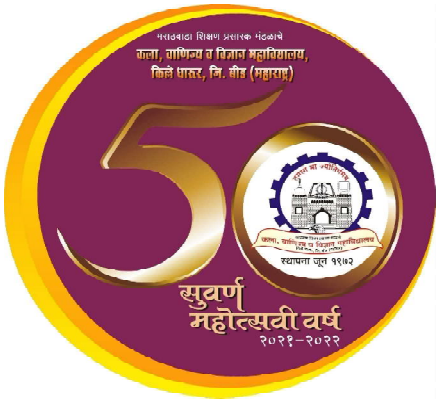
Impact of ICT in Teaching, Learning and Evaluation Process



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EDITORIAL'S

It gives us an immense pleasure to welcome you all, being a part of our E-book entitled "Impact of ICT in Teaching, Learning and Evaluation Process". The main motto behind publication of this E-book is to provide awareness of ICT and its implementation in teaching, learning and evaluation process. ICT based learning is the present protocol worldwide. Information and Communication Technology (ICT) plays vital role in enhancing education process through the various ICT tools. Last two years we have facing tremendous problems for teaching, seeking knowledge and evaluating both teachers 'and students due to COVID-19 pandemic. Our main vision in publishing this E-book for knowing ICT based technology, new methods and their services; which will inspire all the academic stakeholders to promote education in lucid manner. This book will definitely be a best substitute for offline teaching in a very promising tool.

We express a deep sense of gratitude towards all authors for contributing their original research work in this book chapter. We further look forward for such innovative educational awareness in future.

Thank you!

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Role of ICT and Its Impact in Higher Education

K. D. Savant

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Abstract:

Technology changes rapidly and newer, more cost-effective and more powerful technologies will continue to emerge of potential use in education. Theapplications of various ICTs that are the most important determinants of the effectiveness of its tools in education, the choices of tools are quite varied and each has its own advantages and disadvantages. There is a list of reasons which demonstrate how ICT can enhance teaching and learning in the 21st century. However, some of the main ones include: student motivation, student attainment levels, student engagement in subject learningand least time consuming evaluation.The impact of ICT for teaching and learning process has become pertinent as it facilitates teaching and learning process, create conducive learning environment, and help learners develop creative thinking andself-confidence. This paper focuses on the use of ICT in higher education by students and teachers to support theprocesses of learning and teaching. It describes the ways in which teachers could and/or should facilitatestudent use of computer systems, information and

communicationtechnology and how they can progress. This paper thus suggests thateffective introduction of ICT in the teaching and learning process and to analyse whether technology improves learning and students achievements.

Introduction:

Society expects more and more of higher education each year. This stems partly from the continuing expansion of knowledge, and therefore of what must be included in courses and curricula, and partly from growing cognitive challenges and diversity. Progress, convergence, and integration in information technology have driven fundamental change in the information technology faculty, students, colleges, and universities have or might be expected to acquire. A diverse set of ICT tools is being used in colleges to communicate, create, disseminate, store, and manage information. In some contexts, ICT has also become integral to the teaching-learning interaction, through such approaches as replacing chalkboards with interactive digital whiteboards, using students' own smartphones or other devices for learning during class time, and the "flipped classroom" model where students watch lectures at home on the computer and use classroom time for more interactive exercises. When teachers are digitally literate and trained to use ICT, these approaches can lead to higher order thinking skills, provide creative and individualized options for students to express their understandings, and leave students better prepared to deal with on-going technological change in society and the workplace. Integrating ICT in teaching and learning is high on the educational reform agenda. Often ICT is seen as indispensable tool to fully participate in the knowledge society. ICTs need to be seen as "an essential aspect of teaching's cultural toolkit in the twenty-first century, affording new and transformative models of development that extend the nature and reach of teacher learning wherever it takes place".The

Information and Communication Technology (ICT) provides a broad perspective on the nature of technology, how to use and apply a variety of technologies, and the impact of ICT on self and society. Technology is about the ways things are done; the processes, tools and techniques that alter human activity. ICT is about the new ways in which people can communicate, inquire, make decisions and solve problems.

Teaching Learning, computers and ICT tools

Colleges and educational systems must provide the infrastructure and support for students and teachers, and the maintenance of constructive learning environment in which ICT is used. At the same time ICT tools will assist colleges and educational systems in carrying this out. Research has consistently shown that few colleges and teachers implement ICT support to a degree where the potential benefits are likely to be realized. There area number of significant problems which impede and prevent teachers from achieving the full advantage offeredby ICT applications. Cradler (2002) gave seven requirements for effective use of ICT in education: 1. Suiting technology to education goals and standards.2. Having a vision for the use of technology to support curriculum.3. Providing for both in-service and pre-service training.4.Ensure access to appropriate technology5.Provide for administrative support for technology use6. Providing time for teachers to plan and learn how to integrate technology7. Providing for on-going technique support for technology use.

