

Individual Differences and Paired Learning in Virtual Environments

Authors : Patricia M. Boechler, Heather M. Gautreau

Abstract : In this research study, postsecondary students completed an information learning task in an avatar-based 3D virtual learning environment. Three factors were of interest in relation to learning; 1) the influence of collaborative vs. independent conditions, 2) the influence of the spatial arrangement of the virtual environment (linear, random and clustered), and 3) the relationship of individual differences such as spatial skill, general computer experience and video game experience to learning. Students completed pretest measures of prior computer experience and prior spatial skill. Following the premeasure administration, students were given instruction to move through the virtual environment and study all the material within 10 information stations. In the collaborative condition, students proceeded in randomly assigned pairs, while in the independent condition they proceeded alone. After this learning phase, all students individually completed a multiple choice test to determine information retention. The overall results indicated that students in pairs did not perform any better or worse than independent students. As far as individual differences, only spatial ability predicted the performance of students. General computer experience and video game experience did not. Taking a closer look at the pairs and spatial ability, comparisons were made on pairs high/matched spatial ability, pairs low/matched spatial ability and pairs that were mismatched on spatial ability. The results showed that both high/matched pairs and mismatched pairs outperformed low/matched pairs. That is, if a pair had even one individual with strong spatial ability they would perform better than pairs with only low spatial ability individuals. This suggests that, in virtual environments, the specific individuals that are paired together are important for performance outcomes. The paper also includes a discussion of trends within the data that have implications for virtual environment education.

Keywords : avatar-based, virtual environment, paired learning, individual differences

Conference Title : ICED 2019 : International Conference on Education and Development

Conference Location : Lisbon, Portugal

Conference Dates : April 16-17, 2019