Technological Inclusion @School Teachers' Preparation and Professional Development: A Critical Review

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ABSTRACT

Technology plays a critical role in teaching, learning and assessment processes. This study is an attempt to review the studies, initiatives and provisions for effective integration of technology in preparation and professional development of school teachers in Indian context. The digital competency of the teachers is crucial in implementing technological integration in the teaching, learning and assessment processes. The achievement of learners with technological integration will depend largely on the teachers' abilities, perceptions and their skills to embrace the technology. The new education policy also highlights the need for integration of technology at all levels of education facilitating teacher preparation. It also highlights improving teaching, learning and evaluation processes. Several studies reported that the teachers were not fully confident to use technology as they were not properly trained. They have knowledge of technical devices but most of them don't know how to use them in practical situations. This may be attributed to limited knowledge and training regarding how to use technology in teaching, learning and assessment.

Keywords: Technology, inclusion, teachers' preparation and professional development

In the light of recommendations of National Education Policy 2020, the integration of technology at all levels of education is very crucial to revamp the educational quality in India. The recent pace in digitalisation of education is largely attributed to the Digital India Campaign, introduced in 2015 by Government of India. The integration of technology in education not only plays a vital role in improvement of educational processes but also promotes inclusiveness and opportunities for lifelong learning, one of the goals reflected in 2030 Agenda for Sustainable Development. The teachers' digital competence is a very important factor that plays a major role in implementing technological integration in the teaching, learning and assessment processes. The achievement of learners with technological integration will depend largely on the teachers' abilities, perceptions and their skills to embrace the technology. Some initiatives have been launched by Government of India to support the teachers digitally such as Digital Infrastructure for Teachers (DIKSHA), Performance Indicators used to assess the performance and progress of teachers (PINDICS), National Initiative for School Heads' and Teachers' Holistic Advancement (NISHTHA), Central Institute of Educational Technology (CIET)-online training courses, modules and webinar series. Although there have been various initiatives launched in the past several years to improve teachers' digital competence, proper implementation and application of these schemes and policies at ground level always remain a question. The pandemic also has posed unpredictable challenges among educational systems (Ali, 2021). Before pandemic outbreak, the technological use in

teaching learning process was limited as per basic requirement. But the shutting off the schools led teachers, students and parents to a whole new situation which required alternatives to face to face mode of instruction. Teachers have to use different strategies and digital tools to solve unprecedented problems and devise new ways for teaching and learning. According to Schulman's classification of teacher knowledge, the professional competences of teachers include three categories i.e. Content Knowledge (CK), Pedagogical Content Knowledge (PCK) and General Pedagogical Knowledge (GPK). But due to the increasing significance of the digitalisation of education systems, Techno-Pedagogic-Content Knowledge (TPCK) is largely emphasised (Mishra & Koehler, 2006). TPCK has extended the teacher knowledge categories which includes the knowledge needed for effectively implementing technology while teaching and learning as well as to overcome the challenges associated at school. Teachers should acquire a range of knowledge for professional development and to overcome the challenges in teaching and learning (Shah & Mohalik, 2013). Several studies have been reported in the past few months on the problems faced by teachers and learners in online situations. However, it is still unknown how well teachers have handled these difficulties and what criteria are important in the aforementioned situation. This study will be an attempt to explore the inclusion of technology for preparing school teachers in the preservice and inservice stages for teaching learning and assessment practices. Further this study also aims to explore the provisions of NEP 2020 for the teachers' preparation and professional development.

Objectives

❑ To review the studies, initiatives and provisions for the effective integration of technology in preparation and professional development of school teachers.

❑ To identify the gaps and challenges in effective implementation of integration of technology in teachers' preparation and professional development.

Methodology

The study is descriptive review study and has used secondary sources from various Government reports, journals, books, book chapters in edited books, newspaper articles, websites etc. The data collected from the above sources were critically analysed to come at the probable conclusions.

Background

Several international studies showed that teachers are aware of the transition from traditional face-to-face instruction to online and hybrid learning to certain extent. However the teachers had limited competency to use technology for online and blended mode of teaching due to lack of resources and technical training (Alasoluyi, 2021; Lederman, 2020; Lee *et al.* 2021). Hennessy *et al.* (2022) conducted a review on technological use for professional development and found localised technological integrated professional development which included online coaching, blended approaches and software applications. Jager-Biela *et al.* (2020) in their study emphasised on the opportunities to learn digital competence at pre-service teachers' level to implement them in teaching learning processes. Konig *et al.* (2020) also conducted study on pre-service teachers' competencies on planning skills during the pre-service training phase. Several other studies also reviewed the teachers' preparation in the digital age highlighting the gaps and futuristic approach towards digitalisation of education based on previous studies (Li & Ma, 2010; McFarlane, 2019; Mishra *et al.* 2020; Richard, 2016; Starkey, 2020). In their study, Baker *et al.* (2018) noted that it is necessary to evaluate both the efficient training of teachers and the efficient incorporation of technology into pedagogical practices. Ghavifekr and Rosdy (2015) studied the effectiveness of teaching and learning with technology in schools. The findings showed that the teachers' preparatory phase has a crucial role in technology integrated teaching and learning. The training programs conducted for professional development were also one of the important elements. Kozma (2011) in his study stated that the major argument here is to close the gap between learners' conventional and online learning. In this regard, teachers have to be competent enough to bridge this gap.

