Literature Review

Katrina Coker
University of New Mexico

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Why Aren't Teachers Using Technology?

As more and more schools are acquiring the infrastructure and hardware to become technologically up to date there is a strong push to determine the "return on investment" to justify the expenditures. Unfortunately, most schools are reporting school computer labs and classroom computers are gathering dust most of the time. Many teachers simply aren't using school technology. The purpose of this literature review is to explore the myriad issues that contribute to this perplexing dilemma.

After exploring hundreds of studies and articles several strong themes surface:

1. Most articles mentioned a serious deficit in the research of why teachers resist using technology.
2. There are several contributing factors to the issue including fear of technology or fear of change as well as inability to see how technology can benefit education.
3. Training and use improves technology acceptance.
4. Not enough money is being spent on quality technology staff development.

As an education technology specialist working with teachers from over 20 different schools I have encountered extensive resistance to technology integration. At education technology conferences, on technology coordinator listservs and websites, anywhere education technology specialists communicate, the predominant question is: How do we get these teachers to use technology? It was this question that drives this literature review. In fact, it is the desire to understand and solve the mystery of why teachers don't integrate technology into the curriculum that drives most of my academic and professional life.

Understanding the issues of technology resistance requires a critical look at the many resources available on the subject. Unfortunately, not everything written is based on sound principals. Ten documents were selected for this review based on the value, variety and perspective of the writers and their contribution to the field of education technology. These ten resources were selected from Internet and print (primarily education technology journals) sources and encompasses one book and nine papers. Due to the dramatic advances technology has made in the last few years, nothing older than 1997 was considered. Five studies, three quantitative and two qualitative, are included. In an effort to better understand the scope of the problem, research from four countries and 25 U.S. states were covered. The articles' demographic range included high school

teachers (8), elementary school teachers (5), middle school teachers (5), higher education teachers (3) and the general population (1).

Perhaps the first issue to be examined in this review is exactly what are we looking for? What are we expecting teachers to do with the technology? Even more specifically, what do we mean by "technology" anyway? Some writers focused on computers and the Internet while others included such technologies as digital cameras, video production, scanners, probeware, presentation systems, etc. Technology "use" was generally divided into two categories, classroom (student) use and administrative (teacher) use. Less clear was the distinction between technology "adoption" and technology "integration." The reason for this confusion is due to the confusion most school personnel face when dealing with technology. Efforts by such groups as the International Society for Technology in Education to promote the National Educational Technology Standards they helped develop have had some success at the state level. While 36 states have adopted or adapted the National Educational Technology Standards (ISTE, 2003), little has been accomplished at the school level to implement the standards.

A brief look at the five studies examined reveals a consistent theme of research challenges. First is the lack of high quality data available for quantitative study. Solomon noted

in the Milken Exchange on Education Technology's "Progress of Technology in the Schools: Report on 21 States" Executive Summary, "This study has demonstrated the difficulty in obtaining high quality data, for example the different conclusions that can be drawn depending upon one's definition and measurement of the student/computer ratio." (Solomon, 1999)

Additionally, van Braak in his study, "Individual Characteristics Influencing Teachers' class use of Computers" points out the limitations of quantitative research on the subject, ". . media choice for teaching is a far too complex process to rely on a linear, quantitative research paradigm." (van Braak, 2001)

By combining both methods of study we are able to get a better comprehension of the complexity of teacher technology use. A general consensus of the reports revealed:

- Teachers need more quality training in using technology.
- Higher classroom use improves teacher attitudes toward technology.
- More "stuff" does not equal more use.
- Support is a contributing factor in technology use.

An intriguing theme emerged in these reports as well as other literature in the review: Is resistance to technology fueled by fear of technology or are other forces such as goal orientation and pedagogy stronger influencing factors?

In their article, “Teacher Adoption of Technology: A Perceptual Control Theory Perspective.” Zhao and Cziko take a critical look at the assumption that teachers simply need more training in order to achieve successful technology integration.

> “The assumed direction of the relationship between use of technology and training could be just the reverse. In other words, It would be as reasonable, if not more so, to assume that teachers did not want to receive training in technology because they saw no need to use it.” (Zhao and Cziko, 2001)

The authors view teachers as “purposeful human beings whose behaviors are goal-oriented”, therefore, if technology does not meet the their goals or causes conflicts with other important goals then teachers will not use it.

As goal orientation is strongly influenced by beliefs it is safe to assume that pedagogical beliefs can drive a teacher to make technology integration a “high-level” goal or reject technology altogether. Zhao and Cziko support this assumption:

> “Studies have suggested that “high-tech” teachers tend to hold a student-centered approach to learning. This is because for these teachers using technology does not create as much disturbance to other goals as to those who hold a different view of teaching.” (Zhao and Cziko, 2001)

Not surprising, other writers in the field support the assumption that a learner-centered, constructivist oriented pedagogy promotes technology integration. Dias states in her article "Integrating Technology" published in *Learning and Leading with Technology* that, "technology integration is most likely to occur in learner-centered classrooms in which the teacher acts as a facilitator." McKenzie, in How Teachers Learn Technology Best, agrees, "There is no 'front' in the wired classroom. The teacher is rarely a 'sage on the stage.'"

While there is clearly no consensus as to why teachers don't use technology or how to get them to use technology, or for that matter what we mean by "using technology", one thing is agreed upon: We need more research on the topic. Until this issue is addressed it will be difficult to determine if all the millions spent on educational technology has any return on the investment in student learning.

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