# Technology! Why It is Slow to be Integrated into a Classroom

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**Introduction:**

The idea that "Education is the key to America's economic growth and prosperity and to our ability to compete in the global economy" leads educators and governments to consider the potential value of technology as a tool for teaching and learning. In 1997, a science and technology committee assembled by President Clinton issued an urgent call about the need to equip schools with technology (as cited in "In Classroom of Future, Stagnant Scores," 2011). To support their conclusion on the effect of technology, the committee used the examples of successes of individual schools that adopted computers showing that their test scores rose or dropout rates fell.

Based on many education experts, the same article addresses that the research on technology's impact on learning was inadequate because this approach showed little proof of the improvement of basic learning across the country. Matt Ritchtel, author of the article, quoted some districts leaders' skepticism about the approach, saying that they still had a question on what good and valid way to measure the achievements (Ritchtel, 2011). He also quoted some advocates for technology like Karen Cator, director of the office of educational technology in the United States Department of Education, saying that standardized test scores were an inadequate measure of the value of technology in schools. However, she insisted that students still learned other things when using technology. For instance, they learned to use the Internet to research, to organize their work, to use professional writing tools, and to collaborate with others.

Despite the fact that there wasn't enough evidence on its effect, still many governments who believed in positive impact of it on student learning, developed programs for the integration of technology in their schools. I feel that as our society gears toward technology, it is necessary to implement the use of technology in teaching and learning. However, if integrating technology into our classroom improves student learning and increases standardized test scores as some researchers claimed, what makes its implementation slow down, and how it could be solved?

**First, we need to look at how wide has the technology been embraced and/or opposed.**

The view of the impact of technology on student learning has been uncertain among researchers and educators even with the support from the federal government to assure that schools keep pace with technology developments. In his article, Richtel quoted some educators' suggestions that they would like to see major trials years in length in order to clearly demonstrate technology's effect, but at the same time they admitted that such trials were extraordinarily difficult to conduct due to a rapidly changing of technology and the difference of school culture. In contrast to the skeptical ideas, the Research and Evaluation of the Maine Learning Technology Initiative (MLTI) Laptop Program, conducted by David L. Silvernail, director of research in Maine International Center for Digital Learning (2009), showed a success on the studies that students' writing scores improved approximately 1/3 of a standard deviation and twice as many students who used the laptops in the writing program met state proficiency standards. The study also showed a similar result in students' statewide mathematics test and comprehension test among seventh- and eighth-

graders. Influenced by this success, more than a thousand schools nationwide committed themselves to some form of laptop computer initiative, and the number was increasing rapidly (Mark Windschitl & Kurt Sahl, 2002). In spite of that, the delay of integrating technology into the classroom in many schools still exists today.

**Why integrating technology into our classroom was slow to be adopted in many schools?**

Was the uncertainty of educators' view on the role of technology in student learning a barrier to the delay of technology integration? According to Groff and Mouza (2008), the most foreseeable hurdle for teachers implementing technology into their classroom was their own lack of computer knowledge and experience. Other researchers like Glen (1997) saw teachers' different levels of technology competency as a barrier. That's probably why some teachers did not consider using a program due to either they were unfamiliar with the pedagogy of using technology (Hew & Brush, 2007). Based on my previous experience teaching in an elementary private school, creating effective learning environments with technology was a challenging task for me.

It took a great amount of time to develop a lesson on Water Cycle using WebQuest program that I'd just learned during summer school. This task was far more than writing a lesson plan. I had to search educational web sites, research their validity and authenticity to make sure that they were appropriate for this topic. Furthermore, the lesson must be designed in the way that caught student's interest, stirred their curiosity, and motivated them to achieve high level thinking skills. If you were a teacher who had difficult time keep up with technology, would you consider using it? Last year a teacher who was at the same

school where I taught shared her frustration over the use of computer program in creating classroom papers ranging from a lesson plan to monthly meal count chart and anecdotal notes. In this case the teacher was willing to use technology, but without adequate knowledge, it is hard for her to accomplish the task. Still, some teachers preferred traditional teaching and paid little regard to implementing technology. Hew and Brush indicated that teacher attitudes and beliefs toward technology also could be another barrier to technology integration (Hew & Brush, 2007, as cited in Hermans et al., 2006). If the teachers believed little impact of technology on student learning, they were more likely to put little or no effort in investing their time to use technology into their curriculum although a resource and support were available to them. My last year experience in the inclusion classroom, I was assigned to co-teach with a special education teacher. I remember that any time we were supposed to complete a lesson plan electronically using a computer-based program, my colleague asked me to complete the overall layout of the whole lesson. She said she preferred to use paper and pencil instead. The program was introduced to the school staffs a year prior to the mandatory date for using it for developing a lesson plan and assessment. By now I assumed she would know the program well enough to use it.

