' diverse backgrounds and experiences with technology. This reinforces the importance of acknowledging diverse perspectives when designing teaching approaches that aim to foster 21st-century competences. Nevertheless, the literature suggests that 21st-century competences can be developed by both conventional and ICT-based methods, but depending on the specific goals and learning context. Thus, we stress that an integrating approach might be needed that takes the best of both worlds to enrich the educational process and to prepare students for their personal and professional future.

This study highlights the crucial role of families in children's development, but also reveals a gap in actively involving family relatives in educational interventions. These findings suggest the importance of exploring ways to effectively engage family relatives, especially in supporting ICT-based learning. Providing guidance, training opportunities, and accessible resources may help reduce perceived barriers and strengthen families' capacity to support competence development at home. Future research could examine how family training and resources might strengthen relatives' capacity to contribute to competence development, particularly in digital contexts. It should be noted, however, that the sample for this study was drawn exclusively from the autonomous community of Aragón, which may limit the generalizability of the findings to other regions or contexts.

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Appendix A—Instrument

Socio-Demographic Data

1. **Gender:**
   - Female
   - Male
   - Other
   - Prefer not to answer
2. **Year of birth (indicate with a four-digit number): _____**
3. **Current province of residence:**
   - Huesca
   - Zaragoza
   - Teruel
4. **Select your highest completed level of education (or equivalent):**
   - Primary
   - Secondary
   - High School
   - Vocational Training
   - University
5. **Type of school attended by your child(ren):**
   - Private
   - Private-Subsidized
   - Public
6. **Location of your child(ren)'s school:**
   - Municipality with fewer than 2,000 inhabitants
   - Municipality with 2,000–10,000 inhabitants
   - Municipality with more than 10,000 inhabitants

21st-Century Competences

We want to compare traditional education without technology and education with technology. The so-called "21st-century competences" refer to the most important skills for children's personal and professional future. Indicate to what extent you consider that each teaching context (traditional and ICT-based) is adapted to developing each of these competences, where 0 = "not adapted" and 10 = "fully adapted."

	Enseñanza tradicional											**Enseñanza con TIC**										
Creativity	0	1	2	3	4	5	6	7	8	9	10	0	1	2	3	4	5	6	7	8	9	10
Critical Thinking (Analyze problems and make appropriate decisions)	0	1	2	3	4	5	6	7	8	9	10	0	1	2	3	4	5	6	7	8	9	10
Problem Solving	0	1	2	3	4	5	6	7	8	9	10	0	1	2	3	4	5	6	7	8	9	10
Decision Making	0	1	2	3	4	5	6	7	8	9	10	0	1	2	3	4	5	6	7	8	9	10
Communication Skills	0	1	2	3	4	5	6	7	8	9	10	0	1	2	3	4	5	6	7	8	9	10
Teamwork	0	1	2	3	4	5	6	7	8	9	10	0	1	2	3	4	5	6	7	8	9	10
Information Searching and Organization	0	1	2	3	4	5	6	7	8	9	10	0	1	2	3	4	5	6	7	8	9	10
Digital Citizenship (Active and responsible citizens in a digital world)	0	1	2	3	4	5	6	7	8	9	10	0	1	2	3	4	5	6	7	8	9	10
ICT Competences	0	1	2	3	4	5	6	7	8	9	10	0	1	2	3	4	5	6	7	8	9	10
Adaptability to Change	0	1	2	3	4	5	6	7	8	9	10	0	1	2	3	4	5	6	7	8	9	10
Initiative	0	1	2	3	4	5	6	7	8	9	10	0	1	2	3	4	5	6	7	8	9	10
Productivity (Satisfactory achievement of learning outcomes)	0	1	2	3	4	5	6	7	8	9	10	0	1	2	3	4	5	6	7	8	9	10
Leadership Skills	0	1	2	3	4	5	6	7	8	9	10	0	1	2	3	4	5	6	7	8	9	10
Entrepreneurial Skills	0	1	2	3	4	5	6	7	8	9	10	0	1	2	3	4	5	6	7	8	9	10

