

Fostering Educational Technology among Teachers

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Abstract

Nowadays we are surrounded by technology in every aspect of our lives, education is the same. Thus, in the field of education, technology plays a major role in the emergence of quality education. Different types of software and hardware have been introduced at all levels of education. We should be happy to see 21st century schools built on the latest technological advances. Teacher education plays a vital role in shaping teachers' personality and behaviour that ultimately builds a better future for the classroom. Therefore, good training should be provided to all teachers to use the new technology. The purpose of this paper is to make teachers aware of the importance of educational technology and to contribute to the use of educational technology in the classroom. The investigator used a descriptive research method. Sources are secondary, collected from journals, websites, books, research papers, articles, encyclopaedia, etc. This paper suggests that teachers need to be aware of modern educational technologies and their importance in the emerging quality education. Every teacher should keep up-to-date with the latest emerging educational technologies and apply them. Teachers should develop and implement new teaching strategies in their classrooms that are very different from traditional classrooms. The teacher plays an important role in determining how it is used but how technology is used in the classroom and the extent to which technology improves student performance.

Key words: Technology, Education Technology, Teacher Training Education Teacher Education, Teacher Educator

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I. Introduction

Educational technology is a research science that investigates the process of designing, analysing, developing, evaluating and applying learning materials, teaching environment, students and learning process to improve teaching and learning. Educational technology is law enforcement and the latest scientific and technological discoveries in the educational process (S.S. Kulkarni). Educational technology can be thought of as the science of strategies and methods for achieving educational goals (S.K. Mitra). Educational Technology is "Research and ethical practice to teach and improve performance by creating, implementing and managing appropriate technology processes and resources" (Education Communication Technology Agency 2008). The main purpose of educational technology is to assist in an improved learning environment, which is aimed at improving student outcomes. 'Educational technology' is different from 'educational technology' for the use of technical hardware in education called technology education.

Teacher education means "a program of education, research, and training of people who will teach from primary to tertiary level" (The National Council of Teacher Education). Teacher training is a very important program not only to deliver basic education but also to raise awareness of current issues such as women's empowerment, modern society, modern technology, your rights, culture, and equal human rights.

In the 21st century, a system of learning and teaching is locked into the modern world of science and technology. With the advent of new scientific and technological methods, there are new modern educational institutions that provide quality education. Currently the size of the education technology market is growing very rapidly in the world and in India.

With the development of the world, the traditional method is being replaced by new modern technology in all fields. Trainee teachers are the future pioneers of our nation. Institutions for teacher training should also transform traditional teaching and learning. They must therefore be trained and familiar with modern technology in order to apply the technology in their classroom. But unfortunately the report says school teachers are willing to use technology but most of them are not trained. The report said 68% were untrained and 16% were trained and 16% were trained by the Central Squire Foundation, New Delhi, 2015. Most senior

teachers are unfamiliar with educational technology. The educational qualifications of teachers depend on the quality of the teachers. They should be properly updated with the latest technology for teaching and learning.

II. Review of related literature

Shreya (2017) did a study entitled “Information and Communication Technology in Teacher Education in India: Benefits and Barriers”. The study founded that ICT focuses modification of the role of teachers. It forces the teacher to look beyond the next books and traditional methods.

Richard (2016) writes an article entitled “Role of Digital Technology in Teacher Education”. He concluded that the teacher educator should be hard work to expand the technology infrastructure.

Mahato&Omkar (2021) conducted a study entitled “Tracing the ICT in Teacher Education in India”. The investigators suggested that there should be provide different facilities like financial fund, scholarship, appoint supervisor for checking technology system in government and private institution, launch different platform for strengthening the ICT in teacher training institution.

Objectives

1. To access the importance of educational technology in teacher education
2. To make aware the teacher educators about the importance of educational technology
3. To encourage the teacher educator to apply the educational technology in their classroom

III. Methodology of the study

The research methodology is a thorough explanation of how the study will be carried out effectively. The current study is both analytical and descriptive in nature. The investigator has used qualitative research to meet the goals of the current study. It is based primarily on secondary data that is gathered from a variety of sources, including books, journals, articles, and periodicals.

