Editorial

It is hard to believe that this issue marks LEARNing Landscapes' journey into its second decade. We are pleased to report that we have now featured a total of 334 peer-reviewed articles from 21 different countries. LEARNing Landscapes also boasts a total of 101 commentaries, including authors/interviewees who loom large in the field of each themed issue, alongside highly regarded practitioners and an engaging range of student voices. We are indebted to an array of 218 competent and conscientious peer reviewers and to the LEARN support team that make each issue possible. We have migrated to the Open Journal System platform, which is increasing our scope and reach, automates our review system and analytics tracking, and allows us to provide regular updates to our community. We feel we are well positioned to continue this rewarding work in the future.

In 1995, almost three decades ago, Hooper and Rieber posited a five-part pattern they identified in which technology had been adopted in education at that time. The first was *familiarization* where teachers learned about the technology. The second was *utilization* where teachers tried out the technology. The third was *integration* during which time teachers assigned certain tasks to technology. The fourth was *reorientation* where teachers then focused on student learning and the fifth was *evolution* where ongoing change was monitored (p. 3). Aside from the fact that processes are never truly linear, with the rapidly evolving technological changes that educators are witnessing, there is no time to learn and try out technology in advance of the learners. Instead, teachers must have the confidence to jump in and learn with the students, acknowledging that teachers cannot be all knowing, and to embrace the idea that at least some of the learners may actually be the most apt technology teachers.

Morris (2017) has identified six ways that technology is changing teaching and learning. There is much more flexibility in the contexts in which teaching and learning can take place. There is a fundamental change in the ways that learners access knowledge and the ways they can interact with others. Current technology helps teachers to create more interactive, engaging, and flexible materials. It provides ways to be more diverse and inclusive in teaching approaches and permits multiple ways of communicating with learners. It is well theorized that all actions/tools mediate understanding in materially different ways (Wertsch, 1993), that learning is social and contextually constituted, and that collaboration expands perspectives and helps to scaffold learning (Vygotsky, 1980). The potential of technological tools is therefore vast, exciting, and probably impossible to imagine. The possibilities are infinite and the responsibilities weighty. With this in mind, I invite you to enjoy the interesting commentaries and articles that follow.

The articles in this issue appear in alphabetical order, in both the commentary and peer-reviewed sections. For ease of discussion in this editorial they are arranged thematically.

Invited Commentaries

We are grateful for the wise and interesting commentaries on digital technologies provided in our interviews with a researcher, digital consultant, practitioner, and biologist/artist/healer. They create a helpful backdrop of ideas for the articles which follow. **Anne Bamford**, a researcher who works for the International Research Agency out of the UK, discusses in a compelling interview how she first became interested in virtual learning because of cyberbullying. Believing strongly that visual manipulation can affect perception, she discusses her well-known study that examined the impact of active 3D learning using 3D glasses with students in 10 different countries. Her results showed that students achieved better test scores, and, even more importantly, their percentage of improvement increased substantially. She argues that student engagement and involvement in technologies are fundamental for creating successful virtual schools, and that schools of the future require student ownership of, and involvement in, their learning, and a substantial change in how teachers are prepared in terms of pedagogy, assessment, and evaluation. **Dean Shareski**, a digital consultant and the Community Manager for Discovery Education Canada, shares in his interview how he believes the fundamental aspects of authentic learning, in digital or any other contexts, are joy, play, wonder, and community. He discusses with examples how joy is an inward and outward sense of well-being, play is the willingness to try something new, and wonder is the process of noticing in everyday experiences. He suggests strongly that teachers need to see themselves as artists and must be able to articulate their special talents. They deserve validation of their work, which happens all too infrequently. His final advice to teachers is to "let kids be kids" and to be conscious about modeling for students what a healthy adult life looks like. **Kish Gué** is an Information and Technology Pedagogical Consultant for the English Montreal School Board. His enthusiasm about using technology in the classroom is palpable, but he underscores that it has to be based solidly in excellent pedagogy. He describes in some detail a project titled, "Tune Into Culture," in which the students used QR code technology linked to podcasts that they created. He played a role by helping teachers and students to use the necessary audio software. Student motivation was high because the work was "real" and he suggests that this kind of work is like "planting a seed" for what students can do later in life. His advice to teachers is to have the courage to be vulnerable, and to surrender control and learn about technology with their students. He encourages novice teachers to start small, but to jump in, emphasizing the need to integrate technology into the curriculum and to create flexible learning spaces in which to do this. He urges parents to keep abreast of what their children are using and doing with technology to help foster responsible digital citizenship. **Artemis Papert**, biologist, artist, and Shiatsu healer, describes how the computational thinking developed in acquiring computer programming skills can help students organize their thoughts more formally. She discusses TurtleArt, a worldwide software program developed by her partner Brian Silverman and his colleague Paula Bonta. TurtleArt allows both children and adults to create two-dimensional, static art images using geometry and coding as a medium. She explains how the beauty of this software is that it bridges math and art and is very easy to learn. She suggests that when using TurtleArt, people who are more mathematically oriented will do artwork, but will think they are doing math and programming. In contrast, people who are art-oriented will feel they are doing art, but will acquire programming skills in the process. She reminisces about being brought up in the Papert household and maintains that the

