

ICT as a change agent for growth in higher education

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ABSTRACT

ICT is a broader term that includes all technologies for the communication of information. It is the technology that enables the handling (creation, storage and access) of information and facilitates different forms of communication (radio, television, cellular phones, computer, hardware and software, various services and applications for broadcasting information. The development of ICT has influenced all walks of life like agriculture, health, decision making, administration and also education is no exception to this. This article focuses on the role of ICT in higher education. ICT is potentially a powerful tool for extending educational opportunities and resulting in a remarkable growth in the higher education sector and leading to quality enhancements. The government is spending a lot of money on ICT: the National Mission on Education is emphasizing on the role of ICT in increasing the enrolment ratio in higher education and availability of trained teachers in the process of dissemination of education. The main factors that affect the adoption of ICT in education are the mission or goal of a particular system, programs and curricula, teaching/learning strategies and techniques, learning material and resources, communication, support and delivery systems, students, tutors, staff and other experts, management and evaluation.

KEYWORDS: Higher Education, Distance learning, administrative, professional development

I. INTRODUCTION

Information and communication technology is a broad field that encompasses all types of technology for the communication of information. It is the technology that is capable of handling (designing, storing and using information) and information from various mediums of communication (radio television, cell phones, computers and networks, hardware and software, satellite systems, various services and applications). ICT provides broadcasting facilities. ICT has become an inseparable and accepted part of the lives

of many people. There is an impact of development in areas such as agriculture, health, governance and education. ICT is a diverse collection that includes various technology tools. It also includes protocols and services such as video conferencing and electronic mail etc. ICT is like a plumbing system where information (stored water) information technology (storage tank) reaches the receiver of communication (flowing water) through communication technology (pipe). ICT such as creation, transmission, storage, retrieval and operation of digital forms of useful data and information. Digital technology is used throughout the cycle of information. The various components of technology are

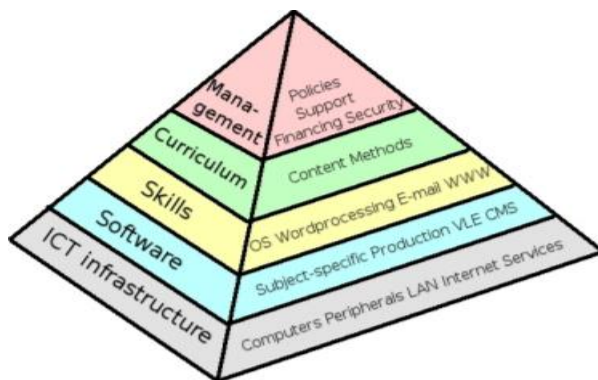
1. Computer Hardware Technology - This includes micro-computers, servers, large mainframe computers as well as input, output and storage devices.
2. Computer Software Technology - This includes the operating system, web browser, database management system (DBMS) server and commercial, commercial software.
3. Telecom and Network Technology - Under this, there are wired or wireless based software, network-security, information encoding (cryptography) etc. to connect to the medium of telecommunications, processors and the Internet.
4. Human Resources – This includes System Administrator, Network Administrator, etc.

ICT And Learning

In this section, the need of ICT in computerization of educational institutes, relationship between different kinds of ICT use in learning, and model for teaching – learning process are accessed. A. Assessment of ICT Need Fig. 2 Pyramid of ICT needs in education (Source: <http://www.htk.tlu.ee>) ICT needs for successful nationwide institutes computerization program can be described as a hierarchy. The first visible part of the pyramid shows the ICT needs in education and corresponding second visible part of the pyramid

hints what are required to fulfill corresponding ICT needs.

- Access to modern and stable ICT infrastructure by all teachers and students.
- Multifunctional, licensed software tools and services for educational use (including Virtual Learning Environments and Content Management Systems).
- ICT skills of students and institute staff.
- Integration of ICT into curriculum that provides valid goals, content and methods for using ICT in institute.
- Management of the ICT innovation on the institute, district, state and national level. The hierarchy of ICT needs shown by the pyramid does not imply that the low-level needs (ICT infrastructure and software) should be completely satisfied before high-level needs could be addressed. Suggested approach is to deal with all levels at once, in the systemic, integrated and coordinated manner.



