

IMPACT OF ICT TOOLS ON TEACHING-LEARNING PROCESS

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Abstract

Human beings are social animals and they cannot live without communication. Further, every life on the Earth communicates with each other. There are several ways of communication such as oral and written communication, verbal and non-verbal communication, vertical and horizontal communication, direct or indirect communication, active and passive communication etc. In education, communication plays a vital role. There are many tools used in the education process such as the media of communication as teaching aids, ICT tools, blackboard and chalk etc. now-a-day ICT tools are used at a huge level in the teaching-learning process. Specially, after covid-19, it becomes part and partial of the teaching-learning process. The use of technology helps to improve teaching and learning processes and practices. The current work aims to identify the impact of ICT tools in the teaching –learning process.

Keywords: Education, ICT, Teaching aids, Teachers, Professional development.

INTRODUCTION

Robinson et.al rightly defined education technology as “Educational technology commonly abbreviated as edutech, or edtech) is the combined use of computer hardware, software, and educational theory and practice to facilitate learning.¹”

In order to make the right use of information and communication technologies (ICT) in the education field, it is of utmost importance to choose the appropriate technical equipment in the teaching-learning process. This work provides information on the various technologies that can be used to obtain information and discusses the difficulties that may arise while using these techniques.

The mere existence of ICT will not change the way of teaching. On the contrary, given the right environment, ICT can help teachers change their teaching methods. Teachers' pedagogic experiences and rationales can affect their use of ICT, and the teacher's way of using ICT can affect student achievement.

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ICT is seen as a tool to help teachers which will help to create a learner-centered environment. The most effective use of ICT occurs when teachers use ICT to challenge students' understanding and thinking processes. ICT is an important tool for moving from traditional teacher-centered teaching methods to more student-centered methods. ICT can be used to support/extend existing teaching methods and support changes in them. Hence, it is very important to know what is meant by ICT.

ICT: ICT stands for information and communication technology. It is used as educational technology which is stated by Richey, R.C. (2008) as, “The Association for Educational Communications and Technology (AECT) has defined educational technology as “the study and ethical practice of facilitating learning and improving performance by creating, using and managing appropriate technological processes and resources².” It is the electrical equipment used to project, store, produce, display, or exchange information as the media of communication. These include radio, television, video, DVD, telephone, mobile phone, satellite-based services and facilities, computers and related hardware and software which are shown in the Figure 1.

Figure 1.

ICT Tools



Apart from the above given ICT tools in the image number 1.1, it also includes techniques such as video conferencing, email, blogs etc. Kolpachikova et al. viewed their approach about ICT tools as, “Computers and tablets enable learners and educators to access websites as well as applications. Many mobile devices support m-learning.³” The use of ICT as a medium of presentation (via overhead and LCD projectors, television sets, electronic whiteboards, guided web-tours - where

many students can view the same information simultaneously on a computer screen - etc.) has been found to be effective in combination - thus helping to understand and build on difficult concepts. Discussions can be encouraged in the classroom (especially using simulations, i.e. virtual images) but such use of ICT can revive old traditional methods of pedagogy and divert attention from the original point of discussion to the tool being used.

Let's take examples of Radio & Television as ICT tools. Since the beginning of the 20th century, radio and television have been used for education. Radio and television are mainly used in the following ways: These patterns of ICT are mainly used in three ways:

- a. Teaching in classrooms with the help of sound videos related to school subjects and programs broadcast on the radio.
- b. To launch programs that complement education in schools.
- c. To show or disseminate general knowledge and informative educational programs.

In order to understand educational goals in the current 'information age', it is necessary to incorporate new forms of information and communication technologies (ICT) into education. To do all this effectively, educational planners, principals, teachers and technicians must be able to make many decisions in various fields such as training, technology, finance, education, communication, etc. For many, this task seems to be as difficult as learning and learning to teach a new language. ICT includes everything from satellites connecting countries to the devices that students use in classrooms. The aim is to make it easier for academicians, ethicists, planners, curriculum makers, as well as others to make the right decisions by making their way through the complex tools of information and communication technology (ICT), related terms, etc.

THE ROLE OF INFORMATION AND COMMUNICATION TECHNOLOGY IN EDUCATION

Almost all academicians and researchers say that the quality of education can be improved exponentially and positively by using information and communication technology (ICT). However, what exactly should be the position of information and communication technology in the education system and how to make the most of its usefulness is still a matter to be discussed. Teachers using ICT may experience a slight change in their teaching methods using traditional methods, as well as a radical change in their teaching methods. ICT can be used to strengthen existing pedagogy

practices as well as to change teacher-student interaction. The use of ICT as a tool for presenting information has mixed effects.

Use of ICT by Teachers:

- a. Teachers use ICT mainly for administrative tasks.
- b. Teachers mainly use ICT for daily tasks of teaching-learning process as note keeping, lesson planning, presentation of information, basic internet searches)
- c. More informed teachers rely less on 'computer-aided instructions'.
- d. Teachers who are more knowledgeable about ICT use rely less on computer-aided instruction.
- e. The use of ICT depends on teachers' general teaching style.
- f. The types of ICT use are related to teachers' pedagogical philosophy.
- g. Teachers who use ICT most, and most effectively, are least likely to use traditional 'projective-method' pedagogy.
- h. Teachers who use more types of software are more likely to use more 'constructive' pedagogies.
- i. Teaching with the help of ICT takes more time
- j. Introducing and using ICT to support teaching and learning is time-consuming for teachers as they try to break away from the methods and pedagogies they have always used.
- k. Simply put, it takes longer to teach using ICT which estimates of how much longer it takes to teach a single subject vary, with a common estimate of 10% longer.
- l. Teacher's confidence and encouragement matters in the use of ICT Tools.
- m. Only few teachers can use ICT confidently
- n. Only few teachers can confidently use various ICT resources and their limited confidence affects the way they teach the lesson.
- o. Many teachers do not use ICT because of fear
- p. Many teachers are still afraid of using ICT and therefore reluctant to use it in teaching.

