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TECHNOLOGY ENABLED EDUCATION AND IMPLEMENTATION OF ICT IN TEACHER EDUCATION PROGRAMME IN THE PRESENT 21ST CENTURY

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Abstract

Globalization is a process, which has affected many areas of human life, one of those being education. In the twentieth century, many developing countries have experienced growth in the educational facilities available to them due to the entry of institutions from the west. Some believe that this process is an invaluable opportunity for the people of the developing countries to raise their skills and standards of education. One aspect of the globalization of education has been the creation of 'twinning projects' between one university to another. Through globalization of education, which is being knowledge transfer from one country to another, is intended to improve the skills and capabilities of the people receiving it. We know that education is undergoing constant changes under the effects of globalization. The impact of globalization on education bring rapid developments in technology and communications are foreseeing changes within school systems across the world as, ideas values and knowledge changing roles of students and teachers, and producing a shift in society from industrialization towards an information-based society. The introduction of technology into the classroom is changing the nature of delivering education to students is gradually giving way to a new form of electronic literacy, more programs and education materials are made available in electronic form, teachers are preparing materials in electronic form students are generating papers, assigning and projects in electronic form. "Video projection screens, books with storage device servers and CD ROMs as well as the emergence of on-line digital libraries and new forms of boards. Globalization has changed the patterns of exams and grades are gradually becoming available through electronic means and notebooks are starting to give way to laptops. The new methods to teach in class by the teachers has been taken by E-learning, M-learning, OHP, slide projector, computer managed learning systems rather than classroom. Globalization has changed the face of classroom, now-a-days there is no longer needs to be physically present in order to learn. It has explored the new areas of learning and thinking that could not be done with pen and paper. This computer has expanded the knowledge through inquiry and experimentation rather than memorizing facts in a teacher dominated classroom setting. The globalization has resulted in calls for more knowledge, skilled workers or new population. Today's education is almost exclusively focused on preparing children for an urban future.

Keywords: Globalization, Education, Technology, Pre-Service, In-Service, Pedagogy, Multimedia.

Introduction

The rise of a global society, driven by technology and communication developments are shaping children, the future citizens of the world into 'global citizens', intelligent people with a broad range of skills and knowledge to apply to a competitive, information-based society. The future of countries often lies within their ability to compete in a global market where industrial based economies are giving way to knowledge-based industries, realizing the importance of "knowledge, skills and the intellectual capacity to meet the challenges of accelerated change and uncertainty." Education is becoming a lifelong learning and training process, developing transferable skills and knowledge that can be applied to competitive markets where knowledge and information is being traded as a commodity.

Educational systems around the world are under increasing pressure to use the new information and communication technologies (ICTs) to teach students the knowledge and skills they need in the 21st century. Information and communication technologies have been powerful enabling tools for educational change and reform. When used appropriately, different ICTs are said to help expand access to education, strengthen.

Technology Enabled Education

World over, the arrival of the newer technologies certainly seems to have stimulated a resurgence of interest in diversifying methods of knowledge delivery. Almost on a daily basis, yet another Web-based course becomes available from one university or another. These new ICTs are considered by many to have tremendous potential for enhancing the quality of teaching-learning process. It is felt that they can increase not only the effectiveness of the educational process but also its overall efficiency. The possibilities they offer have the potential to transform the organization and structure of schooling and may promote the development of higher cognitive processes. Their use in formal and non-formal education has profound implications for the traditional role of the teacher and status of the student. At the heart of all learning, using ICTs, are materials specially designed to exploit the full potential of the available technological assets. These materials will normally include content in the form of texts, special "books of readings" specially

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developed study or learner guides, assignments and assessment pads and instructor or tutor guides. These resources along with appropriate learner support systems complete the educational environment.

Unlike traditional teaching, the design and development of interactive multimedia materials is an exceedingly interesting challenge which involves knowledge as well as skills of the educator. It can be constructed from a combination of media sometimes quite modest in cost and sophistication such as combination of CAI (computer-aided instruction), print and, at other times, very expensive and elaborate, using a combination of VD, CD-ROM, hypermedia and virtual reality.

A teacher, with the use of ICT can supplement these activities using a number of different methods.

- Online tutorials,
- Simulations,
- Knowledge reinforcement exercises,
- Computer assisted assessment.
- Open-ended learning environment

Technology can be employed to support each or all of these activities. It can deliver content that students can use in much the same way as content is delivered through a formal lecture. It can provide guidance on topics, through carefully crafted exercises which can be reinforced by practice activities. Finally, technology can be used to assess student learning through formative and summative testing. However, ICT alone does not cover all activities and the technology itself is not a substitute for face-to-faceteaching but acts as an enhancement to it. Therefore, the appropriate use of ICT, tied in with face-to-face teaching and support, can improve the learning process for students and bring a number of benefits for teachers.ICT Competency Standards for Teachers

UNESCO's project "ICT Competency Standards for Teachers" (ICT-CST) provides guidelines for all teachers, specifically for planning teacher education programs and training offerings that will prepare them to play an essential role in producing technology capable students.