Pyramid of ICT needs in education
 (Source: <http://www.htk.tlu.ee>)

The importance of information and communication technology

The importance of information and communication technology is as follows-

1. Information and communication technology is the basis of service economy.
2. Information technology is a suitable technique for social and economic development of backward countries.
3. Poverty can be eradicated only by making the poor people informed through ICT.
4. Empowerment leads to information-richness.
5. Information technology, administration brings transparency in government, it helps in reducing corruption.
6. Information technology is used in planning, policy making and decision making.
7. It creates new jobs to decrease the problem of unemployment.

ICT in Higher Education Has great importance. From investment to technologies used to tackle key issues of management, efficiency, pedagogy,

quality, research and innovation has made a profound impact on the entire education process.

ICT in Higher Education The following facilities are obtained by the acquisition of -

1. The quality of studies can be increased in remote locations.
2. Brings more transparency system in higher education institutions strengthens their processes and compliance norms.
3. It is used to analyze social media metrics for student performance, placement, website analytics, and brand audits.
4. Distance learning has been made convenient with course delivery through internet (virtual class room), satellite and other means.

II. DISCUSSION

The use of computer-based learning techniques in teaching has been adopted by India's renowned education systems and institutions. The diversity of words and symbols is the great power of computers which is the center of academic endeavor. In e-learning and distance learning programs, teaching through online education is becoming more interesting and easier. Through the Internet and the World Wide Web, teachers can reach their students and teach them from home. The Internet is one of the highest collections of human knowledge. ICT allows the creation of digital resources such as digital libraries, where students, teachers and practitioners can access research materials and course materials. ICT provides opportunities for easy and transparent control and coordination and monitoring of day-to-day administrative activities of the educational institution. Such information can be found through e-media such as registration / enrollment, course allocation, attendance monitoring, timetable / class schedule, application for admission, checking in admission of students.

ICT. In terms of, an exploratory effort is required. This is the right time to encourage motivation because hopefully ICT with the implementation of, tremendous progress can be achieved in every sphere of life.

Relationship between Different Kinds of ICT Use in Learning

The relationship between different kinds of ICT use in learning is shown in Fig. 3. It shows that ICT skills for IT jobs, derived from a partial subset of those needed for enhanced living and employment opportunities; and ICT skills for enhanced living and employment opportunities is derived from subset of those ICT skills which are needed for learning in all curriculum areas

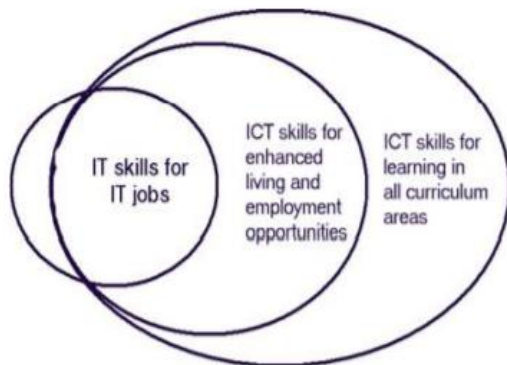


Figure: Relationship between different kinds of ICT use in learning (Source: <http://www.educ.utas.edu.au>)

Role of teacher

Teachers play a central role in the learning process.

There is a change in the role of facilitator of a teacher using ICT. It does not eliminate the need for teachers to serve as leaders in the classroom; The teacher's traditional leadership skills and use are still important (especially for those involved in lesson planning, preparation, and follow-up).

Lesson planning is important when using ICT

It is important to plan lessons using ICT; Research shows that student work is often decentralized where planning is improperly planned and can lead to a decrease in goal attainment.

Providing technology will not change the teaching and learning process

Only the existence of ICT will not change the method of teachers. However, ICTs can help teachers to change their teaching method and achieve greater competence in teaching process. Teachers' pedagogical methods and rationality influence their use of ICT, and the nature of teacher's use of ICT affects student achievement. ICT is seen by teachers as a tool to help create an environment for more 'learner-centered' learning.