Significance of the study

Those who build the future of our nation are teachers. So in order to get a good education they must train according to the needs of today’s society. Today’s society needs education in order to obtain a quality education. The main purpose of this study is to encourage the teacher to use and share the technical knowledge of the student and the teacher according to the needs of today’s society. In this study, the researcher achieved the scope, significance, and benefit of educational technology in detail. The study also designs important educational technology tools and techniques that help the teacher provide quality education. Finally, research has suggested how teachers can value and expand educational technology between student and teacher. This paper helps the teacher to realize the importance of educational technology by reviewing the new educational technology that is coming and how to use it to make it work better in their classroom.

Scope of Educational Technology in Teacher Education

The following are some of the areas in which educational technology is used: developing curricula, teaching-learning techniques, audio-visual materials, identifying educational goals, preparing teachers, providing feedback, hardware and software, etc. In essence, all resources (both human and non-human) that are used to enhance and advance education fall under the purview of educational technology. So, the scope of educational technology is broad. Some scopes are discussed below-

- **Preservation of knowledge:** In more recent times, oral tradition and written documentation were used to maintain the teacher’s expertise. Modern technology has advanced, and as a result, it has been saved in the form of printed books, tape recorders, CDs, films, and digitals.
- **Transmission of knowledge:** The teacher can impart knowledge to a large number of students using technology such as radio, television, loudspeakers, movies, projectors, the internet, etc. With the aid of technology, students can clear up any questions by reading or listening to any programme that suits their interests, skills, and convenience.
- **Advancement of knowledge:** When information is conveyed to a large number of students via these devices, the students apply the information to their everyday conditions, which may lead to the emergence of numerous new difficulties. The knowledge increases naturally when one of the students takes the initiative to research these issues. By utilising their creative potential, people with new abilities and intelligence are adding new aspects to knowledge.
- **Behavioural Technology:** The crucial element of educational technology is behavioural technology. In order to change the behaviour of the instructor and students in accordance with the learning objectives, it emphasises the application of psychological principles in learning and teaching.
- **Instructional Technology:** The term “instructional technology” refers to a collection of methods or tools used to achieve a specific set of learning goals. Technology for education that uses sociological,

psychological, and scientific principles and knowledge to help students achieve their individual learning goals is referred to as instructional technology.

➤ **Teaching Technology:** The social and professional activity is teaching. Teaching is a process of behaviours that encourage learning through interpersonal relationships. The use of scientific, philosophical, and sociological knowledge in teaching is known as teaching technology.

➤ **Instructional Design:** The teaching contexts, working resources, and novel ways were thought to be crucial in addition to the learning principles in order to bring about the desired changes in the behaviour of the students. Instructional design is the sum of all these.

➤ **Training Psychology:** Training psychology is a crucial teaching and learning strategy. Its creation came about as a result of research done on challenging training circumstances and problems.

➤ **System Analysis:** System analysis is a technique for solving problems in which the management's demands are identified and evaluated utilising the best approach to the issue at hand.

Importance of educational technology in teacher education

Without the aid of instructional technology, the educational process cannot continue methodically. With the use of educational technology, the entire educational system has been totally modernised.

- i. Nowadays, new learning methods are preferred by pupils over more conventional ones. The philosophy and practise of education now have a scientific foundation thanks to educational technology. With audio-visuals, charts, and models, smart classrooms, and e-learning rooms, it has changed a passive classroom into an active and dynamic classroom that has significantly motivated and raised the attention level of the pupils.
- ii. The teaching-learning environment at educational institutions has been modernised as a result of the introduction of educational technology. The students will be exposed to professionally made video or computer programmes.
- iii. Through designed lessons for drill, enrichment, or remediation, educational technology has aided and enhanced teachers' instructional programmes. Teachers are relieved of the load of routine repetition for exercise and review, while students receive training in self-instruction.
- iv. By systematically organising information and instructional resources, educational technology has given instructors well-integrated, organised materials, saving them a great deal of time that they may then devote to innovative projects and quality enhancement.
- v. Education and the use of technology in the classroom help teachers advance their careers. It enables them to employ scientific techniques to address administrative and educational issues. It improves instructors' ability to teach and fosters in both teachers and students a scientific outlook and disposition.
- vi. The teaching-learning process has been enhanced by educational technology, which has made it more efficient and process-oriented. Knowledge has been improved and effectively transmitted thanks to technologies like television, radio, VCR, computers, and LCD projectors, among others.
- vii. By providing Teaching Aids and Programmed Instructional Material, educational technology has improved teaching methods while also maintaining educational standards.
- viii. The teacher-training institutions have created effective teachers as a result of the mechanisms of feedback devices for changing teaching-learning behaviour.
- ix. Educational programmes on television, radio, and the internet have benefited students who take advanced or competitive exams.
- x. New areas of educational research in the areas of assessment, evaluation, and classroom instruction have been made possible by technological advancements in education.
- xi. Practices and tactics that support teachers in adapting their lessons to students' specific learning styles have been made possible by educational technology.
- xii. Through the theories of learning and intelligence, educational technology has given education a scientific basis.

