

Teacher Education and Technology- Old Wine in New Bottles: A New Approach in Twenty First Century

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Abstract: Technology is playing an important role in the development and expansion of education. Over the past few decades, countless efforts have been made to integrate emerging educational technologies into the teaching and learning process. Institutions of education at different levels have increasingly embraced online education, and the number of students enrolled in distance programs is rapidly increasing. Teacher education program has always been faced the questions regarding their standard to be maintained. Ministry of Human Resource Development (MHRD), National council of Teacher Education (NCTE) and National Curriculum Framework (NCF) have introduced several policies and programs to start new strategy and upgrade the existing quality of teacher education by exploring a huge source of open information. Both pre-service and in-service teachers now use technology to make teaching learning process more effective through audio-visual aids, power point presentation, pictorial presentation etc. Now NIOS has introduced online classes for training of the elementary teachers through using ICT. This paper is an honest attempt by the researcher to explain the new multiple ways of educational technology in the field of education and how to enhance the quality of teacher education by using the same.

Keywords: Teacher education, ICT, curriculum, framework, quality education.

1. INTRODUCTION:

India is one of the top most destinations of education. With some of the best universities and colleges it has been emerged as successful destination to attract students from all over the world. The nation has around 1.5 million schools with 261 million students, about 751 universities and 35540 colleges. About 35.7 million students were enrolled in higher education during the academic year 2016-17. India has become 2nd largest nation for e-learning just after the US. Total market value of Indian education sector is about 2 billion dollar and is supposed to reach 5.7 billion dollar by 2020. The school segment is growing with market value 52 billion dollar and contributes 52% in the education market, higher education contributes 15% of the market size, test books, e learning and allied services contribute 28% and vocational education in manufacturing and services contribute 5%. Distance education market of India is expected to grow at the rate of 11% during 2016-2020 (IBEF, 2018). Behind the educational growth of India, educational technology is playing a major role.

Educational technology is designed science dealing with basic, fundamental and key issues of teaching

learning process and social organization. Recently technology is being used very systematically for better improvement and enhancement of overall quality education. In the western world educational technology has been practicing for long time but in the developing countries like India, educational technology has been introduced in 1990s. National policy of education (NPE, 1986) first talked about educational technology to improve the quality of education. Policy statements lead to two major centrally sponsored schemes namely Educational Technology (ET) and Computer Literacy and Studies in Schools (CLASS). Quality of education is entirely depending on quality of teacher education. Sharma (2012) mentioned that ICT can play a very important role in professional development of the teachers and consequently it can shape total education system. Unless and until the teachers are not trained we can't use the new tools of educational technology for successful teaching learning outcomes. Different organization both at national and state level has been given the responsibility to boost the use of Educational Technology in teachers training programme. UNESCO has started a program named "A framework for ICTs in teacher education" in 2002 to boost the use of educational technology in education. DIETs have been given the

responsibility for organizing pre-service and in-service programme for teacher education and it is playing the role of nodal resource centres for elementary education at district level. Likewise, colleges of teacher education (CTEs), institution of advanced study in education (IASEs), and academic staff collage (MHRD) have been given the responsibility to introduce new ways of innovation, ideas, technique and methods in teacher education programme at higher education and in vocational education. Recently the Centre of Cultural Resources and Training (CCRT), New Delhi, a national level resource organisation conducts a number of orientation/workshop/seminar/training programs through using information and communication technology (ICT) for the in-service teachers of primary and secondary schools. The programs include how to prepare lesson plan, projects, games and other effective teaching aids and to develop methodologies for classroom transaction, new ways of evaluation and assessment in the light of ICT. Government of India has launched many programs such as Digital India and Skill India to boost digital literacy, create knowledge based society in India and implement three principles – access, equity and equality of the education policy.

