Technology Supported Learning:
New Models for Creating Technology Literate Teachers

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Abstract

The media's attention on our nation's dependence on computer technology has no greater evidence than the impact of technology on our nation's schools. Schools are spending more money on acquiring computing hardware than on training teachers to integrate technology into everyday classroom lessons. Research has shown that learning will be transformed in classrooms to the extent that teachers become comfortable with using technology as a cognitive tool. As future teachers move through schools of education, technology must be viewed as both an educational delivery method and an instructional communication tool.

Quality teaching in the 21st century will require teachers to be knowledgeable about a technology influenced student body and how to create learning environments which integrate technology in the support and delivery of instruction. Teachers in the new millennium should view technology as a cognitive tool that has the potential of encouraging inquiry-based learning and reinforcing instructional concepts, Planning technology connected lessons will require teachers to think more creatively about how students learn and plan lessons which respond to the vast variety of learning needs.

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Introduction

New models of training teachers to use technology must recognize several very important concepts:

1. Training teachers to use technology should incorporate the principles of andragogy and adult learning.
2. Teachers must be helped to redefine their roles and shift from giver of all knowledge to facilitator of learning.
3. Teachers must become comfortable in relinquishing some of their authority in the classroom and become co-learners with the student.
4. Teachers must engage in continual learning and become active students of technology and its use as a cognitive tool.

Training Teacher Adults to Use Technology

Training teachers to use technology is an exciting and rewarding experience. Our training programs have recognized that Knowles (1970) assumptions about how adults learn are still valid:

1. Adults need to know why they are learning something and how it affects them directly.
2. Adults bring to the training session a repository of knowledge, life and work experiences.
3. Adults use a hands-on problem-solving approach to learning

In order for students to learn with technology, teachers must accept a new model of learning (Jonassen, 1999).. Technology enabled classrooms allow students to engage in inquiry-based learning with the teacher's role changing from direct instruction with intellectual authority. This new model of learning should be experienced by teachers in a technology training situation. In training over 400 public and private school teachers to use technology, we have discovered that when teachers become students themselves and confront the unknown technology frontier, they quickly experience anxiety and frustration and need immediate reassurance that learning will occur. In this training situation, teachers find that they are not all knowing and are dependent on the trainers and classmates to navigate successfully through the lessons. This experience helps teachers to understand how important it is to create appropriate conditions for technology learninghow vital it is to experience this learning in a non-threatening situation. Teachers discover that it is acceptable to "not know" and they do not have to fear the shift in their intellectual role. When teacher learning occurs in a collaborative setting, teachers become active co-dependents in the learning situation and recognize that the active, energized classroom is a natural fertile learning culture which facilitates rather than hinders student learning. Consequently, teachers begin to see and accept the notion that the "learning noise" generated by excited learning contributes to the overall success of the lesson.

Instructional events

In observing the learning of teachers participating in technology training, the paradigm of instructional events shifts from the Gagne model:

EVENTS OF INSTRUCTION NEEDED FOR TEACHING TEACHERS TECHNOLOGY

Gagne's Model	Teacher Technology Training Model(TTTM)
Gain attention	Review the teacher's motivation for the training
Inform learners of objectives	Connect training to teacher tasks
Stimulate recall of prior learning	Relate training to improved learner outcomes
Present the content	Initiate technology exploration
Elicit performance	Provide a technology lesson in a collaborative "learner centered" environment
Assess performance	Production: Have teachers produce a technology work product
Enhance retention	Evaluate and Assess the technology experience
	Apply technology learning to a teacher task/classroom application and assess effectiveness

As teachers explore technology and gain confidence in its use, the appreciation of technology as a cognitive tool increases. Having teachers explore the World Wide Web helps teachers to see the vast array of resources available to increase instructional effectiveness. As teachers become more experienced in searching the web and harvesting its resources, it becomes apparent that each teaching discipline can be enhanced by technology and can lead to student initiated research and inquiry. Teachers find that technology allows instruction and learning to be extended beyond the traditional classroom and their influence on students is extended as well.

Teacher technology learning is incremental. Teachers should not be overwhelmed with all that technology has to offer. Trainers should apportion training so that teachers gain fundamental mastery of specified skills before moving on to more complex technological applications. When teachers come out of exciting, energized technology training sessions, this new energy and insight can be readily applied to new ways of teaching and learning in teacher classrooms.

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