In OECD (Organization for Economic Cooperation and Development) countries, research findings assume that the most effective use of ICT is in cases in which teachers, with the help of ICT, have whole-class discussions or personal / Challenges to students. ICT is seen as an important tool for enabling and supporting the move from traditional 'teacher-centered' teaching methods to "learner-centered" methods.

ICT can be used to support change and support / enhance popular educational practices.

ICT can be used by teachers in teaching methods, essentially from the slight enhancement of

traditional methods to teaching methods to making more fundamental changes in their approach to teaching. ICT can be used to reinforce prevailing educational practices as well as the way communication between teachers and students.

The use of ICT tools for information presentation is mixed

The use of ICT as presentation devices (overhead and LCD projectors, televisions, electronic whiteboards, guided "web tours", where students simultaneously view the same resources on a computer screen) is seen as a mixed effect. While it can promote class understanding and discussion about difficult concepts (especially through the performance of simulations), such use of ICT can reinforce traditional pedagogical practices and avoid the topic being discussed, or can divert attention from the equipment being used.

ICT knowledge and teacher's technical capabilities

Preparing teachers to benefit from the use of ICT is more than just technical skills

Technical mastery of a teacher's ICT skills is not a sufficient precondition for successful integration of ICT into teaching. Teachers need intensive and continuous use of ICT to evaluate and select the most appropriate resources. However, the development of appropriate educational methods is considered more important than the technical mastery of ICT. Few teachers have extensive 'expertise' in the use of ICT in their teaching. Even in the most advanced school in OECD countries, very few teachers generally have extensive knowledge of a wide range of ICT tools and resources. The use of ICT to promote 'computer literacy' in OECD countries is seen as less important than the use of ICT as a teaching and learning tool

In the OECD experience, the use of technology in everyday teaching and learning activities appears to be more important than specific instruction "in computer classes". While the development of technology skills is seen as a role in the teaching and learning process, it is more important as an element of providing competence to other teaching and learning methods, and is not as important in itself. Schools that report the highest levels of ICT-related skills and experience are often not among those requiring heavy computer course requirements, but rather those who use ICT solely in the professional development of the teacher and in the teaching and learning process be used on a regular basis.

ICT use by teacher

Teachers generally use ICT most for administrative tasks. Teachers often use ICT for

'routine work' (record keeping, lesson plan development, information presentation, searching for basic information on the Internet). More knowledgeable teachers rely less on "computer support instruction". Teachers more knowledgeable about ICT use tend to use computer assisted instruction less often than other teachers, but use ICT more overall. How teachers use ICT depends on their general teaching style. The types of ICT usage are associated with the teacher's educational philosophy. Teachers who make the most use of ICT - and most effectively - are less likely to use teaching through their traditional 'transmission method'. Teachers who use more types of software tend to have more "creative" teaching.

The introduction and use of ICT to aid teaching and learning is more time-consuming for teachers, both in situations where they are making changes in teaching practices and strategies and while such strategies are used regularly. In short, Teaching with ICT takes longer (estimates vary on how much extra time is required to cover the same material; 10% is a common estimate).

Few teachers remain confident in using a wide range of ICT resources. Fear prevents many teachers from using ICT. In OECD countries, many teachers still have fears about using ICT, so they remain reluctant to use them in their teaching. At least initially, contact with ICT can be an important source of motivation as an enabling tool to promote teacher professional development. Incentive systems should be developed to promote effective teacher involvement in continuing professional development. Teachers need additional motivation and encouragement to participate actively in professional development activities. Incentives can be offered in many ways, including certification, professional advancement, increments, paid vacation for professional development, formal and informal recognition at school and community level and among peers, less isolation and greater productivity.

Accessibility is the most important factor for teachers to use ICT.

The most important factor for continuing the development of ICT skills of the teacher is to regularly use them and facilitate access to relevant ICT tools.