2. NEED AND SIGNIFICANCE OF THE STUDY:

In today's 7 billion world it is not possible to teach all the people just by using teachers in the classroom but we need to use educational technology and communication technology to impart education among common masses. A teacher is not supposed to impart knowledge to this huge population by simple means of classroom teaching or tutorial activities but they can use educational technology for rapid and complete coverage of this huge population. It is possible because with the help of educational technology we have developed new strategies like online teaching, audio-visual conferencing, distance learning, open learning, micro teaching, programme learning, instructional analysis and use of hardware technology in the field of education. Now teachers become more efficient to present the subject matter through pictorial illustration for better understanding. Educational technology does not only make the teaching learning process more effective but also become time savvy. After the introduction of educational technology teaching learning process become more clearly scientific, precise, systematic and interesting. Now teachers can use educational technology to demonstrate and present their view before millions of students together. Educational technology has modified the

conventional role of the teachers and equipped them to conduct action research in the classroom situation to overcome classroom problems, curriculum management, motivate students and conduct guidance and counselling programs.. It helps teacher to demonstrate up-to-date information through technical way before the students. Educational technology supplements teachers to organize and analysis the content in a logical and psychological order so that teachers can hold their optimum performance in the classroom.

3. STATEMENT OF THE PROBLEM:

“Teacher Education and Technology- Old Wine in New Bottles: A New Approach in Twenty First Century.”

4. DEFINITION OF THE TERMS:

Technology: Technology means application of scientific knowledge and principles for the purpose of making daily life easy and comfortable. By this application we develop such machines and devices which improve systemize our daily life.

Educational Technology: Educational technology is that science of strategies and techniques which help us to achieve educational goals. It is being used in teaching learning process to make it more effective. All inputs (hardware and software) are organized in such a manner that students teach themselves what they want to learn. The whole process involves four stages- analysis of teaching task, observation of relative impacts of all these components, drawing conclusion, translating the experiences.

Teacher Education: Teacher Education refers to the policies programme and procedure designed to equip prospective teachers with knowledge attitude behaviours and skills. It has three stages namely Pre-services, induction and in-service.

5. OBJECTIVES OF THE STUDY:

- i. To find out the role of educational technology in teacher education.
- ii. To assess the recent trend and development of educational technology.
- iii. To assess the problem of teacher education and find out the best possible solution by using educational technology.

6. REVIEW OF LITERATURE:

Rafeedali (2009) conducted a study on the topic entitled “Computer Based Technology and its Pedagogical Utility.” The objectives of the study were to identify the basic computer knowledge

among the higher secondary school teachers, to find out the purposes of using computer resources among the higher secondary school teachers, to find out the extend of use of computer resources in the teaching-learning process among the higher secondary school teachers. A self-developed tool (Computer Awareness Questionnaire) was used for the study. The objective scoring procedure was adopted for analysing the questionnaire. The study found that 67 secondary school teachers have basic computer knowledge. Higher secondary teachers were not using the IT resources in the class room interactions. Only 13% of higher secondary school teachers were using power point in the class room.

Lei, Jing (2009) in the article "Digital Natives as Pre-service Teachers: What Technology Preparation is needed?" presented a study which focused on "digital natives" as pre-service teachers to examine their beliefs, attitudes, and technology experiences and expertise, identify the strengths and weaknesses in their technology knowledge and skills, and explore what technology preparation was needed to prepare them to integrate technology in their future classrooms. Results revealed that (a) the digital native pre-service teachers reported strong positive beliefs in technology, yet moderate confidence and reserved attitude in using technology; (b) the majority (80%) of them spent the most time on social-communication activities, and only about 10% of them spent the most time on learning related activities;. The results suggested that, growing up with technology, digital natives as pre-service teachers are savvy with basic technologies and social-communication technologies. Systematic technology preparation is needed to help them learn more advanced technologies, classroom technologies, and assistive technologies, and more important, to help them make the connections between technology and teaching and to help them make the transition from digital-native students to digital-native teachers.

