

## Article Critique

Hove, C.M., & Corcoran, K.J. (2008). Educational technologies: Impact on learning and frustration. *Technology of Psychology*, 35(2), 121-125.

### **Summary**

The article, “Educational Technologies: Impact on Learning and Frustration” by M. Christina Hove and Kevin J. Corcoran published in 2008 in the *Technology of Psychology* journal, examines the issue of postsecondary courses as they are taught using various levels of technology, from none to full use. The main problem this research article addresses is whether a heavy use of technology has an influence on student’s grades and any influence on their levels of frustration. The study compared 154 undergraduate students who were randomly assigned to one of three different treatment conditions where they learned about concepts of psychology conformity and obedience. One condition was a traditional lecture based class, the second treatment was traditional but supplemented by slide shows, and the third treatment was a full online class. Students were given a pre- and post-test, as well as, a scale in which to self-report their levels of frustration in the class. Overall, findings in this research show that students performed better in the slide-show supplemented class and the completely online class over the traditional lecture class. However, students self-reported feeling more frustration in the full online class compared to the traditional and slide-show supplemented class. More research is suggested on this topic to gauge whether students performed better in higher technology based classes due to their level of comfort with technology in their day to day lives and suggestions are made for research to be conducted in more ‘authentic’ classroom settings.

## **Critique of the article**

### **Research Problem/Hypothesis**

The main problem presented in this research article focuses on the increasing number of online college degree programs that are being taken by all types of students. The researchers want to examine the overall effectiveness of these programs in education as no research on the effectiveness of online college degree programs has been conducted. Even though there is no research supporting the use of online college degree programs, they are continually being used in college campuses around the world. This has spurred the current research that aims to study the effectiveness of these online programs. The research questions being addressed in this article focus on identifying whether the prediction that frustration levels would be low in a low-technology setting and high in the high technology (full integration) are true. Although no specific research questions are noted, the authors are interested in the frustration levels of students enrolled in traditional and fully online college degree courses.

This research is important and discusses a significant problem in education today because many students are enrolling in online classes without knowing how well developed those classes are in terms of being engaging for students. The study here focuses on effectiveness and frustration which has a lot to do with how courses are built, as well as, how familiar students are with online courses and completing online work. However, the research could be more focused on studying the general templates used for online classes and their effectiveness on students of all ages and studying their level of technology familiarity to gauge the impact that familiarity has on frustration levels and effectiveness.

## **Literature Review**

The authors cite many sources in their review of the literature to give a comprehensive picture of the situation in education relating to this topic. Sources cited range in date from 1996 to 2006 and vary from studies that support the research hypothesis to studies that challenge it. Although various sources are cited, a more comprehensive literature review could be accomplished by narrowing the topic to studies relating to the overall effects of completely online instruction on students. Currently, studies cited asked participants whether they enjoy the use of slide shows as supplementary material rather than looking at the effects of their use on the students. Consequently, studies are cited in the review that could use more description to generate a larger picture of the problem being addressed.

## **Methods/Procedures**

The method for gathering participants was convenience sampling. Participants were undergraduate students from a Midwestern university who were a part of the Psychology Department and who needed to fulfill a required two-hour research participation requirement. The sample of participants consisted of 154 students, 78 women and 76 men, between the ages of 18 and 24 years old. The sample collected would not be considered a representative sample because the participants were not randomly selected for the population, but instead were used because they were readily available and needed to receive research participation credit.

In regards to the procedure aspect of the research, the researchers controlled heavily for internal validity by controlling for the instructor, the classroom, the content, and the length of the class session which was forty minutes. The researchers created three different treatment conditions where students attended a forty minute lecture relating to concepts of psychology

conformity and obedience and where the only difference between the variables were the use of technology. One treatment condition did not incorporate any form of technology and instead used a traditional lecture based approach. The second treatment condition incorporated some technology into the traditional lecture approach by adding in the use of slide-show supplemental material. Lastly, the third condition focused on a high level of technology and used the virtual learning environment (VLE) Blackboard to give the students a full online course. Although the study controlled for many variables to increase the internal validity of the study, the external validity was affected in that, the study could not generalize to the general population because traditional lecture classes and online classes differ greatly in teaching styles and activities used to incite engagement and learning from the students. The study ensured the content, lecture, and teaching style were the same and this caused the external validity of the study to be at risk. Furthermore, the study may also become confounded by the pre-existing knowledge since the students were a part of the psychology department.

The instruments used in the study were an academic pre- and posttest consisting of fifteen question relating to the material covered in the lecture. The pre-and posttest were randomly assigned as pre- and posttests to ensure there was no confounding from order effects. The National Aeronautics and Space Administration - Task Load index was used to create a self-rating frustration scale to measure the student's frustrations after the course. The pre- and posttest were measured for reliability and validity through their relevance to the content presented in the lesson and the mention of the question pool's use in a previous study. More realizability and validity measures regarding these two instruments would help ensure that they are accurate instruments to use if the study were to be conducted again by other researchers to ensure the

accuracy and validity of the tools when measuring for the effectiveness of the learning environment and frustrations felt by the students.

## **Results**

The research study conducted is a quantitative research study which used a between-subjects design to measure three different treatment conditions and participant's frustration levels. The research design selected is an appropriate model to measure the effectiveness of the three treatment conditions and the frustration levels as reported by the participants. Perhaps researching the same treatment conditions and their results over time would provide more information on their effectiveness and frustration-inducing levels.

Experimental conditions were analyzed using the univariate ANOVAs which revealed no significant difference in the age, school year, or mean of performance for the participants. The three treatment conditions (traditional, supplemented, and virtual) were also analyzed using the ANOVAs. Findings showed a moderate difference found between the participants scores in the traditional lecture treatment condition and the virtual learning environment condition, while there was found to be no significant difference between the slide-show supplemented treatment condition and the virtual learning environment. Additionally, follow up tests were conducted to evaluate whether the results truly represented the effectiveness of the teaching condition and to account for the individual differences relating to pre-existing knowledge that may become a confounding variable in the study. Follow ups were also conducted in relation to the self-reported frustration scale and data was analyzed using the ANOVAs to measure the mean differences.

## **Discussion/Major Findings**

The major findings of this research study found results that were contrary to previous research on similar topics regarding the effectiveness of virtual learning environments as employed in online college degree programs. These results are important and add to the current literature because there is a gap in the literature comparing VLE's to slide-show supplemental lectures. The authors discuss the point that, because the majority of their participants were young adults who may be extremely familiar with VLE's and slide-shows, the findings may not be entirely accurate if compared to participants who are less familiar or used to learning with VLE's and slide-shows and the author cites a previous study to support this point. The authors also suggest further research to be completed on this issue.

In terms of student self-assessed frustration, findings showed students felt greater frustration after completing the VLE treatment condition when compared to the traditional lecture and slide-show supplemented lecture. The authors discuss this finding in relation to a previous study which relates to student frustration and the lack of explicit instruction in navigation and use of the VLE.

The author's note their limitations of using only one research assistant for verification and only one-lecture paradigm in their study. Once again, further research is encouraged in relation to the overall influence of educational technology on students with wider teaching strategies and more authentic settings.