

ICT and Teacher Education: Need of the Hour

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Abstract: *Rapid developments in the field of Information and Communication Technology (ICT) and its invasion of almost every sphere of our life have been witnessed during the last few decades. The field of education is no exception to such technological invasion and is becoming increasingly dependent on ICT for not only delivery of instructions but also for creating and sharing knowledge. Social, economic and technological changes of the past decades are making teaching more crucial than ever. The face of the classrooms is changing. The teachers should prepare to cope up with the technology utility in the classroom. ICT is not only an essential tool for teachers in their day to day work, but also it offers them opportunities for their own professional development.*

Key Words: *Information and Communication Technology (ICT), Professional Development.*

1. INTRODUCTION:

Rapid developments in the field of Information and Communication Technology (ICT) and its invasion of almost every sphere of our life have been witnessed during the last few decades. The field of education is no exception to such technological invasion and is becoming increasingly dependent on ICT for not only delivery of instructions but also for creating and sharing knowledge. Social, economic and technological changes of the past decades are making teaching more crucial than ever. The information and knowledge society needs a continuous change in the role and the working of teachers. Being a teacher in the Knowledge Society, one has to deal with (1) new knowledge and new ways for accessing knowledge (2) a networked world and with new types of co-operation and collaboration (3) a society in which knowledge plays a crucial role and lifelong learning. ICTs have brought new possibilities into the classroom. At the same time, they have placed more demands on teachers. ICTs exemplified by the internet and interactive multimedia are obviously of great significance of teachers. ICTs integration in teaching in general and teacher education in particular is need of the day. Its adequate recognition and fulfilment of relevant needs are crucial for integration and effective utilization for quality education programme.

2. WHY DO WE NEED ICT?

The face of the classrooms is changing. The teachers should prepare to cope up with the technology utility in the classroom. ICT is not only an essential tool for teachers in their day to day work, but also it offers them opportunities for their own professional development.

3. FORM OF ICT IN THE CLASSROOM:

ICT can be used in many forms in classrooms. We can organize teaching learning via ICT. It can be used as a core or a complementary means to the teaching process. There are 3 main approaches to ICT which can be adopted in the classroom teaching learning situations.

Integrated Approach

This aims at planning the use of ICT within the subject to enhance particular concepts and skills and improve pupils' attainment. This involves a careful and considered review of the curriculum area, selecting the appropriate ICT resource which will contribute to the aims and objectives of the curriculum and scheme of work, and then integrating the ICT use in relevant subjects.

Enhancement approach

This focuses on the use of an ICT resource to enhance the existing subject matter through some aspect of the lessons and tasks eg. using an electronic whiteboard for presenting theory about a topic.

Complementary approach

This aims at using an ICT resource to empower the students' learning eg. By enabling them to improve their class work by taking notes on the computer, or by sending homework by e-mail to the teacher from home, or by word processing their homework.

All the 3 approaches can enhance attainment, but the effects may be different.

4. HOW ICT CAN BE IMPLEMENTED IN TEACHING-LEARNING?

The effective and efficient use of ICT depends largely on technically competent teachers. They should be able to appreciate the potential of ICT and have positive attitude towards ICT. 4 phases are conducted to implement ICT content in the classroom. These phases are as under:

- ICT literacy
- Use of ICT hardware and software for teaching-learning activities
- Integration of pedagogy and ICT
- Innovative practices in the use of ICT

5. HOW DOES ICT HELP IN BETTER TEACHER PERFORMANCE?

In new technology era, the role of teacher has changed and continues to change from being an instructor to a constructor, facilitator, coach and creator of learning situation. The ICT will help in better teacher performance in following ways:

Knowledge enhancement through use of ICT

Access to Information is considered to be one of the most important benefits of the use of ICT in education. There are several levels on which ICT can improve the cognition boundaries. ICT tools allow us to represent in rich and diverse ways. They enable us to traverse the boundaries of art, science, language and senses. They allow us to represent and stimulate experiences. The interactivity capacity of ICT provides more opportunities for students and teachers to involve as creators. It supports teachers in bringing together aesthetic as well as scientific consideration.

Strategies for Teachers

ICTs provide many opportunities to use variety of pedagogies. As a tool, ICT can support didactic or facilitative approaches, interact and collaborate across time and distance. ICT enables us to interact with students over a physical distance. It enables to access on-line libraries, journals and research to support individual learning. Didactic software/courseware and intelligent tutoring systems can dramatically reduce the cost of teaching and learning. Hyperlinks allow for student control, which is crucial for constructive learning. ICT enabled teaching facilitates sharing of ideas, experiences as well as collaborating on projects, exchanging materials through discussion groups etc.

Management of Learning

ICT enables to provide individual instruction with individual pace. Self-pace learning is only possible through didactic CDs, DVDs and on-line learning.

Evaluation of Learning

ICT enables to give feedback and testing objectively and quickly without biases. It enables self testing and large group testing easily. It makes formative and summative evaluation easy and can evaluate learners in remote location also evaluate through Internet. ICT tools like e-mail, internet, CDs and DVDs of evaluation programmes, online access of evaluation software etc. can be effectively used for evaluation.

