One Dozen Ways to Motivate Teacher Education Faculty to Use Technology in Instruction

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Abstract
This article describes strategies that can enhance the use of technology by faculty in teacher education programs. As these programs evolve, forms of educational technology can help professors deliver effective instruction, develop and enhance curricula, evaluate student progress, and better manage resources. Educational technology is a discipline that combines instructional media (e.g., video recorders, cassette/microcassette recorders, videodiscs, and compact discs), computerized tools (e.g., laptops, microcomputers, and pen-based systems), and cognitive processing (e.g., information processing, learning, and memory). Although useful and effective, computerized tools are the most reluctantly used form of educational technology. Some teacher education faculty lack either the experience, expertise, or confidence needed to effectively use computerized resources. Administrators can help eliminate this by providing technical support (e.g., troubleshooting, configuration support, and written procedures for commonly asked technical questions), dispensing rewards and incentives for faculty who efficiently use technology in instruction, and offering professional development opportunities (e.g., workshops, seminars, and coaching).

Introduction
Many teachers are helping to change the face of America’s educational system. Across the U.S., many classrooms are moving from teacher-centered, single-discipline, and product-oriented environments to student-centered, cross-disciplinary, process-oriented learning centers. This shift has been motivated by the information Age, which ushered millions of computers into U.S. schools. Newer and more powerful forms of computer-based tools have become an essential part of the educational experience for many students. From the mid-to-late 1980s, the number of microcomputers used in U.S. schools increased from 50,000 to over 2,400,000 (Becker, 1991). Even though the number of microcomputers in U.S. schools is increasing rapidly, some faculty in college and university teacher education programs are still reluctant to use them. This article discusses several types of educational technologies, reasons why teachers are reluctant to use them, and ways administrators can motivate faculty to use technology effectively.

Computer-assisted instruction (CAI) has many forms; the most common are drill and practice, tutorials, instructional games, and simulations. Other types of educational technology, like telecommunications (e.g., e-mail and Internet), applications software, and video, can benefit teachers by reducing duplication; increasing efficiency and productivity; assisting in the development of interactive, technologically rich curriculum materials; and establishing and maintaining collaborative peer networks.

More than thirty years of research on the effectiveness of CAI exists. In a 1988 report prepared by the U.S. Congress Office of Technology Assessment, CAI is described as an effective supplement to instruction. Hundreds of studies were synthesized. The OTA report concluded that "elementary students who received brief daily CAI lessons as a supplement to instruction showed gains equivalent to 1–8 months of instruction over their peers" (p.46). CAI, used as the sole instructional vehicle, produced mixed results. Also reported were increases in students’ speed completing tasks, attention, and motivation. As such, teacher education faculty should acquire relevant CAI software and the hardware needed to integrate computerized lessons into their existing curricula. This would provide opportunities for faculty to develop content-specific lessons and supplemental CAI learning activities. Faculty could also build research programs that evaluate the effectiveness of these lessons and learning activities.

Telecommunications enables faculty to pursue research without the limitations of location or time. Through this media, data collection and consultations with peers in different geographical locations can take place without much difficulty. Appropriate computer networks, hardware, software protocols, and configuration issues should be in place to support this. If facilities and resources necessary are available and operational, educators can participate in electronic forums, post requests for information on the Internet, communicate using bulletin boards, and have conversations with colleagues in other countries. Educators need not travel to other locations to gain valuable information or waste money on postage. Electronic mail can serve as a means for faculty to communicate about conferences, distribute committee assignments at the local, national, and international levels, pursue joint research projects, and prepare manuscripts.

Applications software (e.g., integrated software that includes database, spreadsheet, word processing, desktop publishing, and graphics capabilities) can be used as managerial and instructional tools. Teacher education faculty can use this type of software to prepare communications, record
and track student progress, automate final-grade calculations, create form letters that list student scores and activities turned in, and produce other relevant student-centered feedback. Faculty can also use applications software to deliver instruction. Preservice teachers can be taught to apply this software in classroom settings (e.g., to illustrate math and business concepts, problem-solving activities, to list publications of interest to students, and to record the results of research projects).

