# RESEARCH EFFECTIVENESS

## Research Statement

Educational assessment is at the heart of robust formal education systems and has been deeply impacted by both COVID-19 and by the broad emergence of generative artificial intelligence (genAI). My research program is focused, in the short-term, on refining and operationalizing the TIAF in the context of emerging technologies, such as genAI and artificial/virtual reality (AR/VR). In the longer term, especially considering this opportunity with Athabasca University, there is much work to be done to operationalize the refined TIAF by continuing to build a scale to be used to help individual educators, centres for teaching and learning, scholars of teaching and learning, and/or any other interested stakeholder to explore and understand the impacts of emerging technologies on assessment design and practice, and, by extension, to transform assessment practice in open, digital, and distance learning environments. The potential for transformative impact on education systems by paying attention to technology-integrated assessment is significant, as Ramsden claims, “assessment always defines the actual curriculum” (2003). I believe that transforming technology-integrated assessment practices is one of the most powerful levers we have in the drive to enable access to a “world class university experience for every learner” (Athabasca University, 2024).

The TIAF comprises four primary constructs (assessment purpose, duty of care, technology acceptance, and measurement), each capable of supporting robust interdisciplinary investigations. Each of the four constructs are grounded in the 5 Rs of Indigenous education (respect, relevance, reciprocity, responsibility, and relationships) (Tessaro et al., 2018), making the TIAF a valuable tool for removing barriers to Indigenous learners and communities.

Questions that arise from the *assessment purpose* construct include investigating the impacts of AI use on the balance of assessment of/for/as learning in higher education practice. More specifically, emerging technologies including genAI and AR/VR, have provided opportunity for instructors to focus more on the *process* of learning and assessment for/as learning compared to the *products* of learning. The *duty of care* construct provides myriad opportunities for investigations into the ethics of genAI or AR/VR use and the ways in which it is important to prioritize human characteristics and relationships in education. Note especially the differential impacts on racialized learners and their challenges with using AI-powered remote proctoring services during the COVID-19 pandemic (see my proceeding that highlights my viral experience with this issue (Madland et al., 2022)). At the same time, there are notable benefits for equity-deserving groups (e.g. neurodivergent learners) who may be able to leverage boutique, privacy-protecting genAI models to preview and refine their work prior to submission to an instructor. Duty of care is especially important to prioritize in Indigenous learning contexts where there is a long history of exploitation, extraction, and extermination in the context of education (see my proceeding exploring this issue (Madland & Restoule, 2021)). The *technology acceptance* construct leads to questions about managing technological and pedagogical change in contexts with a focus on technology adoption by instructors. Lasting transformation of educational systems requires deep and careful work in managing change. My work as Director of Technology-integrated Learning and Assessment has given me clear insight and direct experience in managing and transforming educational systems and technological infrastructure at an enterprise level. This experience provides crucial context for my research into technology acceptance and adoption by the full breadth of stakeholders, from learners, to instructors, support staff, and senior administrators and board-level executives. Lastly, the *assessment design* construct offers many opportunities to consider pedagogical designs and architectures that maximize the impact of quality learning experiences. Too often, universal design for learning (UDL) is an afterthought or an add-on to existing educational and assessment designs, however in this framework, intentional focus is brough to bear on the up-front design of learning environments which are human-centred, equitable, inclusive, and accessible.

The TIAF as a whole and each individual construct described within present rich opportunities for research on learning through transformative digital systems. This wide variety of possible approaches to investigating emerging technologies in open, digital, and distance education leads to multiple opportunities for inclusive quantitative, qualitative, and mixed research collaborations for the benefit of remote, rural, and Indigenous communities. Further, as the framework is embedded within the 5Rs of Indigenous education, there are multiple possibilities for collaborating with Indigenous scholars and *Nukskahtowin* to explore these and other questions specific to Indigenous communities as we journey together towards *kwayskahsatsowin* and renewal.

## Sample Published Article

Please see the article I published in May 2024, in the OTESSA Journal:

Madland, C., Irvine, V., DeLuca, C., & Bulut, O. (2024). [Developing the Technology-Integrated Assessment Framework.](https://doi.org/10.18357/otessaj.2024.4.1.63) *The Open/Technology in Education, Society, and Scholarship Association Journal, 4*(1), 1–19.

## Knowledge Dissemination

As a rule, I endeavour to publish all my research outputs under an open license and on the web. Below are two examples of these outputs. The first emerged from my PhD coursework as a visiting student at the University of British Columbia. This publication is a critical family history, an in-depth exploration of one of my ancestors’ emigration from Norway to the USA, then to northern and central Alberta, and finally to British Columbia. The framework for this publication is the history of the treatment of Indigenous peoples throughout North America that opened the way for my great-grandfather to emigrate from Norway.

Madland, C. (2019). [Critical Family History](https://cmadland.github.io/cv/timeline.html#critical-family-history) [Blog]. Colin M. Madland.

The second example of knowledge dissemination is related to a viral moment that I and a colleague experienced on Twitter (now defunct). This conference presentation and proceeding described our experiences with the facial detection algorithm on Zoom, which, when posted to Twitter, showed a related problem there.

Madland, C., Ofosuhene, M., & Adkins, J. (2022). [Digital Platforms and Algorithmic Erasure: What are the Implications?](https://doi.org/10.18357/otessac.2022.2.1.137) OTESSA Conference 2022. OTESSA 2022, Online.

The original Tweet that set it all off [is available on X](https://x.com/colinmadland/status/1307111816250748933), and also has been [ported to BlueSky](https://bsky.app/profile/cmadtweets.bsky.social/post/3lb5lhuo35c2w).

## References

Madland, C., Ofosuhene, M., & Adkins, J. (2022). Digital Platforms and Algorithmic Erasure: What are the Implications? *OTESSA Conference 2022*. <https://doi.org/10.18357/otessac.2022.2.1.137>

Madland, C., & Restoule, J.-P. (2021). Self-Determination in Indigenous Online Education. *The Open/Technology in Education, Society, and Scholarship Association Conference*, *1*(1), 1–7. <https://doi.org/10.18357/otessac.2021.1.1.147>

Ramsden, P. (2003). *Learning to Teach in Higher Education*. Routledge. <https://doi.org/10.4324/9780203507711>