Public Abstract

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Title:The effect of Augmented Reality and Virtual Reality interfaces on epistemic actions and the Creative Process

The aim of the study is to investigate how VR and AR interfaces affect the creative design process in design education. Theories from cognitive psychology, information sciences, and design cognition are provide an explanatory mechanism to indicate that epistemic action reduces cognitive load, thereby reducing fixation in the design process and enhancing the creative design process.

Thirty undergraduate design students were randomly divided into two groups that used AR or VR to complete a simple project that required students to design the interior of an office. Mixed qualitative and quantitative methods were used. A linkography protocol was used to understand the effect of different interfaces on the creative design process and a questionnaire was administered to examine the effect of user characteristics on the creative design process. Results of the study indicated that AR interfaces tend to encourage more epistemic actions during the design process than the VR interfaces. Epistemic actions were found to reduce the cognitive load thereby reducing fixation in the creative design process. From calculating entropy of the design process, AR appeared to provide a more conducive environment for creativity than VR.

The second part of the study focuses on how individual characteristics of the students moderate the effect of technology traits in enhancing the creative design process. Learner preferences were analyzed through learning styles and technology acceptance was measured to understand how different learning styles affect technology acceptance of the two media types of AR and VR. The theoretical background suggests that perceived ease of use correlates with creativity. Hence, learner preferences were hypothesized to affect the use of different types of media in the creative design process. The results did not indicate that learner preferences affected the creative design process but did support the conclusion that certain user preferences lead to higher acceptance levels for technology.