ICT - A Pedagogy in Education Process

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Abstract: *Today's Society is technology motivated and the educational institutions call for new pedagogical ideas. An education process over hauling is needed in all aspects of education like curriculum improvement, teaching learning aspect, assessment and evaluation procedures etc. Information and communication technology (ICT) has become an integral part of nearly all sectors and segments especially linked to the education landscape. ICT plays a crucial role in facilitating teaching learning process and offers uplift of new skills and helps to tackle challenges. In this paper we focus on ICT based teaching and learning methods and mention the benefits it offers in enhancing quality of education.*

Keywords: ICT, pedagogy, teaching - learning process

1. Introduction

Education is considered to be the driving force for economic and social development in any country. Quality enhancement of education is an important parameter in the assessment and accreditation of any institution. Students are significant stakeholders in education and hence their perspective and participation is essential in quality assurance, enhancement and sustenance. Nurturing the students and moulding them into future human resources aids in generating an asset that helps in serving and bringing about social change at the national and global level.

In this context it is necessary and important to find out various means to make good quality education easily accessible and affordable to all, in cost effective and convenient manner. Teaching and learning is a process that includes many variables. These variables interact as learners work toward their goals and incorporate new knowledge, behaviours, and skills that add to their range of learning experiences.

In order to achieve dramatic improvements in critical contemporary measures of performance, Innovation is the fundamental rethinking and radical redesign of any processes. Information and Communication Technologies (ICT) is an emerging field that plays an important role in augmenting the facilities in teaching and learning process. ICT in education is the mode of education that use information and communications technology to support, enhance, and optimise the delivery of information. With the help of ICT which has made many innovations in the field of teaching which brought a revolutionary change from the old paradigm of teaching and learning to technology enhanced teaching. The concept of paperless and penless classroom are emerging as an alternative to the old teaching learning methods.

Some of the main driving forces for improved learning environment are derived from the introduction of new Information and Communication Technology (ICT) tools, which are under intense development. New methods for enhanced communication, collaboration and knowledge transfer, MOOCs (Massive Open Online Courses), Moodle (Modular object oriented dynamic learning environment), Ubiquitous and wearable computing for seamless and everywhere accessibility to computer resources, Creation of use environments with multimodal Human Computer Interaction (HCI), Increased possibilities for lifelong and continuous learning, independent of time and physical space constraints and possibilities to adapt and/or develop new pedagogical and learning methods with respect to learning material, learning modes.

ICT in Teaching Learning Process
Technology has brought in major changes in the way education is imparted. Teaching and learning process has evolved from being a one - sided activity to an active process involving exchange of ideas. Indulgence of various creative tools and techniques has made the process a collaborative initiative. In the era of digitization, technology and knowledge have taken center stage in national and international debates. Be it teaching, learning and assessment, Information and Communication Technology is crafting the role of future education in India. Nowadays the role of Information and Communication Technology (ICT), especially internet in the education sector plays an important role, especially in the process of empowering the technology into the educational activities. Being aware of the significant role of ICT (internet) in our life, especially in the educational activities, education authorities should be wise enough in implementing the strategies to empower ICT in supporting the teaching and learning process in the classroom. ICT is not just the bloom of the educational activities, but also it will be the secondary option to improve the effective and meaningful educational process.

ICT and skill - based learning fosters a conducive environment for participatory learning, thereby increasing the employability of the students. Student engagement ensures that there is consistent improvement in the teaching - learning process. The success of an institution depends on how it manages to meet the growing demands of its student stakeholders by providing them an environment that caters to holistic development of a student and contribute to nation building. ICT has become a popular tool for imparting knowledge, and teachers have to be well prepared to design attractive interactive modules to increase the learning quotient of the student. ICT is touted as following a top - down approach from the teacher to the student at the receiving end. Teaching and learning are no longer treated as separate functions, but they are actually different roles

played by both the teacher and the student as sometimes the teacher becomes a student to know whether the tool used conveys the much-needed information and the student is able to understand the concept easily. Hence, the teacher through effective ICT tools can show the student how creativity, logistics, technical skills, organizing and collaborating skills can become great means of applying his/her knowledge. For quality sustenance, it is imperative that the teachers/mentors also upgrade their knowledge in terms of recent advances in their relevant field and modern teaching methodology (ICT based).

We need to move ahead of marks and grades and see to what extent ICT based knowledge can be imparted within the classroom education which makes a lasting impact on the student and how the student is able to think critically, analyze and apply the knowledge gained during placement.