ideas her father, Seymour, discussed in his 1971 article, "Teaching Children Thinking," are still relevant today. His vision was an educational system where technology is used not just for processing, but as a way to manipulate, extend, and apply knowledge—a way for students to create and think about what they are doing in order to develop intellectual agency and a sense of the power in applying the knowledge. Together these commentaries point to the increasing importance of technology in schools of the future. They underscore the necessity for technology to be securely grounded in engaging, meaningful, and relational pedagogy, and for teachers to become learners alongside their students. They suggest strongly the need to keep pace with the burgeoning, technological metamorphoses, develop creative problem-solving abilities in learners, and equip them for the digital world they will encounter.

Using Technology in a Classroom With Early Learners

McGlynn-Stewart, **Brathwaite**, **Hobman**, **Maguire**, **Mogyordodi**, and **Park** report on the first two years of a three-year study examining the use of open-ended iPad apps to support young children's literacy (visual, oral, print, and digital) learning in 14 full-day Kindergarten classes in Ontario. They argue that these children, ages three to six, who were either English Second Language learners, or those with special learning needs, typically were not easy to assess. Based on interviews with 27 and 25 teachers in the first and second year, they show, with interesting examples, how the use of iPad apps allowed the children to use different modalities to communicate, to record privately, listen and reflect, redo or erase, and to share communicative abilities that were unknown to the teachers. Children were able to link their home language to school and shy children became willing to share iPad creations in group time. All children were engaged, were able to produce complex literacy products, and developed digital competencies while providing teachers with an increased understanding of their interests and abilities.

Using Technology in Upper Elementary and Secondary Classrooms

More than half of the articles for this issue focused on teaching and learning with technology in late elementary and secondary classrooms. In the first of these, **Kuhn** used a technology-supported, student-oriented curriculum to engage middle and high school students. The task was to create an electronic debate with their peers on contemporary social and socio-scientific problems to emphasize present-day and future issues, instead of simply historical ones. They began by discussing challenging topics in face-to-face interaction with "same-side" peers. Then they conducted electronic dialogues with same-side pairs and a series of opposing pairs. Here they practiced argumentative writing which resulted in a final position piece. Kuhn concludes that the argumentative writing enhances conventional essay writing and that the paired work creates an important support system and encourages reflection among peers. **Gimranova**, **Nurmanova**, and **CohenMiller** used what they call Near Peer Role Modeling (NPRM) to promote discussions using WhatsApp texting groups between seventh and eighth grade students learning Kazakh (an official language of Kazakhstan) and university student volunteers. The students enjoyed the project, were motivated to continue this interaction, and had the opportunity to practice Kazakh. An unexpected outcome was the capacity building that went on between the teachers and the university, which augurs well for future work. Challenges included the time required by the teachers to implement the work and the inconsistent access to needed high-speed technology

which was available to the students. **Bengezen** and **Murphy** describe how, over a period of three years, a Brazilian teacher engaged with two of her grade six English Second Language students using Edmodo, a free, communication, collaboration, and coaching platform available to K-12 schools and teachers. She sought to understand more fully who the participants were and were becoming as they focused on authorship using this digital technology. Unsurprisingly, these writing spaces did not only help the students in terms of their writing and technology skills, but also helped the teacher think more specifically about their individual needs and to relinquish her authority with them. **Hughes** and **Maas** share how they worked with a small group of marginalized grade six, seven, and eight students using Aurasma, an augmented reality (AR) platform, to produce a professional-looking, recipe cookbook in a life skills class. AR helped the students develop digital literacy skills, creative/critical thinking, and problem-solving, and collaborative and self-directed learning competencies. The authors underscore the potential for AR in both life skills and nutrition curricula, as well as across other curricular areas. **Cutumisu**, **Labonté**, **Oslie**, **Gange**, **Brown**, and **Smith** implemented a study with five teachers who received professional development and then taught persuasive writing units in their upper elementary classrooms using technology. Students submitted work on devices (laptops, iPads, etc.) and received feedback from university students who acted as writing tutors using Google Docs for their feedback. Their results indicated that blended technology, feedback, and persuasive writing pedagogy were useful and enjoyable for both teachers and students in spite of some technology challenges. Similar to the McGlynn-Stewart et al. article discussed above, teachers were able to connect more fully with their students and get a deeper understanding of their strengths and needs. **Mandinach** and **Miskell** conducted a mixed-methods study which included interviews of teachers and other stakeholders, as well as observations, to explore the use of blended learning in 15 classrooms in three charter schools (two high schools and one middle school) serving students with educational challenges. The learning was blended using many different ways and forms of technology as these schools had an abundance of technology. The results indicated that the students were more active, engaged, motivated, and involved in their own learning. The technologies provided more diverse forms of data that were available to students, as well as to teachers and administrators, which, in turn, permitted flexible and quick adaptations in subsequent face-to-face and virtual learning to meet the students' needs. The authors posit that blended learning environments have the potential to reach and help even the most challenged students to succeed. **Carpenter** and **Justice** conducted a mixed-methods study of largely middle-school classes involved in the Global Read Aloud project developed by Pernille Ripp. Ripp's digital site connects classrooms which read the same books during a two-month period in the fall semester. Teachers connect with Ripp to choose one of the book titles featured on her site and then post an invitation to connect with other classrooms across the globe. They use various means such as Facebook, Twitter, Skype, Edmodo, Padlets, and so forth, to share their thoughts about what they are reading. The idea is to promote global readiness/awareness among students by learning with others in diverse contexts. The authors' survey of 516 participants from 14 countries revealed that the project motivated students particularly when they connected visually, and the various modes of exchange expanded their listening, speaking, reading, and writing experiences, although it was unclear if critical literacy skills were enhanced. The use of asynchronous digital modes mitigated some of the challenges and limitations associated with time differences, but often local pedagogical demands and practices reduced the possibilities of curricular integration.