Video, another form of educational technology, provides opportunities for teacher education faculty to supplement instruction. Through this medium, students can learn to prepare videotaped educational sequences and effectively communicate messages. Students can edit video and prepare projects that persuade, convince, or inform others of the specific activities within their discipline. Other avenues for the use of video include videotaped student presentations. These can be viewed by entire classes and critiqued for delivery, instructional content, presentation, aesthetic qualities, vocal inflections, and body language. Videodiscs can be an effective way to include multimedia (sound, realistic pictures and video clips of past and present events, graphics, color, and narrative) in lectures to reinforce content, introduce new concepts, or gain attention. The potential for using forms of video in instruction is unlimited.

Faculty who use various forms of educational technology can increase the potential for student learning and interest. However, faculty members in teacher education programs still shy away from using these valuable resources. Some reasons for this may include anxiety; time limitations; and a lack of knowledge concerning ways to incorporate classroom applications and technology, incentives, of experience, expertise, or computer confidence (Becker, 1994; Gilmore, 1995; Hunt & Bohlin, 1993). Administrators can remedy this situation by using the twelve points described in this article.

Twelve Ways to Motivate Technology Use

1. Encourage Creativity and Peer Coaching

Teacher education faculty need activities and ideas that engage them in process-oriented applications of technology. They need to be encouraged to explore, create, reflect, incorporate, and share their ideas, beliefs, and the limitations they discover as a result of teaching with technology (Kinnaman, 1990). Brainstorming sessions, technology-related suggestion boxes, and efficiency meetings can stimulate faculty to develop and try each others' suggestions. Peer coaching on the uses of technology can also help build collaboration, reduce anxiety, and share experiences and expertise.

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2. Use Positive Reinforcement Appropriately
When faculty employ technology solutions that effectively use existing resources (e.g., hardware, software, human expertise, and time) they should be rewarded. Positive reinforcement is the key to human motivation. Faculty behave in desired ways in anticipation of rewards or recognition. Several activities can serve as rewards to reinforce teacher education faculty to use technology efficiently (e.g., monetary awards that pay conference registration fees; public recognition in meetings, on-campus newspapers, and departmental or college newsletters; reductions in teaching loads for developing and incorporating technology-rich curriculum materials; opportunities to apply for grant money; or the chance to receive additional equipment or software for research and instruction). Remember that reinforcement is personal and it should take a variety of formats in order to be effective. Find out what individual faculty members value (e.g., more resources, support in the accomplishment of personal goals, support in the accomplishment of professional goals, status, rank, or travel funds) and use these items as the basis for the reward structure. Further, rewards or positive reinforcement should follow the stimulus (desire for faculty to use technology) without delay if the desired performance (efficient technology use) is to occur (Skinner, 1968).

3. Support Faculty as They Set Personal and Professional Technology Goals
Faculty members tend to know their own strengths and weaknesses better than anyone, and they use this knowledge to establish research, teaching, and service programs that incorporate technology. Administrators can help by supplying advice; linking faculty with others who share common interests; providing hardware, software, and technical support for these resources; informing faculty of their options; and modeling and demonstrating technology use. Faculty can also be supported by allowing them the time needed to discover on-campus technology-related services and resources (e.g., research offices, data processing services, and grant support).

4. Avoid the “One Shot” Approach to Staff Development
It is not at all fair to send faculty to a one-day workshop (e.g., “to learn multimedia,” or “to learn computer graphics”) and immediately expect faculty expertise in that area. Seasoned staff developers indicate that there is a learning cycle that generally ensues. Initial curiosity initiates involvement, followed by high anxiety and frustration as faculty experience an information overload. Give incentives for continued education in technology use.

5. Make Teacher Education Faculty Aware of How Their Technology Use Relates to Personal and University Goals
Routine work can result in passivity and boredom unless faculty members are aware of how these routine tasks contribute to their development and to the success of the department and university. A few extra minutes of explanation can increase productivity tremendously and decrease anxiety regarding technology use. University and departmental mission statements should be readily available to faculty. These statements should link technology to the institution’s educational goals and the experiences it provides to students.

6. Provide Faculty With Flexible Technology Choices
Whenever possible, permit faculty to make decisions. Choice and commitment are necessary to motivate technology use. Choices should be based on the ability to acquire and distribute required equipment and software, the amount of faculty development time needed, technical support issues, cost factors, the learning curve for the resources, and most importantly, the role of technology in supporting the existing curricular goals. Remember, some course content lends itself better to certain types of technology (e.g., VCRs, distance learning, instructional television, video, applications software, and electronic communication). It is not important that faculty have everything available in the way of technology, but it is vital that they have what is useful.

