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TRANSFORMING TEACHER EDUCATION THROUGH TECHNOLOGY: CHALLENGES & PROSPECTS

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ABSTRACT
At the turn of the twenty first century, India is rushing headlong towards the expansion of instructional provision through technology and thereby emphasizes on three cardinal principles i.e. increased accessibility, greater affordability and enhanced equity at different levels in education. However, this write-up examines the challenges and prospects of transforming teacher education through technology and its many ramifications. The issue of extended learning opportunities along with certain challenges and prospects needs to be discussed concerning the prospective teachers. New technologies have brought many instances of relatively more flexible initiatives to suit heterogeneity among learning groups. A large and growing body of literature has investigated the role of ICT and its many ramifications in exploring the educational effects in this pursuit. It indicates that technology enabled provisions of educational transactions have encouraging impacts on learners' learning. As technology enabled teacher education has gained momentum recently, the ICTs in multiple shades and sizes have also evolved eventually. With this in mind, a vibrant teacher education system may usually be tough to set-up and sometimes slow to build-up, though, in the context of technology and its rapid development, has the potential to provide relatively a more interactive, speedy and heightened learning experiences. Given the innovative approaches and best practices, support mechanism needs to be rationalized and restructured rooted to the technology - enabled infrastructure, delivery and resources.

Keywords: ICT; Teacher Education; Transformation; Challenges; Prospects.

Introduction

What are the 21st century pedagogical skills required for teacher educators? Are those skills typically needed for both teacher educators and teachers working in the teacher education and school system respectively? Whether teacher educators typically know enough about integrating technology in real classroom situations? Why are they important? Do they serve as useful pedagogical purposes in teacher education? These are a few questions often discussed by teachers, teacher educators, and other researchers. "It is therefore essential to contemplate and develop innovative strategies at different levels of learning to educate the pupils about the world within and without" (Kurhade, M.S., 2019, p.06). Analyzing and working on those skills and knowledge of technological integration may help to accelerate the pedagogical practices in teacher education in the country.

At the turn of the twenty first century, India is rushing headlong towards the expansion of instructional provision through technology and thereby emphasizes on three cardinal principles i.e. increased accessibility, greater affordability and enhanced equity at different levels in education. Teacher education programmes in the country have also grown considerably on par with the expansion agenda. More recently, in the effort to address the issue to train teachers, the state and other private providers have invested a great deal and introduced various teacher education programmes.

Studies such as that conducted by Sabharwal (2016) indicate that "India now needs college 4.0; a radical reboot of our higher education that balances the trinity of cost, quality and scale, while delivering the employment outcomes that "India Scale" needs"(Sabharwal, M. 2016. p.03). This shared sense of urgency to reboot and transform the system of Indian education in general and teacher education in particular has been greater keeping in view the larger interest of the country and its people.

Transforming Teacher Education

As the world's largest democratic country, India may not be the early adopters of technological interventions in the teaching learning process but with the increased access to a relatively high speed broadband internet and low cost computers and other mobile devices tremendous growth is being witnessed in the use of technology at different levels of teaching and learning. UNESCO, 2014 reiterates that "Easy to use and affordable, mobile telephones, tablets and portable computers have significant educational potential, especially in regions with insufficient traditional educational resources"(UNESCO, 2014, p 01).

Despite the fact, that India has been at the forefront of utilizing technology in the business of educational transaction, only a few are satisfied with the current modus operandi of teacher education programmes and institutions. Teacher education has to be accountable for such a low state of affairs.

The issue of extended learning opportunities along with certain challenges and prospects needs to be discussed concerning the prospective teachers. However, debates and discussions continue to rage over the inclusion of professionalism in the whole process of teacher education.

