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ICT: An Important Tool to Analyze Effectiveness of Teaching, Learning and Evaluation

Shalini T. Dengle
Assistant Professor, Dept. of Chemistry, Vivekanand Arts, Sardar Dalip Singh Commerce & Science College, Aurangabad, M.S., India.

Siddharth K.Undirwade
Professor, Department of Mechanical Engineering, P.E.S.College of Engineering Aurangabad, M.S., India,

Ayesha N.Durrani,
Associate Professor, Dept. of Chemistry, Dr.Rafik Zakeria collegefor women, Navkhanda, Aurangabad, M.S., India

Milind N. Gaikwad
Assistant Professor,Dept. of Chemistry, Arts, Commerce & Science College, KilleDharur, Dist. Beed, M.S., India.

Abstract:

This paper presents the study of the role of ICT in education and its effective parameters. It highlights the need, importance and effectiveness of the ICT in the educational parameters like teaching, learning and evaluation. The basic

purpose of this study is to present the impact of ICT on teaching,learning and assessment. The amount of ICT used by students and their attainment levels have been investigated in many research studies. Some studies have used national test results as the measurement; whereas other studies have used the observed improvement in students' learning outcomes. However, a systematic study is done in this work to represent the effectiveness of ICT in the teaching, learning and assessment.

Keywords:ICT, Teaching Learning, Assessment, Evaluation, Technology, Pedagogy.

1. Introduction:

The term ICT simplified means any technology that has to do with information and communication.Today information and communication technologies are the one thing and so the repertoire of technologies expands further to encompass computers and computer-related products, email, MMS, and other forms of communication [1].

Information and Communications Technology (ICT) is technology that is used to handle communications processes such as telecommunications, broadcast media, intelligent building management systems, audiovisual processing and transmission systems, and network-based control and monitoring functions.ICT is often used to describe the convergence of several technologies, and the use of common transmission lines carrying very diverse data and communication types and formats.In a very simplified sense, ICT is used to elaborate about all of the technologies that facilitate communications.

The effective use of Technology is helping andupgrading the Teaching- learning process.It helps to promote knowledge and skill of the learnersthereby encouraging and improving creativity, critical thinking and learning how to learn.Educationalactivities through ICT are

providing scope to acquire wider knowledge. Use of ICT will empower the individuals, the institution and the university [2].

2. Importance of ICT in Education:

In today's society, people as consumers of ICT, all strive for the one dream ie the dream of a connected life.This makes ICT a lifestyle choice for much of the population. In addition, this lifestyle choice is changing the way we communicate, increasing the rate of consumerism, and changing how we interact and gather information.

ICT has invaded and transformed many aspects of our lives to the extent that we live in an environment that is dominated by technology which itself is consumer-driven [3]. No matter how we perceive its presence, there is no denying that it is an important part of our lives and that it is here to stay.

2.1 ICT Integrated Teaching –Learning Process Uses:

The use of ICT in the classroom teaching-learning is very important for it provides opportunities forteachers and students to operate, store, manipulate, and retrieve information, encourage independentand active learning, and self-responsibility for learning such as distance learning, motivate teachers and students.There is a growing interest in online classroom settings in Higher education to provide learningopportunities for the teacher and the learner.Bystating the role of ICT in educational domain and to provide an integrating and blending programs forteacher and learner could increase the potential of an Individual. The capabilities of an individual inspecific fields can be increased. The table 1 shows the significance of ICT enabled teaching [2].

Table 1: Significance of ICT enabled teaching

ICT head	Particulars/significances
What is ICT based teaching ?	Information and Communication Technology (ICT) in education is the mode of education that use information and communications technologyto support, enhance, and optimize the delivery of information. Worldwide research has shown that ICT can lead to an improved student learning and better teaching methods.
What is the role of a teacher in ICT?	ICT plays an important role in student evaluation. ICT is store house of educational institution because all educational information can safely store through ICT. It helps Teacher to communicate properly with their students. ICT helps Teacher to design educational environment.
Can ICT replace teachers?	ICT cannot replace a teacher. It will facilitate the teacher in virtual classroom. By integrating ICT in teaching learning process lot of extra inputs can be given to the learner. For teacher it is a learning experience. ICT will enhance the learners learning.
What is the key benefit of ICT based education?	ICT-based Education is about using computers and technology as tools to enrich learning in various subjects such as English, Science andMathematics. Key Benefits of ICT-based Education: PromotesLearning by doing approach. Enables self-paced learning.
How does ICT helps in education.	ICTs can enhance the quality of education by increasing learner motivation by facilitating the acquisition of basic skills by enhancingteacher training. ICTs are transformational tools which, when used appropriately can change the learning Creates a learner-centred environment.
Why ICT skills for teacher?	ICT skills for graduate teachers: self-directed learning. The effective integration of ICT in the school and classroom can both transformpedagogy and empower students. It is important that teachers are able to successfully weave technology into learning projects.

