

An Evaluation Framework for Virtual Reality Learning Environments in Sports Education

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Abstract : Interest in virtual reality (VR) technologies as virtual learning environments have been on the rise in recent years. With thanks to the aggressively competitive consumer electronics environment, VR technology has been made affordable and accessible to the average person with developments like Google Cardboard and Oculus Go. While the promise of virtual access to unique virtual learning environments with the benefits of experiential learning sounds extremely attractive, there are still concerns over user comfort in the psychomotor, cognitive, and affective domains. Reports of motion sickness and short durations create doubt and have stunted its growth. In this paper, a multidimensional framework is proposed for the evaluation of VR learning environments within the three dimensions: tactual quality, didactic quality, and autodidactic quality. This paper further proposes a mixed-methods experimental research plan that sets out to evaluate a virtual reality training simulator in the context of amateur sports fencing. The study will investigate if an immersive VR learning environment can effectively simulate an authentic learning environment suitable for instruction, practice, and assessment while providing the user comfort in the tactual, didactic, and autodidactic dimensions. The models and recommendations developed for this study are designed in the context of fencing, but the potential impact is a guide for the future design and evaluation of all VR developments across sports and technical classroom education.

Keywords : autodidactic quality, didactic quality, tactual quality, virtual reality

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