Executive Functions and Information Systems Learning

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Abstract

Information systems (IS) are complex and effortful, placing ever-greater demands on humans’ executive functions. Executive functions, general-purpose control processes that regulate one’s thoughts and behaviors, are the subject of growing investigation in cognitive psychology. The present research examines the relationship between individuals’ executive functions and IS learning. Using neuropsychological methods from cognitive psychology, we measured three key dimensions of executive functions: working memory, shifting, and inhibition. Two empirical studies were conducted. Study 1 tested the relationship between executive functions and IS learning in a self-paced offline learning environment. Study 2 replicated Study 1 and extended it to include a comparison of two self-paced online learning methods: behavior modeling and text-based learning. Both studies found significant effects of executive functions on IS learning after controlling for known IS learning determinants. Study 2 also showed that declarative knowledge was higher for behavior modeling than for text-based learning. Overall, our research highlights the influence of executive functions on IS learning. This research advances knowledge about determinants of IS learning and opens important research avenues for gaining deeper insights into cognitive mechanisms underlying effective IS learning.

Keywords: Executive functions, working memory, shifting, inhibition, information systems learning, declarative knowledge, post-learning self-efficacy, behavior modeling, neuropsychological assessment task, NeuroIS