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Editorial 5(SI1): Technology and education: Innovation or hindrance?

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The pandemic-era experiences and outcomes, especially the ones related to new technology use (e.g. remote learning, teaching and working, telehealth), are here to stay (Cetrulo, 2021; Rapanta et al., 2021; Wilson et al., 2021; Bakken, 2020; Jabbari & Rezaei, 2020). We are in the process of learning to live with this 'new normal', constantly trying to improve the initial emergency circumstances we were exposed to (Ferri et al., 2020; Mitra Channa, 2020). Online Learning and Teaching (OLT) is no longer considered an emergency remote teaching (ERT) practice, but is now an activity that has become part and parcel of our everyday life. At present, we are ready to adapt, innovate, share and learn new practices, especially based on technological innovation activities and behaviors. Of course, we should also bear in mind that although innovation is particularly associated with advances in technology, technological innovations need a strong theoretical foundation, a systematic purposeful approach and a grounded theory in pedagogy (Serdyukov, 2017). Additionally, it is true that innovation in education is not only about technology, but also about solving real problems in order to promote equity and improve learning around the world (UNICEF, 2021), wherever possible.

Researches worldwide show that technology and innovative practices can improve the educational experience (e.g. Gunasekara et al., 2021; O'Brien, 2020; Shelley, 2020; Qing & Diamantidaki, 2020; Bonk et al., 2020). We continue to seek alternatives to traditional communication, knowing that the world we live in will never be the same again (Kefalaki & Diamantidaki, 2021), yet we need to acknowledge that this technological advancement is not applicable in all parts of the world where access to technology is not always possible due to socioeconomic conditions. This special issue will explore the successes with technology and its challenges to allow us to reflect on its use and purposes.

We caution against a deterministic concept of educational technology that naively looks at it from a perspective of an ever-progressing 'bigger, faster, better'. In innovation theory, various types of innovation have been differentiated: the four P's – product, process, position and paradigm innovations (Bessant & Tidd, 2015) – radical vs. incremental and systems vs. component innovation (Bessant & Tidd, 2015), disruptive (Christensen, 1997), open (Chesbrough, 2003) and reverse innovations (Govindarajan & Euchner, 2012). All these concepts can be applied to education – for instance, the inauguration of OA (open access) journals such as the Journal of Applied Learning & Teaching constituted an open innovation in journal publishing, and especially the original Canadian, connectivist Massive Open Online Courses (MOOCs) provide another key example for open innovation (Siemens et al., 2020). UNICEF (n.d.) conceptualises innovations in education as those of partnerships, programmes, processes, products and services.

In the history of educational technology (EdTech), "many technological innovations have been supposed to be 'the end of traditional-education-as-we-know-it' – a euphoric, and rather irrational, infatuation with technology" (Rudolph, 2018, p. 35). Illustrated texts, film, radio, television, computers, the Internet, mobile technologies and social media have been heralded as revolutionizing learning and teaching (Terzian, 2019). However, it would appear that throughout the history of educational technology, there was frequently insufficient consideration for how educators implemented, and students interacted with, such resources. Not knowing the history of educational technologies may condemn us to repeat the same mistakes all over again. We may not have to go as far back as prehistoric cave paintings (that may well be the "earliest examples of educational media") or to illustrated textbooks such as Comenius's 17th-century *Orbis Pictus*, a visual aid text for teaching Latin and the sciences (Terzian, 2019, p. 555). However, to avoid an ahistorical perspective on educational innovations and

technologies, it is instructive to choose some examples of innovations from the last two centuries. Due to the spatial confines of this editorial, a few key examples that show the typically uncritical narratives of progress that perceive technology as a cure-all must suffice.

Sir Isaac Pitman's correspondence courses in shorthand in 1840s England may be the earliest example of distance education (Terzian, 2019), and in 1885, it was erroneously predicted "that mail-correspondence students would soon outnumber students on campuses" (Rollins, 2014). In 1913, nobody less than serial inventor Thomas Edison was so enamoured by motion pictures that he audaciously predicted that "[b]ooks will soon be obsolete in the schools. Scholars will soon be instructed through the eye. It is possible to teach every branch of human knowledge with the motion picture" (cited in Terzian, 2019, p. 557). Edison was also wrong when he predicted that "[o]ur school system will be completely changed in ten years" (Edison, 1913, cited in Terzian, 2019, p. 557). In fact, Ferster (2014, p. 1) remarked that despite machines having radically transformed many aspects of daily living in the 20th century, "a nineteenth century visitor would feel quite at home in a modern classroom". The traditional learning environment in physical classrooms may have remained fundamentally unaltered.

Early educational films were overly focused on content and lacked a sophisticated instructional design. Frequently costly educational films were in low demand and overall, "the impact of films on education proved to be modest" (Terzian, 2019, p. 557). When radio became a mass product, once again much hope was invested in it. In the late 1930s, radio was sometimes thought of as a 'Master Teacher' (Cook, 1938; Tyson, 1936).