2.2 Infrastructural development:

This concerns with growth in technology against education system. Online education has become one of the essentials of today's education system, the necessity to bepresent in a classroom to learn is no longer an issue. Educators, tutors or other education professionals who are willing to teach through the Internet need to have the appropriate amenities, infrastructure and software to create virtual classroom for an immersive learning experience. Education system is recorded as a dynamic system which

happens to be changing with time and growthin technology. It responds to the demands of the public, by adopting the technological advancements.The various classes of ICT products such as teleconferencing, email, audio conferencing, televisionlessons, radio broadcasts, interactive radio counselling, interactive voice response systemaudiocassettes and CD ROMs etc. are being used as a medium for teaching. This assimilation oftechnology leads to a new mode of education. This growth in technology against education system is shownin figure 1 below [2].

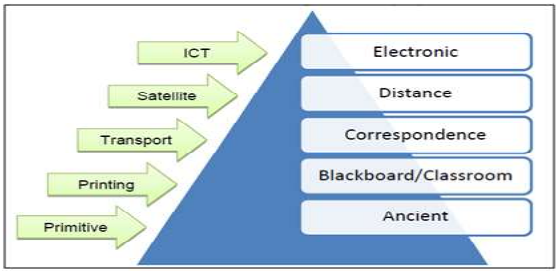

Figure1: Growth in technology against education system

2.3 Importance of Students Engaging with ICT:

It is important for students to engage with ICT so that:

· Learn 21st-century skills and develop their ICT capability and ICT literacy.

· Improves their attainment levels.

· Prepares them for an integrated society dominated by ICT developments.

· So that they learn the notion of using ICT as a tool for lifelong learning.

3. Teaching and Learning with ICT Tools from Teachers' Perceptions:

When teachers are presented with a new technology, the two key factors would influence their decision from the extended variables around them about how and when they will use it:

External Variables –

It represents the challenges that teachers face that come from outside theirsphere of control when integrating a new technology in their teaching and learning process. Thesechallenges include:Limited accessibility and network connection, Schools with limited ICT facilities, Lack of effective training, Limited time, Lack of teachers' competency.

Perceived Usefulness –

It represents the degree to which they believe that using a particulartechnology would enhance their job performance.The factors as key elements to teachers' perceived usefulness of ICT tools are: Work more quickly, Job performance, Increased productivity, Effectiveness, Usefulness.

Perceived ease of use (PEOU) –

It represents the degree to which they believe that using a particular system would be free from effort.The Impact project and other studies identified a wide range of skills and competencies which teachers felt they needed in order to find ICT easy to use. Some of these are: Easy to learn, Clear and understandable, Easy to use, Controllable, Easy to remember. Some other important key factors are: Teachers' attitude toward use, Behavioral intention, Social influence processes like job relevance, output quality, result demonstrability, and perceived ease of use, subjective norm, voluntariness, and image etc. [4]

4. Benefits of Using ICT in Education:

Information and Communication Technology (ICT) includes computers, the Internet, and electronic delivery systems such as radios, televisions, and projectors among others, and is widely used in today's education field.ICT tends to expand access to education. Through ICT, learning can occur anytime andanywhere.The use of ICT has beenfound to:

· Assist students in accessing digital information efficiently and effectively

- Support student-centered and self-directed learning
- Produce a creative learning environment
- Promote collaborative learning in a distance-learning environment
- Offer more opportunities to develop critical (higher-order) thinking skills
- Improve teaching and learning quality
- Support teaching by facilitating access to course content Based on ICT, learning and teaching no longer depend exclusivelyon printed materials. Multiple resources are abundant on the Internet, and knowledge can beacquired through video clips, audio sounds, visual presentation and so on [5].

The major emphasis of ICT infusion in pedagogy is such that it tends to improve learning, motivate and engage learners, promote collaboration, foster enquiry and exploration, and create a new learner centered learning culture. Since ICT provides greater opportunity for both teachers and students to adjust learning and teaching to individual needs, therefore, it is necessary to enhance the integration of ICT concept and application in School education [6].

5. Different Strategies for applying ICT in Teacher Education

Teaching occupies an honorable position in the society. ICT helps the teacher to update the new knowledge, skills to use the new digital tools and resources. By using and acquire the knowledge of ICT, student teacher will become effective teachers. ICT is one of the major factors for producing the rapid changes in our society. It can change the nature of education and roles of students and teacher in teaching learning process. Teachers' strategy for applying ICT in education includes:

- Providing adequate infrastructure and technical support.
- Applying ICT in all subjects.

· Applying new Pre-service Teacher Education curriculum.

