

Digital Pedagogy in Teacher Education

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Abstract

In the present era of technology, vast changes are required in Indian teacher education system with a more advanced digital pedagogy to shape better teachers in India. Now simple pedagogy is shifting towards Digital Pedagogy, which is a novel way of teaching and learning with ICT. Digital Pedagogy moves the focus from only ICT tools and skills, to a mode of working in the digital world. Digital Pedagogy means the use of electronic fundamentals like multimedia, productivity applications, cloud computing, etc. to enhance or to change the experience of education and transforms teaching and learning to provide rich, diverse and flexible learning opportunities for digital generation. Present paper discusses that developments in ICT provide very different learning opportunities, and a need to design a new integrated pedagogy in teacher education. Now the aim of teacher education should be to develop skills and appropriate knowledge among teacher trainees for using and integrating the correct technology in a suitable manner. Every teacher must ensure technological integration, pedagogy and subject area content effectively in their daily classroom teaching.

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Introduction

A teacher plays a significant role as transmitters, motivator and promoter of human's eternal quest for knowledge. Gone are the times when teaching was considered an art but with the changing demands of society and recent researches in the related field now the teaching is being taken as a skill and it is believed that individuals can be trained for the same. To train the teachers and to keep them updated is the purview of teacher education and its main objective is to produce enlightened teachers who will in turn prepare enlighten individuals for progressive society. To achieve this objective, teacher education in India also needs to be redesigned to accommodate the rapid changes taking place across the world in the field of education and learning. It must have constant alertness to the innovations in the concerned area as it brings new realities and challenges to Teacher Education.

New opportunities and possibilities especially those related to the field of Information & Communication Technology (ICT) has important implications in teacher education. ICT is unanimously acknowledged as an essential catalyst of social transformation and progress of country. Recent years have seen various efforts made at different levels of education not just to increase the

use of technologies rather than to integrate the computer and related technologies in the core functioning of teaching and learning. Approach of teachers to use ICT in the process of teaching and learning is influenced by their subject knowledge, knowledge of application of ICT and the relation between two. Quite often teachers select ICT resources, which are related to a specific topic; very few of them use it without any direct application to the topic. Researches show that when teachers use their subject knowledge along with their knowledge of the ways learners understand the subject, use of ICT in teaching and learning has a better and direct effect on learner's achievement.

Pedagogical beliefs and attitudes of teachers play a significant role in designing such learning opportunities, which are techno-mediated. To enable the teachers to choose the most appropriate resources from a wide array of ICT resources, extensive knowledge of ICT must be provided to the teachers. It is also important to acquaint them with the knowledge of incorporating and applying ICT into their lessons. Consequently, to achieve this there is dire need to develop new pedagogical practices by using ICT.

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ICT and Dynamics of Pedagogy

It is evident from number of studies that ICT uses could be most effective when both the teacher and the technology challenges learners understanding and thinking, the method used could be either discussion initiated by the use of an interactive whiteboard involving the whole-class or through individual or paired task to be done on a computer system. Both of the activities could prove to be equally effective if well planned and if the teacher is skilled in organising and encouraging the activities based on ICT. The knowledge about ICT is important but not as a separate and unconnected mass of knowledge divorced from the context of teaching and learning. However, in India very few teachers are competent and have a comprehensive knowledge of the wide range of ICT resources now available in education. This means that learners are devoid of diverse learning opportunities that ICT could provide.

Comu (1995) suggested that recent developments in ICT offer very different learning opportunities, and a need to design a new 'integrated pedagogy' has been identified. Pedagogical roles for teachers in a technology-supported classroom as defined by McLaughlin and Oliver (1999) includes setting joint tasks, rotating roles, promoting student self-management, supporting meta-cognition, fostering multiple perspectives and scaffolding learning. An assumption here is that the use of ICT is changing the pedagogical roles of teachers, and a compelling rationale for using ICT in schools is its potential to act as a catalyst in transforming the teaching and learning process (Hawkrigde, 1990).

