

NewsLetter

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* please excuse the "flashback to the fifties" terminology—it's all for the cause! —ed.

Technology Training for Educators: The Pedagogical Priority

by David P. Diaz

The globalization of information and communication is changing societal assumptions, not only about how we do business, but also how we educate our students. New technologies on the academic scene bring with them a multitude of unique teaching and learning opportunities.

Many of our future students will have had substantial technology experience prior to enrolling in our classes. These students will more than likely be computer-literate and will come to the educational setting with significant computer skills and expectations. In a survey of 231 health education students, I found that 99% of the online and 71% of the traditional students had access to a computer at home. Just this semester (Spring 2000), 70% of students registering for classes at my college did so using "WebReg," our online registration system.

Technology Challenges Us

This trend, facilitated by rapid technological change, presents at least two challenges for educators. First, teachers must stay abreast of relevant instructional technologies. That is, they must be able to assess the value of educational technologies, and acquire and continually update their technological skills. Second, it means that teachers will need to begin blending new technologies into their instructional settings. To successfully upgrade skills and

integrate technology into the educational environment, teachers will have to make a time commitment and school districts will need to provide ample training and support.

Ever-increasing numbers of educational institutions are promoting instructional technology and are asking their faculties to develop technology-based educational products to enhance the teaching/learning process. Many schools are conducting training programs to help faculty integrate educational technology. However, many faculty are resistant; not to technology *per se*, but to the idea of buying and using technologies that are expensive and, in their minds, also unproven. Teachers don't just want to know *how* to use technology; they want to know *why* it should be used. In short, teachers want to be assured that pedagogy and good teaching practices are driving the use of technology.

Pedagogy vs. Technical-based Training

The trend of technology promotion in education has generated two very formidable questions: "What type of training is necessary?" and, "How much training is sufficient?" There are two basic types of training: technical- and pedagogy-based (see figure 1 on page 25). Traditional technical-based training is

(continued on page 25)

Technology Training...

continued from page 1

appropriate for faculty or staff and focuses on familiarizing the trainee with the mechanics of how a particular piece of hardware or software works. For example, a technical-based training approach to learning about email would focus on the specific mechanical aspects and features (e.g., creating and editing mail rules, or attaching files) of a particular email application (e.g., Outlook, Eudora, etc.).

*“Pedagogy-based training
is hardware / software
independent.”*

In contrast, pedagogy-based training is the unique concern of teachers and focuses on preparing the trainee to implement newly gained technology skills and acquired knowledge in the instructional setting. In other words, the training focuses on principles that can be adapted to any hardware or software standard. Pedagogy-based training would approach the email scenario by focusing on how email might be used to enhance and/or support instruction, and how email technologies can match differing student learning preferences. Both types of training are necessary to promote comprehensive and effective technology-mediated instruction.

To ensure good instructional practice, as well as student success, instructional goals should drive technology-training needs. Thus, pedagogy-based training should be addressed prior to, and separate from, traditional technical-based training. Further, because of time limitations, teachers should spend relatively more time understanding the pedagogical priorities of instructional technology, and less time on becoming hardware/software experts.

The purpose of traditional training classes is to help faculty obtain the skills necessary to create technology products (e.g., Web sites, PowerPoint presenta-

tions). However, the creation of these products requires multiple complex skills, more skills than can be practically mastered in a time-efficient manner by any given faculty member. To create a multimedia presentation, for example, faculty would need to learn to use multimedia presentation software, digitizing hardware and software, have a knowledge of principles of graphic design and file formats, and even be acquainted with the unique pedagogy skills for using multimedia to enhance the learning environment.

Product Development Teams: Borrowing from the Business Model

As face-to-face instruction is replaced by more complex interactive learning systems, the structure and design of academic development and delivery will change to more collaborative models. The development of complex learning systems is best done by teams (see figure 1). Product development teams are a way to bring innovative, high-quality products to the market (i.e., classroom) in a time-efficient, cost-effective manner. By using a team approach, institutions can distribute the workload of product development across individuals

and departments. This is not only more time and energy efficient, but it also serves as an integrated training mechanism that helps team members to learn from each other. These teams can be comprised of a faculty person to provide the product concept, and other specialists including a digitizing technician, software specialist, graphic design specialist and technology pedagogy specialist. In a team approach, faculty share their instructional concept with the rest of the team, who then work together to bring the project to fruition. Schools operating on a “shoestring budget” might consider employing techno-savvy students as team members.

My Teaching with Technology

I have utilized various technologies in the classroom to supplement traditional class activities and also as a primary delivery mode in online classes. Internet technologies can address various learning styles and enhance student interest and motivation. For example, students in my classes use self-paced, independent learning activities that allow them to choose from a menu of online “cyber assignments” based on their personal interests and the relevance of the assignments to their life