Broadly speaking, computer literacy is a component of technology education, which is distinct fromusing technologies such as computer systems to support learning and teaching processes. The latter is generallyreferred to as educational technology; and is applied to a wide range of technologies such as black boards andchalk, pencils, books, and slide-rules to television, facsimiles and computers. This paper will focus on the use ofcomputer systems as educational technologies

Availability of resources for ICT enabled teaching:

The relative lack of good quality software and associated courseware is well documentedand is being attended to by software producers and educators throughout the world. The problems associatedwith hardware were mainly a lack of it however there is still a major problem with the appropriateness of thehardware used. The use of inappropriate hardware, the lack of useful software and the difficulty in gainingadequate access to computer system were noted as major obstacles to the use of ICT by teachers and students. Considering the total cost-benefit equation, supplying and maintaining the requisite infrastructure, and ensuring investments are matched with teacher/ students support and other policies aimed at effective ICT use.

One laptop per student:

Less expensive laptops have been designed for use in college on a 1:1 basis with features like lower power consumption, a low cost operating system, and special re-programming and mesh network functions. Despite efforts to reduce costs, however, providing one laptop per child may be too costly for some developing countries

Tablets / Cell phone (Mobiles):

Tablets are small personal computers with a touch screen, allowing input without a keyboard or mouse. Inexpensive learning software ("apps") can be downloaded onto tablets, making them a versatile tool for learning. The most effective apps develop higher order thinking skills and provide creative and individualized options for students to express their understandings.

Interactive White Boards or Smart Boards:

Interactive white boards allow projected computer images to be displayed, manipulated, dragged, clicked, or copied. Simultaneously, handwritten notes can be taken on the board and saved for later use. Interactive white boards

are associated with whole-class instruction rather than student-centred activities. Student engagement is generally higher when ICT is available for student use throughout the classroom.

E-readers:

E-readers are electronic devices that can hold hundreds of books in digital form, and they are increasingly utilized in the delivery of reading material. Students—both skilled readers and reluctant readers—have had positive responses to the use of e-readers for independent reading. Features of e-readers that can contribute to positive use include their portability and long battery life, response to text, and the ability to define unknown words. Additionally, many classic book titles are available for free in e-book form.

Flipped Classrooms:

The flipped classroom model, involving lecture and practice at home via computer-guided instruction and interactive learning activities in class, can allow for an expanded curriculum. There is little investigation on the student learning outcomes of flipped classrooms. Student perceptions about flipped classrooms are mixed, but generally positive, as they prefer the cooperative learning activities in class over lecture.

SWAYAM:

SWAYAM MOOCs platform is World's Largest Online Free E-Learning Platform Portal designed to achieve the three cardinal principles of Education Policy viz., Access, Equity and Quality by covering College /Vocational, Under-Graduate, Post Graduate, Engineering and Other Professional Courses. SWAYAM operates MOOCs learning resources in different ways and structure. Learning in SWAYAM has four parts/quadrants: e-Tutorial, e-Content, discussion forums, assessment (Samanta, Anuva 2018).

The first quadrant is direct teaching means not much

of extra work by students, it could include teaching video, animation, PowerPoint presentation, Podcast and so on. All these depend on what the subject is and what the strategy adopted by the teacher to teach the students. The second quadrant is an e-content which could include e-books, illustrations, Case studies, Open source content, Reference link, further reading sources and so on. The third quadrant is about clearing student's queries. Discussion forum is a part of it means students can interact with other students and faculty to clarify their doubts. The discussion forum is like a doubt counter where any student or faculty can answer the question of a student.[7] SWAYAM is an Indian government programme providing educational opportunities for a vast number of university and college learners(Kumar and Mahendraprabu 2021).The fourth quadrant is self-assessment to check what a student have studied and whether he/she is eligible to get certificate. It could be tests in the form of Multiple Choice Questions (MCQs), or quiz or s hort answer questions, long answer questions, etc. The fourth quadrant also has Frequently Asked Question (FAQs) and their answers to clarify common misconceptions among students.University Grand Commission considers that universities should play a key role in disseminating and popularized SWAYAM courses among their learners and the university, enabling them to gain from Massive Open Online Courses on a more extensive and broader footing.

Networking

The networking of educational technology resources benefits students, teachers and college s byfacilitating information technology learning activities giving ready access to software, allowing a variety ofcommunications, reducing costs of equipment, increasing processing power and facilitating the management ofstudent learning (Cradler and Bridgforth, 2002). It helps to put down the barriers between

information held onseveral (not only computer) systems, thus creating a borderless communication and information environment byallowing users to access remote programmes and remote database either of the same institution or from anotherinstitution with ease. Three categories of network scenario should be considered in the use ofcomputer networks in college s i.e. Intra-college networks, Inter-college networks and External networks (internet)

Impactof ICT on the learning environment:

1. Investigating reality and building knowledge:

ICT allows students to investigate more thoroughly the real world. They can more readily accessinformation sources outside the classroom and can use tools to analyse and interpret such information.Information may be accessed through online systems or through data logging systems. It also makes it easier forindividuals to interact and gain expert knowledge with a very short time, thus making the acquisition ofknowledge to take place easily within a very short period of time.

