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EDITORIAL

Digital Media and Teaching-Learning Effectiveness

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Digital Media and Learning

Educational technology developments started with the audio-visual aids movement, moved through many developments within broadcasting, telecommunications, and computing (Panda, 1990), resulting in radio and television broadcasting, audio and video cassettes and conferencing, satellite communications, personal computers and tablets, computer conferencing, web-based activities, and convergence of all technological innovations into one platform, symbolised in our smartphones. The movement was accelerated with the initiation of Wikis and e-learning in the nineties, OER in 2002, followed by blogging, LMS, virtual reality, e-portfolios, social media, MOOCs, digital badges, artificial intelligence (AI), and blockchain, among others (Panda, 2026). There have also been developments in AI and associated technologies, virtual reality, augmented reality, mixed reality, gamification, 3D simulations, virtual labs, robotics-based learning, ubiquitous learning, online simulations, etc. (Chatfield, 2025; Emma, 2026; Mustafa et al., 2024). Various open-source media tools are now available for finding content, creating content, updating content, sharing content, building networks, and for communication. To a large extent, open and distance learning (ODL) has triggered massive educational technology developments and associated pedagogies.

In terms of educational delivery, starting with classroom teaching-learning, this has moved towards technology-supported and technology-enabled teaching-learning, ODL, online learning, and varied forms of blended learning (Tlili et al., 2024), combining especially self-learning, face-to-face hands-on and internship, and online interaction and online activities (Panda & Mishra, 2027).

Parallel to this, pedagogic transformations have occurred that have led to newer pedagogic methods (Anderson & Dron, 2011; Panda, 2022), feminist pedagogy (Shrewsbury, 1993), critical pedagogy (Giroux, 2012) and future pedagogies (Coughlan et al., 2026; Kukulska-Hulme et al., 2024). With technological developments, various philosophies, models, principles and tools of digital pedagogy (i.e., using digital technologies to affect teaching and learning) have appeared — digital platforms, digital tools, digital resources, virtual assets, digital assessments, synchronous and asynchronous interactions, digital competencies, digital policies, among others (Bećirović, 2023; Huang et al., 2024; Istrate, 2021; Lewin & Lundie, 2016; Ncube & Tawanda, 2025; Santoveña-Casal & Lopez, 2024; Tan et al., 2024).

Digital pedagogies have facilitated open education and open educational practices (Ehlers, 2011; Jhangiani & Biswas-Diener, 2017), open sharing (Panda & Santosh, 2017), personalised learning, self-directed learning (Olivier, 2024), collaborative learning, and critical and inquiry-based learning (Garrison et al., 2010). Current research suggests that digital

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technologies facilitate pedagogic innovations, though there are challenges for technology adaptation and cultural integration (Bitar & Davidovich, 2024). Digital literacy has a positive effect on learning outcomes (Yuan et al., 2025); digital technology is effective for music education (Rexhepi et al., 2024) and higher vocational education (Zhang et al., 2024); and digital technology innovations have a significant impact on student learning in higher education (Awidi & Paynter, 2024) and inclusive learning for teacher education (Drushlyak et al., 2023).

The Commonwealth of Learning (COL) formulated the policy-capacity-technology model as a theory of change policy model for its effectiveness in technology enhanced learning (TEL) (Mishra & Panda, 2020; Panda & Mishra, 2020). These three dimensions triangulate to effect successful and productive TEL implementation. However, while technology is not a sufficient pre-condition for improving learning, the design and contextual implementation of its facilitation of teachers' teaching and learners' learning holds the key (Kirkwood & Price, 2013; 2016). Digital technology supports active learning and learning agency, personalisation of learning and differentiated learning pathways, collaboration and interpersonal communication, learning analytics, learner assessment and feedback, among others. It facilitates changing roles for teachers to become designers of learning experiences, facilitators of student inquiry and critical thinking, guides to digital learning environments and learning outcomes as evidence of learning, and developers of digital literacy. Teacher professional development assumes critical importance to enhance teacher agency, their competence and confidence, and motivation and engagement in the process of teaching-learning.