Subject knowledge

Teacher's subject knowledge affects ICT usage. The way ICT is used in lessons by teachers depends on how well teachers hold their subjects and how they can use ICT resources by making them relevant. Understanding of mastery and student's receptive ability on teacher's content makes use of ICT more

effective. Evidence suggests that when teachers - subject knowledge and the way students understand the subject - use their knowledge of both these things, the use of ICT has a more direct impact on student achievement.

Contacting new / additional information through ICT is not enough

Impact on attainment occurs most when students are challenged to think and question their own understanding, rather than being exposed to new and additional information. In case of ICT subject, teacher can assist for self-education. By providing updates and use of additional learning resources, ICTs can enable the teacher to self-learn in his or her subject area.

Teacher professional development

Continuous teacher training and support is critical to the successful use of ICT in education. Teacher training and professional development is seen as the main driver for the successful use of ICT in the field of education. Teacher's professional development is a process, not an event. Conventional, one-time teacher training workshops have not been found to be more effective at making teachers feel comfortable in the use of ICT, at all by integrating them into teaching. Discrete, 'one-time' training programs have been seen to be less effective than continuing professional development activities. Introduction of ICT increases the professional development requirements of teachers.

Effective use of ICT in the field of education increases the need for training and professional development of teachers. However, by providing access to more and better educational content for such increased needs, supporting routine administrative tasks, providing models and simulations of effective learning methods, and providing networks of support to the learner - face to face And distance learning - in both environments - and ICTs can be important tools for real-time or a synchronology

Three phases of teacher's professional development

Models of successful teacher professional development can be divided into three phases

- 1) Focusing on pre-service, pedagogy, subject mastery, management skills and use of various learning tools (including ICT);
- 2) in-service, structured, face-to-face and distance learning opportunities, to expand pre-service training and directly relevant to teacher needs; And
- 3) Continuous formal and informal academic and technical support enabled by ICT for teachers, targeting on daily needs and challenges.

Effective professional development of the teacher should be in line with the model of effective teaching methods. Effective professional development of the teacher should be as consistent with the classroom environment as possible. 'Hands-on' instruction on the use of ICT is essential where ICT is considered an important component of the teaching and learning process. In addition, professional development activities should be consistent with effective methods and behavioral models and should encourage and support collaboration between teachers. Sustainable professional development is seen as a key factor for success by the use of ICT facilities at the school level, especially if they focus on resources and skills directly relevant to the daily needs and practices of teachers.

Training in assessment methods is important

Professional development should include methods of evaluation and modification of educational methods and exposure of various methods of evaluation to the teacher. Effective professional development planning requires adequate planning. Priority assessment must take place in the formulation and participation of teacher's professional development activities, regular monitoring and assessment of these activities, and feedback loops should be established if professional development is to be effective, targeted towards teachers' needs Ho.

Continuous, regular support is important for teachers

Continuous and regular help is necessary to help the teacher's professional development and can be provided through the use of ICT (in the form of web sites, discussion groups, e-mail communities, radio or TV broadcasts). Several types of changes must be made to implement adaptation of ICT use by the teacher

Changes in teaching methods, changes in curriculum and assessment, and giving schools more autonomy help optimize the use of ICT. With sufficient enabling factors, teachers can use ICT as much as 'constructivist' as their educational philosophy allows.

III. CONCLUSION

Current situation shows us that If ICT is to be used effectively by teachers, then teachers should have adequate availability of working computers, and they should be provided with adequate technical support. Adequate time should be given to teachers to develop new skills, to find their uniformity in their existing teaching methods and syllabus, and to plan necessary additional lessons, if ICT is to be used effectively. Support from school administration

and community can be important. The support of school administrators and in some cases the surrounding community is considered important for the use of ICT by the teacher. For this reason, targeted outreach from both groups is often necessary if investment is to be optimized on the cooperation of ICT in education. Communities of practice can be important tools to support teacher professional development

The existence of formal and informal communities of practice and network of peers can be important tools to support ICT in education initiatives and activities. Such support mechanisms can be facilitated through the use of ICT. There is a need to share the lessons learned by introducing ICT in education. Since the introduction of ICT as an aid to education is often part of a major change or reform process, it is important that information on the successful use of ICT is promoted and disseminated.

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