Teachers need to 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 subject matter content while incorporating technology concepts and skills.

The UNESO ICT Competency Standards for teachers (ICT-CST) project provides a complete framework by crossing three approaches to education reform based on human capacity development-technology literacy, knowledge deepening and knowledge creation, with the six components of the educational system- policy, curriculum, pedagogy, ICT, organization and teacher training. Each of the cells of the matrix constitutes a module in the framework. Within each of these modules there are specific curricular goals and teacher skills.

UNESCO ICT Teacher Competency Standards Modules

Technology Literacy Approach	
Policy and Vision	The policy of this approach is to prepare learners, citizens and a workforce that is capable of taking up new technologies so as to support social development and improve economic productivity.
	Teacher Skills
Policy	Teacher must be aware of policies and be able to specify how classroom practices correspond to and support policy
Curriculum and Assessment	Teachers must have a firm knowledge of the curriculum standards for their subject as well as knowledge of standard assessment procedures. In addition, teachers must be able to integrate the use of technology and technology standards for students into the curriculum.
Pedagogy	Teachers must know where, when (as well as when not) and how to use technology for classroom activities and presentations.
ICT	Teachers must know basic hardware and software operations, as well as productivity applications software, a web browser, communications software, presentation software and management applications.
Organization and Administration	Teachers must be able to use technology with the whole class, small groups and individual activities and assure equitable access.

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Teacher Professional development	Teachers must have the technological skill and knowledge of web resources necessary to use technology to acquire additional subject matter and pedagogical knowledge in support of teachers' own professional development.
Knowledge Deepening Approach	
Policy and Vision	The policy of this approach is to increase the ability of the workforce to add value to society and the economy by applying knowledge of school subjects to solve complex problems encountered in real world situations of work, society and life.
	Teacher Skills
Policy	Teachers must have a deep knowledge of national policies and social priorities, and be able to design, modify and implement classroom practices that support these policies.
Curriculum and Assessment	Teachers must have a deep knowledge of their subject and the ability to apply it flexibly in a variety of situations. They must also be able to create complex problems as a measure of students' understanding
Pedagogy	Teaching is student centered in this approach and the teacher's role is to structure problem tasks, guide students understanding and support student collaborative projects. In this role, teachers must have the skills to help students create, implement and monitor project plans and solutions.
ICT	Teachers must be aware of a variety of subject-specific tools and applications and able to flexibly use these in a variety of problem-based and project-based situations. Teachers should be able to use network resources to help students collaborate, access information and communicate with external experts to analyze and solve their selected problems. Teachers should also be able to use ICT to create and monitor individual and group student project plans.
Organization and Administration	Teachers must be able to create flexible classroom learning environments. Within these environments, they must be able to integrate student-centered activities and flexibly apply technology to support collaboration.
Teacher Professional Development	Teachers must have the skills and knowledge to create and manage complex projects, collaborate with other teachers and make use of networks to access information, colleagues and outside experts in supporting their own professional development.
Knowledge Creation Approach	
Policy and Vision	The policy of goal of this approach is to increase productivity by creating students, citizens and a workforce that is continually engaged in and benefits from knowledge creation and innovation.
	Teacher Skills
Policy	Teachers must understand the intentions of national policies and be able to contribute to the discussion of educational reform policies, and participate in the design, implementation and revisions of programs intended to implement these policies.
Curriculum and Assessment	Teachers must know about complex cognitive thought processes, know how students learn and understand the difficulties students encounter. They must have the skills required to support these complex processes.
Pedagogy	The role of teachers in this approach is to overtly model learning processes, structure situations in which students apply their cognitive skills, and assist students in their acquisition.
ICT	Teachers must be able to design ICT. Based knowledge communities and use ICT to support the development of students' knowledge creation skills and their continuous reflective learning
Organization and Administration	Teachers must be able to play a leadership role in training colleagues and in creating and implementing a vision of their school as a community based on innovation and continuous learning, enriched by ICT
Teacher Professional Development	Teachers must have the ability and inclination to experiment and continuously learn and use ICT to create professional knowledge communities.

Helping the Teachers Develop ICT Skills.

It is important to develop a strategy for the growth and development of education and teacher education that takes advantage of ICTs. The vision is not simply of ICTs, but of better education facilitated through the adoption and promotion of ICTs.

