

## **Development of a VR-based Learning Platform for Building Services Engineering Education**

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### **ABSTRACT**

Advances in immersive virtual reality (VR) technology render it possible to provide “immersive experiences” to learners. Although it has been commonly adopted in psychological, medical and construction training pedagogical applications, its application in building services engineering education is still in its infancy. In fact, site visits to building services plant rooms are an indispensable element of building services engineering education for acquiring basic knowledge of its components, equipment and systems. Given that such visits could not be easily arranged due to the COVID-19 pandemic, a VR platform has been developed for facilitating students’ learning in building services engineering. This paper presents the development and implementation of a VR-based learning platform, *PR Explorer*, for engineering education programs at the undergraduate level, and reports student feedback from the users’ perspective. Inside *PR Explorer*, VR models have been constructed for a number of building services plant rooms to provide an immersive experience for virtual site visits. Student feedback was collected from an online questionnaire survey designed to identify factors that affect their satisfaction and intention to use. Built upon the technology acceptance model (TAM) composed by perceived usefulness, perceived ease of use and intention to use, this study has further extended the TAM model to reveal the relationships between the quality of the “VR-based learning platform”, and intention to use and user satisfaction. The findings of this study prove the effectiveness of *PR Explorer* as an education tool, and meanwhile provide recommendations for the further development of VR-based learning materials.

**Keywords:** immersive virtual reality; engineering education; virtual site visit