Appendix B—Table 2. Descriptive Statistics and Student's T-Test to Compare Means

Analogical teaching (CAN)				Teaching with ICT (CTI)			T-Test	*Cohen's d*	IC 95%	
		Mean	SD		Mean	SD				
21st-century competences										
Creativity	**CAN1**	7.22	1.99	**CTI1**	6.9	2.02	2.99**	.11	(.110, .532)	CAN1 > CTI1
Critical thinking	**CAN2**	7.27	1.84	**CTI2**	6.46	2.06	8.06***	.30	(.612, 1.005)	CAN2 > CTI2
Problem solving	**CAN3**	7.26	1.72	**CTI3**	6.69	2.08	5.8***	.22	(.377, .762)	CAN3 > CTI3
Decision making	**CAN4**	7.19	1.83	**CTI4**	6.68	2.01	5.41***	.20	(.326, .696)	CAN4 > CTI4
Communication capacity	**CAN5**	7.53	1.93	**CTI5**	6.55	2.34	8.03***	.30	(.737, 1.213)	CAN5 > CTI5
Teamwork	**CAN6**	7.62	1.92	**CTI6**	6.64	2.37	9.21***	.34	(.848, 1.308)	CAN6 > CTI6
Seeking and organising information	**CAN7**	6.22	2.14	**CTI7**	8.24	1.87	-17.87***	-.67	(-2.246, -1.801)	CAN7 < CTI7
Digital citizenship	**CAN8**	5.18	2.58	**CTI8**	7.77	1.97	-21.02***	-.78	(-2.832, -2.384)	CAN8 < CTI8
ICT competences	**CAN9**	4.9	2.55	**CTI9**	8.11	1.8	-26.63***	-.99	(-3.443, -2.970)	CAN9 < CTI9
Adapting to changes	**CAN10**	6.34	2.16	**CTI10**	7.49	1.98	-10.74***	-.40	(-1.362, -.941)	CAN10 < CTI10
Initiative-taking capacity	**CAN11**	7.05	2.06	**CTI11**	6.86	2.08	1.87	.07	(-.010, .400)	CAN11 = CTI11
Productivity	**CAN12**	7.23	1.76	**CTI12**	7.14	1.96	0.88	.03	(-.098, .257)	CAN12 = CTI12
Leadership capacity	**CAN13**	7.28	1.96	**CTI13**	6.46	2.19	8.25***	.31	(.624, 1.014)	CAN13 > CTI13
Capacity to be enterprising	**CAN14**	6.92	2.06	**CTI14**	7.25	2.12	-3.44***	-.13	(-.519, -.142)	CAN14 < CTI14

On a scale from 0 to 10. According to Cohen's (1988) criteria, values of d around .20 indicate a small effect, around .50 a medium effect, and .80 or above a large effect.

*p < .05, **p < .01, ***p < .001

Appendix C—Table 3. Correlations among 21st-Century Competences

	CAN1	CAN2	CAN3	CAN4	CAN5	CAN6	CAN7	CAN8	CAN9	CAN10	CAN11	CAN12	CAN13	CAN14
CAN1	1													
CAN2	.639**	1												
CAN3	.589**	.692**	1											
CAN4	.615**	.714**	.749**	1										
CAN5	.506**	.578**	.601**	.650**	1									
CAN6	.531**	.573**	.561**	.629**	.704**	1								
CAN7	.441**	.469**	.490**	.494**	.414**	.465**	1							
CAN8	.383**	.386**	.346**	.341**	.282**	.345**	.505**	1						
CAN9	.388**	.838**	.331**	.354**	.275**	.342**	.501**	.785**	1					
CAN10	.535**	.537**	.511**	.531**	.477*	.513**	.557**	.563**	.575**	1				
CAN11	.606**	.652**	.623**	.684**	.579**	.619**	.510**	.446**	.433**	.649**	1			
CAN12	.531**	.602**	.590**	.603**	.536**	.589**	.507**	.394**	.411**	.516**	.665**	1		
CAN13	.547**	.581**	.589**	.629**	.597**	.645**	.427**	.363**	.363**	.507**	.687**	.644**	1	
CAN14	.575**	.592**	.604**	.643**	.599**	.640**	.524**	.459**	.457**	.587**	.713**	.656**	.774**	1

