The Effectiveness of Virtual Learning Environments for Education

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Abstract

Virtual Learning Environment (VLE) tools are used to communicate knowledge and skills between computer-based materials and students or trainees. VLEs expand the capability of online education by allowing for interaction between the participants and the course material. The literature demonstrates a depth of research in the relationship between technology and education. However, the literature shows little empirical evidence for the effectiveness of VLEs on a learner’s outcome. This study investigates the effectiveness of virtual learning environment trainings compared to traditional trainings. The research question for the study is “Are VLEs more effective than traditional classroom trainings?” The paper will compare the outcomes of students using VLEs with the outcomes of students using an instruction book.

The theoretical base for this research is cognitive theory, which states that short-term memory is the key factor for a better learning process, and constructivism, which is student oriented. We argue that the usage of a VLE in an educational context will improve the learning outcomes for participants, thus we hypothesize:

\[ H_1: \text{Students who participate in a VLE will receive higher learning outcomes than students who use only a conventional learning environment.} \]

Participants for the pilot study were students enrolled in an undergraduate introductory business course in a mid-west university (N=120). Participants were 51% female. Average age of participants was 23.5 years. Half of the participants were enrolled in a class that teaches using a VLE learning module system and the other half were enrolled in a conventional learning environment. The VLE was a web-based platform integrated with the learning module system. The VLE enabled the students to participate in aided exercises that have narrated videos and interactive feedback. The VLE also provided the students with detailed reports and links to an electronic version of the associated textbook. In addition to that, students used the VLE to complete projects and assignments that were then graded by the system.

The MANOVA for learning outcomes showed a significant effect of VLE on exam scores (F(1, 75)= .29, p = .48). Exams scores were standardized so variations due to learning scenario were controlled for. Exam performance after using the VLE was higher than after using the conventional learning environment (M = 0.04 vs 0.02). The analysis shows that H1 was supported.

This work is presented to a relevant audience seeking more ideas to enrich the research on both the theory side and the experiment side. We believe that other factors may have influenced the significant outcomes of the treatment group. We would like to extend our knowledge beyond theory and receive insight from instructors, students, and professionals.