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Martha Cleveland-Innes

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Editorial / Éditorial Volume 49 Issue 2

M. Cleveland-Innes, *Athabasca University*

This next Canadian Journal of Learning and Technology issue is published on the heels of the well-attended ICDE (International Council for Open and Distance Education) conference. The Conference's overlapping topics and attendant researchers, well-known to this journal, remind us that our field is important, well-subscribed, growing, and changing. An excellent overview of this ICDE Conference and information about the state of education transformation in the current global context can be found here in recent blog posts by the well-known expert and author on the topic of education and technology, Dr. Tony Bates.

Learning and technology, the focus of research published by CJLT, is a microcosm in the much larger fields of open, distance, and digital education. Research spans all sectors: primary, secondary, post-secondary, higher education, and lifelong learning. Across issues and years, we seek to touch on the research, theory, and practice in these areas, particularly those where authors are in, or research topics are relevant to, Canada. Canadian researchers were well-represented at the recent ICDE conference, and a Canadian researcher received the conference's best paper award!

That ICDE conference's best paper described best practices when combining the community of inquiry (CoI) theoretical framework with blended learning. Covering that very topic, researchers Elena Chudaeva, Guilherm Loth, and Thuvaragah Somaskantha of George Brown College and Cynthia Blodgett-Griffin of Athabasca University are authors of article #1: ***Exploring Blended Learning Designs for Community College Courses Using Community of Inquiry Framework***. Using a case-based comparative approach, student groups in the same course from two different delivery formats, blended and in-person, identified their learning experience. Findings reveal differences in student presence scores across the formats. As might be predicted, those students engaged in a blended delivery format report more satisfaction with the flexibility in their course experience, but in-person students report more awareness of the standard three presences found in the CoI framework.

The pedagogical awareness and adjustment required by teachers using technology are significant. Moving into blended delivery and applying new pedagogical frameworks like the CoI requires time, effort, and professional development. The TPACK model, or Technological Pedagogical Content Knowledge support, was created to provide guidance about the use of technology in content and processes in teaching and learning. For the author of article #2, Suresh C. Joshi of Chandigarh University, India, understanding the usefulness of TPACK depends on teacher self-efficacy. In ***TPACK***

and Teachers' Self-Efficacy: A Systematic Review, Dr. Joshi identified, reviewed, and analyzed studies using TPACK. Results indicate that TPACK-based argumentation practices helped participants strengthen their perceptions toward the integration of technology for in-person delivery and that professional development contributes to improving teachers' TPACK self-efficacy. The article concludes with evidence-based implications for teacher preparation programs and other professional development activities.
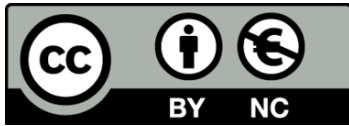
These development activities for new education technologies require clear description and evidence of the benefits and challenges. Artificial intelligence (AI) describes a different kind of technology: machines that are learning and adjusting based on inputs or responses. Software applications are better described as machines for learning rather than machines that learn. Comparing simpler machines to AI-driven systems is a pre-step to change. In article #3, *A Comparison Between Virtual and Conventional Microscopes in Health Science Education*, University of Alberta researchers Nazlee Sharmin, Ava Chow, and Alice Dong compare virtual and real-light microscopes according to rates of usage and learner response. To verify this initial step, these authors "conducted a scoping review to investigate the comparative impact of conventional and virtual microscopes on different aspects of learning" (Abstract). Their results suggest that while learning through virtual microscopy is superior to traditional microscopes, traditional microscopes are still in everyday use. Common to our work in education change, the authors suggest where further research is needed. Before we conclude that virtual microscopes are the best pedagogical choice, more evidence and clear guidelines must be in place.

Evidence and guidelines are critical supports for any change in professional practice. The frequent narrative of education change also includes the call for increased access and inclusion for diverse marginalized populations. In article #4, University of Windsor researchers Sandra Raffoul and Lindsey Jaber carefully use self-regulated learning theory to assess the value of one type of software for students with disabilities. *Text-to-Speech Software and Reading Comprehension: The Impact for Students with Learning Disabilities* provides evidence that text-to-speech (TTS) software is beneficial. In this analysis, the use of TTS software supports increased outcomes such as reading comprehension and the pedagogical processes of motivation and self-efficacy. This software is most notably used in post-secondary education. However, these authors also note that access to this software first, and then training for appropriate use, is required. In this case, the required training is suggested for students, while article #3 the focus is on the need for educator training.

Our focus on software technology for learning continues in article #5 and into the Book Review. Both describe the main tenets of teaching music with technology, a subject matter that requires both content knowledge and psychomotor skills. *Technology in Music Education* by Adita Maharaj and Akini Gill, The University of Trinidad & Tobago, reports a test of music theory digital software and assessment of the learners' experience. The use of music instructional software correlates with 90% of the students successfully completing the required assignment. While learners reported being motivated by and comfortable with the software, more training was generally requested. This request is a common result of research testing new education technologies (see articles #3 and #4 in this issue).

The use of technology in music education is fully explored in the book *A Framework for Teaching Music Online* by Carol Johnson. In an evidence-based process, this author provides a clear and precise framework for teaching music online. The focus soundly rests on practical application and design for online teaching spaces which promotes specificity for an arts-based discipline, one that requires both psychomotor and knowledge development. Covering music theory, history, and composition, this framework offers authentic supports for anyone preparing to teach music online. This excellent book review is provided by Sandra Duggleby of the University of Calgary, Canada.

We hope you enjoy this issue.