Significance of the correlation: * $p < .05$, ** $p < .01$

Appendix D—Table 4. The ANOVA Test for Comparing Means

		Primary/ Secondary	Higher Secondary	Vocational Training	University				
Analogical teaching (CAN)		M (SD)	M (SD)	M (SD)	M (SD)	F	*p*	ηp^2	*IC 95%*
Creativity	**CAN1**	7.79 (1.67)	7.43 (1.95)	7.36 (1.77)	6.97 (2.15)	4.809	**.003**	.020	(.196, 1.431)
Critical thinking	**CAN2**	7.56 (1.53)	7.40 (1.93)	7.29 (1.79)	7.16 (1.90)	1.254	.289		
Problem solving	**CAN3**	7.74 (1.67)	7.31 (1.55)	7.08 (1.77)	7.23 (1.73)	2.934	**.033**	.012	(.079, 1.323)
Decision making	**CAN4**	7.62 (1.73)	7.27 (1.67)	7.18 (1.82)	7.07 (1.88)	2.078	.102		
Communication capacity	**CAN5**	7.75 (1.82)	7.57 (1.98)	7.47 (2.01)	7.50 (1.90)	.468	.705		
Teamwork	**CAN6**	7.98 (1.64)	7.72 (1.94)	7.74 (1.93)	7.45 (1.96)	2.237	.083		
Seeking and organising information	**CAN7**	6.92 (2.22)	6.27 (2.21)	6.32 (2.13)	6.01 (2.08)	4.305	**.005**	.018	(.241, 1.565)
Digital citizenship	**CAN8**	5.86 (2.63)	5.34 (2.90)	5.64 (2.42)	4.77 (2.51)	7.234	**.001**	.029	(.291, 1.890)
ICT competences	**CAN9**	5.77 (2.37)	5.06 (2.89)	5.39 (2.47)	4.39 (2.44)	11.023	**.001**	.044	(.604, 2.162)
Adapting to changes	**CAN10**	7.07 (1.89)	6.48 (2.27)	6.30 (2.16)	6.16 (2.15)	4.304	**.005**	.018	(.249, 1.584)
Initiative-taking capacity	**CAN11**	7.55 (1.68)	6.94 (2.21)	7.08 (2.01)	6.94 (2.12)	2.056	.105		
Productivity	**CAN12**	7.73 (1.60)	7.17 (1.97)	7.21 (1.70)	7.13 (1.75)	2.662	**.047**	.011	(.047, 1.139)
Leadership capacity	**CAN13**	7.45 (1.62)	7.35 (2.10)	7.28 (1.97)	7.22 (1.99)	.362	.780		
Capacity to be enterprising	**CAN14**	7.68 (1.58)	6.68 (2.37)	6.88 (2.10)	6.81 (2.04)	4.583	**.003**	.019	(.299, 1.505)
Teaching with ICT (CTI)									
Creativity	**CTI1**	7.17 (1.77)	7.22 (2.06)	6.82 (2.08)	6.81 (2.02)	1.499	.214		
Critical thinking	**CTI2**	6.86 (2.00)	6.59 (2.13)	6.40 (2.03)	6.37 (2.07)	1.441	.230		
Problem solving	**CTI3**	6.80 (2.09)	6.73 (2.17)	6.94 (1.99)	6.52 (2.10)	1.833	.140		
Decision making	**CTI4**	6.73 (2.11)	6.91 (1.92)	6.75 (2.05)	6.57 (1.98)	.790	.500		
Communication capacity	**CTI5**	6.81 (2.15)	6.80 (2.06)	6.86 (2.29)	6.27 (2.45)	3.460	**.016**	.014	(.047, 1.116)
Teamwork	**CTI6**	6.73 (2.16)	6.79 (2.39)	6.63 (2.40)	6.39 (2.39)	1.029	.379		
Seeking and organising information	**CTI7**	7.80 (2.21)	8.35 (1.82)	8.22 (1.93)	8.34 (1.75)	1.980	.116		
Digital citizenship	**CTI8**	7.84 (1.78)	8.03 (1.54)	7.57 (2.06)	7.80 (2.03)	1.188	.314		
ICT competences	**CTI9**	7.82 (1.94)	8.21 (1.51)	7.85 (1.91)	8.30 (1.74)	3.496	**.015**	.014	(-.857, -.037)
Adapting to changes	**CTI10**	7.57 (2.02)	7.63 (1.65)	7.64 (1.96)	7.35 (2.05)	1.096	.350		
Initiative-taking capacity	**CTI11**	6.83 (2.13)	7.04 (2.07)	6.93 (2.07)	6.79 (2.08)	.432	.730		
Productivity	**CTI12**	7.36 (1.73)	7.20 (2.00)	7.19 (1.99)	7.06 (1.99)	.624	.600		
Leadership capacity	**CTI13**	6.73 (2.19)	6.58 (2.31)	6.60 (2.19)	6.29 (2.15)	1.486	.217		
Capacity to be enterprising	**CTI14**	7.35 (1.98)	7.43 (2.09)	7.34 (2.20)	7.13 (2.11)	.742	.527		

Effect sizes are reported as partial eta squared (ηp^2). According to Cohen's (1988) guidelines, ηp^2 values of approximately .01 indicate a small effect, .06 a medium effect, and .14 a large effect.

