

## Chapter 80

# Challenges and Opportunities in the First Year of a 1:1 iPad Initiative in a High- Poverty, Highly Diverse Urban High School

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### ABSTRACT

*The digital divide between technology-mediated instruction for students in low versus high socio-economic schools is a serious equity issue with repercussions for student learning. While there is a growing body of research on blended learning and 1:1 mobile devices, there seems to be little research on the potential of iPads to reduce disparity of access and impact student learning in high poverty schools. This chapter reports first year results of a 1:1 iPad project on teachers' attitudes and experiences and on high school students' technology access and use. Using iPads resulted in blended learning opportunities for some but not all students. Those who had an individually assigned iPad to use at school and home reported significantly higher satisfaction and proficiency with technology. These students also reported significantly greater use of online iPad applications and technology activities for instruction both during class and outside of school.*

### INTRODUCTION

The digital divide between technology-mediated instruction for students in low versus high socio-economic schools is a serious equity issue with repercussions for student learning. While there is a growing body of research on blended learning

and on 1:1 mobile devices, including the iPad in K-12 schools, there seems to be little research on the potential to reduce disparity of access and impact student learning in high poverty schools.

The purpose of this chapter is to investigate the degree to which a 1:1 iPad initiative in a high-poverty, diverse high school reduces the disparity

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of technology access, provides opportunity for blended learning, and improves student achievement. The author is working with an urban high school in the Pacific Northwest in a multi-year, mixed-method study of how students access and use individual iPads for learning and the resulting impact on these students' attendance, behavior, and academic achievement. This chapter focuses on two of the research questions: What is the impact of the 1:1 iPad project on teachers' attitudes and experiences with instructional uses of iPads? What is the impact of the 1:1 iPad project on students' access, skills and experiences, and use of technology?

## **THEORETICAL FRAMEWORK**

The National Education Technology Plan (U.S. Department of Education, 2010), calls on teachers to "leverage [technology] to provide engaging and powerful learning experiences and content, as well as resources and assessments that measure student achievement in more complete, authentic, and meaningful ways" (p. ix). Despite near universal access to high-speed Internet connections in most public school classrooms (NCES, 2006), the digital divide between the instructional opportunities for students in low and high socio-economic status (SES) classrooms remains. DeWitt (2007) found the curriculum and technology taught by teachers in higher SES schools was more intellectually rigorous and provided more opportunity for creativity and higher-order thinking skills than curriculum in lower SES schools. He concluded, "[Students'] social class appears to influence teacher beliefs about the implementation of instructional uses of computers" (p.300). More recently, Boser (2013) reported "students from high-poverty backgrounds were far less likely to have rigorous learning opportunities when it comes to technology" (p.2). Similarly, Talley (2007) noted that searching, summarizing, and evaluating complex information on the Internet is more challenging than navigating

social media. He cautioned: "Ignoring the literacy demands of new technologies may have especially dire consequences for children in disadvantaged homes and schools" (p. 315).

There seems to be little research on how iPads can reduce the digital divide in high-quality technology instruction and access experienced by low income, racially and linguistically diverse students. The New Media Consortium Horizon Report: 2013 K-12 Edition (Johnson, et al., 2013) forecasts mobile-learning as a "near-term horizon" technology to have a large impact and mainstream use in K-12 education within the next twelve months. The report also cites the importance of access to these devices as the equalizer for low-income students.

More research is also needed on the potential of technology and its measureable impact on K-12 student learning. According to recent federal guidelines (U.S. Department of Education, 2010), the ultimate result of technology integration must be an increase in student achievement. Three meta-analyses of published articles on mobile learning provide an overview of research findings in the last decade. Pollara and Broussard (2011) reviewed 11 studies published between 2005 and 2011 and reported that the benefits of using mobile devices included increased student achievement, productivity, motivation, and engagement.

Wu et al. (2012) conducted a meta-analysis and synthesized 164 studies from 2003-2010. They found that mobile phones and PDAs were the most widely used mobile devices, noted in 75% of the studies. Over half of the studies evaluated the effects of mobile learning, and the majority indicated positive outcomes. However, while over half of the studies examined mobile learning in higher education, research in elementary and secondary schools represented only ¼ of the studies. This is not surprising as K-12 schools have been slow to embrace mobile learning and until recently restricted students' use of mobile phones.

Most recently, Liu et al. (2014) reviewed 63 studies of mobile learning in K-12 schools from

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