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Integrating Technology into the Classroom: Eight Keys to Success

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There are many issues related to the successful use of technology in the classroom. Some of the more salient include securing necessary annual funding, the development of dynamic plans, and decisions concerning platforms, hardware, T1 lines, software, and so forth. While these are perhaps the most obvious considerations, an often-overlooked but crucial determinant of whether technology succeeds or fails in the classroom is a less than obvious one…the teacher. While attention to choosing the appropriate hardware and software for the classroom is prerequisite, it is the skill and attitude of the teacher that determines the effectiveness of technology integration into the curriculum.

Fullan (1982, p. 107), a renowned expert in change theory, stated that "educational change depends on what teachers do and think—it's as simple and complex as that." Yet, it seems, teachers are often overlooked when technology is discussed. Before technology can effect changes in the classroom, those ultimately responsible for the classroom must be considered. Teachers must learn to use technology and must allow it to change their present teaching paradigm. This is not an easy task because change can seem intimidating and threatening. Additionally, teachers lack good models to emulate for the effective integration of technology into the curriculum.

Through many years of working with teachers and technology, and through a synthesis of research, the authors have developed eight areas of

consideration that has been shown to be important to allow teachers to successfully integrate technology into the curriculum. These areas are:

1. FEAR of change
2. TRAINING in basics
3. PERSONAL use
4. TEACHING models
5. LEARNING based
6. CLIMATE
7. MOTIVATION
8. SUPPORT

Fear, anxiety, and concern that teachers have about change must be addressed. Adults do not change easily. Change of any kind brings about fear, anxiety, and concern. Using technology as a teaching and learning tool in the classroom does so to an even greater extent since it involves both changes in classroom procedures and the use of often-unfamiliar technologies. Those responsible for asking teachers to use technology in the curriculum should be aware that fears and concerns do exist. Helping teachers overcome their fears, concerns, and anxiety is crucial to the success of the program. For additional information about fears and concerns of adults please refer to the writings of Knowles (1982, 1980), Knox (1977), Hall and Hord (1987), Hall and Loucks (1979), and Hord, Rutherford, and Hall (1987).

Training must provide teachers with knowledge of the very basics of computer use. Teachers need to have a rudimentary understanding of how to operate a computer. A working knowledge of standard input and output devices such as a mouse, disk drives, printers, speakers, and so forth, is important. It is equally important that they know how to perform basic system operations such as program installation, deletion, and backing up files. They need to know such basic file commands as Save, Delete, and Rename as well as a basic understanding of directory structures. It is easy to overlook the need for very basic training of our teachers when it is assumed that their computer knowledge is at some standard level, regardless of whether or not that is the case.

Personal productivity skills can be used as a means to foster the teacher's interest. Those who use personal productivity programs such as word processors, spreadsheets, databases, graphics programs, and so forth, on a regular basis, become increasingly familiar with computer operations. In the

process of doing so, they lose some of their fear of the machines while at the same time learn that computers can make their jobs easier. Such programs as *Microsoft Works* or *Claris Works* are excellent introductory level programs. *Microsoft Office XP* and *Corel Word Perfect Office 2002* are other excellent integrated programs for teachers to use. Programs that allow teachers to explore the Internet and communicate with others through electronic means are invaluable. Once these skills have been developed, teachers are ready to begin looking for ways to integrate technology into their curriculum and demonstrate its use to others.

Teaching models using technology as a tool in the classroom to help students achieve must be provided. Teachers need to conceptualize how the use of various programs which facilitate teaching and learning. This can more easily be done if they actually see students using technology that has been integrated into a curriculum. Teachers need to be aware of the different kinds of programs that can be used in large and small group instruction. They also need to experience programs that are available in each content area. Programs such as *PowerPoint, Publisher, HyperStudio, and Inspiration* help students and teachers with the organization and presentation of information. Programs that promote problem solving, provide information, stimulate discussions, and allow for drill and practice are also important to review. A few programs with these characteristics are *Decisions, Decisions, the Encarta Multimedia Encyclopedia, Jasper, and MathBlasters*. Thus, an important skill for teachers to develop is that of evaluating software. This will provide them with a base from which to begin to choose which software will best suit their classroom needs.

Learning should be the impetus that drives the use of technology in the school. Its use can allow teachers and students to become partners in the learning process. Technology integration necessarily alters the traditional paradigm of the teacher providing wisdom and the student absorbing knowledge...and for good reason. The knowledge needed for tomorrow's jobs will change before many of today's students enter the job market. Students today must learn to search and discover knowledge, actively communicate with others, and solve problems so that they can become productive life-long members of our society. For more information about change paradigms refer to publications by Fullan (1993, 1991, 1982), Reigeluth (1994), Goodlad (1975), Papert (1993, 1980), and Sarason (1990, 1971).

A Climate must be created that allows teachers to experiment without fear of failure. Failure is not well accepted in today's society. However, whether computers are used for personal productivity or for learning enhancement, a certain amount of failure is inevitable. This kind of failure should be viewed as a positive event since some of the best lessons learned

come from episodes of trial and error. Teachers must feel free to make these mistakes without fear of damaging the computer or software. More importantly, they must feel free to make mistakes using the technology in their classrooms absent of any fear of a loss of standing or respect from students, peers, or superiors. Few of us can experience absolute success the first time we try something. Fullan (1993) referred to this occurrence as the Implement Dip

. A climate must be present in the school that allows people to fail without feeling like failures before change will occur.

Motivation to endure the frustration and turmoil of the change process must be present. Change is not easy and is sometimes even painful. For teachers to suffer this unease and pain, they must be motivated. Often the intrinsic motivation will come as they see the possibilities that technology can offer their students. Extrinsic motivation however, must sometimes come first. Trainers must work closely with administrators to provide appropriate motivation for teachers to begin the uncomfortable process of change. It is often as simple as asking the teachers themselves how best to meet their needs in this area. Nonetheless, administrators must be prepared to demonstrate the importance of integrating technology by providing incentives such as extra pay or release time. They also should show their willingness to be an active participating partner in the change process. The old adage, do as I say and not as I do, applies.

Support that is ongoing and onsite must be provided. Teachers also need expeditious support to be effective in using technology in their classrooms. They need support in the technical area and in the curriculum area. In the technical area, there needs to be an onsite support person available who can troubleshoot and remedy hardware and software problems as they occur. When a problem occurs in class, it is difficult, if even possible, to ignore 30 or more students and concentrate solely on restoring a technology resource breakdown. Teachers need telephones in their classrooms and a number to call at anytime to get answers to technical or “how to” hardware and software questions. There is a need for ongoing training in the use of new and different hardware and software. One valuable resource that is often overlooked and underused is student help. This resource cannot be overemphasized. Involving students in this process fosters individual self-esteem, self-confidence, interest in the learning environment, and a sense of ownership in their own education. It is vitally important to use all the available knowledge and assets within the school.

The eight keys discussed in this article may seem basic, but they are not easily accomplished. They require planning and commitment, as well as

time and money. The importance of involving the teachers cannot be overstated. Both major Office of Technology Assessment (OTA) (1995, 1988) reports stated that educators and educational researchers consistently cite the classroom teacher as central to the full integration of technology in our schools. Leaders who make decisions regarding infusion of technology into the classroom must include teachers in the decision making process. They must also be mindful of the considerations cited in this article to assist the teachers through the difficult change process necessary to use and integrate technology into the curriculum.

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