Therefore, educational technology is needed at every single step of the teaching and learning process. Technology in education fulfils every purpose for modern education. Without the aid of educational technology, education today cannot get very far. The educational process has been greatly improved by technological advancements. It has improved the character of the educational process while also maintaining its structure.

Benefit of educational technology in teacher education

➤ **Enhanced Teaching and Learning:** A few examples of technical innovations that have made it simpler for teachers to help students understand topics are digital cameras, laptops, projectors, Power Point presentations, mind-training software, and 3D visualisation tools. They can engage in more active participation in class, and teachers can take advantage of this to make their teachings more interesting and interactive.

- **Globalization:** When the schools are spread out across the state, kids can virtually “meet” their counterparts without ever leaving the classroom. Through the use of websites like www.gloviso.com, students can learn foreign languages online by being paired with a teacher from a different nation.
- **No Geographical Limitations:** Since the introduction of online degree programmes, physical attendance in classes is no longer necessarily required. Even a few foreign universities have started providing students with online degree programmes. Distance learning and online education are increasingly important parts of the educational system.
- **Automate grading:** Teachers used to grade papers for hours after school and on the weekends. This time can be reduced by using a variety of educational technology solutions that automate grading and make assessing students’ progress straightforward.
- **Get student data:** Data collection for gauging student achievement can be greatly facilitated by educational technology. Many tools may provide teachers with data on pupils automatically, quickly and readily identifying which skills kids have learned and which ones they still need to improve.
- **Stay in touch 24/7:** Students and teachers can communicate constantly thanks to technology and the internet. Numerous apps exist that let students communicate with teachers (without teachers giving out their personal email or phone number). Teachers can send vital reminders and students can obtain assistance with their homework.
- **Keep up with classroom management:** There are several educational technology solutions available that can aid teachers in maintaining order in the classroom. Technology allows teachers to communicate with parents and monitor student behaviour.
- **Teachers save time:** Before educational technology became popular, teachers devoted many hours to planning lessons and grading papers. Online lesson plans and other free resources are available to instructors thanks to technology and the internet. Additionally, time can be further saved by using apps and systems created specifically for grading student work.
- **Find free materials:** Workbooks are no longer a cost to teachers. Online resources abound that are free and can assist time-pressed teachers in quickly creating lesson plans.
- **Bring classroom into the 21st century:** More use of educational technology in the classroom is only logical. Exposing pupils to technology is one of the ways that teachers may help them get ready for the 21st century.

Use of new innovative educational technology in teacher education

Following educational trends is probably not something new, but rather crucial, for inventive educators.