Digital Pedagogy

Teacher education aims to develop knowledge and skills in pupil-teachers for the appropriate use and integration of right technology in a suitable way. It is the need of time that every teacher should know the proper use of technology, pedagogy and content of particular subject to make their daily classroom teaching effective and efficient. Digital pedagogy could help teachers in achieving this. Digital pedagogy, the term emerged from the juxtaposition of technical skills, pedagogical practices and understanding of curriculum design approach, which are appropriate for learners. Digital Pedagogy is effective in supporting, enhancing, and transforming the process of teaching and learning and in consequence provides enriched, assorted and flexible learning opportunities for learners. It also offers a base to engage learners in constructive learning through which learners dynamically construct and apply learning in decisive, purposeful and significant ways. According

to smart classrooms (2008), "Digital Pedagogy enhances opportunity for authentic, contextualised assessment that supports learning in a digital context. The Digital Pedagogy program incorporates contemporary teaching and learning strategies. It features personalised approaches, intellectual rigour and engagement, connectedness to global contexts, supportive and collaborative classroom environments and a clear alignment of curriculum, assessment and reporting to improve outcomes for students." It is a technique to work and learn with ICT tools to assist quality enriched learning experiences for 21st century learners. Digital Pedagogy means the use of electronic fundamentals like social media, online games and applications, multimedia, productivity applications, cloud computing, interoperable systems and mobile devices to enhance or to change to experience of education and transforms teaching and learning to provide rich, diverse and flexible learning opportunities for a digital generation.

"Digital pedagogy is not merely a way to teach, but also makes up a rapidly expanding field hosting multiple debates and schools of thought" (Croxall, 2013). The Digital Pedagogy provides an understanding to teachers about the ways in which learners of digital generation works and learns in a digitalized connected environment. Teachers integrate technology that has the potential to bring change in the education process by the means of digital pedagogy.

Digital pedagogy or techno-pedagogy consists of three areas of knowledge, i.e.: content, pedagogy, and technology.

Content (C) is the subject matter that is to be taught.

Technology (T) encompasses modern technologies such as computer, Internet, digital video and commonplace technologies including overhead projectors, blackboards, and books.

Pedagogy (P) describes the collected practices, processes, strategies, procedures, and methods of teaching and learning. It also includes knowledge about the aims of instruction, assessment, and student learning (Khirwadkar 2007).

Integration of technology involves the understanding of the relationships among the aforementioned three components. According to Koehler and Mishra (2005), "good teaching is not simply adding technology to the existing teaching and content domain; rather, the introduction of technology causes the representation of new concepts and requires developing sensitivity to the dynamic, transactional relationship between all three components suggested by the TPCK framework".

