Journal of Learning for Development 11(3), 2024, i-iv

EDITORIAL
Developments in TEL: Pushing the Boundaries of Open Education

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Context

With the firm articulation by the first chancellor of the OU Lord Geoffrey Crowther, at the UKOU's inaugural ceremony, that the open university is "open as to people, open as to places, open as to methods and open as to ideas" (Crowther, 1969, pp. 1-2; also reiterated by Perry, 1976), open education has evolved over the past decades and has come a long way to be understood and practised as open access, open learning, open educational resources, open sharing, open pedagogy, and open educational practices, among others. In its evolution, technology has played a significant role. In a review of open, distance and digital education in the Global South, Mays (2023) notes that open, distance and blended approaches in open schooling and higher educational institutions have increasingly embraced digital, cloud-based and connected approaches appropriate to diverse levels, disciplines and contexts, and, therefore, contextual understanding is crucial in any TEL design and application. Conole's (2013) research review on pedagogical patterns and open educational resources, and learning design for an open world; and Selwyn et al's (2020) caution about digital inclusion/exclusion, artificial intelligence/datafication, human learning/machine learning, and community approaches to design and implementation, will be of critical importance to TEL designers for open education. Our opening first paper in this issue of the *Journal* is an interesting and reflective discourse on open education and generative AI.

For effective implementation of TEL, Panda and Mishra (2020) underlined that while 'policy-capacity-technology' could act as a theory of change model, open and distance institutions need to invest in our collective understanding of 'learning' in a 'networked society' and work toward implementation of TEL in relation to contextual socio-cultural and educational ecologies. In a recent bibliometric study, Wang et al. (2024) underlined that technology acts as both facilitator and transformative agent, and that while digital literacy has been a necessity, critical and ethical use of technology and digital resources needs to be emphasised. Within the open education realm and with reference to open educational practices at any level of education and mode of delivery, as argued by Alton et al. (2024), TEL has introduced and complicated new and diversified academic identities in teachers, and, therefore, institutions need to nurture facilitative environments through policy, training/continuing professional development, and recognition of diverse academic work vis-à-vis TEL.

The papers in the current issue of this journal directly or indirectly address this theme of 'TEL and open education'.

Papers in this Issue

In the first *Invited*, but peer-reviewed, paper Tlili and co-authors address a very important and emerging theme within the contemporary concerns for technology-enabled teaching and learning — promoting the safe use of GenAI through open education. Open education has been able to

Published by Commonwealth of Learning, Canada

enhance accessibility, inclusivity, and student learning achievements. The authors describe scenarios of open educational practices (OEP) that can promote effective and humanitarian use of GenAI, in four dimensions: open educational resources, open teaching, open collaboration, and open assessment. The OEP Framework by Huang et al. (2020) was used by the authors to discern various scenarios of OEP that can effectively facilitate the adoption of Generative AI in education. The authors suggest that we need to be cautious in our understanding, formulation and application of openness — with a clear distinction between 'free' and 'open'. While we need to be specific in the use of GenAI for addressing diversity, inclusion and personalisation, we need to do this within the ambit of social empathy and responsibility, and innovative and critical pedagogic approaches. This is a scholarly and practical analysis that will add to our existing literature on and our understanding about OEP and GenAI.

In the *Research* section, we have included eight papers which deal with themes ranging from video and learning, technology readiness and adaptive educational application to blended learning, virtual reality, and strategic priorities for universities. In the first paper in this section, Zheng, Huang and Liu, based on an examination of twenty instructional designs for STEM through the information flow-based assessment method, established the feasibility of such a method, which can be effective in assessing STEM instructional design plans. In the second paper, Maryani, Karimi and Fathi present the findings of a scientometric/bibliometric review of 365 scientifically selected articles on virtual reality (VR) in elementary education, which suggests collaborative research due to increasing funding support, competency of authors, and increasing trans disciplinary studies. While the developed countries have gone ahead with advanced technology applications, the developing countries have yet to enter the realm of advanced technological applications.