A Review of Shannon Leddy and Lorrie Miller's (2024) *Teaching Where You Are: Weaving Indigenous and Slow Principles and Pedagogies*

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In the era of reconciliation initiatives, educators are grappling with layers of colonial stories and processes naturalized in systems of teaching and learning (MacDonald & Markides, 2021). As a non-Indigenous Canadian of settler-European descent, like others (for example, Root, 2010; Tupper & Mitchell, 2022), my ongoing journey towards decolonizing my practice involves facing difficult truths while navigating pathways to do things differently. In their book, *Teaching Where You Are: Weaving Indigenous and Slow Principles and Pedagogies* (2024), Shannon Leddy and Lorrie Miller generate an inclusive space for educators to come as they are, and to participate in the important work of decolonizing education and centring Indigenous pedagogies. It is the book that I have been waiting for.

Modelling common Indigenous practices of self-introduction (Archibald, 2008; Kovach, 2021), the authors begin with a welcome and familiarize the readers with who they are, where they are from, and their connections to Indigenous communities. Leddy is a member of the Métis Nation, and Miller is a settler scholar and mother of four children, two of whom have Cree heritage. Both authors grew up on the prairies and now live in Vancouver, where they are art educators at The University of British Columbia. Their voices are distinct as they take up metaphors of weaving—of personal stories, past teaching experiences, and connections to theory and practice—throughout the text. From the beginning, I was drawn to how these two differently positioned scholars share their stories and work together toward the collective good. Likewise, I also felt continuously invited to join the conversation, often through promoting questions and pauses. For example, the authors' dialogic style begins on page 4 when readers are encouraged to place themselves within the text by inquiring about who they are, where they come from, and whose traditional territories they live on. These prompts are offered throughout the chapter, building on the reader's readiness to engage. As someone who has been engaged in similar work, I found the questions useful for self-reflection and bringing these generative ideas to others in my practice.

The book's central focus is on building decolonial literacy and paralleling Indigenous and slow principles and pedagogies for an audience of non-Indigenous educators (K-12). Reflecting on the anxieties that K-12 educators often experience while learning to enact and include Indigenous content, the authors resist offering lesson plans or other prescriptive ways to do the work. Instead, they invite readers to ethically engage with the complexities of history and realities of the present to make connections in their own lives. The physical and metaphorical practices of weaving—with the Medicine Wheel as the loom—offer symbolism and teachings of ethically engaging and connecting along the way. For instance, Leddy and Miller offer how a weaving project can support thinking about curriculum outcomes: "with a weaving project, one needs to decide the end goal (what is being made), the size of the weaving (how large or small it needs to be), the intent of the cloth (why one is making it)" (p. 44). With that, subsequent chapters offer stories, teachings, considerations, and invitations from each quadrant of the wheel (East – Spiritual – Respect; South – Emotional – Relevance; West – Physical – Reciprocity; North – Intellectual – Responsibility). For example, in the South – Emotional – Relevance chapter, the authors address topics around why emotions matter in education, the slow and careful business of decolonization, taking trauma into account, developing effective practices, and circle pedagogy (pp. 85-101). At the end of each quadrant chapter, the authors creatively add a new element to the weaving metaphor with sourcing and prepping materials as additional elements in the first chapter and then building

weaving as the final chapter elements. Offering this arts-based example, with a beautiful image, throughout the book illustrates, at least to me, how each part contributes to a whole.

Drawing parallels between slow and Indigenous pedagogies is a strength of this text. Doing so allows for multiple access points that widen conversations around experiential learning, land/place consciousness, deep relationality, and internal connections in teaching and learning. Throughout, discussions of time as both theoretical and practical (such as having patience, being in the flow, growth, not rushing, circadian rhythms, seasonal change, etc.) are included as a cohesive theme. Simultaneously, the authors do not shy away from complicated conversations stemming from ontological differences. For instance, in the East direction, they discuss spirit, and how it has been avoided in common teaching and learning theories, such as Bloom's Taxonomy (p. 74). The authors provide nuanced discussions around spirit as living in all creation and not belonging to any one belief system. At the same time, they provide important cautions around tokenistic gestures without sometimes-uncomfortable work, and support readers to connect with the present and one's inner self as a way of understanding the spirit, or *soul* work, of humanity.

