
A Study on Emerging Trends in ICT for Education

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INTRODUCTION

Information and communication technology (ICT) has become, within a very short time, one of the basic building blocks of modern society. Many countries now regard understanding ICT and mastering the basic skills and concepts of ICT as part of the core of education, alongside reading, writing and numeracy. ICT permeates the business environment, it underpins the success of modern corporations, and it provides governments with an efficient infrastructure. At the same time, ICT adds value to the processes of learning, and in the organization and management of learning institutions. The Internet is a driving force for much development and innovation in both developed and developing countries. Countries must be able to benefit from technological developments. To be able to do so, a cadre of professionals has to be educated with sound ICT backgrounds, independent of specific computer platforms or software environments.

Technological developments lead to changes in work and changes in the organization of work, and required competencies are therefore changing. Gaining in importance are the following competencies:

- critical thinking,
- generalist (broad) competencies,
- ICT competencies enabling expert work,
- decision-making,
- handling of dynamic situations,
- working as a member of a team, and
- communicating effectively.

In any educational system, the level of available resources places a restriction on the degree to which any new subject can be introduced into the school curriculum, especially where only the most basic facilities have so far been provided. But ICT is of such importance to the future industrial and commercial health of a country that investment in the equipment, teacher education, and support services necessary for the effective delivery of an ICT-based curriculum should rank high in any set of government priorities. The curriculum proposed takes account of these resource issues and specifies minimum requirements for effective delivery in different circumstances.

Schools at the beginning stages of ICT development demonstrate the emerging approach. Such schools begin to purchase, or have had donated, some computing equipment and software. In this initial phase, administrators and teachers are just starting to explore the possibilities and consequences of using ICT for school management and adding ICT to the curriculum. Schools at this emerging phase are still firmly grounded in traditional, teacher-

centered practice. The curriculum reflects an increase in basic skills but there is an awareness of the uses of ICT. This curriculum assists movement to the next approach if so desired.

A CURRICULUM STRUCTURE FOR SECONDARY SCHOOLS

The following design supplies four curriculum areas tied to the four stages of teaching and learning, allowing schools to progress from:

- *ICT Literacy* (where ICT skills are taught and learned as a separate subject) to
- *Application of ICT in Subject Areas* (where ICT skills are developed within separate subjects) to
- *Infusing ICT across the Curriculum* (where ICT is integrated or em-bedded across all subjects of the curriculum) to
- *ICT Specialization* (where ICT is taught and learned as an applied subject or to prepare for a profession).

STEPS FOR IMPLEMENTING ICT:

1. Emerging: The emerging approach is linked with schools at the beginning stages of ICT development. Such schools begin to purchase computer equipment and software or perhaps have had some donated. In this initial phase, administrators and teachers are just starting to explore the possibilities and consequences of adding ICT for school management and the curriculum. The school is still firmly grounded in traditional, teacher-centred practice. For example, teachers tend to lecture and provide content while students listen, take notes, and are assessed on the prescribed content. School organization provides discrete time periods for each subject. Learners' access to technology is through individual teachers. A curriculum that focuses on basic skills and an awareness of the uses of ICT assists movement to the next approach.

2. Applying: The applying approach is linked with schools in which a new understanding of the contribution of ICT to learning has developed. In this phase, administrators and teachers use ICT for tasks already carried out in school management and in the curriculum. Teachers still largely dominate the learning environment. For example, instructing may be supplemented with ICT such as electronic slide presentations and word-processed handouts. Students receive instruction and add notes to teacher prepared handouts. They use ICT tools to complete required lessons and are assessed on prescribed content. School organization provides discrete time periods for each subject with some flexibility to combine subjects and time periods. Learner access to technology is through one or two classroom computers and computer labs. Until now, ICT has been taught as a separate subject area. To move to the next phase, the school chooses to implement an ICT based curriculum that increases ICT across various subject areas with the use of specific tools and software.

3. Infusing: The infusing approach is linked with schools that now have a range of computer-based technologies in laboratories, classrooms, and administrative areas. Teachers explore new ways in which ICT changes their personal productivity and professional practice. The curriculum begins to merge subject areas to reflect real-world applications. For example, content is provided from multiple sources, including community and global resources through

the World Wide Web. Students' access to technology enables them to choose projects and ICT tools that stimulate learning and demonstrate their knowledge across subject areas. School organization provides the flexibility to combine subjects and time periods. Learners have more choices with regard to learning styles and pathways. They take more responsibility for their own learning and assessment. ICT is taught to selected students as a subject area at the professional level. To advance to the next phase, schools choose an ICT curriculum that allows a project-based, ICT enhanced approach. These schools begin to involve the community more in the learning environment and as resource providers.

4. Transforming: The transforming approach is linked with schools that have used ICT creatively to rethink and renew school organization. ICT becomes an integral though invisible part of the daily personal productivity and professional practice. The focus of the curriculum is now much more learner centred and integrates subject areas in real-world applications. For example, students may work with community leaders to solve local problems by accessing, analyzing, reporting, and presenting information with ICT tools. Learners' access to technology is broad and unrestricted. They take even more responsibility for their own learning and assessment. ICT is taught as a subject area at an applied level and is incorporated into all vocational areas. The school has become a centre of learning for the community.