Using Technology in Higher Education

Russell describes her qualitative study in which she used a wiki social media site with a group of undergraduate childhood studies students as well as her PhD student. The PhD student was assisting Russell in the course to gain teaching experience in order to be competitive in the higher education job market. Positing that a wiki can act as site of "situated learning" and a "community of practice" because of its constitutive and collaborative nature, she interviewed student focus groups and the PhD student about their experiences. Her results showed that there were different levels of participation in the wiki context, but some students gained confidence to voice opinions and increased experience in their writing. The PhD student gained experience and confidence in higher education pedagogy. **Hagerman** and **Coleman** reflect on the use of a Digital Hub strategy with Bachelor of Education students where they each created a digital website, curated their evidence of learning, and reflected on their growth as teachers. They share an example of one student who indicated the hub created an authentic space for identity construction, technical skill development, and digital literacies learning. They intend to explore these avenues in future research. **Carpenter**, **Cook**, **Morrison**, and **Sams** studied the use of Twitter as an outreach, social media tool to enhance course content and extend the classroom context with preservice teachers. The students reached out to the National Council of Teachers of English, a large professional association in the United States, and were surprised to find they could dialogue digitally with responsive and enthusiastic educators. As a result, the students deepened their engagement with course materials, widened their professional conversations/networks and, for some, enhanced their perception of themselves as teachers. Some of the challenges included the disconnect between personal fluency and professional know-how, the perception that Twitter is outdated, the difficulty of integrating Twitter into course content and useful professional development, and the evaluation of Twitter participation. Finally, **Roulston**, **deMarrais**, and **Paulus** conducted a narrative study of the journeys of three faculty members into online teaching of qualitative research methods for graduate students. These narratives provide helpful insights about online course design, planning, and strategies for building community as well as the challenges of keeping up with and learning the technologies, and finding the necessary resources and time needed for course development.

Turning Experiential Learning With Technology Into Maker Experiences

> There are essential elements of educating young people to become innovators: the value of hands-on projects where students have to solve a real world problem and demonstrate mastery; the importance of learning to draw on academic content from multiple disciplines to solve a problem; learning to work in teams. (Wagner & Compton, 2012, p. 52)

Last, but certainly not least, **Davidson** and **Price** argue that technology is not the key component of the fast-growing, makerspace movement where people/students "engage in self-directed experiential learning through risk tolerant, persistent problem-solving in interdependent communities tackling socially relevant problems." Therefore, to understand educational makerspaces, these researchers focused instead on the competencies that can be developed. They recruited 100 people from schools, colleges, universities, and community centres for a series of maker events in the form of experiential learning with technology in a participatory-driven, qualitative study. They define and describe

the key competencies (initiative; playful learning; authentic adaptation; interdependence; and over-resourcing) that emerged in their research and suggest that these characteristics of maker activities can be used as prompts when creating, observing, and evaluating learning experiences.

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Lynn Butler-Kisber (B. Ed., M. Ed., McGill University; Ed. D., Harvard University), a former elementary school teacher, is Professor in the Department of Integrated Studies in Education in the Faculty of Education at McGill. She has held a number of administrative posts including a deanship, two associate deanships, and five directorships, and has served on numerous committees within the University and in the educational milieu. In 2007, she was appointed and continues as Outside Educator to the Board of Directors of St. George's School and she also serves on the board of Explorations Camp. Her interests, teaching, and graduate supervision focus on multiliteracies, leadership, student engagement, professional development, and qualitative research. She has a particular interest in feminist/equity and social justice issues, and the role of arts-based analysis and representation in qualitative research. Her research and development activities have included numerous international projects and locally she is currently working on the LEARN English Language Arts Project, the EDCAN Network Education Fact Sheet Project, and the NEXTSchool Project. In the upcoming year, she will be a visiting scholar at universities in Alberta, Vermont, and Worcester (UK) with a particular focus on arts-based research. She has published and presented extensively in her areas of interest and the second edition of *Qualitative Inquiry: Thematic, Narrative and Arts-Based Perspectives* is being published by Sage.