**The lack of resource also was a barrier to technology integration.**

Although some teachers believed that technology could play a significant role in enhancing learning and wanted to adopt the program into their classrooms, the lack of resources lead to suspend their pursuit. This could be resulted of a limited technology, limited access to the internet, insufficient time, or inadequate technical support (Hew and

Brush, 2007). Without adequate hardware and software, there was little opportunity for teachers to integrate technology in to the curriculum (2007). I could relate to this issue when I taught in a private elementary school. My assignment was to teach computer classes in 4th to 10th grade classrooms. Imagine when the principal showed me a tiny room with a stack of computers and out of date software to use for teaching computers. When I asked her if we had an Internet access, she said with the school limited budget, we had to wait. That same thing could happen to lower socio-economic districts. Lack of budget leads to lack of resources, therefore it is difficult for the whole school and teacher in particular to upgrade their technology skills. Access to technology involved providing the proper amount and right types of technology in locations where teachers and students could use them not just for basic computer skills (Hew & Brush, 2006, as cited in Fabry & Higgs, 1997).

Suppose there were enough funds for resources, will the school be able to get the teachers to integrate technology in their school? Again, educators suggested that the need for multiple and complementary research strategies to measure the implementation and impacts of learning technologies was necessary because no single study, genre of studies, or methodology was adequate to the task (Haertel & Means, 2003, pp. 257-258). In addition, Haertel and Means argued that substantial funding was needed for a coordinated, large-scale program of such a research on educational technology and learning in K-12 schools.

One research project showed that even though the teachers were willing to transform their classroom from traditional to technology-supported environment, the lack of institutional support could be a barrier to this transformation. This barrier as Hew and

Brush stated includes leadership, school time-tabling structure, and school planning. During our class discussion, I heard my classmate who is a teacher mention a lack of support from her school administrator. I experienced that incident during my first year teaching. After learning about instructional technology, I developed a lesson plan that integrated technology with the science and social studies. It was a challenging task to achieve without administrative support. Time limits for using a computer lab also affected teachers' plan on computer activities on a daily basis (Hew & Brush, 2007). If the schedule for using a computer lab was not sufficient for each class, teachers as well as students wouldn't have time to accomplish their work. Hew and Brush mentioned that if there was no meaningful plan for teaching technology, the use of it did not produce effective teaching and learning.

**Now that we know some of the barriers that slow down the integration of technology, what could be done in order to speed up this approach? How can we remedy this situation?**

It seems that many things need to be done cautiously when it comes to spending money as we all knew that we are now facing an economic crisis. However, researchers contributed a variety of ideas to overcome the barriers. Suggested by Hew and Brush, three strategies to overcome the lack of technology barriers were: first, create a hybrid technology setup in the classroom that involved cheaper computer systems; second, introduce technology into one of two subject area at a time to ensure that teachers and students in those areas have adequate technology (Hew & Brush, 2007, as cited in Tearle, 2004); third, cited in Lowther et al., (2003) Hew and Brush stated that instead of building a computer lab, use laptops with wireless connections to achieve a one-to-one student-to-

computer ration. Another suggestion from Dowling and Harland (2001), that it is important to embed the use of technology into the curriculum to produce the outcomes rather than to invent new ones. I like the idea of bringing the programs and projects that work to scale so that every school would have the opportunity to take advantage of their success.

### *Personal Reflection*

I personally feel that integrating technology for the 21th century classroom is an urgent issue if we want our students to be highly competitive in a global economy. I believe that educators, researchers, technology expert, administrators, and teachers should work together in developing effective strategies for integrating technology into our classroom that will prepare our students for success.

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