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A Research Study of the Inclusiveness of VR Headsets for Higher Education

Authors : Fredrick Forster, Gareth Ward, Matthew Tubby, Pamela Lithgow, Anne Nortcliffe

Abstract : This paper presents the results from a research study of random adult participants accessing one of four different commercially available Virtual Reality (VR) Head Mounted Displays (HMDs) and completing a post user experience reflection questionnaire. The research sort to understand how inclusive commercially available VR HMDs are and identify any associated barriers that could impact the widespread adoption of the devices, specifically in Higher Education (HE). In the UK, education providers are legally required under the Equality Act 2010 to ensure all education facilities are inclusive and reasonable adjustments can be applied appropriately. The research specifically aimed to identify the considerations that academics and learning technologists need to make when adopting the use of commercial VR HMDs in HE classrooms, namely cybersickness, user comfort, Interpupillary Distance, inclusiveness, and user perceptions of VR. The research approach was designed to build upon previously published research on user reflections on presence, usability, and overall HMD comfort, using quantitative and qualitative research methods by way of a questionnaire. The quantitative data included the recording of physical characteristics such as the distance between eye pupils, known as Interpupillary Distance (IPD). VR HMDs require each user's IPD measurement to enable the focusing of the VR HMDs virtual camera output to the right position in front of the eyes of the user. In addition, the questionnaire captured users' qualitative reflections and evaluations of the broader accessibility characteristics of the VR HMDs. The initial research activity was accomplished by enabling a random sample of visitors, staff, and students at Canterbury Christ Church University, Kent to use a VR HMD for a set period of time and asking them to complete the post user experience questionnaire. The study identified that there is little correlation between users who experience cyber sickness and car sickness. Also, users with a smaller IPD than average (typically associated with females) were able to use the VR HMDs successfully; however, users with a larger than average IPD reported an impeded experience. This indicates that there is reduced inclusiveness for the tested VR HMDs for users with a higher-than-average IPD which is typically associated with males of certain ethnicities. As action education research, these initial findings will be used to refine the research method and conduct further investigations with the aim to provide verification and validation of the accessibility of current commercial VR HMDs. The conference presentation will report on the research results of the initial study and subsequent follow up studies with a larger variety of adult volunteers.

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