Guidance to the Learners

Diagnosis of individual is also possible through ICT using specific software. Remedial teaching for each and every student is not possible by the teacher but with the help of ICT it may be made possible. If teachers are to cope with the challenges of the rapidly changing society and make use of new opportunities offered by ICT, the teachers and students must have access to necessary equipments. The most important competence building is the development of pedagogical methods. Special emphasis must be given on the use and integration of online resources in classroom.

6. ASSUMPTIONS OF INNOVATION FOR ICT:

Different people have defined innovation in different ways. Innovation is the introduction of new ideas, goods, services, and practices that are intended to be useful. Whenever the researcher puts forth the innovation to the users, it might be having the following assumptions.

Usefulness: The innovation must bring out the desired change in the target group. This change should be visible and measurable.

Economical in terms of Time and Money: The innovation should be affordable by majority of users.

Easy to implement: The implementation should be easy and smooth.

Availability of Infrastructure: The implementation of any innovation will require some physical infrastructure.

Availability of Human Resources: any innovation will require manpower to use it for the benefit of the people.

Trainable: The innovation should be such so that people can be trained to use it.

Environment Friendly: The innovation should be environment friendly.

Socially Acceptable: Each society has its norms, values and traditions.

It breaks the monotony: The system does not produce desirable result due to its monotony.

Matches with the philosophy of the Nation: Each nation has a philosophy. The innovation should be able to match with the philosophy of the nation.

7. COMPUTER-BASED DIAGNOSTIC TESTING:

The common observation is that the quality of teaching in the classroom is on the decline. More and more students are depending on the private tutorial classes. The private tuition also has become a business. This phenomenon is not only prevalent in India but also present in other countries too. There are about 800 students from USA who have enrolled themselves for private tuition in Mathematics. It means tuitions are also being outsourced. This is being done through the use of ICT. These studies fall to understand certain concepts or retain certain information. This can be improved by introducing the diagnosis and remediation in the process of teaching-learning. However such practice is not adopted in usual classroom teaching. The reasons might be large class size, non-availability of diagnostic tests in different subjects, lack of training, money and desire on the part of teacher etc. This is the age of technology. These difficulties can be easily overcome with the help of ICT.

8. DIGITALIZED INSTRUCTIONAL MATERIAL:

As pointed earlier, there is a shortage of qualified teacher educators. Not only this, even the instructional material available in the print form is not of quality. This is because many authors have written on those topics that they have never read and/or done research. Sometime the information given in the books is also wrong. The book reading is not very enjoyable and does not help students in understanding the concepts and retaining the information. There are many teacher educators who are well known for the specific subject. Their lectures should be digitalized and made available to all the users. The Consortium for Educational Communication (CEC) is making efforts to develop e-content material in different subjects for the benefit of diverse users. The teacher educators should also start using it for developing e-content in their own areas of specialization.

9. SELECTION OF TEACHER TRAINEES:

It is a well known fact that the quality of output of teacher training programme depends to a great extent on the quality of its input. At present different states adopt different mechanisms of selecting students for the teachers training programme. Some procedures of selection are very good and are in a position of screening students very well. The entry level of test should assess those characteristics that are necessary to being a teacher. Entry test must serve the purpose of IIT or CAT or NET exams. At present ICT is used in conducting GRE exams. It indicates the feasibility of the use of ICT in the selection of teacher trainees. Like this ICT can be used in improving different quality of different aspects of teacher education.

10. TEACHER EMPOWERMENT:

Teacher empowerment is not entirely providing them some incentives which acts as reinforcer and motivate them. To empower teachers' means they should be motivated to reach the highest strata of the hierarchy that is reaching the top of need hierarchy. It is not just providing them with monetary benefits, working conditions etc. but also providing them opportunities to grow, get recognition, advancement in professional life etc. Empowered teaching should also be characterized by reflection, self-fulfilment and decentralization. Teacher empowerment therefore includes the following elements: decentralization, professionalism, enablement, democratization and inversion of power hierarchy. For teacher empowerment to materialize, the college administration, person in administration at various levels are to be involved in the process.

11. ICT NEEDS OF TEACHERS:

In the present scenario of techno-savvy classrooms, teacher has to be a master in use of technology in the teaching-learning process. For this the important needs can be broadly related to training, access, support and advice.

Training Needs

To be skilled and knowledgeable is of course the key to effective implementation of ICT in teaching and learning and there is no doubt that teachers are motivated and interested in developing their own skills and knowledge. There is a need for training to develop knowledge and skills. Conversely no matter how good the quality of the training is, if it is not related to the ICT resources available in school it is likely to be seen by teachers as a waste of time and effort. It is important therefore that training opportunities for practicing teachers remain flexible enough to cope with the varying pace of development.