7. Listen and Deal Effectively With Faculty Technology Complaints
Often, unaddressed technology problems reduce faculty productivity. It is important that problems and complaints are handled before they get blown out of proportion. The faculty will feel more significant when their complaints are taken seriously. Conversely, nothing hurts as much as the perception that a personally significant problem is unimportant. This area can be addressed by competent technical support.

Both technical and administrative support are critical for teacher education faculty using technology. A technical support team should respond quickly, actively, and effectively to resolve faculty complaints. This team should have written procedures and a hierarchy for common technical problems. All team players should be competent in hardware and software issues (e.g., configuration, installation procedures, upgrade information, compatibility, maintenance, service issues, parts, capacity, networking, software efficiency, disk space requirements, memory constraints, ease-of-use, and learning curves). Team members should also be familiar with the computer platforms supported (e.g., VAX-Unix, IBM, or Macintosh).
written and oral communications skills, the ability to plan and organize, the ability to follow through or complete tasks, people skills, listening skills, and positive character traits (e.g., dependability, honesty, and dedication) are a must for each technical support person.

Technical support personnel should serve the organization, and they should be recognized as an essential component of the department. The technical leader should be included in departmental resource, allocation, and distribution issues, and he or she should supervise and prioritize the activities of other members. It is advisable for a full-time employee to hold the lead position rather than a student, because a student’s other responsibilities (e.g., getting his or her degree or finding full-time employment) might interfere with his or her ability to provide consistent, long-term technical support.

Administrative assistance is also necessary for ensuring the success of teacher education faculty seeking to use technology. Often, learning new forms of technology takes a great deal of time and effort, and faculty are often unable to devote their attention to this endeavor because of their enormous workload. Administrative assistants can ease faculty workload by providing consistent course scheduling and room assignments, responding to student requests and questions, and electronically adding and dropping students from courses.

8. Stop Isolating Educational Technology as a Separate Discipline
This means that teachers should not have to go to a separate multimedia conference, for example, in order to learn to use multimedia to improve teaching in language arts, math, science, or any other discipline. The leadership in each discipline should help to define the appropriate role of multimedia within content domains.

9. Provide Support When Needed
One characteristic of the achievement-oriented person is his or her willingness to use help when needed (McClelland, 1953). Faculty should be encouraged to ask for support and assistance; otherwise they will become frustrated. Asking for help should not be considered a sign of weakness, but rather one of strength.

10. Provide Faculty With the Support of an Educational Technologist or Curriculum Specialist Familiar With Technology Uses
Courses have different requirements and faculty may need one or more forms of educational technology to aid instruction and accomplish these requirements. What one faculty member needs in the way of technology, another may not. It is impossible to totally individualize working conditions; however, it is possible to give faculty an opportunity to satisfy their own needs. Common sense and effective technical and administrative support can help build effective work designs. (See Point 7 for more information about these support roles.)

11. Apply a Lesson From Higher Education: Individualize Technology Supervision
Teacher education faculty may require different supervisory approaches. Individualized supervision is routinely done in higher education; this principle can be applied to technology use among teacher education faculty. In order to maximize individual motivation (e.g., merit pay, recognition of scholarly activities, and recognition for service projects), treat teacher education faculty members as individuals. Motivate based on individuality and facilitative supervision, and provide the minimum amount of supervision required to optimize instructional performance through technology use.

12. Provide Technically Competent Support Personnel Who Help Faculty Improve Their Performance Using Technology
Feedback offered by technical support staff is effective when it follows performance (Thoresen & Mahoney, 1974). Feedback should be relevant to the instructional task, and it should provide faculty with clues about using technology to improve instructional delivery and aid student retention, motivation, and achievement. Technical support should never give negative evaluative feedback without offering alternatives.

Conclusion
These twelve suggestions can provide administrators with valuable insights that can enhance the use of technology by teacher education faculty. Using this list will undoubtedly increase the effectiveness of some administrators. Of course, it may not be possible to do everything presented here. There is always the possibility of “motivational overkill.” If, however, these strategies or suggestions are gradually integrated into teacher education programs, faculty may experience greater satisfaction and less tension and anxiety as they seek to navigate the technology-filled waters of the Information Age.

References


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