

EDITORIAL

Special Issue

Augmenting the Virtual Environment: Technology – Innovation – Humanity

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This Special Issue was conceived to complement the 16th eLearning Forum Asia (eLFA2021), hosted entirely online by Indonesia's Soegijapranata Catholic University around November/December 2021 (<https://www.elfasia.org/2021>). At the time, the COVID-19 pandemic was still affecting student mobility, with colleges and universities deploying eLearning or virtual teaching and learning (VTL) to continue educating students. The Forum provided educators and technologists with an opportunity to “take stock of the rapid technological and educational movements in response to the pandemic and to consider the long-term benefits and challenges to students and institutions of learning” (eLearning Forum Asia, 2021).

All presentations made at the Forum had gone through a peer review process for acceptance, a finite pool of authors and their manuscripts thus already existed for further selection for this Issue. Apart from invitations to Forum presenters, the Issue was also open to consider suitable submissions via the Journal's usual call-for-papers channels. All submitted manuscripts followed the Journal's established rigorous review mechanism, involving two screening-editors (also the Principal Editors), eight Guest Editors and their respective invited reviewers worldwide.

Eleven manuscripts are accepted for publication in this Special Issue. There are eight Articles and three Reflections on Practice showcasing innovative use of technologies and pedagogies to educate students. All eleven papers demonstrated humanity as educators were keen to help students learn effectively despite the pandemic, with good VTL measures adopted during the pandemic transitioned into routine practices to ensure continued benefits to students. The published manuscripts highlighted the diligence and perseverance of the educators. The switch to mass-scale VTL was abrupt, yet the return to face-to-face classes was not in sight as the pandemic, which started in early 2020, was still ravaging the world in late 2021. Mindful to continue effective student learning, educators were experimenting with various pedagogies and models that could suit their respective disciplines and subject matters amidst mastering the new VTL environment.

The Issue opens with a study conducted by **Choy et al.** for an engineering discipline requiring highly technical training. To complement the virtual reality (VR) technology deployed, the team adopted communal constructivism as the main pedagogy to train students in Singapore in the concept of aircraft instrument landing system in their aerospace avionics course. Their findings suggested that with this pedagogy, students could construct knowledge for their benefit as well as collaboratively as a group to improve their learning, resulting in knowledge building and retention of skills for the learners. Continuing with the theme of deploying VTL for technical disciplines, **Goepel et al.** discussed strategies for the exposure and integration of extended reality (XR) technologies among postgraduate and undergraduate level architecture students in Hong Kong. Their initiative shed light on how to respond to the paradigm shift in education, from instruction-based pedagogy to autonomous self-directed learning, preparing students for a more challenging and unpredictable future work environment. While the technological resources and internet connections were limited and unstable, the strong conviction of **Pinlac et al.** to do their best to educate their students despite the pandemic was undiminished. Their study highlighted the resilience of teacher-architects in moving from physical to virtual architectural design studio in the Philippines.

COVID-19 is finally settling down now, and face-to-face classes have returned. However, the pre-pandemic “norm” has been displaced completely, and the “new normal” with VTL now prevails. The Special Issue continues with two papers that showcased the sustained use of VR to immerse students in highly realistic simulations of various interactive scenarios to strengthen their learning. **Yap et al.**'s application of VR in

chemical engineering in a Singaporean institution showed early indications of positive impact of this technology on engineering education as it helped bring realistic industrial training to students, enhancing their knowledge retention and experience. **Ng et al.** described the development and implementation of a VR application to teach rehabilitation in a university in Hong Kong. Apart from illustrating the design and development flow, the findings included a solution to evaluate the quality of interdisciplinary work in engineering and health science. From another perspective, VTL is not exclusively just for STEM¹ disciplines. **Chan and Idris** presented a case study of cross-cultural synchronous online learning between marketing and advertising undergraduate students in Hong Kong and Malaysia. Apart from commenting positively on the online materials, students also reported gains in intercultural and communication skills.

While others were doing smaller scale research in their respective disciplines, **Tan et al.** conducted a large scale mixed-methodology study involving over 3000 students from two institutions in Singapore on the perceived effectiveness of VTL. Their findings confirmed the importance of online lesson designs and deliveries in positively influencing student learning. Whether the teachers adopt VTL or conventional teaching and learning (T&L) approaches, constructive alignment (Biggs et al., 2022) still applies as it requires the teaching methods, learning activities, and assessments to be aligned with the intended learning outcomes of the courses or programmes. Highlighting implications for T&L, **Bellam's** theoretical paper wrapped up the Articles section with an exploration of students' perspectives regarding their interdisciplinary learning through projects based on a systems thinking curriculum while modelling and simulating real-world energy issues.

The three Reflections are practical case studies, applying VTL to the curricular as well as co-curricular activities. Extending a cross-institution project (Wong et al., 2018) that started in 2014, using augmented reality (AR) learning trails to help students learn abstract concepts, **Lau** reflected on the extra complication in nurturing academic integrity in students with the mass scale adoption and convenient availability of technologies. Harnessing the popularity of online games amongst students, **Lau et al.** showcased their efforts in developing multi-cultural teamwork skills in students using online games played by multicultural virtual teams. **Azfar et al.** shared their insights from a faculty-librarian collaborative endeavour to teach digital information literacy at a university in Singapore. Despite the lack of physical team-teaching, they experienced increased teaching morale working as a team, serving a workable model for future faculty-librarian collaborations.

Last but not least, the successful development of this Special Issue is entirely because of the group of dedicated Guest Editors whose names and affiliations are listed on page 5 in alphabetic order. We would like to express our deepest gratitude for their wisdom and insights, without which this Issue will not materialise.

ENDNOTE

1. STEM is an acronym for the fields of science, technology, engineering and mathematics.

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