Jazlin Ebenezer and et al., (2011) conducted a study on the topic titled "One Science Teacher's Professional Development Experience: A Case Study Exploring Changes in Students' Perceptions of their Fluency with Innovative Technologies". The purpose of this case-study was to narrate a secondary science teacher's experience of his professional development, education and training in innovative technologies in the context of engaging students in environmental research projects. The study implied that immersive professional development opportunities have the potential to produce significant increases in students' perceptions of their IT fluency.

7. METHODOLOGY:

The present study is based on secondary sources like books, articles, journals, thesis, university news, government websites and NGOs. This is the descriptive method.

8. TEACHER EDUCATION AND ITS PROBLEMS:

NCTE has been taken several steps to improve the quality of teacher education for several times. It has prepared teacher education curriculum framework to equip them with handsome resources to educate the classroom through new technique, ideas, innovation and overall with up to date information. The integration of theory and practice and consequent curricular response to the demand of school system still remain insufficient. Their familiarity with latest educational perspective, orientation, technological advancement, new innovation remains unfulfilled. The system still prepares teachers who don't have professional competency, technological know-how, educational commitment, lack of dedication. Large number of teachers training institutions do not follow the instructions prescribes by NCTE. Even whatever teacher trainers learn during their training they do not practice all of that in actual classroom setting or they don't get the situation to practice whatever they learn. So a discrepancy remains between objective of teachers training programs and its application in actual education system. The following are the main problems connected with teacher's education:

- i. Brand in equity or public private dichotomy
- ii. Selections problem
- iii. Institutional inertia
- iv. Incompetency of teacher educators
- v. Quality crisis
- vi. Narrow and rigid curricula
- vii. Over growing establishment
- viii. Superficial practice teaching
- ix. Irregularities in demand and supply
- x. Insufficient professional development
- xi. Lack of professional trainers
- xii. Minimum financial grant on educational sector
- xiii. Huge commercialization of teachers training education
- xiv. Lack of culture specific pedagogy
- xv. Irregularities in affiliation
- xvi. Lack of resources i.e. books, laboratory, computers
- xvii. Lack of faculty members of teachers training institutions

- xviii. Callousness of teachers training institutions to follow govt. instructions
- xix. Administrative inefficiency to monitor teachers training institutions.

9. PRESENT SCENARIO OF EDUCATIONAL TECHNOLOGY IN TEACHER EDUCATION:

Government of India has announced 2010-2020 as the decade of innovation with special focus on ICT oriented education and acquiring of ICT skills for teaching learning process. According to Indian Brand Equity foundation 2018 (IBEF) total amount of foreign direct investment (FDI) in flow into the education sector in India was about 1.67 billion dollar from April 2000 to December 2017 (data released by department of industrial policy and promotion). Government of India will spend around rupees 20 thousand crores (3.1 billion dollar) to build 6 new Indian institute of technology by March 2024, of which rupees 7 thousand crores (1.08 billion dollar) will be, spend by March 2020.

Central square foundation (2014-2015) conducted a survey with over 1500 teachers (63% urban and 37% rural or 68% trained teachers 16% untrained and 16% self-trained teachers) to know about their efficiency on educational technology. The study revealed that 70% of untrained teachers indicated their need for ICT training. On average 93% of teachers informed that they use technology regularly for lesson planning, communication, sharing based practices and data tracking purposes. 88% of trained teachers reported making use of available computers as compared to 53% untrained teachers. 70% of teachers use technology for audio visual purpose while 41% teachers use technology for tracking student's data and 27% use technology for participating in forums. According to DISE 2013-2014, only 23.3 % of all schools have access to computers. According to SEMIS 2013-2014, only 60.58% of secondary schools have computer access with 32.59% of secondary schools having computer with internet connection.

10. EDUCATIONAL TECHNOLOGY PROJECT IN INDIA:

Govt. of India launched educational technology project for the first time in mass level in fifth five year plan (1971) to improve quality of education. This project has 4 sub schemes-

1. Setting up an educational technology unit in the Ministry of Education and Social Welfare.

2. Establishing a centre for educational technology in NCERT.
3. Assisting states for setting up educational technology cells and their programme on 100% basis.
4. Strengthening few education institutions for undertaking education technology programs.

