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Teacher Reticence Towards Learning and Adopting New Technology in Today's Classroom

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Abstract

Technology in the classroom is as old as the classroom. A reluctance to use the latest technology is as old as technology itself. Teachers being only human have the same fears about change, looking foolish and lack of time as the general population. Unlike most of the general workforce however they are not given the training, financial assistance or time off to acquire the necessary skills. Many studies utilizing traditional research techniques as well as Action Research and naturalistic inquiry have been conducted to find out why teacher reticence is so strong. If teachers are to accept technology schools must understand their reticence.

Teacher Reticence Towards Adopting Technology in the Classroom

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.

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.

Method

Much of the information search was done using the Internet. Various search engines were employed such as Goggle, AltaVista and cross-linking from one article to another. The word reticence did not bring up many articles where as the words fear and reluctance coupled with teachers and technology yielded thousands of articles. 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 encompass 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).

The studies reviewed made mention to how information was gathered. Those studies that relied on e-mail and other forms of technology were concerned about having a bias in favor of those that embrace technology. Most of the studies used in this review used various methods to gather information to minimize the tech bias. Successful programs such as the Texas Center for Educational Technology (TCET) provided many useful links to tools and results of studies.

Barriers

Literature concerning the reticence of teachers to adopt new technology often refers to the fear factor. There is a fear of change, fear of the Internet, fear of not being the expert in the class and a general technophobia. Fear can be of a first order or second order. First order fear is when a person has reason to mistrust or needs an excuse for not adapting to new ways. Second order fear symptoms are physical; sweaty hands, racing heart and feelings of anxiety or even panic attacks. Past studies suggest that about a quarter to a third of the population could be characterized as suffering from computer anxiety with strong affective response to using a computer. (Morgan, 1998)

Brickner, (1995) defines two types barriers to explain the reluctance of teachers to accept new technology. First order barriers are typically extrinsic in nature in that they are external to the teacher and require a "technological quick fix" in order for change to occur. This could be a lack of software or access to computers. These problems are out of the control of the teacher. Second order barriers are intrinsic in nature. These are internal to each teacher, such as a fear of computers. Teachers maybe reluctant to confront these barriers, as it requires personal change. Many times second order barriers are hidden

within first order barriers. Studies show that there are solutions to these barriers. In fact there have been thousands of articles written and studies performed using different techniques such as qualitative and quantitative research.

Technology

Educational technologies include many resources. Some devices have not changed much for over the years. Tools that are used for handling any activities involved in education are in a sense technology. Chalkboards, overheads, hands-on labs and even the use of assessments are all education technologies. Tools such as filmstrips, slide projectors, language labs, audiotapes, radio, and television are well accepted in most any classroom. With the introduction of affordable compact computers the term “technology” usually refers to computers and the associated hardware such as DVDs, LCD projectors and software designed to harness their usefulness. Many elementary and secondary schoolteachers don't use, and sometimes resist, the use of computers. (Hannafin and Savenye, 1993) list some research-based possible explanations for teacher resistance to using computers. These reasons include: poorly designed software, doubt that computers improve learning outcomes, resentment of the computer as a competitor for student's attention, unsupportive administrators, increased time and effort required of the teacher, fear of losing control of "center stage," and fear of "looking stupid." in front of the class. Technology aversion is not an uncommon problem. A survey by Dell Computer Corporation revealed 55% of the population harbors fear of some form of technology (Hogan, 1994). Another survey found that 36% of people who use computers at their office feel that their skill levels are inadequate (Donoho, 1994). So many articles mention

fear and teachers overcoming that fear of technology that it seems to be an excepted truth. What is it based on?

Fear of Change

Barbara Bray (1998) states that,

> Resistance is mostly because of fear of any change. Many teachers are busy with their daily routines and can find any excuse when asked to add something new. "Why change what is working?" Many teachers find that it is easier to maintain the status quo: staying with what has been comfortable. Some teachers are afraid of taking any risk and exposing themselves as lacking skills, especially in front of their students.

According to Rick Maurer, (1995) this fear of change can be categorized into three levels of resistance.