- **E-Learning:** E-learning is instruction or training that is delivered online. Due to the quick growth of COVID-19 and school closings in 2020, online learning rose to the top. As a result, demand for online learning systems increased. With e-Learning, students receive educational material via computers, laptops, tablets, or cell phones. It continues to be sustainable and grow. The advantages of technology are being used by educators to improve learning. A teacher has option of teaching pupils in real time (synchronously) through live streaming or group meetings using different meeting apps like Google Meet, Zoom, etc., or they can employ recorded (asynchronous) techniques with a wealth of media and digital tools at their disposal to enhance lessons. To measure your students’ learning outcomes, a strong online learning platform can be paired with a learning management system (LMS).
- **Video-Assisted Learning:** The use of video-assisted learning in classroom displays has grown significantly recently. With the internet and modern technology, “video day” may be any day. In distance learning settings, where students study from computer displays, this tendency is also rising. Ones, especially animated videos, are a great way to enhance courses and improve comprehension of the material. It raises student achievement while lightening the load on teachers.
- **Artificial Intelligence (AI):** By automating feedback and grading and offering individualised learning opportunities, AI is gaining traction in the educational sector. Teachers can now use software to automatically grade questions with multiple choices and blanks to fill in. By handling the marking and providing feedback on their behalf, it can save the teacher time. By handling the grading themselves, teachers might discover a lot about a student’s learning habits.
- **Learning Analytics:** Through the use of learning analytics, educators can monitor and report on students’ progress online. They can use such information to maximise their understanding of learning. The knowledge and skills of educators can be improved in accordance with the demands of their students. Teachers can determine which informational format pupils prefer (text, pictures, and videos) and utilise that format more in subsequent classes. Additionally, learning analytics aids educators in locating groups of kids who might be experiencing behavioural or academic difficulties. From there, educators could devise a strategy for assisting pupils in realising their full potential.

- **Gamification:** When students are having fun, they learn better. By connecting the enjoyable aspects of play with the knowledge that students must acquire, the use of gaming in the classroom puts this idea into practise. A humorous and encouraging learning atmosphere is aided by gaming aspects. It inspires excitement for the lesson. It offers quick feedback. The K–12 school area is where Gamification is most widely used. This is a result of kids becoming fast engrossed in gaming videos or achieving better results in games.
- **Social Media in Learning:** All of these social media platforms Facebook, WhatsApp, Telegram, Instagram, LinkedIn, Quora, Pinterest, and Tumblr started out as tools for education. Social media is now widely used in educational institutions as a communication tool so that students may readily communicate with one another. Shared study materials, group discussions, and simple commenting are all options available to students. Even an animated educational video has the potential to go viral online. Social media will likely never go away because it fosters a culture of sharing and cooperation that enhances learning.
- **Google Classroom:** Google Classroom allows teachers to manage assignments and build a community-based learning environment for their students online. It's a comprehensive online application that enables teachers to set up classes, assign and mark homework, give comments, and communicate with students.
- **Instructional Technology:** Technology tools for the classroom are developed in the field of instructional technology to support teaching and learning. It talks about the technology and software required to give teachers and students the most simple and engaging learning experience possible.
- **Virtual reality:** Technology for virtual, augmented, and mixed realities is advancing quickly. Taking students on virtual field trips to locations that they couldn't otherwise visit is one of the technology's main applications in the classroom. It offers enjoyable, practical experiences that might be damaging or inaccessible otherwise. Appeals to those who prefer to see and do things rather than just read about them: visual learners.
- **Cloud technology:** The cloud is used in education to store and distribute digital textbooks, lesson plans, videos, and homework. Students can also utilise it to communicate live with their professors and fellow students. It lessens the likelihood that homework will be misplaced between school and home. Students won't have to carry as many bulky textbooks. Through live chat options, it provides rapid and simple communication with the instructor.
- **Mobile technology:** Some schools are using educational apps to integrate mobile technology into the teaching and learning process rather than forbid students from using their phones or other mobile devices in class. Students have the option to participate in their own learning process thanks to the broad selection of apps that are readily available. Apps for education give teachers the chance to tailor lessons to each student.

IV. Discussion of the study

With the development of technology in contemporary times, the scope of instructional technology has been kept in the form of printed books, films, CDs, tape recorders, and digitals. The teacher can impart knowledge to a large number of students using technology such as radio, television, loudspeakers, movies, projectors, the internet, etc. Learning technology provides access to knowledge advancement. Utilizing psychological principles for learning and teaching, behavioural technology modifies the teacher's behaviour during instruction. The potential of educational technology for teachers to impart knowledge in the classroom and support the development of new instructional strategies is enormous. The use of scientific, philosophical, and sociological knowledge in teaching is known as teaching technology.

