

DESIGNING A DESKTOP VIRTUAL REALITY-BASED LEARNING ENVIRONMENT WITH EMOTIONAL CONSIDERATION

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Many studies related to the use of virtual reality in education are focused on the cognitive aspects with little consideration given to the emotional domain. Thus, this study aims to identify the salient linkages between learners' emotions and design elements of a desktop virtual reality-based learning environment by employing Kansei Engineering concepts. A courseware related to the teaching of road safety skills to young learners was designed and developed to be used as a case for the study. Ten specimens of the courseware, which highlights different design elements, were presented to 90 students from three randomly selected secondary schools. They were required to rate their feelings towards the specimens using the provided checklist that consists of 30 words related to emotions. The gathered data were then analysed using Principal Component Analysis and Partial Least Squares analysis. The results revealed that the most influential design elements in inducing positive emotions are environment richness and coaching. Ultimately, the uncovered linkages could be used to inform future design of emotionally sound desktop VR-learning environments.

Keywords: Desktop virtual reality; emotions; Kansei Engineering; instructional design.

1. Introduction

Virtual reality (VR) is one of the many technologies that have become increasingly popular to be used as an educational tool due to the development of low-cost computer graphics technology. With its capability, VR permits users to be immersed in a computer generated virtual world by giving techniques for user orientations in this world (Burdea & Coiffet, 2003). Non-immersive VR or commonly known as desktop VR makes full use of desktop computer to present images in common monitor and allows user interaction with the computer-generated images via generic input devices such as computer mouse