As a result an education technology unit has been started in the Ministry of Education and Social Welfare in 1971. A Centre for Education Technology (CET) has been started in 1993. Education technology cells came into existence in different states from 1972-1973 onwards.

11. INNOVATION AND APPLICATION OF EDUCATIONAL TECHNOLOGY IN TEACHER EDUCATION:

Many schools have already been implemented technology driven tools to educate and prepare their students for the future. Both government and private sector coming forward to boost educational technology both in educational transformation in general and teacher education in particular. Some technological innovations that have redefined the total education system with special reference to teacher education are:

- i. **Tablet PC:** They are the future of mobile devices in the classroom. Tablet PCs with internet connectivity give them access of various useful educational apps.
- ii. **Interactive white boards:** Whatever seen on a computer screen can be replicated on this interactive white board.
- iii. **Google apps for education:** Around 45 million students and teachers around the world use this app.
- iv. **Digital library:** Unlike conventional libraries, digital libraries are not dependent on the availability of space to preserve books and other articles.
- v. **Microsoft Skype:** Skype gives the students a platform to have real time interactions with students of their age group in a different part of the world.
- vi. **Flipped classroom:** It is the online courses with instructional medium of teaching where students can watch videos delivered by experts.

- vii. **Children with special needs:** Assistive technology has benefited students with physical sensory or cognitive disabilities to learn or communicate better. Example of some them are- text-to-speech software, word prediction software, speech recognition software.
- viii. **E-learning:** Various e- learning centres are being opened in under develops countries that open doors to education to the people.
- ix. **Class blogs and Wikipedia:** Blogs are used to maintain running dialogue, such as journal, thoughts, ideas, assignments, etc. Wikipedia and online encyclopaedia is the source of all kind of information where multiple users can edit the documents to make it more precise.
- x. **Wireless classroom and microphone:** Teachers can use these tools to maintain the class and make their voice reachable to the last one.
- xi. **E-Basta:** School book in digital form.
- xii. **E-Education:** All school connected with broad band and free wifi and develop pilot MOOCs.
- xiii. **Nand Ghars:** Digital tools and teaching as teaching aids.
- xiv. **SWAYAM:** Mock based on curriculum taught in classroom from 9th class to post graduation.
- xv. **E-PG Pathshala:** A gateway to post graduate courses. MHRD, under its National Mission on Education through ICT (NME-ICT), has assigned work to the UGC for development of e-content in 77 subjects at postgraduate level. The content and its quality is the key component of education system.
- xvi. **India Skills Online:** Learning portal for skill training.

12. CHALLENGES OF EDUCATIONAL TECHNOLOGY IN TEACHER EDUCATION

- i. Lack of trained teachers
- ii. Shortage of time
- iii. Issues of maintenances and upgrading of equipments
- iv. Insufficient funds
- v. Challenge of language and content
- vi. Shortage of equipments
- vii. Unreliability of equipment

- viii. Lack of technical support
- ix. Resource related issue and internet
- x. Resistance to change
- xi. Choosing effective tools and devices for use
- xii. Examine technology budget frequently
- xiii. Fear by the teacher and administration
- xiv. Mismanagement time
- xv. Partial channelization of fund
- xvi. Apathy among teachers towards systematic technology

13. CONCLUSION

Integration of technology in education has been applied to reduce the gap of learning achievement by increasing open access to qualitative content for both students and teachers. A visible gap still exists between demand and supply of quality education and this gap is reflected through different activities of different economic, social, political and educational sectors. To reduce this gap we need quality teachers fully equipped with educational technology. To have sustainable digital nation, foremost importance must be given to educational technology. Both government and public stakeholders should come forward and they should focus on the four following aspects of educational technology- optimum access, rational usage, and sustainable economic and social impact. Implementing educational technology in teacher education is not only the end target but periodic monitoring and evaluation must be done to achieve the sustainable target.

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