CAPACITY-BUILDING AND ICT IN HIGHER EDUCATION

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Abstract

Integration of technology in teaching and learning requires changes in attitudes of teachers. There is a need to continually equip teachers with knowledge and skills that will enable them benefit maximally from the use of ICT. There is a need to equip teachers with such skills. However, effective integration of emerging ICTs in traditional education models is impeded by many factors. A key retardation factor relates to the lack of proper ICT competencies on the part of teachers. The need for trained personnel who will implement technology integration in schools is also a key area that policymakers need to pay attention to, and they must do so from the outset. Teachers who successfully complete professional development programs and implement technology-supported teaching and learning innovations should be given public recognition to give them a sense of achievement and encourage them to continue, as well as to encourage others to participate in such programs. As governments in the region embark on large-scale adoption of ICTs in education, it is important to move away from techno centric planning and implementation approaches to models that focus on establishing sound policy and support strategies leading to capacity development and empowerment.

Keywords: Integration of technology, ICT, Capacity-Building

Introduction

The education sector in India is still in its infancy in the inclusion and use of ICT. To integrate ICT appropriately in order to increase the quality of education, technology and teaching methods and education should go hand in hand. Government of India pursues an integrated approach and we simultaneously work with several national institutions that have mandates to strengthen the capacity of education managers at different levels, as well as that of teachers.

The shift to a 'knowledge-based economy' requires that educational institutions develop in individuals the ability to transform information into knowledge and to apply that knowledge in dynamic, cross-cultural contexts. ICTs are a means for meeting these twin challenges. Teachers must be prepared to empower students with the advantages technology can bring. Schools and classrooms, both real and virtual, must have teachers who are equipped with technology resources and skills and who can effectively teach the necessary subject matter content while incorporating technology concepts and skills. Real-world connections, primary source material, and sophisticated data-gathering and analysis tools are only a few of the resources that enable teachers to provide heretofore - unimaginable opportunities for conceptual understanding. Integration of technology in teaching and learning requires changes in attitudes of

teachers. And also ICTs can enhance the quality of teaching and learning by providing access to a great variety of educational resources and by enabling participatory pedagogies.

Definitions

Anderson and Baskin (2002 online) comment: the addition of *communication* to previous terms such as *information technology (IT)* emphasizes the growing importance attributed to the communication aspects of *new technologies.* Information and communication technology (ICT) generally relates to those technologies that are used for accessing, gathering, manipulating and presenting or communicating information.

Moursund (2003 online) accepts this definition of ICT but details more comprehensively the range of technologies embraced by ICT. ICT includes the full range of computer hardware, computer software, and telecommunications facilities.

Need of the Study

There is a need to continually equip teachers with knowledge and skills that will enable them benefit maximally from the use of ICT. There is a need to equip teachers with such skills. ICT can also help to accelerate teacher training as the world is facing an acute and growing shortage of teachers with currently 60 million teachers in the world, but another 15-35 million needed to achieve Education for All by 2015.

However, effective integration of emerging ICTs in traditional education models is impeded by many factors. A key retardation factor relates to the lack of proper ICT competencies on the part of teachers. Traditional educational practices no longer provide prospective teachers with all the necessary skills for teaching students, who must be able to survive economically in today's workplace. Teachers must teach students to apply strategies for solving problems and to use appropriate tools for learning, collaborating, and communicating. The problem is not necessarily lack of funds, but lack of adequate training and lack of understanding of how computers can be used to enrich the learning experience.

The need for trained personnel who will implement technology integration in schools is also a key area that policymakers need to pay attention to, and they must do so from the outset. Technology by itself is not enough to transform education processes and improve educational outcomes. As Haddad (2007) puts it, 'appropriate and effective use of technologies involves competent, committed interventions by people.

Capacity-Building in ICT Integration for Teachers

Teacher professional development has been shown to be a particularly important component of educational improvement but only if professional development is focused on specific changes in teacher classroom behaviors and particularly if it is aligned with other changes in the educational system.

According to a UNESCO publication on teacher education through distance learning (Perraton et al. 2001), integrating ICT in teacher education refers to two sets of activities or roles. One is training teachers to learn about ICT and its use in teaching as computers are introduced to schools.… The other role of ICT is as a means of providing teacher education; either as a core or main component of a programme, or playing a supplementary role within it.The goal of the "ICT Competency Framework for Teachers" (ICT-CFT) project is to improve teachers' practice. However, the Framework do not merely focus on ICT skills. By combining ICT skills with emergent views in pedagogy, curriculum, and school organization, the

framework is designed for the professional development of teachers who want to use ICT skills and resources to improve their teaching, collaborate with colleagues, and perhaps ultimately become innovation leaders in their institutions.

Passi (2003) reports that, since teachers cannot obviously be withdrawn from classrooms for long periods in order to update their skills. He suggests that an online training model would be useful which would then allow professional development to be conducted in parallel with regular teaching.

Key principles underlying the effective use of computers in learning include curriculum integration, continuity of learning, empowerment, equitable access and participation, supportive environment, teacher education (pre-service and in-service), and resource management. (Queensland State Education 2003, online).

ICT Role in Teacher Education can be pointed as follows:

o Representation, manipulation, exercising, applying
o Have a dynamic representation enabling the understanding of the complexity
o Add a dimension to the enactive representation; e.g. a downloaded film
o Let students see the relevance of a topic/issue
o Reinforce and enhance teacher activity (NOT replacement)
o Make the content of the teacher richer.

Even with a coherent and detailed policy and careful planning, ICT integration in education is a complex and protracted process. Various studies in both developed and developing countries point to four broad stages of ICT adoption and use those educational systems and individual schools typically go through.

