

BOOK REVIEW

DIGITAL TECHNOLOGIES: SUSTAINBLE INNOVATIONS FOR IMPROVING TEACHING AND LEARNING

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The volume *Digital Technologies: Sustainable Innovations for Improving Teaching and Learning*, edited by Demetrios Sampson, Dirk Ifenthaler, Michael Spector and Pedro Isaias, provides a contemporary glance at the rising challenges of sustainable educational innovations for improving teaching and learning. Emerging educational technologies can help to transform learning environments across educational contexts. School teachers, college professors, and administrators are expected to increase effectiveness of technology innovations in education. The need for educational innovations has become acute to effectively cultivate students' 21st century competences in the digital society. These novel issues are further explored by the volume's contributors who provide theoretical and empirical examples of how digital technologies can be effectively used to support teaching, learning and assessment.

The question addressed throughout the book is: how the potential of digital technologies can be exploited to improve the experiences of teaching, learning, and assessment in real-life contexts? The chapter on mobile device usage in higher education by Jan Delcker, Andrea Honal and Dirk Ifenthaler, for example, addresses how mobile learning technologies should be implemented to facilitate student's learning needs. Also, as the book chapter by Michail N. Giannakos, John Krogstie and Demetrios Sampson shows, progress in instructional design and technology infrastructure posits a flipped approach to teaching and learning ripe for exploration.

The book showcases case studies about analytics for improving learning experiences. Groundbreaking advancements in educational data analytics can track down an individual learner's learning process, which prompts educators to offer more tailored support for learners. Izumi Horikoshi, Masato Noguchi and Yasuhisa Tamura vividly demonstrate how learning analytics technologies can help teachers evaluate the relation between learning objectives and the learners' actual activities. Meanwhile, adaptive game-based learning can foster dynamic assessments. The chapter on exploring adaptive game-based learning by Jelke van der Pal, Christopher Roos and Ghanshaam Sewnath makes an interesting empirical contribution in this respect, offering insights to learning game designers to better suit the learner needs by adjusting the learner's engaging experience.

The contributions clearly show that rapidly expanding learning technologies are

transforming teaching pedagogies and educational data analytics. The chapter on a self-regulated learning approach by Erin E. Peters-Burton, Timothy J. Cleary and Anastasia Kitsantas examines self-regulated learning cycles related to student computational thinking as students are engaged in a goal-directed process. Efforts to support deep learning through active student engagement include pedagogical solutions. Manoli Pifarré and Laura Martí propose a technology-enhanced pedagogical framework for scaffolding the development of new ideas and collaborative creativity. University teachers need to take on a designer mindset to underpin effective use of digital technology. Their role in exploratory learning environments becomes a learning facilitator. The chapter on digital smart citizenship competence development by Yacine Atif, Stylianos Sergis and Demetrios Sampson discusses how a cyber-physical learning approach can become actionable to create authentic blended and augmented learning, while eliciting student engagement with cyber-physical learning environments.

Since the early 2000s, the plethora of e-Learning programs has spurred a high demand for efficiently meeting competence needs of the learners across the globe. Importantly, the book not only addresses core global educational challenges spanning from transforming digital learning environments to cultivating students' competences for emerging educational technologies, but also provides a unifying goal of continuing to promote technological and pedagogical solutions to support teaching, learning and assessment. This volume represents the very latest work in the area where learning technologies, educational psychology, pedagogical strategies and instructional design intersect. Genuinely, the volume represents a multi-disciplinary approach to the digital learning field and opens interesting avenues for future strands of research on reaping benefits of the affordances of digital technologies. Overall, *Digital Technologies: Sustainable Innovations for Improving Teaching and Learning* is a thought-provoking and a pedagogically helpful book. It proposes directions for further research in the vastly expanding digital learning field.

Reference

Sampson, D. G., Ifenthaler, D., Spector, J. M., & Isaias, P. (Eds.). (2018). *Digital Technologies: for Sustainable Innovations for Teaching and Learning*. Springer.

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