Effects of Instructional Design and Emotional State on Performance, Mediated by Interest and Attention

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Abstract

The aim of this study is to determine the effect of instructional design and emotional state on performance, considering interest and attention as mediators. To identify this effect, a Structural Equation Model (SEM) is applied to analyze individual performance based on five variables: information representation, emotional valence, pupil size, alpha power, and task completion time. The SEM provides a more robust prediction of performance by including behavioral metrics than solely from self-report methods, which may provide biased results. Specifically, eye-tracking and electroencephalography technology were used to measure pupillary response and brain frequency while participants performed tasks on a computer. Results suggest that both instructional design and emotional state have significant effects on performance, but instructional design has the highest influence. Compared to instructions in text, instructions in pictures reduce task completion time, yielding high performance. Experiencing positive emotions, rather than negative emotions, reduce task completion time, improving performance. Interest and attention mediate performance by a significant relationship. This work allows instructors control the conditions of the learning environment in order to improve desired outcomes.

Wednesday, August 14th, 2019
10:00 AM, KEC 1007

School of Mechanical, Industrial and Manufacturing Engineering