Level One: Resistance to any use of technology. These teachers do not understand what the administration is trying to accomplish, or doubt if the school realizes how much technology will cost in time or money. They have their own ideas about what the school should do-they like the status quo, and believe the timing is wrong. Their main concern may just be fear of letting others know what they don't know. Level Two: Deeper than the use of technology. These teachers believe the administration has made promises before which they did not keep. They are afraid that technology use is really the start of something deeper and fear if they do not use technology, they will no longer be included as "in."

Level Three**:** Deeply embedded resistance. Level Three resisters may have deeply entrenched distrust over many years and will fight anything the administration is supporting because values differ from what teachers want and what administration is proposing.

Fear of the Internet

One thing that seemed to cause anxiety was the fear of losing control of where students might go on the Internet. (COE, 2003). Teachers fear the Internet for several reasons. Can the information be trusted and what if a student accesses an inappropriate site or makes contact with a pedophile that we are told is lurking behind every keyboard? Some feel that the presence of an instructor is the best deterrent to student's misuse of the Internet. Some people like Mary O'Haver, (2001) have experienced very little of this in the five years she's been helping kids use technology in the classroom.

O'Harver (2001) says, "First off, the projects are so specific, that the students are pretty focused on finding the information they need. Secondly, they don't have a lot of time on the computer (since it must be shared). Also, I hang around the computer when the kids are online. And, I've spent years in the classroom. I can *smell* it when some kid is getting distracted from their work-- offline or online." When they do find inappropriate material, O'Haver redirects the students and reminds us that children are confronted with inappropriate content in their daily lives at every turn.

"School administrators erect barriers, including written (or often, unwritten) policies, internal network firewall software, and Web filtering software. Fear of parental reaction

lead teachers to self-censor. These are all factors that impact all teachers…"(Ehman, 2002)

Fear of losing control of the Class

While teachers may resist for many reasons the fear that technology threatens their role as the expert, and the resulting feeling of inadequacy resulting from lack of prior mastery of technology skills produces the most anxiety. (Saye, 1998; Monahan, 1996).

> "My experience (Gavin, 2002) has been that those teachers who fear technology in the classroom are also those who feel they need to know everything themselves before teaching it to the students. In my opinion there is a parallel between teachers who fear technology and teachers who fear giving up control in their rooms. If we're going to develop student-centered classrooms, I believe that this element is key in helping teachers."

Technophobia

"Children have no fear of technology. They can be powerful change agents in the schools." (Chicago Board of Education, 2002). They never have to worry about knowing how to fix a difficult problem or the expense that might be incurred. Adults know that someone will have to fix a problem sooner or later if they are using sophisticated equipment. They hope it won't be them and that it won't come out of their pocket.

"Techno is terrifying. Get used to it. It's here to stay," says, (Hequet, 1997) "The fear of technology can motivate teachers to do something about it. Learn that which can leverage what you want to do". Applebaum (1990) reports that, "Some may willingly accept

changes even when they would greatly affect the method of instruction and course content. Others may rebel against any such efforts. This challenge stimulus may elicit a fear of or anxiety to the technology (cyber phobia), not because the technology is difficult to learn but because it may change the existing culture, power structure or habits."

Solutions

Teachers should be supported by financial assistance and time off to acquire the skills needed to utilize the today's technology. Studies have shown (Corcoran, 1995) that teachers may learn better outside of the environment in which they must work. This approach may be difficult to take, however, because the public perception (and sometimes the perception within schools as well) is that teachers are not "working" unless they are in the classroom with students. Conveying the value of teachers' professional development, as difficult as that may be, is important for finding the resources for paid release time.

Coburn (1998) extensively describes ways we can use students in the classroom as computer experts. She explores the idea that instead of being the recipients of education, students can take significant responsibility for their own learning. By giving students opportunities and choices that enable them to construct their own knowledge, we allow students to take a leadership role in their own education. Coburn looks specifically at technology as one-place students can surpass their teacher's knowledge. Instead of

teachers fearing this, they should embrace this as a way they can build on students abilities to explore, to expand their own knowledge, and to teach others in the process.

Modeling enables teachers to observe expert performance. It helps teachers overcome the insecurity and fear of applying what they have learned in workshops. Teachers who learn with "trainers" who model good use of technology often are less fearful and more confident about using technology in their classrooms (Browne & Ritchie, 1991). When an expert teacher provides the instruction, the teacher-learners also have a benchmark for measuring their own progress.

Conclusion

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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