TEACHER EDUCATION AND ICT FRAMEWORK

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ABSTRACT

In the contemporary era, Technology plays vital role for the growth of education. The teachers and students are closely related to each other for the expansion of education system. The quality of education depends upon the knowledge and attitude of teachers towards the ICT. Information and communication technology (ICT) can provide more flexible and effective ways for professional development for teachers and connect teachers to the global teacher community. Teacher educators are the facilitators in any educational reform movement. In order to effectively implement the prescribed curriculum and to achieve its objectives of preparing better future teachers, teacher, educators should themselves be psychologically and academically competent. This paper is emphasis on the ICT framework in teacher training and teacher development in UNESCO.

Keywords: ICT, Teacher Education, ICT Framework.

INTRODUCTION

ICT stands for Information Communication and Technology. ICT refers to usage of electronic devices. ICT awareness includes browsing or surfing, designing or authoring, communication to teaching and maintenance or hardware/software skills which are needed effective teaching (Gracious & Annaraja, 2011). Information and communication technologies (ICTs) are major factors in shaping the new global economy and producing rapid changes in society. Within the past decade, the new ICT tools have fundamentally changed the way people communicate and do business. Education has evolved over the years from the basic reading, writing and arithmetic, to present day globalized view, which stresses on group work, lateral thinking, creativity, problem solving and innovation (Beyers, 2009). ICTs provide an array of powerful tools that may help in transforming the present isolated, teacher-centered and text-bound classrooms into rich, student- focused, interactive knowledge environments. To meet these challenges, schools must embrace the new technologies and appropriate the new ICT tools for learning.

The quality of teachers and their continuing professional education and training remain central to the achievement of quality education. ICT professional development is seen as a vehicle to enable transformative change in teachers' practice (Russell, 1999). They have produced significant transformations inindustry, agriculture, medicine,

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business,engineering and other fields. For education to reap the full benefits of ICTs in learning, it is essential that pre-service and in-service teachers have basic ICT skills and competencies.

ICT Framework Objectives:

The objectives of ICT framework help the teachers to support the students to:

Explore the potential of ICT to create, communicate and collaborate to organize and produce information.

Understand and apply the knowledge of the functions of ICT including safe practice, maintenance and ergonomics.

Use ICT for thinking and learning including managing enquiry, assessing information, solving problems and express ideas across range of curriculum areas.

Develop a critical appreciation of the role of ICT in society and habits which reflect ethical and responsible use of ICT.

The UNESCO ICT Competency Framework for Teachers as below:

	TECHNOLOGY LITERACY	**KNOWLEDGE DEEPENING**	**KNOWLEDGE CREATION**
UNDERSTANDING ICT IN EDUCATION	Policy awareness	Policy understanding	Policy innovation
CURRICULUM AND ASSESSMENT	Basic knowledge	Knowledge application	Knowledge society skills
PEDAGOGY	Integrate technology	Complex problem solving	Self management
ICT	Basic tools	Complex tools	Pervasive tools
ORGANIZATION AND ADMINISTRATION	Standard classroom	Collaborative groups	Learning organizations
TEACHER PROFESSIONAL LEARNING	Digital literacy	Manage and guide	Teacher as model learner

TEACHER DEVELOPMENT FRAMEWORK

Teachers are central to the implementation of the National Curriculum Framework. The challenge for teacher development in ICT is to provide teachers with the necessary knowledge, skills and understanding to successfully integrate ICT into everyday educational practices in a meaningful way. Teacher development should, maintain a balance between developing effective teaching and learning strategies and increasing the knowledge and skills of teachers in the use of ICT. ICT integration into curriculum delivery is not simply about acquiring ICT competency. It is about the "appropriate selection, use, mix, fusion and integration of many sets of competencies including, but not exclusively, those in pedagogy and technology" (Information and Communication Technology in Education, UNESCO; 2003:18).

There are four broad approaches from the research literature for developing a model for ICT integration in Teacher Development. The adoption model depicts an approach continuum whereby the skills of teachers flow from emerging to applying to infusing to transforming stages of ICT integration. As teachers move through each stage, they develop increasing capability to integrate ICT in their day-to-day activities and master the use of ICT as an effective tool for teaching and learning.

