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IBVR: Image-based virtual reality for innovative teaching and learning in ORL-HNS teaching clinics

Li Ang Lee, Hung Chin Chen, Tuan Jen Fang and Hsueh Yu Li
Linkou-Chang Gung Memorial Hospital, Taiwan

Recent advances in virtual reality (VR) simulation can reduce the complex of learning task and the cognitive load (CL) of the learner and make this novel technology well suited for the initial training of novices. Accordingly, we hypothesize that VR-based instruction can help novices to decrease CL and improve their outcomes of workplace-based assessments. We performed a randomized controlled trial to compare CL and learning outcomes between novel image-based VR (IBVR) learning and conventional video-based (VB) learning the ORL-HNS teaching clinics. We recruited 24 undergraduate medical students who were randomly assigned (1:1) to an IBVR group and VB group matched by age, sex, and cognitive style. There were 17 males and 7 females (median age 25 years) receiving the intended intervention. CL questionnaire scores of the IBVR group were equal to those of the VB group (all $P > .05$). The VB participants had a significantly increased reaction time at the end of learning ($P = .046$) whereas the IBVR participants had the equivalent reaction time in the learning period. Differences in Mini-CEX, global satisfaction, and learning experience between both the groups were not significant (all $P > 0.05$). However, there were 3 IBVR participants who had motion sickness. In conclusion, both the IBVR and VB modules can help learning history taking and physical examination with equivalent CL and outcomes in the ORL-HNS teaching clinics. Although the IBVR module seems to keep the learners alert, it can potentially induce motion sickness. Our preliminary results indicated that we need a larger group to determine the effects of IBVR.

Biography

Li Ang Lee pursued his MD from Kaohsiung Medical University (Kaohsiung, Taiwan); Residence from Linkou-Chang Gung Memorial Hospital (Taoyuan, Taiwan) and MSc (Medical Education) from Graduate Institute of Clinical Medical Science, Chang Gung University (Taoyuan, Taiwan). He is the Director of Division of Laryngology, Department of ORL-HNS, Linkou-Chang Gung Memorial Hospital and an Associate Professor of Faculty of Medicine, Chang Gung University (Taoyuan, Taiwan). He has published more than 88 papers in reputed journals and has been serving as Member of Council of International College of Surgeons, Taiwan.

5738@cgmh.org.tw

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