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Digital game-based learning: effects on students' perceptions and achievements in a business process management course

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2016

http://hdl.handle.net/10539/22119

Grace, Thomas (2016) Digital game-based learning: effects on students' perceptions and achievements in a business process management course, University of the Witwatersrand, Johannesburg, <http://wiredspace.wits.ac.za/handle/10539/22119>

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ABSTRACT

The study aimed to investigate the impact of the introduction of digital game-based learning (DGBL) and its effect on students' perceptions of competence, usefulness, and enjoyment, as well as their achievement. The context of the study was a third year Business Process Management (BPM) module, within an information systems course at the University of the Witwatersrand. Eight research questions were formulated and ten hypotheses were derived. The study was underpinned by Deci and Ryan (2002)'s self-determination theory (SDT) of human motivation, which included two of the sub-theories of SDT, cognitive evaluation theory (CIT) and organismic interaction theory (OIT), as well as Ryan et al. (2006)'s adaptation of the construct of presence into SDT.

The study adopted a single group natural experiment pre-post design and a longitudinal relational design. The study was conducted with a sample of 24 students. Three baseline surveys were used to measure students' levels of intrinsic motivation, perceived competence and perceived usefulness. This was done prior to the introduction of IBM's Innov8 2.0, which was the digital learning game used in the study. The baseline surveys were administered one week apart, prior to the introduction of the game. After the game was introduced, an endline survey was used to capture students' levels of intrinsic motivation, perceived competence, perceived usefulness and presence with the game. Learning achievement was measured through the use of three assessments conducted one week, one month and two months after the end of the BPM course.

Hypothesis testing was conducted using t-tests, correlation, and PLS regression techniques. Results confirmed significant effects of the digital game to decrease perceived competence, a positive relationship between intrinsic motivation and achievement, and a positive relationship between presence and intrinsic motivation.

As a result of the study, we now know that DGBL effects achievement through intrinsic motivation when in close proximity to the assessments. DGBL can appear to decrease perceived competence as it appears to be a feedback mechanism, which should be seen as a positive rather than negative effect. Certain DGBL characteristics such as presence increase intrinsic motivation perceptions.

Keywords: Digital Game Based Learning (DGBL), Competence, Motivation, Presence, Business Process Management (BPM)