In the Indian context, Chauhan (2017) studied some recent meta-analyses. They suggested that the technological use has been popularised at secondary schools in recent decades and it has provided

ample opportunities for teaching and learning processes. Government of India (2019) in the Draft of National Education Policy has highlighted the need for appropriate integration of technology at all levels of education to facilitate teacher education and professional development as well as to improve teaching learning and assessment practices. Further Government of India (2020) in National Education Policy 2020 has reflected on the need for suitable technological training and development programmes for the teachers along with changes required in online pedagogy and assessments. It also emphasised technological inclusion for the continuous professional development of the in-service teachers in specific areas. The pre-service training will include training of most recent methods in pedagogy with technological interventions in several areas including teaching and learning with children with disabilities, special children, language teaching etc. A platform for knowledge sharing in the form of ideas and resources, the National Educational Technology Forum (NETF), will be formed for teachers and administrators.

Identification of research gaps

A review of studies on the technological use in teaching, learning and assessment has consistently found that the teachers' competence to use technology is an important factor in effective teaching learning in this situation. Despite the many advantages associated with the use of technologies that have been documented in past literature, there are numerous challenges faced by teachers related to lack of knowledge, skills, training and resources to use technology in its operations. Therefore, this study will be an attempt to explore the problems, challenges and implementational gaps to improve teaching, learning and assessment practices

Technological inclusion challenges in teachers' preparation

❒ Limited competency to use technology for online and blended mode of teaching.

❒ Lack of resources and technical training.

❒ Traditional curriculum.

❒ Lack of technical elements in the pre-service and in-service stages.

Other challenges

❒ Poor infrastructural facilities.

❒ Technical infrastructure.

❒ Geographical location.

❒ Poor internet connectivity.

❒ Concept of multilingualism.

❒ Lack of scripts of local languages.

❒ Lack of sufficient number of higher education technical institutions.

❒ Poor governance to facilitate and successfully implement the fundings.

NEP 2020 and technological inclusion in teacher education

Teacher preparation and professional development include three stages i.e. pre-service, induction and in-service (Fig. 1).
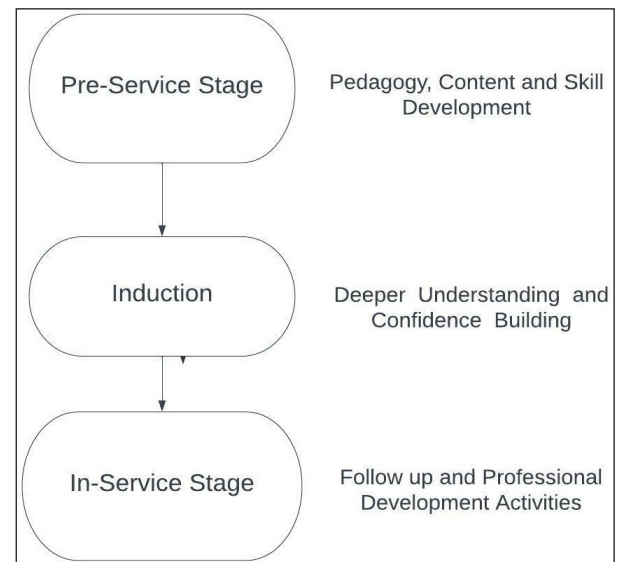

Fig. 1: Stages of teachers' preparation and professional development

The previous survey reports on percentage of trained teacher available at different levels of school education highlights that though the percentage of trained teachers had increased but there is no significant increase in trained teachers secondary and higher secondary level (Fig. 2). Further the percentages of teachers who are technologically trained are not clearly highlighted yet. The new education policy has recommended inclusion of technology at all stages. The key recommendations of NEP 2020 for teachers' preparation are as follows:

□ The platforms such as Study Webs for Young Aspiring Minds (SWAYAM), DIKSHA etc. have to be used for online training of teachers in a short span of time.

□ The NETF will be created for free sharing of ideas on how to use technology for teaching, learning, assessment, administration and planning.

□ The educational softwares has to be developed for both the teachers and learners at all levels in regional languages. The e-content is also to be developed for learners in remote areas and divyang learners.

□ The technological interventions for supporting teacher preparation and professional development have been emphasised.

□ Availability of suitable technological equipment has to be checked for the teachers.

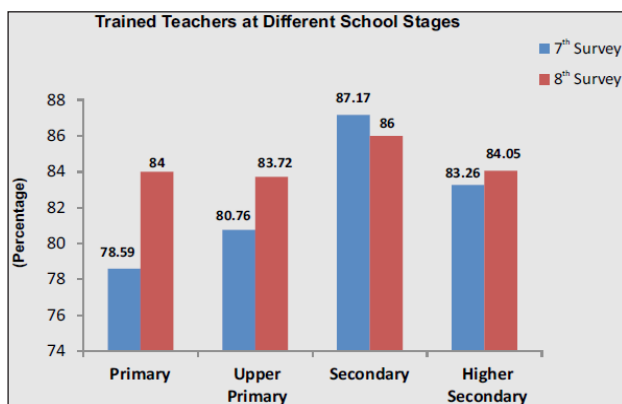□ The frequent training on technological inclusion has been emphasised during both preservice and inservice stages.

Fig. 2. Percentage (%) of trained teachers at all the levels of school education

Source: NCERT report on All India School Education Survey (2002-2009)

Suggestions

□ The current teacher education system should be properly reassessed in order to find the actual problems in different areas.

□ The multilingualism can be properly implemented when there will be linguistic development of endangered local dialects across different areas.

□ Proper funding should be provided as well

as monitored for technical infrastructure development.

□ More technical higher educational institutions needed to be established in this region.

Relevance of study for the society

Education is crucial for the transformation of society. For quality education, there should be continuous professional development of the teachers. And technological inclusion plays a crucial role in improving learning outcomes. This study may be helpful in finding the gaps in implementation and providing probable solutions for better teaching and learning processes. Further improvement in the pedagogical and assessment practices will also be possible.

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