Consideration of the congruence of 'context-pedagogy-technology-context' is of crucial importance, and digital media and technology can enhance teaching-learning effectiveness only when it is used to facilitate pedagogy and strengthen teacher expertise, learner agency, equitable access, and meaningful interaction and engagement. In the present context of rapid developments in AI and associated technologies, appropriate digital education facilitates critical thinking, ethical action, responsible participation, and enhancement of pedagogical quality. It is against this backdrop that the current issue of *JL4D* is organised.

The Current Issue

In the peer-reviewed *Research* section, we have included seven research papers focusing on gamification, social media, e-learning, digital technology, and AI. While in the first paper, Das and Madhusudan report that in the ODL context, gamification and rewards play a significant role in student engagement, in the second paper, Amorin and Gallaron suggest that though social media usage had no direct effect on students' critical thinking skills (CTS), both learning engagement and information literacy contributed to CTS. The third paper, by Simiyu, Kiambati and Wabwoba, explores faculty challenges and student experiences in e-content and e-learning, where the authors strongly recommend for instructional design training and enhancing interactivity in e-learning. Inayati and co-authors, in the fourth paper, support the contribution of gamification and game-based tools to creative thinking in university students. The findings have implications for ODL, emphasising digital tools for developing higher-order critical and creative competencies.

The fifth and sixth papers deal with AI in the context of, respectively, K–12 teachers and higher education students. Khan and co-authors report that while relative advantage, compatibility and humanisation were associated with AI readiness, other variables were associated with behavioural intention, and both significantly contributed to teachers' intention and readiness. In the second paper on student communication skills, Behforouz and Ghaithi

underline the contribution of AI-based exposure over in-class teaching in enhancing students' speaking skills and willingness to communicate. In the last paper in this section, Chandra reports that the use of digital technology (mediated by behavioural intention and actual use of e-content) significantly contributed to learning outcomes in secondary school students.

The *Case Study* section includes five peer-reviewed papers on Moodle, mixed reality, digital literacy, ICT engagement, and blended learning. In the first case study, Kazanbayeva and co-authors report improved involvement in academic participation and meaningful academic participation among disabled students while using a Moodle-based automated assessment in online education. In the case of an innovative mixed reality assessment tool for vocational education, Suryodiningrat and co-authors report its effectiveness in mixed-reality learning experiences. Ahmed and Alkahtani, in the third case study, report the effectiveness of digital literacy in multicultural language learning in high schools. Alam, in the next case study, found that in ICT-based technology education, factors like network access, perceived academic performance, and learning and instructional mode significantly contributed to student satisfaction and engagement. Rifai and co-authors, in the last case study, suggest that blended learning can widen student access, equity and success, provided there is sufficient access to digital resources, inclusive instructional design, meaningful interaction, and sustained institutional support.

In the peer-reviewed *Report from the Field* section, Jhangiani and Pakkal report that, in the Canadian context, institutional capacity assessment effectively contributes to institutional adoption of open education through focused strategic planning and sector-wide institutional investment; and this finding is equally applicable to other developed and developing national contexts.

In the peer-reviewed *Commentary* section, Mazlan critically analyses the pre-conditions for the use of blended learning in digital education. Blended learning could be more effective when there is an interplay of learner agency, self-regulation, engaging interaction, and sustained participation of students and teachers. The author suggests that learning, relearning and unlearning should be a continuous process in both physical and digital learning spaces.

The *Book Review* section includes a review of the seminal book *Teaching in the digital age* by Tony Bates, critically reviewed by Joel Rodriguez. The reviewer, while recommending the book for students, teachers, leaders, researchers and policy makers, underlines the excellent weaving together of theories, pedagogies, instructional design, and tech-supported learning by the author, thereby making the book an authoritative but easy-to-comprehend contribution to the field.

We hope the papers and book review included in this issue of the *Journal* shall be of interest to our readers and useful to both practitioners and researchers in the field.

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