- q. Early exposure to ICT can be an important tool in promoting and enabling teachers' professional development.
- r. Incentives should be developed to encourage teachers to effectively participate in continuing professional development.
- s. Teachers need additional encouragement and incentives to actively participate in professional development programs.
- t. Different types of incentives can be given as certifications, professional promotions, salary increases, paid leave to participate in professional development, formal or informal appreciation in school, community and among peers, reducing loneliness and increasing productivity, etc.
- u. A key factor in determining whether teachers can use ICT is letting them handle it.
- v. It is important to allow teachers to regularly handle ICT related equipment to enhance their ICT skills.

Teachers' Technical Competence and Knowledge of ICT:

Preparing teachers to take advantage of ICT is much more than just technical skills. It needs competence and knowledge of ICT. The fact that teachers have excellent ICT technical skills alone is not enough to successfully integrate ICT into teaching. It requires following principles:

- a. 'One-off training' is not enough
- b. Teachers need to be continuously and thoroughly informed about new aspects of ICT so that they can select and evaluate appropriate resources.
- c. Very few teachers have the skills to use ICT extensively in education.
- d. Even in the most advanced schools in OECD countries, very few teachers have in-depth and comprehensive knowledge of ICT tools and resources.
- e. The use of ICT as teaching and learning tools is considered more important than the use of ICT to promote 'computer literacy'.
- f. The use of technology in the everyday activities of teaching and learning is more important than specific instruction in the 'computer classroom'.

- g. The development of technology skills has an important place in the teaching and learning process, but it is even more important because it enables the use of other methods of teaching and learning. Not all educational institutions have been found to have high levels of students' ICT skills and experiences have a difficult computer curriculum. But they have integrated ICT into the whole of teacher professional development and the everyday process of teaching and learning.
- h. Students are smarter than teachers when it comes to technology use.
- i. Large gaps were found between students' ICT use and knowledge and teachers' ICT use ability and knowledge. This may mean that inexperience and lack of skills among teachers may be a significant factor in preventing effective use of ICT in education by students.

Knowledge of the Subject:

It is very essential that though teacher uses ICT of other tools in teaching-learning process, first basic need it he/she should have the knowledge of Subject that is to be taught because-

- a. Teachers' knowledge of subject matter affects the use of ICT in the teaching-learning process.
- b. A teacher's mastery of their subject and how they can use ICT resources affects the way in which ICT is used in lessons.
- c. Teachers' subject mastery and students' comprehensive understanding lead to more effective use of ICT.
- d. Evidence shows that when teachers use their knowledge of the subject and how students understand the subject, their use of ICT has a more direct impact on student achievement.
- e. New/ additional information provided by ICT is not sufficient
- f. The impact on attendance is greatest when students are challenged to think and their own understanding rather than being given new/additional information.
- g. ICT can help teachers to do more self-study about the subject.
- h. IT can help teachers do more self-study of their subject by providing updated and additional learning resources.

Professional Development of Teachers through ICT:

- a. Sustained teacher training and support is critical to the successful use of ICT in education.
- b. Consistent teacher training and support has been found to be critical in the successful use of ICT for the success of teaching-learning process
- c. Professional development of teachers is a process, not a sudden event.
- d. Traditional one-time teacher training workshops have been found to be ineffective in helping teachers to handle ICT easily. So it is very difficult to integrate ICT in teaching successfully. This is why isolated, one-time training programs are less effective than ongoing professional development programs.
- e. Introducing ICT further underscores the need for continuous teacher professional development.
- f. A successful Continuing Teacher Professional Development model can be divided into three phases as:
 1. Pre-service, focusing on initial preparation in pedagogy, subject mastery, management skills and various educational tools (including ICT).
 2. Include in-service, structured, face-to-face and distance teaching opportunities, based on pre-service training and directly related to teachers' needs and
 3. Consistent formal and informal pedagogical and technical support for teachers to meet their day-to-day needs and challenges, enabled by ICT.
- g. Proper training of teachers in handling information and communication tools can lead to a paradigm shift in the education system. However, these efforts have not yet been emphasized, and there is no concrete evidence that such training has led to a change in the education system.

CONCLUSION

The effective use of ICT in education increases the need for teacher training and professional development. But ICT is an important tool to meet such growing needs by helping to provide more and better educational materials, assisting with day-to-day educational needs, administrative tasks, providing models and replicas of effective teaching methods, and helping to enable face-to-face or remote student support networks in real time or later. The format of ICT programs has now changed

over time. The focus is now on making these programs more harmonious than just showing talking heads and thereby attracting "links" to connect society with education. These programs have reduced the leakage of students from secondary schools to a great extent. With the help of tools such as printed materials, cassettes and CDs, the courses taught by the media have provided an opportunity for students to study a wide range of subjects. However, the study programs broadcast in the school are not designed to replace the teachers in the school, but the main purpose of these programs is to improve the teaching methods of the teachers and the ability of the students to study and to improve the quality of education.

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