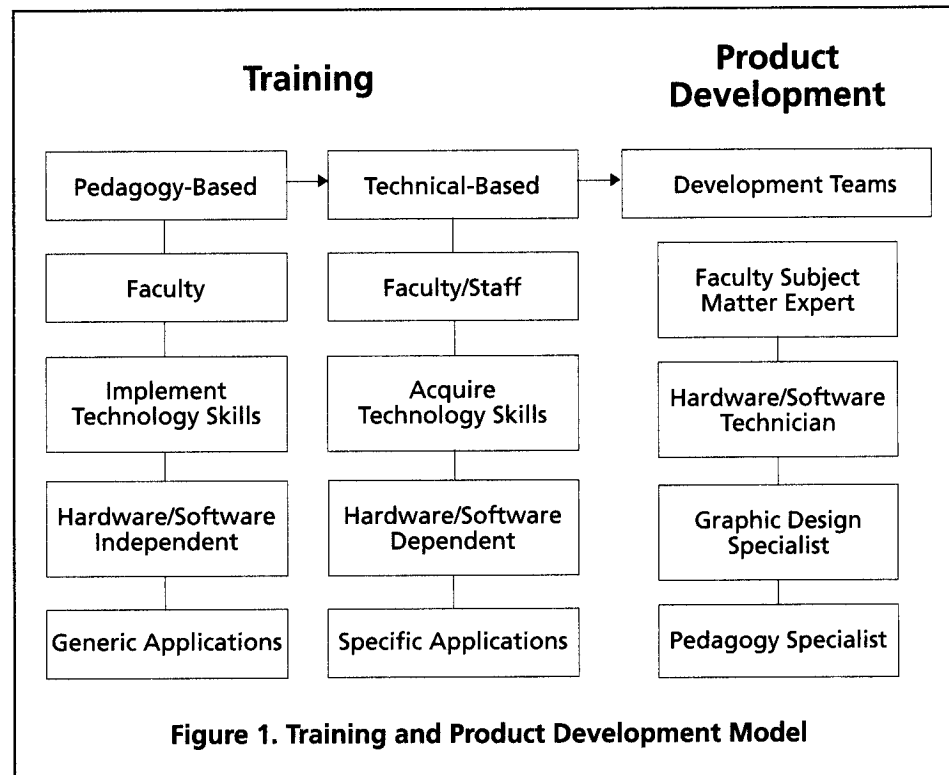


Figure 1. Training and Product Development Model

situations. Students choose their own assignments and complete them by the deadlines posted online at the class Web site. This is ideal for independent learning styles. For collaborative learners, I have used "list servs" and "threaded discussion" areas to promote interaction among distance education students. In these activities, students solve problems by brainstorming with their peers via email and then posting their common answer on the Web or sending it directly to me via email.

Multimedia delivery can appeal to those students who are visual and auditory learners. I have used PowerPoint and Astound computer presentations in my classes with success. However, differences in computer platforms and access to specialized software prevented an easy delivery of multimedia to students outside of class. To relieve these problems, I converted the multimedia presentations to HTML and delivered them via the Web. Still, the prevailing state of technology did not (and still doesn't) allow for the optimal delivery of multimedia elements (i.e., audio, video,

graphics) due to the limited bandwidth of typical Internet connections. To address this problem, I created a Web site that is stored on a CD-ROM. This "CD/Web hybrid" enabled me to include rich audio and video content since the delivery was not restricted to the slow transfer speeds of the modem. Hyperlinks on the CD-ROM Web site take a student from the CD-ROM out to the Internet and back again, seamlessly. With the ability to integrate more multimedia resources into the Web site, I feel I am able to increase student interactivity, curiosity, and interest, in the hopes of increasing student motivation.

Student Success

Many studies have reported that students appreciate the use of computer technology in the classroom. One study surveyed over 500 students to evaluate the effectiveness of computer multimedia presentations. The students reported that multimedia slides were clearer and more legible than overhead transparencies and chalkboard materials. They also indicated that lectures were easier to

understand and more interesting when delivered in a multimedia format.

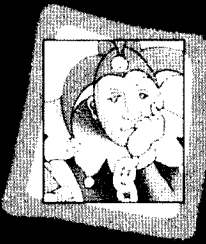
"...the online students were more satisfied..."

I have tracked student satisfaction in online and traditional sections of a general health education course. I administered an 11-question student satisfaction survey to 125 students during the last week of the semester. The survey questions measured student satisfaction in four areas: class structure, instructor performance, class materials, and overall experience. Though both groups were satisfied with all aspects of the class, the online students were more satisfied as indicated by higher satisfaction scores on all but one of the 11 survey questions. Further, online students were more successful than were traditional class students. Twenty-five percent of online students received an "A" grade versus 13% for the traditional students. Online students received fewer "D" (3.1%) and "F" (5.2%) grades than did the traditional students (10.1%, 8.6%).

What We Need To Do

The technological field is a prime example of an area in which increasingly rapid external environmental changes will require more rapid responses than traditional training and development approaches can provide. Educators are in great danger of losing a competitive advantage in serving their students if they are not able to respond quickly to the changing technological landscape. Needless to say, I have had to increase my own knowledge and understanding of educational technology to effectively utilize these new teaching tools. But it has come at the price of increased investments of time and money.

To facilitate sound instructional practice, teachers need to understand the strengths and weaknesses of various instructional technologies and become aware of pedagogical priorities related to technology-mediated education. The appropriate use of educational technologies can enhance instruction, however, students will not respond equally to



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technology-mediated instruction. The strengths of instructional technologies will only be realized in their appropriate selection, proper use, and precise mix.

Taking advantage of the opportunities afforded by instructional technologies, while avoiding the pitfalls, requires ample preparation by faculty, students, and administration. Technology training should consist of technical- and pedagogy-based varieties, and school districts should consider how to fund product development teams. Teachers should spend more time on pedagogy-based training activities and acquire a "functional minimum" of technical-based skills, leaving the more specialized skills and knowledge for other product development team members. ■

David P. Diaz has taught for 21 years in higher education. He has served on many statewide technology committees including the California State Chancellor's Office "TTAC," "TTIP," and "@ONE" project teams. He has also served on the California Academic Senate's Technology Committee. Mr. Diaz has conducted numerous staff development and technology workshops, and is a frequent presenter at technology conferences. In 1998, he was recipient of the Outstanding Achievement for Technology in Education award by the Community College Foundation. As a consultant, Mr. Diaz focuses on the pedagogical priorities of instructional technology. Web site: <http://www.thegrid.net/dpdhp/LTS/>. Email: zaidave@thegrid.net.

For Further Reading

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