Chapter 15
Practices and Attitudes of Students and Teachers Using iPads in High School Mathematics Classes

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ABSTRACT

This chapter reports on a study that examined the practices and attitudes of students and teachers in using iPads in high school mathematics classes. Participants in the study were 5 teachers and 80 students in a charter school in New Jersey. The study examined the students' classroom behavior and their perceptions along with the teachers' perceptions of the new class environment throughout a six-week period. The results show that the replacement of class materials with a single device helped students to become more organized and better prepared. The study also reveals that the use of iPads enabled students to interact with the materials through enriched multimedia content, which increased their interest and engagement. Utilizing iPads created a dynamic and collaborative learning environment that enhanced student-centered active learning. However, findings also show that iPads could become a source of potential distraction if used inappropriately, which creates new challenges for teachers in classroom management and instruction.

INTRODUCTION

According to a report by the Benton Foundation (2003, p. 7), "In the last decade, the federal, state, and local governments have invested over $40 billion to put computers in schools and connect classrooms to the Internet." Continuing this trend, there has been a rapid increase recently in tablet computer use in K-12 schools. More than 600 school districts have already adopted tablet computers and applications across the United States, (CNN News, 2012). Among these, due to its public popularity, there has been a high interest as to how iPads can be incorporated into classrooms. This demand has pushed decision-makers to seek ways to utilize the iPad as a learning tool. However,

DOI: 10.4018/978-1-4666-6300-8.ch015

there are serious concerns regarding the efficacy of using tablet computers in education (Kerawall & Crook, 2002; Rosen & Beck-Hill, 2012).

Because the iPad has not been manufactured solely for educational purposes, school districts should maintain a watchful approach towards the advantages and disadvantages of its use. As it is a new device, there is not enough research-based evidence of its educational value and expected benefits. In order to not risk thousands of students' education, decision-makers should not rush into iPad use without any proven evidence of its impact on student learning. Therefore, there is urgency for school districts to perform a needs-analysis and to examine the effectiveness of iPads prior to an investment decision in order to determine the best approach.

BACKGROUND

As computer technology advanced and became cheaper, it became possible for schools to invest in laptops to enhance student learning (Maninger & Holden, 2009). The portability and mobility of laptops allowed students to work collaboratively, and schools to develop a more communicative, collaborative, and supportive classroom environment (Maninger & Holden, 2009). Whether the integration of technology has a positive effect on students' motivation, interest, and engagement in learning or not has long been a topic discussed in the education community. Lin and Wu (2010) found that using netbooks in the classroom offered more options to practice and that teachers used more innovative activities to help students' levels of engagement and attention.

Rosen and Beck-Hill (2012) reported that participation in technologically enriched programs contributed significantly to a higher frequency of one-to-one teacher-student interactions, and this positively affected motivation to learn compared to the traditional settings. Rosen and Beck-Hill (2012) also reported that in a technologically rich classroom environment, students' unexcused absences decreased along with discipline issues compared to students in a traditional classroom. The effects of higher student attendance and fewer disciplinary actions can be perceived to impact the achievement scores and learning attitudes of students (Rosen & Beck-Hill, 2012). A technologically enhanced classroom environment helps with the implementation of differentiation, as technology makes it possible to have a differentiated curriculum available at teachers' fingertips by providing more options (Rosen & Beck-Hill, 2012).

Conversely, Barak, Lipson, and Lerman (2006) found that teachers should be careful with technology implementation because digital devices may also become a "source of distraction" when used for non-educational purposes. During classes, students may pretend to listen to the teacher while surfing the web or sending messages on social networking sites such as Facebook or Twitter. This concern led many school districts to limit students' access to certain websites (Barak et al., 2006). Fried (2008) also reported that 64% of the students he surveyed indicated that laptop use is a source of distraction in class.

Regarding technology integration, teachers' beliefs and readiness play a crucial role. Aubusson, Schuck, and Burden (2009) reported that a majority of educators see potential in mobile learning, but there were clear obstacles, including slow adoption of technology and a culture that has yet to embrace shared reflection in collaborative professional learning. Inan and Lowther (2010) found that teachers' readiness and teachers' beliefs were the most important factors with the highest direct effect.