
Editorial

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Biographical notes: Kam Cheong Li currently serves as Dean of the School of Open Learning, Director of Research and Knowledge Transfer, as well as Director of the Institute for Research in Open and Innovative Education at Hong Kong Metropolitan University. He has published over 180 refereed journal articles/book chapters/conference papers and 8 monographs/textbooks, co-edited 12 books. Besides serving as an editor for the *Asian Association of Open Universities Journal* and *SN Computing Science*, he is an editorial board member for the academic journal *Interactive Technology and Smart Education*. His research interests lie in open learning and technology in education.

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Fu Lee Wang is the Professor and Dean of the School of Science and Technology at Hong Kong Metropolitan University. He was the Vice President at the Caritas Institute of Higher Education and a faculty member at the City University of Hong Kong. He has over 150 publications in international journals and conferences and led more than 20 competitive grants. He is a Fellow of the BCS, past Chair of ACM Hong Kong Chapter and IEEE Hong Kong Section Computer Society.

Reggie Kwan is a Professor of Computer Science and currently the Provost of Hong Kong Metropolitan University. He served as the Chair of Computer Science at Montana Technological University, the Head of Computing and Mathematics at the Open University of Hong Kong, and the President of the Caritas Institute of Higher Education. Though trained as a computer scientist, he has been fascinated by e-learning and open and distance learning.

Pedro Isaias is an Associate Professor at the Information Systems and Technology Management School of The University of New South Wales, Australia. He is the author of several books, book chapters, papers and research reports, all in the information systems area. He has headed several conferences and workshops within this area. He has also been responsible for the scientific coordination of several EU funded research projects. Currently he conducts research related to management information systems in general, and more specifically learning technologies, data analytics, business intelligence, digital transformation, e-business and WWW related areas.

Advances in mobile technologies have been playing a key role in breaking the boundaries of learning in terms of time, space, curriculum content, organisation, pedagogical methods, infrastructure and requirements. The widespread adoption of tools for online meetings and social media, as well as the increasing use of learning analytics, virtual/augmented reality and artificial intelligence for educational purposes, illustrate the global trend of changing the modes of learning and teaching with technology for greater mobility, ubiquity and flexibility. Such a trend has been shown in various subject disciplines, levels of education, and learning contexts.

This special issue focuses on showing how the boundaries of learning can be eliminated with technological advances. The papers in this issue cover topics ranging from language learning to online teaching and learning, smart learning, and self-regulated learning. They illustrate how online and mobile technologies have been adopted for diverse pedagogical purposes, such as automatic grading of short answers, simulation-based learning, social networking, instructional games, wiki-based collaborative writing activities, and blended and virtual learning.

In the first paper, Jia et al. present a research study which addresses the lack of empirical evidence on the long-term effect of mobile learning as related work had been carried out mostly on a trial basis in which the use of mobile devices for learning lasted for only a short period of time. This study examines the effect of mobile-assisted language learning supported by an online tutoring system for vocabulary drilling in a foreign language course which extended over a nine-semester period. The findings reveal the effectiveness of the use of smartphones in a language learning curriculum.

In the paper by Lui et al., a framework for automatic grading of short answers is proposed which can significantly reduce the human effort required for grading. As pointed out by the authors, the cost of grading has limited the use of short-answer questions, particularly in large-scale operations like MOOCs, despite this question type being effective for assessing students' knowledge on specific topics. The proposed framework introduces a divide-and-grade approach to group similar answers into clusters, so that minimal human grading effort is needed for each cluster. The paper also addresses issues such as the selection of answers having a major impact for grading and the handling of final grading. The effectiveness of the framework is illustrated by the improvement in grading quality with the same level of human effort in grading.

Gill et al. share their experiences in conducting lessons on practical science and engineering subjects during the switch to online learning due to the COVID-19 pandemic. Their paper presents the results of a survey on institutional means and the views of staff and students in this regard, covering the successful and less-than-successful strategies for skill-based subjects. Institutional and individual suggestions are provided for the implementation of online teaching and learning under various delivery

scenarios to mitigate potential negative impacts on learning experience. The role of technologies, such as simulation and virtual and augmented reality, is highlighted.

Li and Wong report a review study on the implementation of smart learning in terms of its contexts, objectives, means and features. Based on more than 100 articles, their findings illustrate the patterns and trends of smart learning, which has been practised in a widening range of subject disciplines, educational levels and learning environments, as well as the increasing use of mobile devices and learning analytics. The results contribute to informing the future development of smart learning design, in particular the need to address subject disciplines of diverse natures, the interoperation of smart learning with emerging technologies, smart pedagogy design, and technology-pedagogy integration.

Zhang et al. present another review study on the use of MOOCs for language learning, namely language MOOCs. They analyse 78 relevant MOOCs and identify their features which support learners' self-regulated learning, such as pre- and post-course surveys, follow-up questions, previews, discussion forums, instructional games, collaborative writing activities and social networking. Based on the features identified, they put forward a number of implications for the design and pedagogy of language MOOCs, as well as highlighting the research needs on the relationship between the MOOC features and self-regulated learning.

In the last paper, Pan et al. report the differences between the blended and virtual modes of a Chinese language writing and translation programme in terms of the challenges and merits associated with the two types of learning. The differences are identified based on the learners' feedback in the programme which was first carried out in a blended environment and, in the next year, a virtual environment. The results reveal the need to cope better with learners' diverse backgrounds; show that teachers should be creative and adaptive in their pedagogies; and indicate that institutional and technological support are also important.

These papers reveal the potentials of technologies in facilitating learning for learners from a diversity of ethnicities, cultural backgrounds, study levels and disciplines. The results reported in the papers contribute to pedagogy development and educational policy-making, as well as indicating new research territories in relation to the adoption of emerging technologies. We look forward to more works generated from the findings and insights of these papers.