· By using application software, using multimedia, Internet e-mail, communities, understanding system software. Teachers in India now started using technology in the class room. Laptops, LCD projector, Desktop, EDUCOM, Smart classes, Memory sticks are becoming the common media for teacher education institutions.So use of Information & Communication Technology (ICT) in Teacher Education in 21st Century is of prime importance because teachers can create a bright future for studentsand society [7].

6. ICT in Assessment or Evaluation:

The use of ICT in assessment is now common where it utilizes digital devices which help in construction of assessment tasks for students. It helps in delivery of assessment tasks. Not only construction or delivery, the ICT has the ability to give grades or feedback to students. It is essential for schools to encourage themselves to strengthen their commitment to developing a better assessment practice which can support teachers, students and other stakeholders.There are various kinds of tasks which are not suitable for the computer to evaluate them but most of the time the technology becomes a powerful tool in carrying out the tasks which are very much tough for a common human being to evaluate in a little spam of time. Some methods are briefed below:

6.1 Computer Assisted Assessment (CAA):

Computer-assisted assessment is used to assess learning and performance of the students. It includes all types of assessments whether formative or summative assessment and which is then conveyed with the assistance of these modern technologies. Delivery of the assessment is made online as well as offline. Examples of computer assisted assessment are the OMR that is used to grade MCQs and

various other database programs that help in recording student marks.

6.2 Computer Adaptive Testing (CAT):

In the recent development in technology is the use of computer adaptive testing which enhances the testing process to a great extent.While a student is subjected to answer questions, the technology is capable of adjusting the level of the difficulty. The technology accesses how a student is answering the questions and how much mistakes the student is making. Based on that concept the technology will adjust the other questions accordingly. The technology is capable of putting questions from previous learned content as well. As the technology is increasing its area, it became as the easiest method to use it in the educational contexts.

6.3 E-Portfolio:

Electronic portfolio is a process of gathering of e - evidence collected and maintained by a person on the web. Such kind of e-evidence include written text, files, multimedia, images and hyperlinks. The E-portfolios is basically useful for assessing the abilities of the person. The person maintaining these kinds of portfolios online is having an eye on his strengths and weaknesses. An e-portfolio works as a learning record for the person where his achievements can be analyzed by the person himself or another person. These kinds of records are related to learning of a person to a great extent.

6.4 Digital Rubrics:

A rubric is basically a criterion which is set for the work of the students. The rubrics has included descriptions in the subjective manner about the performance of the students. Rubrics is mainly used to have a look at the key constituents of an assignment. Rubrics assume the expectation from students before the start of the learning activity. They make students aware of the thing that learning is to make integrated with the necessary skills. The way of assessment in rubrics

follows the formative type of assessment as student is able to know the weakness in any area where he/she needs to improve.

6.5 Online Assessment:

Online assessment is usually followed when any instructor needs any information pertaining to some content. The assessment is made online where an instructor sets some sort of a questionnaire to get it filled from the opponent. With the help of the emerging technology, it is easy for instructors to design an online test and get the response of that test via web. There are a lot of agencies working under this platform. Some of them are free while most are paid.

6.6 Survey Tools:

There are many online survey tools like survey monkey, poll daddy or lime survey. These kinds of tools can be used to collect feedback from students regarding any matter. In some situations, where we are creating a survey of bipolar set of opinions, this kind of web-based tools can be used.

6.7 Wikis:

A wiki is a website that allows users to collaboratively edit and create content. A very good example of a wiki is Wikipedia, a collaboratively created online encyclopedia. The Wikis are becoming very much popular now a day. Because it facilitates collaboration among learners. The contribution made in wiki by the learners can be assessed by the teachers as well. Therefore, it can be very much helpful while using it as a tool for accessing peers [8].

7. Discussion and Conclusions:

This study highlights that the presence of ICT in education allows for new ways of learning for students and teachers. E-learning or online learning is becoming increasingly popular and with various unprecedented events taking place in our lives. ICT brings inclusion, it promotes higher-order thinking skills, enhances subject learning. Use

of ICT develops ICT literacy and ICT Capability, encourages collaboration, motivates learning and also allows for effective differentiation instruction with technology. ICT in education improves engagement and knowledge retention. ICT integration is a key part of the national curriculum.

The discussions of this paper suggest that ICT based technology can be bitterly used for assessment of the students in classroom situations.The teachers can be empowered by providing them assess to the e-portfolio and project with the help of a rubric that is capable of assessing not only the process and product, but also the use of technology by students.The major emphasis of ICT infusion in pedagogy is such that it tends to improve learning, motivate and engage learners, promote collaboration, foster enquiry and exploration, and create a new learner centered learning culture.ICT is one of the major factors for producing the rapid changes in our society. It can change the nature of education and roles of students and teacher in teaching learning process. The study examines the challenges of using ICT tools in teaching and learning in the classroom among school teachers and recognizes the effectiveness of the extent of ICT tools in supporting classroom teaching and learning.

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