Digital Technology Integration in American Public Schools

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ABSTRACT

This paper explores the literature review on 1:1 laptop initiatives in America’s digital schools and school district efforts to integrate technology into classroom instruction to maximize student learning. The findings indicate that the much needed instructional integration has not kept pace with the increase in available instructional technology tools. Therefore, there is need for school districts to focus on appropriate technology development activities that could help teachers and students to overcome the barriers in technology integration. Further, school leaders must make sure that the technology integration practices translate to proactive laptop implementation to enhance effective student-centered learning in the digital age.

INTRODUCTION

Access to technology tools has changed the way students learn and access information. K-12 school districts have increased their technology investments; technology expenditures in schools are expected to hit 21.9 billion by 2013. The America’s Digital Schools 2006 – Mobilizing the Curriculum identifies ten trends for the future of education: (a) Ubiquitous Technology and the Digital School – 1 to 1 Computing Usage in U.S. Public Schools; (b) Climate for Change – Adopting Technology-Based Initiatives; (c) Digital Learning – Factors and Roles for Digital Computing; (d) Professional Development – Expenditure Priorities; (e) On-Line Learning – Value, Offerings, and Delivery; (f) Academic Performance – Achievement linked to 1 to 1; (g) Home-School Connection – Connectivity and Parental Access; (h) Devices and Hosting Models; (i) The Changing Landscape of Expenditures – Spending, Budget, and Investment; and (j) A Technologist Looks in The Future – Usage, Needs, and Global Outlook.

The presence of technology in schools and in the classroom implies that schools find ways to deals with some of these barriers through facility and strategic planning. Classroom design in new buildings, wireless access to classrooms and throughout school buildings, specialized training for technology support positions and cross training of teachers are key components to dealing with technology barriers. In addition, many school districts are implementing 1:1 Laptop initiatives programs to deal with access,
mobility, and student engagement issues. Irving and Austin, TX; Richmond and Alexandria, VA, and San Francisco and Fullerton, CA are examples of large urban school districts making commitments to mobile technology.

Implementation of 1:1 Laptop programs is a fast growing educational philosophy. Many schools are implementing 1:1 programs to offer choice, support lifelong learning, offer flexible learning opportunities, and support digital and global learning opportunities. Students that participated in 1:1 Laptop programs demonstrated higher achievement in writing, language arts, math, attendance, student behavior, project-based learning, and higher order thinking skills (Rockman, 2003). Parents can monitor homework assignments and attendance, track student progress, and communicate with teachers and administrators. The advantages of mobile computing allow learning to go far beyond the walls of schools.

The implementation of 1:1 programs with students and staff demonstrates a number of benefits by students and teachers in the new digital world. Given the potential benefits of laptop settings, it is important that schools strive to take steps to create more equitable settings with respect to technology access and skills. These steps include: Remediating students who lack technology access and skills; increasing teachers’ technology skills; providing students with greater access to a computer; and developing teacher and student standards for technology proficiency (Gluek & Demirtas, 2005). True integration of mobile technology and 1:1 technology programs has faced many challenges due to many factors including: (a) Poor Administrative Support; (b) Problems with time, access, space, supervision, and operation; (c) Poor software; (d) Curriculum Integration difficulties; (e) Teacher Attitudes and knowledge towards computers; (f) Computer limitations and inadequate numbers of computers; and (g) Lack of Technical support (Schoepp, 2005).

Technology integration is a critical element for schools to engage students in the digital age. 1:1 Laptop initiatives are increasing in schools across the country. Rural schools with geographic and access challenges and urban schools with socioeconomic and achievement challenges are turning to 1:1 Laptop access as a means of meeting the challenges. The fiscal investments in technology must be justified by accountability in student achievement (Oppenheimer, 2003). This paper explores the literature review on 1:1 laptop initiatives in America’s digital schools and school district efforts to integrate technology into classroom instruction to maximize student learning. Specifically, the paper’s focus is on three key areas: Technology integration and student achievement, barriers to effective technology integration, and current 1:1 Laptop program implementation.

TECHNOLOGY INTEGRATION AND STUDENT ACHIEVEMENT

There has been a tremendous investment in technology access by states and the federal government. However, we have a tremendous disparity between the “haves” and have-nots” in regards to access to computers. The number of Black and Hispanic students aged 10-14 that will use computers at home to do homework is less than half as likely than their white classmates (Barrios, 2004). The challenge of helping teachers and students achieve ICT literacy, and the challenge of establishing frameworks for assessing their skills, is most acute in schools serving low-socioeconomic, minority students (Becker, 2000b).

Public debate on digital divide centers on basic technology access while the gap is even wider taking into consideration the pedagogical practices associated with technology use in different schools. More than half (53%) of teachers in public schools who have computers use them or the Internet for instruction during class. But in schools whose students are from higher-income families, 61% of teachers with computers use them in class compared to 50% of those teaching in schools with lower-income students (Lenhart, Rainie, & Lewis, 2001). The same study that found 87% of young people use
A Project-Based Learning Approach: Online Group Collaborative Learning
[www.igi-global.com/article/project-based-learning-approach/2272?camid=4v1a](www.igi-global.com/article/project-based-learning-approach/2272?camid=4v1a)

A Model for Effectively Integrating Technology Across the Curriculum: A Three-Step Staff Development Program for Transforming Practice
[www.igi-global.com/article/model-effectively-integrating-technology-across/2276?camid=4v1a](www.igi-global.com/article/model-effectively-integrating-technology-across/2276?camid=4v1a)