Teacher Barriers to Technology Integration

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With the rapid advancement of technology in society, research questions the lack of technological use in today’s education curriculum. The key to implementation of technology in schools lies with the teachers and administration. The main obstacle to implementation is perceived barriers by teachers. Although many barriers (perceived or real) do exist, there are four main barriers by which we can examine possible reasons for the slow implementation. These barriers are teacher’s beliefs and knowledge, time and access, training and expertise and visionary leadership.

Research on technology integration has revealed that teacher’s beliefs about teaching and learning (pedagogy) and their views on student learning (epistemology) impact technology adoption. (Rosen & Nelson, p. 223) Successful technology integration means providing support and opportunity for teachers to increase their technical comfort level as well as their understanding of how technology connects with good teaching practices and student learning. For example, one study focused on teachers’ role in developing new learning models using technology, and their beliefs about the importance of technology for student learning. R. Schebeci et al, (2008) identified four possible stages of teacher beliefs about technology integration. They are; “Stage 1: Where’s the ON button, Stage 2: Black line mastery, Stage 3: Routine Student use, and Stage 4: What’s in the curriculum? (p. 318) This study supports the need for technical and pedagogical professional development to overcome the multi-faceted effect of teacher’s beliefs and knowledge as a barrier to technology integration. Similar studies that identify teacher beliefs and knowledge as a barrier to technology integration include Sassevile, B., (2004) and Wozney et al, (2006). Some examples of recent projects that provide models aimed at reducing this barrier are Owens, A., (2009), Epler, J., (2009), McAnear, A., (2009), and Coffman, T., (2009).
Resources that were considered significant barriers in the past were time and access to technology. Although these barriers are perceived to exist today, they have taken on new meaning. With the introduction of computers into the classroom, teachers needed time to learn to use computers and programs available. These were basic programs that are now commonplace in the classroom. Teachers now need “multiple hours to preview Web sites, locate Web resources required for the multimedia project they assigned to students, and make those resources available on the computer.” (Brush, Glazewski & Hew, 2008, p.116) In general, “time is needed for teachers to make sense of new practices for themselves.” (Carmichael & Proctor, 2006, p.183) Another barrier that has changed in meaning is access to technology. Access once referred to the shortage of computers and inefficient Internet connections, today, the “…access to technology involves providing the proper amount and right types of technology in locations where teachers and students can use them; in other words, it consists of much more than merely the availability of technology.” (Brush, Glazewski & Hew, 2008, p.116) The student to computer ratios has dropped considerably in recent years but teachers are still faced with the need to compete with colleagues for computer lab time. In addition, access to software needed to use technology in the classroom is often lacking. These barriers are perceived by teachers therefore limiting their use of technology in the classroom.

Despite the prevalence of computers and technology in schools, a barrier to their effective use continues to be inadequate teacher training (Cuban, 2001). Teachers trained in the effective use of computers have shown increases in student achievement and this has been correlated to teacher expertise (Earle, 2002). For teachers to be comfortable with any teaching
strategy, they need to be trained on how to use it effectively, and computers are no exception. Teachers represent a diverse population of learners and each brings a unique set of skills and experiences with technology. Effective professional development must therefore build on the current set of knowledge and experience of teachers in order to meet their wide range of needs (Bybee, 2001). A sustained and coordinated approach to professional development must also be implemented if teacher training is to be removed as a barrier to technology use (Bybee & Loucks-Horsley, 2000, Earle, 2002). Long-term professional development that grows with the learner and addresses changing technology is essential for success. Professional development also needs to be conducted in a manner that reflects successful technology integration (Belland, 2009). “Those who conduct professional development should design their work as they wish teachers to teach and students to learn” (Bybee, 2001, pg. 27). A more cogent way of summarizing this may be that teacher ‘training’ should be replaced by teacher ‘education’, so that as new technology comes along, they can train themselves (Caverly, Peterson & Madeville, 1997, pg. 56).

Critics of educational institutions believe that new innovations are not absorbed into school cultures because traditional instruction modes persist (Hodas, 1993; Cohen 1987). Those in this faction position that teachers are engrossed with teacher talk, a one-way method of knowledge transmission whereby students are passive recipients of information (Hodas, 1993). Recognizing this Cuban and Cohen (1986; 1987 as cited in Hodas, 1993), state technologies that are inflexible to existing classroom structures will be discarded and short lived. In a similar vein, Hope (1997) draws an analogy between an organ transplant and technological implementation in schools. He believes if the chemistry of the organ does not match the recipient, the transplant would be unsuccessful. Likewise if school organizational structures do not promote the use of
technology then implementation will not render positive outcomes. With this in mind, leaders in the field of education can determine the fate of technological advances. In fact Chang and Chin (2008), found that principal’s leadership is linked to teachers’ effective use of educational technology within their classrooms. They write, “[P]rincipals must have a clear technology vision and understand technology implications for the classroom. Without vision, staff members who lack direction and guidance for technology integration will not succeed.” (p.230). However, with any change there must be a strategic plan that involves all stakeholders. Exemplary practices are currently happening in classrooms scattered around the globe but it is up to our leaders to gather the troops on one unified front.

Teaching professionals are key players in the longevity and successful implementation of technology in schools. As noted in this paper, barriers exist due to teachers’ perceptions around lack of time, limited access, lack of training, beliefs and knowledge. Possible strategies to overcome these barriers depend on leadership from within the professional community. There is a need for a common vision to drive professional development and as life long learners teachers can learn about the capabilities of technology as a teaching tool. It is via training and education, that teachers can change their perceptions and hence their reality.
References


