Introduction of Technology-Based Education in India

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Abstract

Technology is a great under-utilized resource in education in India. Computers, learning software, the Internet, and even mobile phones can be used to reshape how and where teachers teach and students learn. Cutting-edge educational technology can provide students with personalized learning experiences akin to one-on-one tutoring; improve teacher effectiveness by giving them access to immediate, detailed data on student performance; and eliminate the barriers of geography to provide rigorous learning opportunities to students in even the most remote areas. But it is crucial that we use such technologies in targeted and thoughtful ways that ensure scarce education funding is spent on technological interventions that truly improve teaching or learning.

Key words: Technology-Based Education

Introduction

The development in education in India has not reached at expected level of excellence due to the lack of adequate teaching faculty. In such case technology can prove to be a boon where it is impossible to bring highly qualified faculty in all institutes of education. To reach the remote areas as well as address the issues of large number of students in education institutes, technology is the best mean to cater their needs. Teachers' preparation and professional development in skill and content areas constitute a major challenge for education systems around the world. Seldom are sufficient resources available to meet the career-long professional needs of teachers, and even when such resources are available, teachers are having a hard time getting out of their classes during the school year to attend traditional workshops. The emergence of technologies as powerful tools for learning and teacher empowerment is revolutionary. For once, the integration of technology into education can be used as a starting point for educators' professional growth. E-training, or online professional development, offers a tremendous potential for teachers to stay in their classrooms while meeting the constant skills improvement needs inherent in the teaching profession.

Our changing society, now more and more centered upon information and communications technologies (ICTs), is giving rise to new educational needs as well as to new teaching methods.

The arrival of Web-based courses and other Web-based resources presently appears to be one of the great focuses of pedagogical innovation at the university level.

Far too many of us have witnessed computers in classrooms collecting dust; computer labs locked because there is no one trained to run them; students playing non-educational games on computers for hours on end. Literally millions of rupees are being spent on providing computers to schools in developing countries, much of which will be wasted because teachers are not trained to use technology effectively. Experience around the developing countries like India has shown that teacher training in the use and application of technology is the key determining factor for improved student performance (in terms of both knowledge acquisition and skills development enabled by technology). Educational technology is not, and never will be, transformative on its own – it requires teachers who can integrate technology into the curriculum and use it to improve student learning. In other words, computers cannot replace teachers – teachers are the key to whether technology is used appropriately and effectively.

Teachers remain the gatekeepers for students' access to educational opportunities afforded by technology: they cannot and should not be ignored. Providing technical skills training to teachers in the use of technology is not enough. Teachers also need professional development in the pedagogical application of those skills to improve teaching and learning. Traditional one-time teacher training workshops have not been effective in helping teachers to feel comfortable using technology or to successfully integrate it into their teaching. Instead, a new paradigm is emerging that replaces training with lifelong professional preparedness and development of teachers. This approach includes pre-service and in-service training, as well as ongoing pedagogical and technical support and mentoring.

While technology increases teachers' training and professional development needs, it also offers part of the solution. Information and communication technologies (ICTs) can improve pre-service teacher training, by providing access to more and better educational resources, offering multimedia simulations of good teaching practice, catalyzing teacher-to trainee collaboration, and increasing productivity of non-instructional tasks. ICTs can also enable in-service teacher professional development at a distance and individualized training opportunities. Finally, ICTs can overcome teachers' isolation, breaking down their classroom walls and connecting them to colleagues, mentors, curriculum experts and the global teacher community on a continuous basis. Technology can promote effective instruction that is more student-centered, inter-disciplinary, more closely related to real-life events and processes, and adaptive to individual learning styles. Such instruction encourages development of higher-order thinking and information-reasoning skills among students, and socially constructed (collaborative) learning, all of which are increasingly required in today's knowledge-based global economy. This potential of technology to improve instruction must be integrated into the design and delivery of teacher professional development programs in the use of technology. Perhaps most importantly, technology implies a shift in the teachers' role from being the sole source of knowledge and instruction to being a facilitator of students' learning that is acquired from many sources. This is often referred to as a shift from being "the sage on the stage to the guide on the side."

Teacher professional development in the use of technology should embody and model the forms of pedagogy that teachers can use themselves in their classrooms. For example, these training programs should

• Empower teachers to develop their knowledge and skills actively and experientially, in a variety of learning environments, both individual and collaborative.

• Include a variety of learning strategies, including direct instruction, deduction, discussion, drill and practice, induction and sharing.

• Aim at higher-order thinking skills.

• Provide an authentic learning environment so that teachers engage in concrete tasks within realistic scenarios.

• Emphasize ways that technology can facilitate and enhance teachers' professional lives.

• Encourage teachers to be mentors, tutors and guides of the students' learning process (rather than simple presenters of knowledge and information).

• Develop teachers' skills in learning how to learn (define learning objectives, plan and evaluate learning strategies, monitor progress and adjust as needed).

• Promote cooperative and collaborative learning.

• Be sensitive to the culture and diversity of teachers as learners, using a multifaceted approach so as to respond to different learning styles, opportunities, environments and starting points.

• Enable learning independent of time and place (anytime, anywhere learning).

Parallel to, and in conjunction with, teacher professional development is the need to provide training for students in the use of technology. It is shared wisdom now that youth acquire technological skills far more quickly than adults, and are more likely to share their skills with their peers. Rather than seeing this as a threat to their authority, teachers should embrace this reality and use it to their advantage.

As discussed earlier, e-learning is a way for teachers to learn new knowledge and skills using computer network technologies. The technologies provide not just text, but also sound, video, simulations, and collaboration with other learners who may be scattered around the country or the world. Currently, most e-learning is delivered using the World Wide Web. However, future e-learning could include delivery via mobile handheld devices, cell phones, and digital video devices. The field of e-learning is rapidly developing because of the following four main factors:

• Gradual increased availability of higher-speed computer networks to deliver information and services;

• Recognition that teachers need to "work smarter" with constant updating of skills;

• Convenient just-in-time education for teachers (often "anytime, anywhere"); and

• Cost-effective alternative to traditional classroom-based education and training.

However, ensuring that genuine teacher professional development occurs as a result of e-learning requires more than just "putting things on the web." Once again, the key understands how most adults learn. Typically, this means involving teachers in real tasks, with frequent interactions with their peers and instructors, opportunities for application of new ideas and skills in the classroom, feedback on assignments and examinations, and time for self-reflection. Good online

teacher professional development programs in the future will create knowledge-building communities among the participants.

Conclusions

In India, most teachers want to learn to use educational technology effectively, but they lack the conceptual framework, time, computer access and support necessary to do so. A well-planned, ongoing professional development program, based in a theoretical model, linked to curricular objectives, incorporating formative evaluation activities, and sustained by sufficient financial and staff support is essential if teachers are to use technology effectively to improve student learning in Indian education. The problem trained faculty in the classroom can be solved by bringing technology in the classroom. The virtual and interactive classes can bring the best resource persons around the world in any remote area class in India. E-training and the web, its delivery media, provide real benefits for teachers – and students – when appropriately contextualized to the needs of teachers. In short, the introduction of technology in Indian education can revolutionize the current teaching-learning scenario and will prove as a milestone in the human resource development and hence it will change the educational, economic, and social set up of the country.

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