The example below shows what the technology literacy approach might look like in practice

TECHNOLOGY LITERACY IN THE EVERYDAY WORK OF A TEACHER	
UNDERSTANDING ICT IN EDUCATION	A mother-tongue teacher understands the basic principles of using ICT in teaching, so he/she[7] considers how to make the best use of an interactive whiteboard recently installed in his/her[8] classroom. Until now, she has only used it as a projector screen.
CURRICULUM AND ASSESSMENT	The teacher realizes that using word processing on the interactive whiteboard would offer a new approach to one of the basic skills in the curriculum - how to improve the wording of sentences. Word processing allows words to be changed and moved around without having to endlessly re-write whole sentences on paper. Word processing can also be used for formative assessment. She composes a long, badly worded sentence which she will give all the students on their computers and ask them to see how many different improved versions they can produce within five minutes.
PEDAGOGY	Using the word processing application, the teacher displays on the interactive whiteboard some examples of poor writing. She demonstrates how, with a few changes in the choice of words and the word order, sentences can be made simpler and clearer. Then, by questioning the class, offering them suggestions and pointing out weaknesses in sentences, she gets them to improve some further examples of writing. She makes the changes on the interactive whiteboard as the students suggest them, so the whole class can see the process. Finally, she sits down to one side of the room and asks students to come to the interactive whiteboard and operate it themselves to show how they can improve sentences.
ICT	Initially, the teacher uses a word processing application on the interactive whiteboard while conducting a discussion with the class. In the next lesson, each student uses a laptop computer. Since the laptops and the teacher's computer are networked, the teacher can easily display on the interactive whiteboard interesting examples of re-worded sentences which the students have been able to devise in the five minute test. The whole class can then discuss and evaluate different wordings.
ORGANIZATION AND ADMINISTRATION	For the second lesson, the teacher uses the school's trolley of laptop computers so that each student is able to carry out word processing on their own. She devises the two lessons in such a way that students will know exactly what to do in the second lesson, without the need for questions or discussion. This ensures the students make the fullest use of the laptops while they are available to them. Using the school's computer network, the teacher records her students' grades on a central file which other teachers and the school administration can also access.
TEACHER PROFESSIONAL LEARNING	The teacher searches various websites for mother-tongue teachers to find teaching resources on writing skills, including exercises and writing assignments, stimulus material and ideas for lessons.

The developmental framework developed by UNESCO is based upon these four broad approaches where the applying stage is further subdivided into adoption and adaptation levels. It is further emphasized that 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 development 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. We need to adopt a framework for teacher development that reflects the shifts from 'training' to 'lifelong professional preparedness and development of teachers' on new modalities of professional development. The framework adapted from UNESCO outlined the following five ICT development levels that are to be included in the ICT integration for teacher training.

> Entry level: The teacher is computer literate and is able to use computers. However, frustrations and insecurities are common in the introduction of ICT. At this level, teachers are likely to lack confidence.

> Adoption level: The teacher is able to use various ICT, including computers, to support traditional management, administration, teaching and learning, and is able to teach learners how to use ICT.

> Adaptation level: The teacher is able to use ICT to support everyday classroom activities at an appropriate NCS level, assess the learning that takes place and ensure progression. He/she is able to reflect critically on how ICT changes the teaching and learning processes and to use ICT systems for management and administration. Productivity increases at this level.

> Appropriation level: The teacher has a holistic understanding of the ways in which ICT contributes to teaching and learning. He/she has an understanding of the developing nature of ICT, and awareness that it is integral to the structure and purposes of the NCS. He/she has the experience and confidence to reflect on how ICT can influence teaching and learning strategies, and to use new strategies.

> Innovation level: The teacher is able to develop entirely new learning environments that use ICT as a flexible tool, so that learning becomes collaborative and interactive. ICT is integrated as a flexible tool for whole-school development through redefining classroom environments and creating learning experiences that control the power of technology.

The Framework therefore addresses all aspects of a teacher's work, like, understanding ICT in education, curriculum and assessment, pedagogy, organisation and administration and teacher professional learning. The Framework is arranged in five different approaches to teaching (successive stages of a teacher's development), which moves the teacher from Technology Literacy to Knowledge Deepening and finally to Knowledge Creation.

CONCLUSION

So we are living in a world of science and technology, where an explosion of knowledge is taking place. This analysis of approaches in ICT teacher training indicates that there are possibilities and challenges in adopting ICT in teacher training and professional development. Overall, governments and teacher training institutions seem to recognize the importance of integrating ICT in learning and teacher training. It

is observed in the analysis that a variety of ICT-integrated training environments have been created to provide more effective ICT training and teacher tends to integrate ICT in their teaching if they experience ICT skills as a learner. From the literature it is clear that though ICT enabled education is seen as a way to improve the quality of education in many countries, its implementation is complex. One has to take into consideration many factors, such as availability of technology, time, training and support, coordination and management, individual attitude, belief and motivation, characteristics and ethos of the organization (Tearle, 2004). Finally, more attention should be paid to specific roles of ICT in offering multimedia simulations of good teaching practices, delivering individualized training courses, helping overcome teachers' isolation, connecting individual teachers to a larger teaching community on a continuous basis, and promoting teacher-to-teacher collaboration. As to conclude, the ICT framework is the effective for students as well as teachers, and prepares students to enter and successfully compete in the education system.

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