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The Society for Information Technology and Teacher Education has identified basic principles for Development of effective ICT teacher Education (SITE, 2002). These are:

- Technology should be infused into the entire teacher education program Throughout their teacher education experience, students should learn about and with technology and how to incorporate it into their own teaching.

- Technology should be introduced in context. As with any profession. There is a level of literacy beyond general computer literacy. Teaching pre-service students, the traditional operating systems, word processor, spreadsheet, database, etc. is not enough. They require more specific or professional literacy, involving learning to use technology to foster the educational growth of students. Opportunities should be given to them to teach with technology.

- Student should experience innovative technology supported learning environments in their teacher education program. Technology can be used to support traditional forms of learning as well as to transform learning. A Power Point presentation, for example, can enhance a traditional lecture, but it does not necessarily change the learning experience. On the other hand, using multimedia to teach topics that have previously been taught by lecture methods may well be an example of a learning experience transformed by technology. Students should experience both types of uses of technology in their programme, and try for more innovative and creative forms of teaching and learning.

Strategies for Implementing ICT into Teacher Education

In order to implement ICT into teacher education, a realistic target could be to make ICT an integral part of pre-service and in-service education of teachers. A number of methods have been identified for achieving this objective.

- Foundation Course: At the initial stage of pre-service training, a short foundation course could be provided which focuses on applying ICT skills to achieve pedagogical objectives, rather than teaching ICT skills in isolation. ICT components should be integrated into all subject areas like math, science, social studies, English and so on so that students have a role model for ICT-integrated teaching and learning

- Putting ICT Skills into context: If pre-service or in-service teachers are taught ICT skills in con text, they are able to take an interest in the course, knowing that the skills have real applications.

- Combining Pre-service and in-service training: Pre-service preparation can be aligned with in-service teacher education where, a practicing teacher may work with a pre-service teacher education student on an innovative educational project. This will not only increase the research potential of the in-service teacher, but the pre-service teacher will also benefit from role modeling, and as a result, may have an easier transition into teaching.

- Reciprocal Mentoring: A teacher may facilitate learning by reversing the teaching roles. Using the process of peer tutoring or reciprocal mentoring, students often become teachers with the use of ICTs.

- Start with a Small Group: Further strategy is a start in a small way. It can be started by providing professional development in the use of ICTs to a small group of teaching staff. This will help to determine the specific needs and interests of teacher educators as well as what works best in the professional development process. Based on this experience, other small groups of faculty could be helped, thus expanding and refining the professional development efforts.

- Multimedia presentations: Multimedia combines media objects such as texts, graphics video, animation and sound to represent and convey information. Teachers should be encouraged to develop learning activities that take advantage of unique aspects of computer-based learning, such as creating interactive multimedia presentations. In this method of teaching and learning, students acquire new knowledge and skills by designing, planning and producing a multimedia product. The teachers in training can look at examples of projects and lessons at various Internet sites and create. Their own such as: using a multimedia slide show application to create computer presentation.

- Tele-computing Projects: The pre service teachers in one location may collaborate with other students or adults who are at other locations, with the help of Internet-enriched learning activities. They may share their experiences, information and problem-solving strategies. Tele-computing tools include e-mail, discussion groups, real time chatting and audio and video conferencing.

- On line Discussions: Online teaching and learning discussions will increase meaning and understanding of the content and provide more knowledge globally. The global growth of infrastructure has increased the ability to access others through remote connections. Teacher candidates can connect to experts and peers through a variety of formats such as chat rooms or e-mail.

Conclusion

It is expected that these approaches would give a paradigm shift to teacher education from its traditional form to a program relevant to the context of schooling for the globalized era. The crucial step is to incorporate ICTs appropriately in the curricula of teacher education programs. This would enable the prospective teachers as well as in service teachers to implement ICT successfully in the teaching learning situations.

The real challenge is how to harness the power of ICT in meeting the needs posed by the onset of information age. While IC T clearly seems to have the potential to enhance teaching learning process, the classroom activities involving the use of these technologies need to be carefully structured for the promotion of higher order thinking and problem-solving skills. It must be emphasized that the technology by itself is not going to bring about change in the teaching process, unless they are employed in innovative and effective ways by teachers. Thus, today the globalization has put remarkable progress in the field of education and also created both progress challenges and opportunities. Although we know that school education and university education is providing high quality of education for the globalized world, despite its focus on internationalism and cross-cultural communication, which is still based on an individual model of teaching. In the context of globalization, we are studying and using different approaches, ways of teaching and different media. Globalization has made emphasis on educational technology and communication systems and also changes the way roles played by both teachers and students. It has developed new skills. Value and knowledge needed to be competitive in a global market. Thus, we should work or rethink about the globalization emphasis not only how much education is needed but also of ultimate purposes.

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