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INVESTIGATING THE USE OF AUGMENTED REALITY IN ENHANCING STUDENT COGNITION

Abstract:

Augmented reality (AR) , which refers to a form of technology that enhances the user's sensory perception of the real world with a computer-assisted contextual layer of information (Azuma, 1997), has been found to enhance learning, particularly in the areas which require enhancement of senses (audio, visual, tactile) (Billinghurst, Kato, & Poupyrew, 2001; Platonov, Heibel, Meier, & Grollmann, 2006). What is less established and lesser known in the education context is how AR could be used to enhance the various stages of learning such conceptual understanding and cognition.

In order for AR to bring about learning, the use of AR should go beyond considerations of the technology (Broll et al., 2008; Johnson et al., 2010; Liu, 2009, Squire & Klopfer, 2007, Wu et al. 2013). Rather, it should be backed by sound instructional design principles for learning.

This paper reports on a pilot study of how an instructional design model - Merrill's Five Phases of Instruction (Merrill, 2002)- was used to guide the design of an AR learning package to enhance student cognition for the Mathematics topic on functions and graphs; and how students perceive the learning package.

Results of the pilot study revealed that the students perceived the use of the AR learning package positively and that it helped them in their learning of the topic.

Keywords:

Augmented reality, cognition, mathematics