Editorial

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Over the past years, much has been written about the Fourth Industrial Revolution and how it is leading to a fundamental change in the way we live and work. The merging of the biological, physical and digital worlds, along with a fusion of technologies, is disrupting our institutions, businesses and societies, and it will continue to do so to an extent that we cannot yet foresee. This game-changing technologically-driven revolution offers both a future wherein the lives of (some) humans are bettered but also a danger that those who live in a poorly serviced digital world are left further and further behind. In short, the current digital divide will exponentially increase unless there are concerted efforts by global actors (such as the World Economic Forum, UNESCO, the World Bank), regional trading blocs (such as BRICS and the EU), and national governments.

Addressing the divide is especially important in the higher education (HE) sector. Prior to COVID-19, progress had been made in using technologies to provide opportunities to those who might not otherwise have had access, such as online programmes and Massively Open Online Courses (commonly called MOOCs). This has benefited adult learners in particular. However, progress has been uneven both within countries and across continents despite the many signals that HE had to evolve from being the 'least digitised and most people-intensive business sectors' to the digital transformation of teaching and learning so that students are prepared for an ever more digital future.[1] They need to have the skills to (i) successfully compete in a global workplace in employment that does not yet exist and (ii) be able to fully participate in their societies.

The pandemic forced all sectors of education to shift to remote learning due to lockdowns. Indeed, at the height of the pandemic, it is estimated that 1.6 billion learners were out of school – i.e., 85% of learners worldwide.[2] Remote learning during this period had various degrees of success. School closures, particularly in developing countries, often meant no formal learning took place at all due to a lack of technological infrastructure. Furthermore, many faculty and teachers worldwide had limited technological skills and even more had little training in the use of information and communication technologies (ICTs) in education systems (EdTech). Hence, there is a large deficit that needs to be made up in order for learning to be congruent with the economic and societal needs that come with our ever deeper moves into the 21st century.

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1   European Commission (2022) *The Future of Digital and Online Learning in Higher Education*. S. Humpi & T. Andersen Reflection Paper Series, doi: 10.2766/587756

2   World Bank Group (2021) Digital Technologies in Education. www.worldbank.org/en/topic/edutech

In this 17th edition of the IJTL, the first cluster of articles reflects this sense of urgency with respect to the use of EdTech in teaching and learning. Both the education of teachers and learners are important for student attainment. In the first article, the authors are concerned with promoting active learning using mobile and web-based design interfaces, design principles, and online engagement. Using a Design Science Research paradigm, they developed a 10-step framework adapted from the Multi-Motive Information Systems Continuance (MISC) Model. In the next article, the author undertook a case study to understand the factors constraining the uptake of ICT in schools. He found that both poor technological pedagogical knowledge and little experience in integrating computers into the classroom were impacting negatively on ICT uptake. The author recommends that ICT professional development opportunities for teachers is needed. The following article addresses the challenges of student motivation and engagement in e-learning. The authors used a case study to explore how gamified quizzes influence the motivation of programming students. Their findings were mixed: the use of gamified quizzes strengthens student understanding and confidence but only in low stakes activities. The next article explores the effectiveness of digital media as teaching tools in Chemistry for second-year pre-service teachers. The author found that their use typically enhanced conceptual understanding. The last article in this cluster returns to the issue of online leaning during COVID-19. In a country like South Africa, the digital divide is acute. Students living in its rural areas generally have limited if any internet connectivity and access to digital devices. The authors recommend that HE leaders and managers put in place mechanisms and resources to address the digital gap.

The second cluster in this issue of the journal centres around various aspects of teaching and learning. The first article explores the quality management arrangements that a sample of Private Higher Education Institutions have implemented for programme reaccreditation by the Higher Education Quality Committee of the Council for Higher Education. The second article uses a constructivist paradigm to explore postgraduate supervisors' perceptions of supervision. The findings resulted in reframing postgraduate supervision as a teaching and learning practice. The authors in the following paper used three case studies to determine the application of general pedagogical knowledge and their intention-realisation in the classroom. The final article in this cluster explored, using a mixed method approach, the impact of teachers' professional development on second language learning of Grade 1 learners.

In Practitioners' Corner, the shortage of teachers led the author to conduct a case study to determine what conditions would encourage former teachers to return to teaching. A number of factors were identified including a supportive school environment, better remuneration, a manageable workload, and sufficient resources.