A scientific foundation for educational theory and practise has been made possible by educational technology. The teaching-learning environment in educational institutions has been modernised by the advent of educational technology. The use of educational technology by teachers has aided and complemented their curricula. Teachers now have access to well-integrated, structured resources, saving them a significant amount of time. The use of educational technology helps teachers advance their careers. The teaching-learning process has been enhanced by educational technology, which has made it more efficient and process-focused. The quality of education has been upheld, and teaching methods have been improved, thanks to educational technology. Effective teachers have emerged from teacher-training institutions thanks to mechanisms of feedback devices for improvement of teaching-learning behaviour. With the use of educational technology, teachers may now adapt their lessons to the unique learning styles of their students.

For instructors, the advantage of educational technology is considerable because it aids in improving instruction in the classroom. We might say that educational technology makes education globalised because it has no territorial boundaries. Additionally, it enables the teacher to communicate with pupils round-the-clock, collect data on them, and grade them quickly and automatically. The teachers are able to maintain classroom management, locate free resources, modernise their classroom, and save time.

Thus, every step of the teaching-learning process requires the use of educational technology. Technology in education helps every objective of contemporary education. Without the aid of educational technology, education today cannot get very far. The educational process has greatly benefited from

technological advancements in this area. It has improved the character of the educational process while also maintaining its structure.

By synchronising with live broadcasts or group meetings held through various meeting apps like Google Meet, Zoom, etc., the teacher can instruct pupils in real time. Multiple choice questions are automatically planned and completed by teachers with the aid of artificial intelligence. By grading assignments and providing feedback on the instructor's behalf, it can save time. Teachers can adapt their knowledge and abilities to better meet the requirements of their pupils by using learning analytics. Teachers are able to determine which informational format—text, images, visual material, or videos—students prefer and employ that format more frequently in ensuing sessions.

Facebook, Whatsapp, Telegram, Instagram, Twitter, Snap Chat, LinkedIn, Quora, Pinterest, and Tumblr are just a few examples of social media platforms that have started to be used as instructional tools. Google Classroom is a tool that teachers can use to create an online learning environment for their students. Building classroom technology tools to support teaching and learning is the field of teaching technology. It combines the technology and software required to make teaching and learning as simple and adaptable as possible for both teachers and students. For both teachers and students, mobile technology has recently gained importance.

It is evident from the debate on the scope, value, and benefits of educational technology that, at the moment, it is crucial to have a high-quality education in a technologically advanced society. The best way to increase teacher education's knowledge of educational technology is through teacher training programmes. The teacher training institutions train the aspiring educators. In order to increase the use of educational technology among aspiring teachers, teacher educators play a very important role.

Suggestions to foster educational technology among trainee teachers

- i. Workshops, conferences, seminars and meetings on educational technology need to be held in teacher training institutions in order to promote the knowledge and skills of educational technology. The importance of conducting workshops on educational technology should be emphasised by institutions more.
- ii. The administration of the institution and the government should push teachers to employ more instructional technology in the classroom.
- iii. Government and administration should inform teacher preparation programmes about new innovations in educational technology.
- iv. In teacher training institutions, instructional technology should be accessible and available.
- v. When choosing candidates, it is important to assess teacher educators' expertise and knowledge of educational technology.
- vi. The NCTE ought to establish certain standards for teacher educators' familiarity with educational technology.

V. Conclusion

The study focuses on the evolution of educational technology among teachers. The study addresses some of the cutting-edge educational technologies that are most helpful to teachers in their teaching programmes as well as the extent, importance, and advantages of education technology. It is evident from the conversation that there would not be a high level of education today without the use of education technology. The purpose of teacher educators is to educate aspiring teachers about educational technology. The extent, significance, and advantages of educational technology in their teaching programmes should be understood by teacher educators as well as student teachers. They must to be knowledgeable with the most recent emerging educational technology initiatives and have a working knowledge of how to apply these new technologies in the classroom. The traditional classroom can be replaced by current educational technology if the instructor is adequately informed about the value of this technology and employs correct instructional approaches. Finally, the study made several recommendations for how to enhance the use of educational technology in teacher preparation. In addition to teacher training programmes, each teacher should make an effort to support instructional technology inside their own classrooms. When it comes to how technology is used in the classroom and how much it enhances student performance, the teacher has a significant influence.

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