Chapter 38
Teacher Technology Leadership

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ABSTRACT

Some school administrators may be ill prepared to lead their staff into the digital landscape of the 21st century. Technology leadership is not limited to administrators. Teacher technology leaders have arisen in some institutions as a means of meeting the needs of fellow faculty and students. These teacher technology leadership practices may serve as a catalyst in altering school culture to embrace technology throughout the curriculum. This is explored in this chapter.

INTRODUCTION

We live in a society permeated with information and communications technology (ICT) (Cisco, 2008; Prensky, 2010). From Web 2.0 applications to smartphones, tablets, and cloud storage, ICT has become a commonplace part of our lives (Anderson, 2007; Askin & Randewich, 2012; Barret, 2010). ICT can play a powerful role in the education of children (Bell, 2010; Cisco, 2008; Norton, 2007; Prensky, 2007). In schools, it is imperative that educators use technology throughout the curriculum in order to better prepare students to be productive workers on a digital and global stage (Bell, 2010; Cisco, 2008; Jukes, McCain, & Crockett, 2010; Prensky, 2007; Silva, 2009). The National Education Technology Plan (2010) states technology must be utilized in providing timely and meaningful learning experiences. Technology leadership must strive to foster a climate that supports technology infused lessons throughout the curriculum (Luthra & Fochtman, 2011; Prensky, 2007; Silva, 2009). In 1999, the Governor of Maine, Angus King organized a task force to research the educational technology needs of students. The task force concluded:

We live in a world that is increasingly complex and where change is increasingly rampant. Driving much of this complexity and change are new concepts and a new economy based on powerful, ubiquitous computer technology linked to the Internet. Our schools are challenged to prepare young people to navigate and prosper in this world, with technology as an ally rather than an obstacle. The challenge is familiar, but the imperative is new: we must prepare young people to thrive in a world that doesn't exist yet, to grapple with problems

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and construct new knowledge which is barely visible to us today. It is no longer adequate to prepare some of our young people to high levels of learning and technological literacy; we must prepare all for the demands of a world in which workers and citizens will be required to use and create knowledge, and embrace technology as a powerful tool to do so. (Silvernail, 2011, p. 3)

Starting in 2001, Maine embarked on a statewide laptop initiative tasked with providing students the necessary technological skills and experiences for the 21st century (Penuel, 2006; Silvernail, 2011). Luthra and Fochtman (2011) in their research of technology integration at the American School of Bombay concur that students need to be "critical consumers of technology tools (p. 17)." Students need educational opportunities that will prepare them with 21st century skills.

21st Century Skills

In order to meet 21st century student needs, educators have to incorporate timely technological skills throughout the curriculum (Cisco, 2008; Jukes, McCain, & Crockett, 2010). Schools are expected to prepare students with digital literacy, teamwork, and problem-solving skills. The Partnership for 21st Century Skills (http://www.p21.org) proposes four sets of elements that if delivered in schools will prepare our youth for the technology rich landscape of the modern workplace. The first element proposed students should be schooled in the core subjects of the curriculum:

Table 1. Partnership for 21st Century Skills (http://www.p21.org)

Core Subjects
• Language arts (including world languages). • Arts. • Mathematics. • Economics. • Science. • History and Geography. • Government and Civics.

These core subjects will lay a foundation for some measure of understanding of the world and provide scaffolding on which to develop 21st century skills.

The second element stresses learning and innovation skills. P21 recognizes that in order for students to be problem solvers, they need to be critical and creative thinkers. Students should practice brainstorming new ways of doing things, and be reflective in improving and refining concepts. Creative thinkers should be open to working in groups even if they are separated over a considerable distance. Students should be experienced in communicating in a variety of forms such as email, video teleconferencing and shared online documents. They should also be fortified with a willingness to experiment, and an understanding that failure is a learning opportunity (Partnership for 21st Century Skills, retrieved June 11, 2013.)

The third element is information, media and technology skills. This includes accessing and evaluating information in a critical and timely manner. Media literacy is also critical to 21st century students in that they understand media construction and bias. Students will further need a firm grounding in information, communications & technology (ICT) literacy which includes using digital technologies to network, collaborate, and communicate. Tomorrow's workers will need to locate information in a timely manner, analyze, and then synthesize their findings into a product that will solve problems and meet the needs of others.

The fourth element is life and career skills. Students will need to be adaptable to changing work habits, peers, and environments. They will need to value initiative and be self-motivated in seeking out solutions to problems. Schools will need to provide students with experience at working with and leading others. Schools may need to partner with the business community to provide students with practical learning experiences.

The International Society for Technology in Education (ISTE) advocates the National Educational Technology Standards (NETS) for students (http://www.iste.org/standards/nets-for-students):