

Video: Is video an effective strategy in improving learning performance?

Summary:

The studies contained in this technical report all produce favorable findings for the affect of video on learning performance. The first two studies examined video as it compared to not using video. The first study used 3rd and 8th grade students, and attempted to ascertain basic criteria of video based education it found that students who received video instruction scored higher than those who did not. Researchers of this study caution that the change may not be entirely related to video, and recommend continued trials.

The second study indicates that much of the information that goes into making a diagnosis is visual in nature. Multimedia learning can promote constructivist learning, learning that occurs when learners seek to make sense of presented material by constructing a coherent mental representation (Mayer, 1999). The group presented with the video case study tended to spend more time discussing what happened in the video and presenting explanations for the patient's condition. The research suggested that cognitive processes were stimulated by the inclusion of videos.

The third study ran a similar experiment using college students enrolled in an accounting course. The experimental group that received video in this study also scored significantly higher than those in the control group. However this experiment used controls in the form of a survey/questionnaire given to students before the experiment. It cited no significant differences in learning styles, preparation, or prior knowledge, between the two groups. This bolsters the idea that it is in fact video that is responsible for the difference.

The final study is different from the first two in that it does not compare groups who use video to groups who do not; instead it compares video based instruction to simulation based instruction, in an attempt to ascertain the educational outcomes of simulation based instruction. The study found that while both groups improved significantly from pretest to posttest, there was no difference in scores for students receiving video and those receiving simulations. While the main point of the study seems to illustrate the shortcoming of simulations, it also reveals the advantages of video based instruction.

Reference

Boster, F. J., Meyer, G. S., Roberto, A. J., Inge, C., and Strom, R. (2006). Some effects of video streaming on educational achievement. *Communication Education, 55*, 46-62.

Note: Video streaming refers to viewing video over the Internet – usually it is downloaded and viewed simultaneously. The articles go on to mention several benefits of streaming.

Population

The participants included 3rd and 8th grade students from three school districts in the southeastern part of the US. A total of 913 students and 38 teachers from 13 schools were in the 3rd grade science/social studies study. 558 students and 8 teachers from 4 schools were in the 8th grade science study, and 536 students and 7 teachers from 4 schools were in the 8th grade social studies study. The schools were primarily rural.

Purpose/Questions

Findings

<p>Many studies showing that using communication technology in the classroom may increase learning must be viewed with caution because many of these studies did not follow a strict experimental design. This study used a pre-test/post-test, control group design to determine if video (streaming) supported the reported effectiveness of using video in a classroom presentation. The current available literature suggests that using communication technology (streaming video) will assist in 3 ways:</p> <ol style="list-style-type: none"> 1. Enhance student attention and thus improve academic achievement. 2. Help prepare teachers to be more effective in the classroom. <p>Video streaming may change the nature of classroom interaction in ways that facilitate learning.</p>	<p>In the Discussion section of the report, the authors report that the results of the 4 experiments provide additional evidence that video streaming <i>MAY</i> contribute on average to increased student learning. They report that the experimental group students' improvement on achievement tests exceeded the control group students' improvement by 12.6%. The authors caution that understanding the precise reasons for the observed effects requires additional controlled trials coupled with increased data collection.</p>
<p>Reference</p> <p>Morgan, P. J., Cleave-Hogg, D., McIlroy, J., & Devitt, J. H. (2002). Simulation Technology A Comparison of Experiential and Visual Learning for Undergraduate Medical Students. <i>Anesthesiology</i>, 96, 10-16.</p>	
<p>Population</p> <p>Participants in the study were medical school students at the University of Toronto. 144 students participated in the experiment, with group breakdowns as follows.</p> <p>Scenario 1- n = 43</p> <p>Scenario 2- n = 48</p> <p>Scenario 3- n = 53</p>	
<p>Purpose/Questions</p> <p>The research seeks to compare the affect and results of video based education against simulation based</p>	<p>Findings</p> <p>While scores for each group improved significantly from pretest to posttest, there was no significant difference in score between those who received video based education and those who</p>

<p>education, in medical school training for final year med students. The use of simulator technology has serious organizational implications for universities because of the cost, and management that is required. To evaluate the educational outcomes of simulation based education, it was compared to video based education. Research based around three scenarios covering different medical school topics.</p>	<p>received simulation based education. In the first scenario, students receiving video based instruction actually had a greater rate of improvement from pre to posttest, though the difference was statistically insignificant.</p>
<p>Reference</p> <p>Balslev, T., De Grave, W. S., Muijtjens, A. M. M., & Scherpbier, A. J. J. A. (2005). Comparison of text and video cases in a postgraduate problem based learning format. <i>Medical Education</i>, 39, 1086-1092.</p>	
<p>Population</p> <p>Pediatric residents at Arhus University Hospital in Skejby, Denmark.</p>	
<p>Purpose/Questions</p> <p>To investigate whether adding a brief video case instead of an equivalent written text improves the cognitive and metacognitive processes of residents in problem-based learning.</p>	<p>Findings</p> <p>The authors of this study hypothesized that adding a video case (instead of reading about a case study), in which the patient and doctor interaction was presented in video format would lead to a greater increase in data exploration and theory building and evaluation. That is to say they would spend more time searching for clues and proposing possible explanations for the patient's condition. This proved to be true with the video group. They tended to spend more time discussing what happened in the video and presenting explanations for the patient's condition. The research suggested that cognitive processes were stimulated by the video.</p>
<p>Reference</p> <p>Siegel, P. H., Omer, K., & Agrawal, S. P. (1997). Video simulation of an audit: An experiment in experiential learning theory. <i>Accounting Education</i> 6, 217–230.</p>	
<p>Population</p> <p>The participants included students from four sections of an introductory accounting course. The experimental group included the sections from the Fall semester, and the control group included sections from the spring semester.</p> <p>Fall Semester Day, n=15 Evening, n=25</p>	

Spring Semester

Day, n=27

Evening, n=33

Purpose/Questions

This research is seeking to evaluate the affect of experiential learning on an accounting class. The body is moved by three considerations: development of pedagogical methods, learning styles, and measurement of instructional effectiveness. The experimental group received instruction from videotapes designed to give them, a feel for what actually happens in an audit, in addition to traditional lectures. The control group received only the lectures.

Findings

The study found that students in the experimental group scored significantly higher than those in the control group. Students were found to have no preexisting differences that relate to the experiment.