In the third paper, Salas-Rueda used mixed methods research and a machine learning algorithm on linear regression, which indicated that the content of the technology of Adaptive Educational Application on Electronics (AEET), presented through a web simulator, digital files, and YouTube videos had a positive effect on a virtual education environment, and on students' motivation, satisfaction and their active role in this. Dimo and co-researchers, in the fourth paper, present the findings of a study on the relationship between technological readiness and online learning self-efficacy in physical education. All the four dimensions of technological readiness (optimism, insecurity, innovativeness, and discomfort) had a positive relationship with self-efficacy in online learning; and this could possibly be due to the use of advanced tools in the online learning platform. In a similar technology impact study, Gulen and Donmez report, in the fifth paper, the positive effect of web-supported videos on school students' science learning (three-dimensional learning, and academic achievement), though this did not have any effect on their critical thinking skills. Similarly, in the blended learning context during Covid-19, Jasmin and Ongcoy's study, as reported in the sixth paper, revealed that blended teaching-learning had a significant positive effect on STEM students' self-perception of their mathematical abilities due to mastery of the content by the teacher, per interaction, and utilisation of web-based resources, though distraction in educational settings, domestic workload and feeling of loneliness hinder such positive self-efficacy.

In the seventh paper, Hardiansyah report a positive effect of teacher professional education (PPG) training on higher order thinking skills (HOTS) in physical education students, though there was no effect of gender and teaching tenure on students' HOTS.

Don Olcott Jr, in the eighth paper, presents a reflective analysis of 'strategic reset' of universities, which suggests prioritisation of universities' intent and actions to respond to

stakeholders with flexibility and innovation within the given limited resources. The author presented a Strategy Reset Framework that can facilitate institutional leaders in designing multi-dimensional approaches to the university's niche — be it academic programmes, online learning, resource allocation, open educational resources, micro-credentialling, or technology deployment including AI, among others (especially online-open-micro-credential frameworks). Institutions must create multiple, strategic, priority synergies and strategically locate priority areas that are complementary to each other. This reflective, well-argued paper will be of significant use to both campus-based and ODL institutions and institutional leaders.

In the peer-reviewed *Case Study* section, the four papers deal with micro-credentials, cyber ethics, learning support through SMS during Covid-19, and teacher professional development. The first case, by Santally and co-researchers, presents the views of education and industry leaders on the potential of micro-credentials in higher education. Though there was low awareness among the leaders, there was clear expression of concerns about credentialling, alignment with the national qualifications framework and national credit framework; and also competency-based assessment and inclusion within university assessment and certification. In the second case, Mfaume and Bilinga report that while there is prevalence of cyber ethics violations among teachers, this can be converted to cyber ethics compliance by developing a national policy on the responsible use of technology for teaching-learning, training teachers on the pedagogy of technology use, promoting awareness of cybercrimes, and building cyber ethics into teachers' code of conduct.

An interesting case on the use of low-technology application of SMS during Covid-19 (and later) for project Keep Kenya Learning is reported by Jordan and co-researchers in the third case study. The technological innovation used SMS for content, usage statistics, quizzes, and user feedback in the education of remote learners (literacy, numeracy, and social and emotional learning). This case on low-technology use shall be very useful to planners and educators in isolated, disadvantaged, and remote areas.

The fourth case study, by Mgaya, is about the problems faced by teachers and educational administrators on technology integration in teaching. The focus group discussion yielded some important constraints that will be useful to many especially in the developing world — lack of appropriate infrastructure, lack of teacher digital competency, limited professional development, and professional misconduct. The author strongly recommends for continuing professional development in enhancing competency for technology-enabled learning and cyber ethics/misconduct.

The *Book Review* section includes one important review on the book *Critical digital pedagogy in higher education,* edited by S. Koseoglu, G. Veletsianos and C. Rowell, and reviewed by LeRoy Hill. The exhaustive critical review, focusing on 'critical theory, digital pedagogy and student-centred learning' will be very useful to institutional leaders, faculty and researchers alike. The editors of the book posit the work as ongoing, giving spaces to the readers to critically reflect on the discourse in relation to their contexts. The reviewer appropriately concludes: 'This, therefore, is a powerful metaphor and application of its universal call to operationalise the potential to humanise technology in education'.

In Conclusion

We hope the papers and case studies and the book review, which reflect on and relate to the theme of this issue 'Developments in TEL: Pushing the boundaries of open education', shall be of interest to our readers and bring in further reflections on this broader theme.

To conclude, I take this opportunity to sincerely thank Dr Tony Mays, Dr Sanjaya Mishra, Dr Jako Olivier, Dr Betty Ogange, and copy editor Alan Doree for their constant meticulous efforts in organisation, review and facilitation in the publication of this issue of the Scopus-indexed *JL4D* on time.

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Chief Editor, *JL4D*

Cite as: Panda, S. (2024). Editorial — Developments in TEL: Pushing the boundaries of open education. *Journal of Learning for Development*, *11*(3), i-iv.