> "Experts in given fields broadcast lessons for pupils within the many schoolrooms of the public school system, asking questions, suggesting readings, making assignments, and conducting tests. This mechanizes education and leaves the local teacher only the tasks of preparing for the broadcast and keeping order in the classroom" (Cook, 1938, 249-250).

After motion pictures and radio, the next technology to supposedly revolutionize education was television. U.S. President Lyndon Johnson characterized educational television as a "vital public resource to enrich our homes, to educate our families, and to provide assistance in our classrooms" (cited in Terzian, 2019, p. 559). Again there was the vision of exemplary teachers reaching out to millions of learners. However, results were once again modest (Terzian, 2019).

A parallel development was the advent of computers in education. An early example of computers in the classroom was Sidney Pressey's Automatic Teacher of the 1920s and 1930s. Unlike the mass education of the radio or the film projector, the Automatic Teacher was supposed to foster a more individualized classroom. The device posed multiple-choice questions, and in order to proceed, the student needed to get the answer eventually right. Alas, the Automatic Teacher was a commercial failure (Watters, 2021). After World War II, the relative inaccessibility of prohibitively expensive mainframe computers meant that related educational initiatives had a "negligible impact on classroom instruction" (Terzian, 2019, p. 560).

Eventually, networked, portable and accessible electronic computers incorporated many features from earlier educational media, boosted by the meteoric rise of the internet and online learning from the late 20th century onwards. However, during the dot-com era, online learning ventures created by universities and venture capitalists, largely went bust (Rollins, 2014).

What does this brief glance at EdTech history teach us? Hopes are often exaggerated and one should not overlook commercial interests that are at play. There is a certain inevitability behind the supposed teleology of EdTech – however, our brief glance at history shows more randomness than determinism. In an interview, learning science expert Bror Saxberg remarked: "Technology is neither good nor bad. Technology teaches nothing… Technology is just technology" (cited in Rudolph, 2014, p. 215). There is a long history of viewing technology as a panacea and "both technological determinism and Luddism should be avoided, with there not being any Magister ex machina miracle" (Rudolph, 2018, p. 35).

The Journal of Applied Learning & Teaching (JALT) is certainly not Luddite and has an educational technology (EdTech) section that has produced numerous articles on educational technologies such as Gnowbe, Google shared files, Kahoot, Mentimeter, Nearpod, Padlet, Zeetings, and Zoom (Burton, 2019; Harris, 2018; Rudolph, 2018; Shuker & Burton, 2021; Stafford, 2020a; 2020b; 2021; Yeo, 2019). When browsing through past JALT issues, it could be argued that approximately every second article has technological or innovative aspects. More recent examples include Akinola et al. (2020) on virtual reality and education, Sim's (2021) evaluation whether we use Learning Management Systems correctly and Or & Chapman's (2022) review of online assessment approaches. The pandemic compelled higher education in developed economies to move to emergency remote teaching and eventually to more thoroughly considered approaches of online education (Alterri et al., 2020; Butler-Henderson et al., 2020; 2021; Crawford et al., 2020; Kefalaki & Karanicolas, 2020; Maddumapatabandi & Gamage, 2020; Mulrooney & Kelly, 2020; Hawley et al., 2021; Grafton et al., 2021; Mshigeni et al., 2021). At the same time, it is important to note that learning and teaching in less developed economies such as, for instance, Bangladesh (Shuchi et al., 2021), Cambodia, India (Teo & Divakar, 2021), Mozambique (Martins et al., 2021) and Uganda (Omona, 2021) face resource constraints in terms of constant electricity supply, access to digital devices and the internet. Lymperis (2019; 2021) in her research on marginalised rural schools in Greece shows that such constraints may even exist in EU member states.

As a result, this issue aims to examine the successes and challenges with technology in diverse educational settings, hence portraying its possibilities, but also its inevitable constraints. The decision rests with our readers whether

technology in education is an innovation or indeed a hindrance. The articles brought together in this special issue come from six countries in five continents (Australia, Canada, Nigeria, Singapore, the UK and the U.S.) and showcase process and product innovations as well as the pros and cons of the paradigm innovation of online learning.

Specifically, the first two articles in this special issue by Koulaxi & Kong and Déri show process innovations in the form of virtual writing groups (using Zoom) and academic writing retreats. The next two articles by Shuford Mayeaux & Olivier and Luo discuss product innovations, using YouTube and other platforms to build professional learning communities as well as a mobile app for learning Mandarin Chinese. Sanni et al. show the limits of a paradigm innovation such as online education in the Global South (Nigeria), when necessary preconditions for that innovation such as electricity, devices and Internet access are often lacking, while Kwan highlights academic burnout as an additional downside of online learning, even when such preconditions are given in a highly developed economy such as Singapore. Finally, the seventh article by Tan et al. shows that the switch to online learning in Singapore was located somewhere on a continuum between emergency remote teaching to andragogical innovation, depending on the various institutional environments as well as the time horizon.