Access to ICT

Simply providing training facilities is not enough. Providing proper access to the system is also one of the important needs. Systems are required in each school to publicize and inform all teachers about the availability of ICT resources: teachers need to be made aware of the existence of ICT within their own school as well as its potential. All schools need to seek ways of sharing relatively expensive ICT resources. Education authorities should consider providing computers for use by teachers at home: access to a computer at home will encourage those who are motivated towards ICT to make greater use of ICT in school, by providing the space and time for development which is often lacking in a busy school time schedule.

Support and Advice

Support is an essential component; mechanisms need to be put in place to ensure that teachers have adequate access to technical support and advice, and to ensure that teachers do not feel that they have to become technical experts themselves. Mechanisms should be put in place to support teachers in identifying, selecting and evaluating the ICT resources appropriate to their needs.

12. PROBLEMS AND CHALLENGES:

No provision for needs of teachers adequately is one of the main issues in use of ICT in classrooms. Teachers identify a range of issues which they regard as inhibitors to effective use of ICT, like:

- Lack of access/availability of hardware/software
- Lack of familiarity, skills and knowledge
- Lack of support during times of crisis and
- Lack of management guidelines from organization

Teachers are not in a position of taking any independent judgement regarding any matter of ICT related teaching due to lack of authority and knowledge. Some of the problems faced by teachers while using ICT in classroom situations are as under:

- Classroom management issues are the focus of much concern in relation to ICT, providing fair and equal access for all pupils when hardware is limited is seen as a major challenge.
- The perceived expense of ICT, relative to more traditional resources, creates tensions in terms of prioritizing budgets for hardware and software.
- Dissemination of knowledge related to various aspects of ICT among teachers is rare. This brings in the feeling of gap among teaching faculty, which is not conducive for achieving goals.
- The priorities for teaching learning at different levels say primary, secondary etc. are different. When this point is not given consideration, teachers may feel that administrators possess biased priorities in the allocation of ICT resources.
- Lack of proper evaluation procedures related to ICT use in classrooms is another problem. Proper guidelines are not there for use, access to different varieties of resources available in the organization.
- The other problem which surfaces is that of incompatible hardware. This can hamper the transfer of ideas and skills. Incompatibility of hardware within a school also limits the value of information resources.
- Absence of support during times of crisis is the serious problem in organizations.

Keeping in view all these issues and many more that may arise with time and changing needs, there is a need for providing proper empowerment to teachers by framing conducive rules and regulations by authorities.

13. ROLE OF INSTITUTIONS:

- Objectives of ICT programme must consider the following points need for safe-guarding values like academic freedom, the need for continued attention to quality in teaching-learning; the need to protect student involvement and influence etc.
- Develop and continuously update institutional ICT policies in order to align educational objectives with technology.
- Place equal emphasis at all levels of education in institution in using ICT technology.
- Provide all members of academic and non-academic community with skills to use up to date ICTs.

Sufficient and on-going financial support should also be allocated to ensure that all students are provided with the relevant ICT skills.

14. ROLE OF PRINCIPAL:

The school Principal has to encourage teachers in ICT based teaching on the following lines:

- Actively participating as an equal in the programme designed for the organization
- Being enthusiastic and energetic in providing support to teachers.
- Ensuring inclusion of all teachers in the programme.
- Providing opportunities to meet and discuss various problems to find amicable, possible solutions time to time.
- Encouraging team spirit and supporting risks.
- Encouraging innovations by respecting new ideas; allow them to try out new ideas.
- Encouraging teachers to take responsibility and solving problems along with colleagues
- Providing for proper rewards, recognition patterns for excellence shown by people in the organization.

14. ROLE OF TEACHER:

The teachers need to understand their role in the present day techno-savvy classrooms. Teacher plays the role of leader, guide, facilitator and manager of the entire process of classroom teaching-learning. Co-ordination, co-operation among all persons is the key issue in enhancing use of ICT for effective classroom teaching-learning. Everyone involved in the process need to be aware of their roles, responsibilities and various other things related to the issues.

15. PLACE ACCORDED TO ICT BY THE ONGOING TEACHER EDUCATION PROGRAMME:

The teacher education programmes that are offered today usually have components that tend to trainees about certain aspects related to educational technology such as various types of media, their shortcomings and strengths, use of computer for learning, benefits of using technology while imparting instructions etc. ICT is treated usually as an isolated theoretical component in the curriculum followed in teacher education programmes. Technology therefore, remains at the periphery of the teaching-learning process. There is hardly any hands on training regarding the latest development in the field of educational technology such as computer assisted learning, web-based learning, developing software for different types of media, development of online courses etc. Hence, teacher education programmes need to provide an environment or more aptly a culture so that teachers are imparted not merely theoretical knowledge and computer literacy but are also trained in the application of various kinds of educational software in teaching and learning.

16. CONCLUSION:

In most of the developed nations of the world, there has been a paradigm shift in understanding the teaching-learning process with the accent on learning rather than teaching. There is a growing awareness in academia that a teacher is less “the sage on the stage” and more of “a guide on the side”. With the increasing emphasis on the learning process, teachers have to recognize and harness the awesome power of technology to take this giant leap into the future.

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