As the book title suggests, it is essential to know *where* you are, and the peoples, traditions, and ecologies within that place, to build decolonial and Indigenous practices. Since the authors write from British Columbia, they build context from curriculum documents and materials in that place—for example, the *First Peoples Principles of Learning* (British Columbia, 2015). Given this, Canadian readers, and more so those in British Columbia, will find this text speaks into common languages, practices, and protocols of that locale. However, as the authors do not claim to provide a prescriptive agenda, this focus is not a limitation but rather a good model for how to read critically and engage ethically. For example, the use of the Medicine Wheel in this book is guided by teachings that the authors have received, but the teachings are not universal. Therefore, as the authors suggest, the reader will need to do their own learning within their specific setting—this could include learning about local traditions and symbols or partnering with Indigenous community members and Knowledge Holders to take up local knowledge meaningfully. For those who understand that Indigenous education is more than a set of lesson plans, this book is a useful guide to prompt reflection towards good practice in other places. Even for those who are still coming to understand that Indigenous and relational practices involve deep personal work, the book does a good job of explaining why a contextualized and responsive approach is necessary.

The book is ideal for K-12 pre-service and in-service teachers coming to understand place-based, land-based, and Indigenous pedagogies. The narrative style of writing combines theory and practice in an accessible way. In a time of various social and ecological crises, when Generative Artificial Intelligence models are pushing educators to ask questions about what knowledge is most worth knowing, many are turning to experiential and process-driven learning to support student wellness, critical thinking, and holistic understandings. In this way, *Teaching Where You Are* is likely to have an impact on the future, as slowing down and turning to the wisdom of the place makes good sense. Through the generous spirit of the authors, I am given hope that education can go beyond clock time—that is, the relentless and mechanical force of ticking minutes and hours—to enhance human experiences as we work through complexities in dialogue together, knowing that struggle and uncertainty are necessary parts of the process.

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Phillip Joy is a registered dietitian and an associate professor in Applied Human Nutrition at Mount Saint Vincent University. His qualitative research uses poststructuralist and queer approaches to explore queer nutrition, health, and curriculum development. He often uses arts-based methods such as photovoice, cellphilming, and comics to engage emotion, creativity, and embodiment, and to challenge norms and support more inclusive approaches to nutrition and health. More details can be found at www.phillipjoy.ca

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Marta Liesa-Orús holds a degree in Educational Sciences and a PhD in Psychology. She is an associate professor in the area of Didactics and School Organisation at the University of Zaragoza (Spain). She has held several university management positions, including Dean, and currently serves as Vice-Rector. She has participated in numerous research and teaching innovation projects and has published widely in national and international journals on inclusive education and attention to diversity. She has also taken part in national and international conferences and completed teaching and research stays abroad.

Jennifer MacDonald is an assistant professor in the Faculty of Education at the University of Regina. She teaches courses in outdoor, environmental, and treaty education. Her interdisciplinary curriculum research centres on building languages and meanings to enhance relationality, especially through outdoor learning experiences. As a non-Indigenous educator, she is committed to modelling how all learners can dialogue with topics of truth and reconciliation to understand themselves and to interact with others in ways that challenge colonial logics and prioritize the well-being of all.

María Mairal-Llebot holds a degree in Early Childhood Education and a master's degree in advanced studies in Language, Communication, and its Pathologies. She earned her PhD in Education, specializing in inclusive education and support for vulnerable groups. Her research focuses on education for all and the integration of technology in learning to promote accessible and equitable educational environments. She is a member of the recognized research group Education and Diversity and actively contributes to projects aimed at improving inclusive educational practices.

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Natalie Pegus is a K-4 music educator at a French immersion school in Winnipeg, Manitoba. She recently earned a Master of Education in Educational Administration at the University of Manitoba. Natalie began her teaching career in Northern Manitoba, an experience that continues to inform her professional interests. Her work is grounded in a commitment to supporting teachers and fostering strong, connected school communities, with particular attention to teacher well-being and belonging.

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Johanathan Woodworth is an assistant professor of Education at Mount Saint Vincent University in Halifax, NS, whose scholarship examines educational technology, epistemology, pedagogy, and educational research methodology. His work engages critical, queer, transformative, and mixed methods approaches to teaching and learning, with particular attention to how reflection, affect, identity, and ethical self-positioning shape professional formation. He is interested in how educators and students encounter discomfort, uncertainty, identity, and institutional norms within learning spaces, as well as how technology integration can support more reflective, accessible, and relational forms of practice. His research contributes to conversations about critical pedagogy, educational technology, inclusive education, professional learning, and equity-oriented educational practice.