

# Journal of Computer Assisted Learning



## Embedded blended learning within an Algebra classroom: a multimedia capture experiment

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### Peer-Review Comments:

**“The results of this study are a substantial contribution to this research area, which is in dire need of more research and development.”**

**“An interesting article which is well written. It is clearly better than most articles on blended learning.”**

**“Evaluations of computer-based instruction at the K-12 level are sparse and it is good to see this study address this understudied area.”**

**“Quantitative and qualitative results complement each other well and the presented quotes from the open-ended student comments give good insight into student perceptions.”**

**“Only a relative low number of comparative studies on blended learning are performed in K-12. Therefore, I think this study is a welcome addition to the literature.”**

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# Embedded blended learning within an Algebra classroom: a multimedia capture experiment

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### Abstract

This two-group, pretest-posttest, quasi-experimental study compared secondary students' learning of Algebra II materials over a 4-week period when identical instruction by the same teacher was delivered through either embedded blended learning (treatment group;  $n = 32$ ) or a live-lecture classroom (control group;  $n = 24$ ). For both groups, instruction was delivered in a normal classroom setting. A math test and a student survey were used to measure students' learning of Algebra II and satisfaction with the instruction. Students in the treatment group showed significantly greater gains in Algebra II test scores and evaluated their learning experiences significantly more positively than did the control group. The great majority (80%) of students in the treatment group preferred the embedded blended learning over traditional live lectures for future learning of math. Students' responses to open-ended survey questions suggested that students in the treatment group appreciated the: (a) ability to control the pace of instruction; (b) new role of the classroom teacher; (c) lack of distraction in the blended learning environment; and (d) accessibility of the embedded multimedia lessons outside the classroom. This study suggests that screen-capture instructional technology can be used towards establishing a teacher-based, embedded blended learning environment within a secondary algebraic classroom.

### Keywords

blended learning, improving classroom teaching, media in education, multimedia/hypermedia systems, secondary education, teaching/learning strategies.

### Introduction

It has been estimated that nearly one-third of all public high school students within America fail to graduate (Bridgeland, DiIulio, & Morison, 2006). To overcome these deficiencies, enormous pressures from state and

federal governments continue to be placed on the K-12 public school system. Secondary schools throughout the USA repeatedly look for external solutions to address academic achievement. In hopes of finding a quick and easy answer to these systemic failures, online courseware and educational software have been cast as education's new *silver bullet*, similar to past predictions of the radio, film and television (Mayer, 2009). However, unlike these past technologies, new schools are being built solely to facilitate these computer-based curriculums, while traditional brick-and-mortar schools are replacing or reducing the role of the classroom teacher. Three quarters of K-12 school

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