The experiences and behaviors' of teachers and learners learning how to use ICTs can be mapped on to the **four stages**.

1. At the first stage, teachers and learners are discovering ICT tools and their general functions and uses, and the emphasis is usually on ICT literacy and basic skills. Discovering ICT tools is linked with the *emerging stage* in ICT development.

2. The second stage involves learning how to use ICT tools, and beginning to make use of them in different disciplines. This involves the use of general as well as particular applications of ICT, and it is linked with the *applying stage* in the ICT development model.

3. At the third stage, there is understanding of how and when to use ICT tools to achieve a particular purpose, such as in completing a given project. This stage implies the ability to recognize situations where ICT will be helpful, choosing the most appropriate tools for a particular task, and using these tools in combination to solve real problems. This is linked with the *infusing stage* in the ICT development model.

4. The fourth stage is when the learning situation is transformed through the use of ICT. This is a new way of approaching teaching and learning situations with specialized ICT tools, and it is linked with the *transforming stage* in the ICT development model.

Progression through the stages takes time. And the transformation of pedagogical practice requires more than ICT skills training for teachers. Too often the approach taken to teacher training in ICT integration is the one-off crash course on computer literacy. This approach does not enable teachers to integrate ICT in their day-to-day activities and master the use of ICT as an effective tool for teaching and learning.

To overcome by these long process following approaches can be followed in

teacher training in ICT integration:

➢Training teachers on ICT-related skills within the context of classroom objectives and activities ensures the development of skills in the integrated use of ICT in teaching.

➢School-based training of teachers by their more experienced peers from other schools or senior instructors from the MoE (Ministry of Education) ensures that teachers are trained in the context of their workplace.

➢Needs-based just-in-time learning and peer coaching ensure further development of teachers' ICT and pedagogical skills.

With the use of ICT, emphasis is placed on practical activities and learning by active participation, with good communication maintained between lecturers and learners. Through an integrated approach that utilizes traditional instructional media like textbooks and overhead projectors together with ICT, students learn about theory and practice communication skills. To train the in-service teachers in the area of ICT in Education, the Teachers Service Commission has partnered with Regional ICT Training Centre to train the teachers on basic IT literacy as well as use of ICT as tool for teaching and learning practices.

Thus, teacher training in ICT integration involving the application of skills learned (through formal training) in the classroom over an extended period of time. This in turn means that the teachers need access to technology resources (computers, training materials, educational software), support from technology managers (i.e. the computer lab manager or ICT coordinator), and support from colleagues and school administrators.

Challenges for Capacity-Building in

Integrating ICT in Teacher Education

Negative attitudes towards ICT use by most teachers in the region. Teachers need to have a clear understanding of why ICT is useful and, most of all, they need time to explore general applications software (like word processing, databases and spreadsheets) in order that they may feel comfortable with ICT applications. Few challenges in integrating ICT in teacher education as mentioned below:

• **Curriculum:** There is no prescribed curriculum for in service training of the teachers in the area of "ICT in Education". Presently, the IT literacy modules have been used to provide basic IT literacy training.

• **Teacher trainers: T**he Teacher Trainers are not exposed the academic and pedagogical practices hence the trainers are not able to contextualize the training for the teachers. If the trainers move to next phase i.e., "Use of ICT in Teaching and Learning" the trainers needs to be capacitated.

• **Improper Training:** Due to the lack of maintenance / technical support by the vendors / suppliers, the teachers have been trained on "hardware maintenance" which has resulted in loss of instructional time for the schools. Even the training provided to teachers grossly in-sufficient to carry out trouble shoot when problem occurs.

• **Ongoing Pedagogical support:** Once teachers trained, there is no follow up support to teachers at the cluster / school level. This has resulted in wastage of trained skills and knowledge in using ICT in schools.

• **Monitoring and Evaluation:** The Monitoring & Evaluation has been very weak in this system. The Inspectorate General is keen in collecting the administrative data. The lack of school

based support for the teachers is evident that the teachers are not able to fully use the deployed ICT infrastructure for Teaching and Learning.

Suggestions / Recommendations

- Providing teachers with access to technology resources within the school *post* training is one motivational strategy.
- Giving teachers time and recognition for innovation is essential. Teachers need to be given time to participate in training activities and they need to be given time to try out what they have learned in the classroom.
- Teachers who successfully complete professional development programs and implement technology-supported teaching and learning innovations should be given public recognition to give them a sense of achievement and encourage them to continue, as well as to encourage others to participate in such programs.
- Having them work with colleagues in technology-supported instructional design projects.
- An important incentive for teachers to upgrade their knowledge of and skills in ICT integration is formal certification of in-service professional development leading to a degree (UNESCO Bangkok 2004). Action on this point clearly goes beyond the school level and even the district or schools division level, to the level of the Ministry or Department of Education, since it is the latter that should certify teacher training programs.
- Design the scientific tools to collect in depth information on the need, capacity gaps and areas of intervention to make the more effective in the area of ICT in Education.
- Build a capacity building workshop to sensitize the Teacher training curriculum developers, teacher trainers (pre/in service).
- Enable ongoing pedagogical support through the Open Distance Learning / school based / cluster based support. Facilitate the National Level Institutions to start this initiative.

Conclusion

As governments in the region embark on large-scale adoption of ICTs in education, it is important to move away from techno centric planning and implementation approaches to models that focus on establishing sound policy and support strategies leading to capacity development and empowerment. A sound policy and holistic plan for ICT integration recognizes the critical role that teachers play in ensuring the appropriate, effective, and sustainable use of ICTs to provide quality education for all. Thus, such a policy and plan give priority to teacher professional development that empowers teachers not just to implement but also to *lead* educational innovations that will transform schools and ultimately, all of society.

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