World Academy of Science, Engineering and Technology
International Journal of Cognitive and Language Sciences
Vol:9, No:05, 2015

Physical Interaction Mappings: Utilizing Cognitive Load Theory in Order to Enhance Physical Product Interaction

Authors : Bryan Young, Andrew Wodehouse, Marion Sheridan

Abstract : The availability of working memory has long been identified as a critical aspect of an instructional design. Many conventional instructional procedures impose irrelevant or unrelated cognitive loads on the learner due to the fact that they were created without contemplation, or understanding, of cognitive work load. Learning to physically operate traditional products can be viewed as a learning process akin to any other. As such, many of today's products, such as cars, boats, and planes, which have traditional controls that predate modern user-centered design techniques may be imposing irrelevant or unrelated cognitive loads on their operators. The goal of the research was to investigate the fundamental relationships between physical inputs, resulting actions, and learnability. The results showed that individuals can quickly adapt to input/output reversals across dimensions, however, individuals struggle to cope with the input/output when the dimensions are rotated due to the resulting increase in cognitive load.

Keywords : cognitive load theory, instructional design, physical product interactions, usability design
Conference Title : ICCSP 2015 : International Conference on Cognitive Science and Psychology
Conference Location : Amsterdam, Netherlands
Conference Dates : May 14-15, 2015