There seems to be a close connection between the technological interventions and pedagogical practices so far as the transformation in teacher education is concerned, as shown in the figure below:

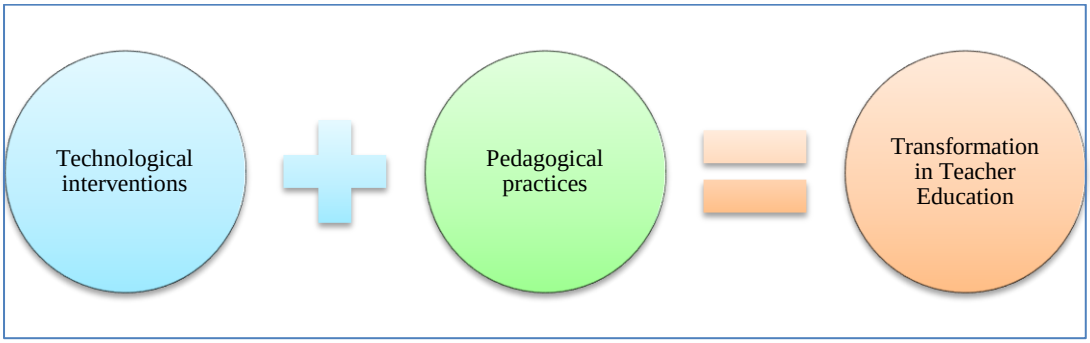

Figure 1: Transformation in Teacher Education

We find ourselves at the end of the second decade of the twenty first century. Institutions of teacher education continue to prepare teachers and teacher educators

for future generations. New technologies have brought many instances of relatively flexible initiatives to suit heterogeneity among learning groups.

A large and growing body of literature has investigated the role of ICT and its many ramifications in exploring the educational effects in this pursuit. It indicates that technology enabled provisions of educational transactions have a positive impact on learners' learning. "Every life-long learner has opportunity to become discoverer/ researcher/ navigator/ collaborator by surfing through the information highway, interpret it and share knowledge with many and varied users"(Gupta, S. et al, 2011, p.5).

All things considered, it seems reasonable to assume that teacher education has to connect the relevance of training and development activities to the day to day workings of the classroom teachers.

Technology mediated Teacher Education

It is strongly believed that the technology enabled teacher education has the potential to transform and reshape the instructional process and other learning networks in the country in fundamental ways. "The global movement towards more accessible, affordable and quality resources for learners is now getting momentum and it has become increasingly significant to appreciate how tech-driven pedagogical practices are created, shared, used and re-used while utilizing web based new information and communication technologies, applications and other appliances"(Ahmad, S., 2016, p.16).

Teacher education has to be robust and built on strong foundations. The technology mediated learning platform provides ample space for a relatively free and flexible educational provision such as open educational resources (OERs), SWAYAM, SWAYAMPRABHA, MOOCs etc. and commits to ensure increased accessibility and equity in education. "A massive open online course (MOOC) is an online course aimed at unlimited participation and open access via the web"(Wikipedia, 2019, p.01).

Research indicates that technology driven learning has emerged as an important tool for empowering human resources through education, training and development. However, many teacher education institutions provide the enhanced accessibility as well as greater opportunity of interactivity based on synchronous and asynchronous learning resources.

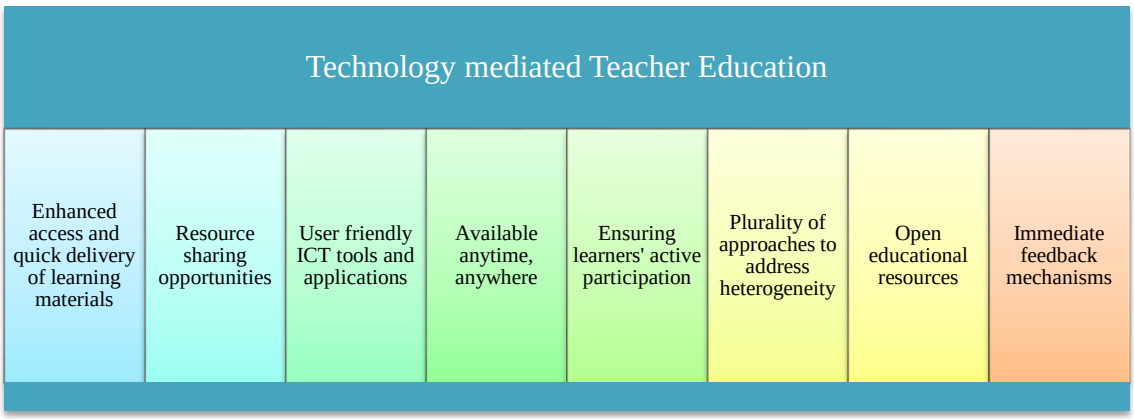

Figure 2: Technology mediated Teacher Education

Technology mediated teacher education, as mentioned in figure - 2, has many advantages i.e enhances access and quick delivery of learning materials, varied resource sharing opportunities, user friendly technological tools, devices and applications, anytime, anywhere availability, ensures learners' active participation, plurality of approaches to address the students' heterogeneity, uses open educational resources and immediate feedback mechanisms.

