

I am in the second year of a PhD program in *Educational Studies* at the University of Victoria, researching how mediated learning environments may influence and develop creative self-belief. My dissertation, *Cultivating Creative Confidence in Design Education: Design-Based Research in the Age of GenAI*, will expand on my *Master's in Educational Technology* research and professional experience using design education to support learner agency (Grey & Ivy, 2023). My expertise is supported by my *Bachelor of Applied Science*, a discipline inherently concerned with design, and reinforced by over thirteen years of professional experience in design, making, and process-based teaching.

Background. We live in an increasingly technological world of convenience that captures our attention and enables us to outsource judgment and decision-making, rather than exercise agency (Marriccia et al., 2026; Risko & Gilbert, 2016). As a result, visible outcomes, credentials, and measurable performance can become valued over the unfinished, often messy exploratory work that builds not only skill, but the belief in oneself (Bauer et al., 2025; Royalty et al., 2014; UNESCO, 2025). An educational environment that does not support desirable difficulties and exploration may limit opportunities to develop learner agency (Biesta & Tedder, 2007; Schoon, 2018).

Generative artificial intelligence (genAI) affords immediate performance through its ability to rapidly generate human-like text, code, and images (Barcaui, 2025; UNESCO, 2025), while its statistical outputs may promote cultural, linguistic, and creative homogenization (Bender et al., 2021). GenAI may expand learners' capacity to create, but unreflective delegation of tasks may place learners in a more passive role, bypassing important cognitive experiences (Arthurs et al., 2026; Barcaui, 2025; Kwan & Hung, 2025). Forms of cognitive offloading to genAI have been found to reduce capacity for meaning-making, creativity, and metacognition (Barcaui, 2025; Bauer et al., 2025; Kosmyrna et al., 2025; Kwan & Hung, 2025; Marriccia et al., 2026). Educational practices are lagging behind technological progress, often shaped more by geopolitics and capitalism than by pedagogy (UNESCO, 2025), leading some K-12 institutions to restrict mobile devices (BC Ministry of Education, 2025) and genAI (NYC Department of Education, 2026) rather than prepare learners to navigate these technologies. As genAI reshapes learning environments, cultivating learners' confidence to generate and act on their own ideas is an increasingly vital educational goal (Arthurs et al., 2026; UNESCO, 2024, 2025).

Creativity is the capacity to generate and pursue ideas amidst ambiguity (Britos Cavagnaro et al., 2025; Sawyer, 2019). It is linked to academic achievement (Gajda et al., 2017) and recognized as a core competency for navigating complex futures (Province of British Columbia, 2015). Exercising creativity is supported by *creative confidence*, the trust in one's ability to be creative, a construct central to design education (Kelley & Kelley, 2013; Royalty et al., 2014). Learners with high creative confidence tend to persist through setbacks, embrace intellectual risk-taking, and transform ideas into action (Beghetto et al., 2021; Karwowski & Beghetto, 2019), while those with low creative confidence may cognitively offload tasks, deferring judgment and opportunity to develop their skill (Al-sa'di & Miller, 2026; Krajcer et al., 2026). Maizel et al. (2026) found the strongest predictor of genAI dependency to be low confidence in one's ability to complete a task. Creative confidence is theorized to have two components: the belief in one's creative potential, developed through past experiences, and the belief in one's ability to solve a problem within a given context (Karwowski et al., 2019). These two components are dynamically interrelated, as successful past experiences contribute to a belief in one's ability to engage with a new task, which may lead to a new successful experience (Habib & Gardiner, 2026; Wiśniewska & Karwowski, 2026; Zielińska et al., 2021). This dynamic shows how greater creative confidence may increase one's willingness to engage in educational experiences (Álvarez-Huerta et al., 2021).

Creative confidence evolves over time through learners' interconnected experiences within technological, social, and task-related conditions (Karwowski & Beghetto, 2019; Zielińska et al., 2021). While research has examined creative confidence across multiple dimensions, showing that it is shaped by social dynamics (Azkarate-Iturbe et al., 2024; Liu et al., 2023), genAI (Al-sa'di & Miller, 2026;

Habib & Gardiner, 2026; Krajcer et al., 2026), and pedagogical interventions (Jackson et al., 2025; Sweeney et al., 2025), research has yet to examine how these interconnected influences interact within an integrated system. *Activity theory* provides a sociocultural framework for understanding human action as part of a system shaped by mediating tools, rules, community, and division of labor (Engeström, 2001; Jonassen & Rohrer-Murphy, 1999). Applying this lens can help explain *why* and *how* a learning environment may influence creative confidence in the moment and develop it over time.

Purpose. The purpose of this study is to iteratively refine a learning environment that cultivates adult learners' creative confidence, and to understand how the environment's mediating activity system, of tools (including genAI), relationships, and structures, shapes the development of creative confidence.

Methodology. A *design-based research* (DBR) approach will be used to develop and refine a learning environment that supports creative confidence (McKenney & Reeves, 2019). Learners' self-beliefs will be examined using measures of creative confidence and situated within the broader system using *activity theory*. Research will occur through a *Design+Build* intervention, in which 5-10 participants will design and build a physical prototype addressing a community problem across four three-hour sessions of design thinking instruction and self-directed design time. The intervention will undergo iterative cycles of implementation, analysis, and redesign, where insights inform changes to the learning environment (i.e., space, technology access, social structures) to examine their effect on participants' creative confidence. This process will continue until emerging theoretical insights become sufficiently robust. Each iteration will recruit a different group of adults through university channels, teacher education programs, and community networks. DBR is particularly relevant for researching learning environments because it develops theoretical insights within an authentic context (McKenney & Reeves, 2019).

A convergent mixed-methods approach will be used, combining quantitative measures before, during, and after the intervention using the 11-item Likert-scale *Short Scale of Creative Self* developed by Karwowski et al. (2018), with qualitative interviews, observations, participant reflections, and artefacts. This approach supports transferability and trustworthiness, by situating quantitative findings within their qualitative context as activity theory demands (Creswell & Creswell, 2023; Jonassen & Rohrer-Murphy, 1999). Interviews will follow Seidman's (2019) semi-structured *in-depth phenomenological* format, which includes individuals' lived experience. Thematic analysis will leverage a *constructivist* approach, emphasizing *how* experiences unfold in addition to *what* occurs (Roulston, 2010). Findings will undergo member-checking to support trustworthiness (Roulston, 2010), then inform successive intervention redesigns, contributing to the development of situated theory (McKenney & Reeves, 2019).

Feasibility. The success of this research is supported by substantial literature, academic and professional expertise, and a strong academic network. My experience with peer-reviewed publications, presentations, active research, and technically complex project management will contribute to the success of this research. My affiliation with the CFI-funded Technology Integration and Evaluation Lab will deepen my experience in research design, instrumentation, analysis, and advanced learning technologies while contributing to SSHRC-funded initiatives. My supervisor, Dr. Michael Paskevicius, has multinational experience in educational technology, activity theory, and digital literacies.

Impact. Findings will be disseminated at peer-reviewed conferences (e.g., *CSSE, Play Make Learn*), in scholarly journals (e.g., *Educational Technology Research and Development*), and educator accessible multimedia formats. This research aligns with SSHRC's Emerging Global Challenges of *Working in the Digital Economy, The Arts Transformed*, and *Humanity+* (Policy Horizons Canada, 2018). The resulting contribution is actionable knowledge for designing learning environments that support and cultivate learners' creative confidence amid rapid technological change, a contribution uniquely enabled by my expertise across education, design, and research.