The majority of the articles in this special issue of the Journal of Applied Learning & Teaching were presented at one of the events organized by the Communication Institute of Greece, especially the 2nd International Conference on Education (EDU2021). The first paper, by Afroditi-Maria Koulaxi and Jessica Kong (UK), entitled "Re-thinking virtual writing retreats in the COVID-19 higher education environment", explores the role of virtual writing retreats in supporting postgraduate students and enhancing the quality of their learning experience in the COVID-19 higher education environment. The authors explore virtual writing retreats as a way to (a) build a community, (b) create a virtual library, (c) combat isolation, and (d) maintain productivity, in a context of crisis. This study offers insights into the possibility and contribution of virtual writing retreats, also for Master students, and responds to specific challenges that arise from the context of a pandemic. The authors believe that the model and practice of virtual writing retreats could be considered by all educators regardless of their position in academia (researchers, Master and Ph.D students, professors, etc.). Additionally, as compared to physical retreats, virtual writing retreats are relatively flexible in terms of time and space and give the possibility for community building and academic productivity, especially for distance learning.

Catherine E. Déri (Canada) is the author of the second paper of this issue, entitled "Social learning theory and academic writing in graduate studies". Her paper aims to provide a greater understanding of peer learning in academic writing groups organized by graduate students in Canada (Master and PhD students). This study uses the social learning theory developed by Bandura (1971) with its self-efficacy concept at the forefront of the theoretical framework. In that regard, as the author explains, Canadian students can develop confidence in their abilities to successfully complete writing projects based on four sources of influence: mastery experiences; vicarious experiences; social persuasion; and physiological and emotional states (Bandura, 2019). This article proposes valuable strategies to develop academic writing competencies through social actions led by graduate students. The implementation of such initiatives, as Déri explains, in conjunction with institutional support, is recommended to increase successful outcomes for success to graduate, among others.

"Professional kinship using social media tools: Bridging and bonding to develop teacher expertise" is the title of our third research article, authored by Amanda Shuford Mayeaux and Dianne Olivier (USA). Their collective case study research provides information on the impact school culture, internal factors, and the state of flow have upon motivating a teacher to develop teaching expertise. The fact that expert teachers bond with peers within their school, but also bridge with peers outside of their school with the use of various social media tools from YouTube to professional learning networks on Twitter, has allowed experts to develop professional kinship and enhance their practice regardless of location and proximity with peers within their professional learning community. These major findings hold implications for theory, practice, and future research, particularly in terms of teaching quality and a change of mindset towards the profession and the standards of education.

"Novel micro-learning-based mobile-assisted language app for Mandarin Chinese» is the fourth article of this issue, authored by Ling Luo (China). This article discusses the original design of a mobile app (Android and iOS) as a supplementary tool for learning Mandarin Chinese, using micro-learning theory. This app promises to help overcome the substantial challenges in learning Mandarin. The author explains that by piloting the app and conducting experiments within a basic Chinese language course in a community college in Manhattan, the creators aim to assess the effectiveness of the proposed app free of charge. Additionally, Ling Luo explains that this app can be modified for learning other languages.

The fifth article of this issue, entitled "Knowledge and uptake of e-learning among Nigerian students during the COVID-19 lockdown" by Felix Sanni and co-authors (Nigeria) evaluates the uptake of e-learning among students of a local government area in Nigeria during a COVID-19 lockdown. The authors conducted a descriptive cross-sectional survey of primary and secondary school students that was conducted from January to February 2021. This article is important as it refers to the complexity of using e-learning practices in Nigeria (representing the Global South) that faces entirely different difficulties as compared to more advanced economies.

The sixth and seventh contributions bring us to the higher education landscape of the city-state of Singapore. James Kwan's study examines "Academic burnout, resilience level, and campus connectedness among undergraduate students during the Covid-19 pandemic. Evidence from Singapore". Kwan's findings show that overall, respondents had a moderate level of academic burnout, a high level of academic resilience, and campus connectedness. In Kwan's view, higher education institutions may wish to consider

redesigning the assessment structure to support a blended learning environment and provide additional support to students facing academic burnout and undue stress from the pandemic.

The seventh and final article, "Emergency remote teaching or andragogical innovation? Higher education in Singapore during the COVID-19 pandemic", is a collaboration between authors located in Singapore (Shannon Tan and Jürgen Rudolph) and in Australia (Joey Crawford and Kerryn Butler-Henderson). The paper provides a critical case study and reflection-in-action of the Singaporean intraperiod response, exploring individual responses from a sample of six autonomous universities, two international universities with campuses in Singapore, and four Private Education Institutions. The authors chose to ensure full coverage of the city-state to enable a comprehensive country analysis in contrast to the growing volume of single-institution case studies. They discuss how a regrettable technical focus has practical and research implications, and how research and university teaching and learning practice can better respond to future challenges through reflection of a sociotechnical perspective.

Despite its horrors, the current crisis may well present us with a well-disguised opportunity to improve learning and teaching experiences. The pandemic has offered us the need to bridge many gaps in our education systems, and technological innovation has the potential to help us address them. Of course, miracles cannot happen overnight; we cannot resolve long-standing problems and inequalities in the space of a few months or even years. However, this pandemic has provided us with an opportunity to see and understand our mistakes and transform them, with the help of technological innovations, among other things. We owe it to the young generation, that of our students and our children, to show the way and make this world a better place, sharing good practices and examples.

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