2. Active learning and authentic assessment:

ICTs potentially offer increased possibilities for codification of knowledge about teaching and forinnovation in teaching activities through being able to deliver learning and cognitive activities anywhere at anytime. In many classroom situations it is difficult to allow students to besufficiently active as participants. Typically students are often passive, spending a lot of time listening orreading. It is well known that students are more likely to be interested and attentive and will achieve a widerrange of learning outcomes if they can be active. Their engagement with the curriculum will increase as they areafforded opportunities to create their own information and represent their own ideas. Expert system can be usedto provide students with learning experiences where they are interacting directly with the computer system, andare not just passive but active participants in the learning

process, thus increasing the quality of education (Salekhovaet.al. 2013).

3. Engage students by motivation and challenge:

The interactive and multimedia nature of modern ICT tools has provided the opportunity forsoftware developers to create increasingly more stimulating features. Computer system does provide theopportunity to create a wide range of interesting learning experiences as it makes learning, participatory and asocial process supporting personal life goals and needs. This is likely to help tomaintain student interest and interest a wide range of students (Cradler &Bridgforth, 2002). The interactive andmultimedia features within software can be used to help students grapple with concepts and ideas.Provide tools to increase student productivity. In the past students have spent a lot of time doing repetitive, low-level tasks particularly involvingwriting, drawing and computation. While it may be necessary for students to developing these skills at sometimes on most occasions they are pre-requisite to some higher level task. Unnecessary repetition of low-leveltasks is inefficient, non-motivational and may obscure the real purpose of the learning activity. Many computerapplications provide the tools to support students in quickly completing these lower-level tasks so that they canfocus on the main purpose of the activity. Word processors, graphics packages, database packages, spreadsheetsand other software support the performance of students. ICT has transformed teaching and learning processesfrom being highly teacher-dominated to student-centred, and that this transformation will result in increasedlearning gains for students, creating and allowing for opportunities for learners to develop their creativity,problem-solving abilities, informational reasoning skills, communication skills, and other higher-order thinkingskills (Bhaurao,2015).

4. Provide scaffolding to support higher level thinking:

There is an increasing range of software tools which can be used to support the development of higherthinking skills such as application, analysis and synthesis Tools can be used to analyze data, present data, link data or information, present informationin different formats, simulate environments and conditions and support interactive communications. This allowsteachers to consider providing a range of activities to assist students to become critical thinkers, designers andproblem solvers.

5.Increasing learner independence:

Computer systems are increasingly being used to provide learning experiences when and where theyare needed. This provides students with greater independence not only in terms of when and where they learnbut also what they learn (Cradler and Bridgforth, 2002).

6. Collaborative and co-operative learning:

The use of ICT leads to more co-operation among learners within and beyond college andmoreinteractive relationship between students and teachers.

7. Overcome physical disabilities:

The variety of input and output devices available provides the opportunity for students who arephysically handicapped to be involved in the same learning activities as other students. For some studentscomputers provide the only environment which they can manipulate and the only tools that reduce their level ofdisability. Modified keyboards and mouse-drivers may be used to allow extremely handicapped students to useregular software packages. For students who are not able to take notes during the course of the class, the systemstores in a database lessons already taken for further studies and provides a more user friendly environment forblind students through audio interpretation of the course (Bingimlas, 2009), thus enhancing their learning

8. Student learning:

There are many potential uses for different ICT tools in the learning process. In some situations changes inrelevant industries makes computer use in colleges imperative. For example, to provide courses in music,technical drawing, statistics, and business which do not incorporate computer use reduces the relevancy of thecourses to the real world. Here the rationale cries out from the work place but needs to be responded to withcareful impact of ICT on learning and teaching

Conclusion:

The study attempts to explain the impact of ICT on learning and teaching, with an aim of enhancing student learning and achievements. The question asked by the researcher is whether technology improves learning and students achievements. It has been found that ICT does not increase learning over and above traditional methods. The more appropriate question should be:- How can the Educational technology together with Technology Education be implemented in the learning environment to facilitate learning and teaching process. When Educational Technology is integrated into classroom, students are able to access more information faster and in an efficient manner. In the absence of these fundamental changes to the teaching and learning process such classrooms may do little but to accelerate the ineffective processes and methods of teaching. The impact of ICT on learning process therefore excites and engages learner's interests. Today, everything that is required for reading, looking up, studying, training, revising, constructing, arranging and informing, saving and reminding, browsing or navigating is available at the click of a mouse. Hence it is necessary for the colleges to jump onto the Technology bandwagon so as to become part of information super-highway and make it possible for their learners to have access to the world's knowledge .

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