As technology enabled teacher education has gained momentum recently, the ICTs in multiple shades and sizes have also evolved eventually. Teacher education (both pre-service and in-service) through innovative technological initiatives such as SWAYAM, SWAYAMPRABHA, MOOCs etc. play a vital role especially in the developing countries.

"The bottom line is that education at high quality research universities will remain expensive for a while, certainly till we learn to consider technology and people better" (Rajan, R.G., 2016, p.29). With this in mind, a vibrant teacher education system may usually be tough to set-up and sometimes slow to build-up, though, in the context of technology and its development, has the potential to provide relatively a more interactive, speedy and heightened learning experiences.

Likely Challenges

The discussion in the present academic investigation reiterates to strike a subtle balance between efficiently using technology and its many ramifications to maximize educational effects while minimizing its systemic impacts. In order to ensure a robust teacher education system, suitable strategies to overcome the challenges and risks involved in technology driven teacher education need to be considered. There are, of course, numerous challenges in transforming the teacher education especially when it comes to technology driven instructional initiatives; a few of them may be as follows:

- institutional policy for technology integration,
- establishing technology enabled infrastructure,
- provisioning for an orderly development of teachers and teacher education,
- streamlining the technological effects in teacher education,
- emphasizing on more accessible and flexible approaches to instruction,
- making adequate funding arrangement,
- suitable modus operandi for reshaping the teachers and teacher education,
- tech – driven governance,
- arrangement of collaborative and networked learning,
- technology – mediated training and development of teachers,

Given the current teacher education scenario, there are many more challenges which need to be addressed on priority basis. This may require well – tried strategies such as institutional policy for an orderly development of teacher education, streamlining technological effects, technology enabled infrastructure, monitoring agencies and other administrative inputs. With the adequate strategies to overcome the challenges, the transformation of teacher education commensurate with the expectations and aspirations of the prospective teachers needs to be accelerated.

Prospects of Technology mediated Teacher Education

Since the present academic investigation discusses integrating technology in teaching and teacher education, much emphasis is institutional policy and pedagogical reforms as they relate to the use of technological initiatives and interventions on the part of the teacher educators and teacher education institutions. The future prospects of technology mediated teacher education may be outlined as below:

Technology mediated Teacher Education: Prospects	Increased accessibility to learning resources,
	Quick delivery of learning materials,
	Technological interventions to address heterogeneity,
	Affordable educational provisions,
	Customized learning,
	Open educational resources in multiple formats,
	Learning anytime, anywhere,
	Quality learning materials,
	Plurality of approaches,
	Instant feedback mechanisms,

Figure 3: Prospects of Technology mediated Teacher Education

Taken together, studies suggest that it also reduces costs and improves access and quality of teaching learning resources. The future prospects of teacher education also depend on infostructure meaning the technical infrastructure supporting the information system (Wiktionary, 2016). The key strength outlines that by enabling technological tools, devices and other appliances, institutions of teacher education and teachers' professional development may help transform and re-pattern a teacher education system which is not only more inclusive and flexible but more importantly cost effective. Given the innovative approaches and best practices, support mechanism needs to be rationalized and restructured rooted to the technology - enabled infrastructure, delivery and resources.

Concluding Remarks

To conclude, it is strongly believed that the technology enabled teacher education has the potential to transform and reshape the instructional process and other learning networks in the country in fundamental ways. Taken together, studies suggest that it also reduces costs and improves access and quality of teaching learning resources. The discussion in the present academic investigation reiterates to strike a subtle balance between efficiently using technology and its many ramifications to maximize educational effects while minimizing its systemic impacts. The key strength outlines that by enabling technological tools, devices and other appliances, institutions of teacher education and teachers' professional development may help transform and re-pattern a teacher education system which is not only more inclusive and flexible but more importantly cost effective.

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