CONCLUSION:

A question I often hear teachers who are unwilling to take the ICT plunge is, 'Can the student learn anything without the teacher explaining or intervening? And my answer to that is, 'Students also have ideas of their own and knowledge that they gathered from daily life; this knowledge and ideas are not accepted or utilized by teachers. Using ICT this can be achieved in a big way.'

Training a teacher in using ICT is more crucial than acquiring a large number of computers. Teachers have to be trained to facilitate the learning process, make the process real, achievable, challenging, yet exciting and not intimidating. Reducing teacher talk and encouraging student discussion is extremely important. Everything need not be written on the blackboard to be considered as taught. Many teachers think the computer is used only to make the content look attractive! They need to know that in 21st century, information is not difficult access, instead organizing, sharing, and collaborating become essential skills. Hence, ICT is not merely to portray information but to interact, share, and thus learn. ICT provides meaningful, absorbing media that makes teaching-learning more productive.

There are two main areas that we have to look at if a paradigm shift in the teaching process has to occur: the teacher's role of teaching and the teacher's role of helping the student learn.

In the first one ***the teacher has to enhance teaching***. Here, the teacher can ask himself or herself, 'How will ICT enhance my teaching?' The teacher should be aware of what lacunae exist in his/her teaching. The teacher should ask 'Do I need to be empowered? 'What more can be done?' 'What is the most effective way of teaching?' 'How will more students benefit from my teaching?' 'Will ICT help me?'

The second role of the teacher: *helping the student learn.*

The Internet is full of information, textbooks are bursting with information. But this information can become true knowledge only when the teacher makes it meaningful. Here the teacher can use multimedia to make topics more comprehensible.

Think of a teacher showing large number of different flowers while reading out a poem on flowers, or teaching about the parts of a flower. Talking about the freedom struggle is one thing and seeing a 2 minute video on the same topic is altogether different. Preaching about rain water harvesting and showing a clipping while teaching is different. Showing how bunding is done, how crude oil is refined, gives students the correct idea. Instead of boring the students with a decade old chart on the respiratory system, showing a 1.5 minute video during teaching takes the students to a different level of understanding. Listening to the voice of Rabindranath Tagore while reading his stories, poems will help the students associate with the author. The entire teaching-learning process gets a boost with the appropriate use of ICT. It should be used to fill in the inadequacies that the teacher is facing. The problem of large numbers, students not showing interest can be tackled to some extent. Can use of ICT make teaching more meaningful, get rid of rote memorizing?

The teacher needs to be fully aware of the fact *that students can find information, they need proper instructions, they need scope for creativity, expectations of the teacher brings forth performance.*

The present generation is a multimedia generation. It is not their fault. They are numbed by too much of information and easy access to that information. How then can we expect our students to sit and listen to lifeless sermons in class. The information that is given in the classroom is redundant and presented in boring manner. NGC, Discovery, Fox History can take one to places and time in minutes. They show so much of the present and the past far and wide that one seems to learn unknowingly. One search on Google and lo and behold! The information at your fingertips will be difficult to assimilate. How does one harness this gargantuan accessibility of information? How to make students use it appropriately and avoid brazen plagiarism? Vague expectations, lack of innovation, poor scope for creativity make learning dull. Mere use of computer or Internet doesn't improve the learning output.

The process should be like this.

Step one: What are the problems in schools, classrooms, exclusively related to teaching-learning? Identify them. Large numbers? Lack of interest? Many drop outs? Learning disability?

Step two: What is being done about these problems? Can use of ICT help? Try making lectures, classes more technology laden to bring a difference. Observe the difference in the classes.

Step three: What are the requirements of the teacher to do a better job? Do the teachers feel that use of ICT to help them improve their teaching?

Step four: Are the teachers and students equipped with ICT skills?

Although ICT offers the opportunity to construct powerful learning experiences, it is pedagogically neutral. That is, ICT can be used in support of traditional teaching methodologies like the large group lecture, student note taking, and examinations. Teachers can use a computer and projector to show slides to illustrate a lecture, students can use laptops to take notes during the lecture, and multiple choice quizzes about the content of the lecture can be put on a website. How these new ICT tools and resources will be used is a human decision, not inherent in the technologies themselves. ICT has the potential to be used as a supportive educational tool enabling students' learning by doing. ICT can make it possible for teachers to engage students in self-paced, self-directed problem-based or constructivist learning experiences; and also test student learning in new, interactive, and engaging ways that may better assess their understanding of the content. A second way to assess the merit of ICT use in education is to consider what its use enables students and teachers to do that they would not otherwise be able to do.

To explore this question, we consider five aspects of the educational use of ICT –

- supporting new pedagogical methods
- accessing remote resources
- enabling collaboration
- extending educational programs and
- developing skills for the workplace

Modern constructivist educational theory emphasizes critical thinking, problem solving, “authentic” learning experiences, social negotiation of knowledge, and collaboration – pedagogical methods that change the role of the teacher from disseminator of information to learning facilitator, helping students as they actively engage with information and materials to construct their own understandings. That is, students learn *how* to learn, not just *what* to learn

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