E – Learning: There is a methodical shift from class room to virtual teaching. The integration of e - learning into education pedagogy has occurred against a backdrop that includes the development of a integrated e - learning strategy and an increased focus on setting priorities for e - learning research. This includes an e - learning and pedagogy strand with a focus on both designing for and understanding learning, including consideration of learner participation in, and experience of, e - learning. Advantages of e - learning in education, obtained from review of literature includes 1. Student has the flexibility of choosing the place and time that suits them.2. Improves the efficiency of knowledge and qualifications via ease of access to a large amount of Data.3. It provides opportunities for learners by the use of discussion forums, eliminates barriers, provides better communication and also improves the relationships that sustain learning.4. It is cost effective in the sense that there is no need for the students or learners to travel. It is also cost effective as it offers opportunities for learning for maximum number of learners with no need for many buildings.5. Helps to compensate academic staff, as well as facilitators, lab technicians etc.6. Permits each student to study at his or her own pace and speed whether slow or quick. It therefore increases satisfaction and decreases stress.
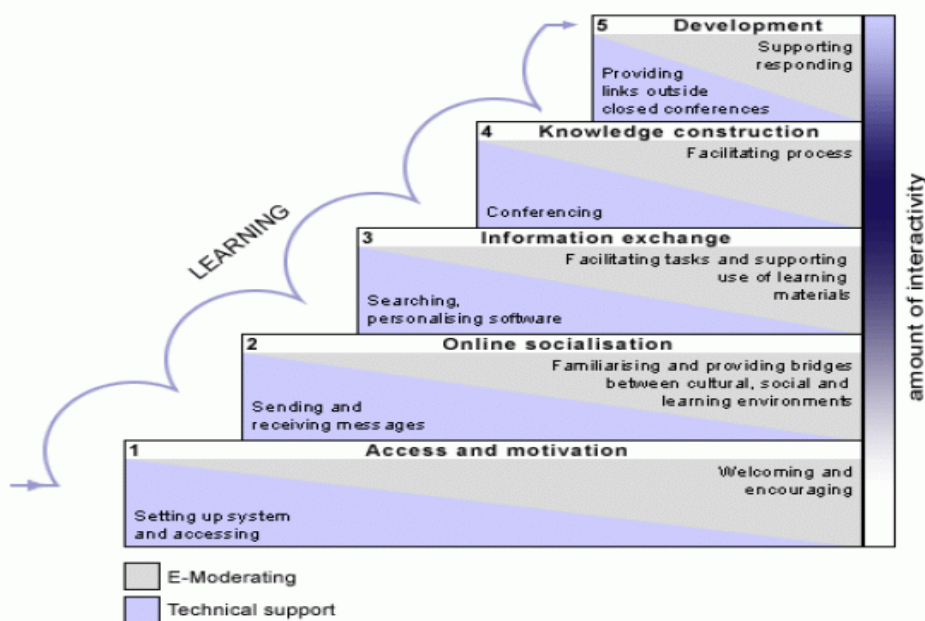
The objective of Information and Communication Technology (ICT) is also to maintain a sustainable system that reduce paper work and makes the information available for ever. It also minimizes the utilization of natural resources for the future of the beings on the earth. The information technology is only the way to reduce the utilization of paper resources, recycling of waste and increase the life of forests, plants and nature. There are some tools available in ICT to minimize or stop using paper resources for transaction processing and authentication of the resource user.

Flipped Classroom: The Flipped Classroom is a notion which inverts the traditional classroom environments, concentrating on students teaching themselves over the conceptual knowledge by taking part in active learning. Instead of teachers teaching for hours together in classes and merely delivering the information, the instructional contents are delivered, often online, to the students before delivering the lecture and the classroom is used for diving deeper into the curriculum facilitating the knowledge they have using experiments, projects, and peer - to - peer interactions.

Flipped vs Traditional	
Flipped	*Traditional*
Teacher instructs lesson at home (video/podcast/website/book)	Teacher Instructs
	Students take Notes
Students work in class	Students follow guided instruction
Deeper understanding of concepts and applications	Teacher gives assessment
	Students have homework

2. Advantages

Integration of ICT in education can vastly improve the quality, efficiency and effectiveness of education at all levels. ICT in education facilitates increased access, flexibility of content and delivery, improve the transparency and responsiveness, provide quick guidance, more interactive, explorative, simple, clear and easy to understand, higher quality of education and new ways of interaction.

It provides an easy approach to learn latest and multiple technologies delivered by teachers, create greater enthusiasm and interest for learning, provide latest and new sources of information and knowledge, prepare students to face the real world challenges, provide the learners with open online educational portals where they can learn and also evaluate their knowledge.

3. Challenges

There are many challenges in using ICT for teaching and learning process. The most important factors impeding the access to ICT are lack of infrastructure, poverty, lack of computer literacy and language barriers.

ICT is dependent on many social factors including education, geographic location, mobility and social class. Availability of infrastructure, electricity and transport may also influence the use of ICT.

Using ICT requires training, education and affordable access to the technology. Access to and use of Internet has important economic, educational and social benefits.

4. Conclusions

Teaching and learning methods should be student centric with ICT based methods and continuous co - curricular activities such as seminars, guest lectures, and competitions using ICT are among some quality enhancement drives.

Involving the student community in such ICT based teaching - learning process and curriculum designing will make the students more mature, sharpen their skills in analyzing and planning, confident in facing interviews, prepare them for further research and industrial requirements and would help in overall personality development.

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