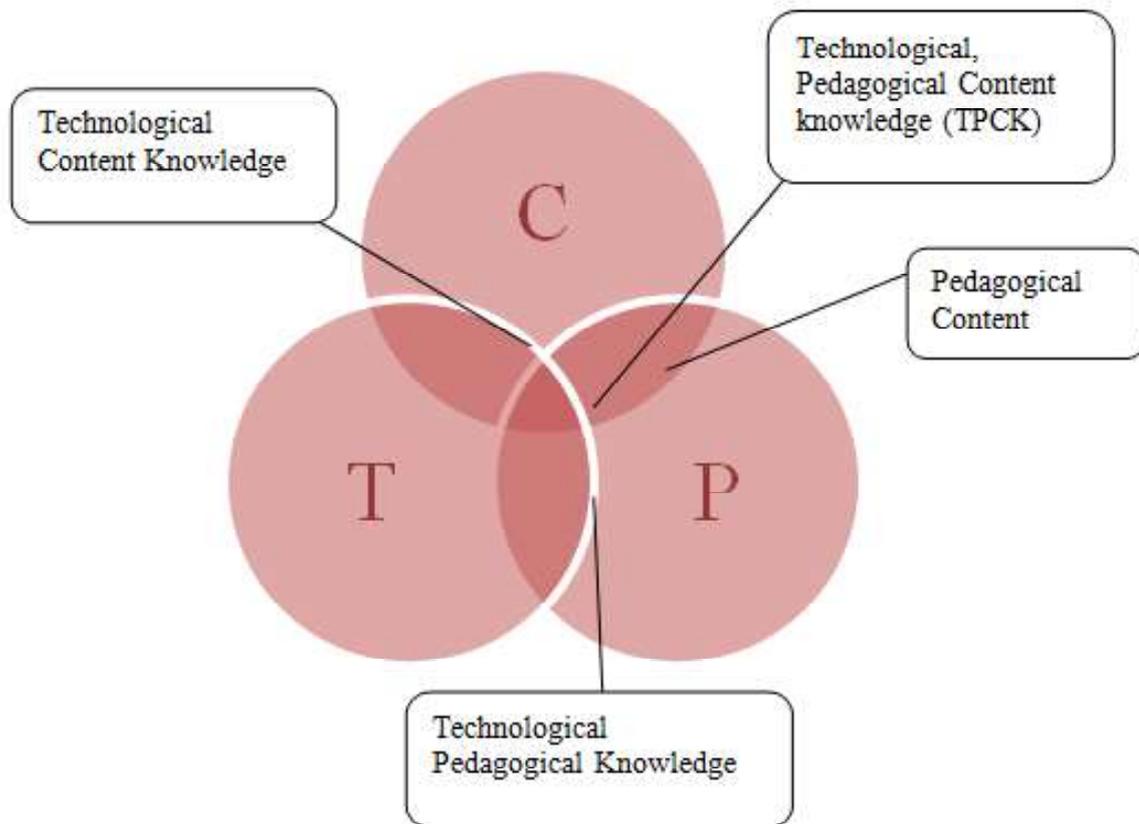


Figure 1- TPCK Framework (Koehler and Mishra, 2005)

Depending upon the nature and scope of content, and level of learners, appropriate technology integration must be looked for. Technology as an assistant enhances the process of learning and helps in achievement of higher-level objectives.

Approaches for digital integration in Teacher Education

Throughout the world, ICT and other related digital technologies are being used in teacher education with number of different approaches with varying degrees of success. These approaches have been further described, analysed, refined and merged into following approaches-

1. ICT **Skills development approach** in which weightage is given to provide guidance to pupil teachers in general use of ICT to assist them in performing their daily activities. To accomplish this, knowledge about different software, hardware and their respective usage in the process of education is provided.

2. ICT as **Pedagogy approach** where importance is given to plan, integrate ICT skills for the specific subject to enhance particular concepts and skills, and improve learning outcomes. Based on the principles of constructivism, pupil teachers prepare lesson plans and

activities, select the appropriate ICT resource followed by integrating them to use in relevant lessons.

3. ICT as a **Subject-specific approach**, in this approach ICT does not function as an 'add on' rather than as an integral tool; accessed by teachers as well as learners for a wide range of the curriculum. It includes the planning to use ICT resources that enhance the understanding of learners through some aspect of the lessons and tasks related to particular subject.

4. ICT as a **Practical approach** here emphasis is to provide exposure to the pre-service teachers about the use of ICT in practical aspects. In this approach, the pupil-teachers focus on the planning and developing lessons by using ICT tools to complement the lesson with the help of various innovative presentation methods to promote class discussion and the visualisation of concept.

These approaches can enhance attainment but with different effects. They are useful to the extent that the skill development approach enhances ICT literacy skills whereas the fundamental pedagogy permits student teacher to further develop and sustain these skills in the context of designing classroom- based resources. By using this, teacher educators will not only expose

students to new and innovative ways of learning but also provide them with a practical understanding about what teaching and learning with ICT looks and feels like (Khirwadkar 2007). It is evident from the above discussion that ICT in teacher education can take many forms. Teachers can be trained to learn how to use ICT tools. ICT can be used as a core or a complementary means to the teacher training process (Collis & Jung, 2003).

Conclusion

Teachers are very important in shaping the future but teacher education has faced criticism over the years, because of its general too technical and obsolete pedagogy, which is not applicable in contemporary Indian society. At present the chief objective of the teacher education to prepare techno-pedagogues, one who can develop and implement digital pedagogy. Pre-service teachers must be able to integrate technology into teaching learning. They must understand their role in technologically oriented classrooms and develop skills to make use of Internet technology, exploring it, perform information processing and management to use in teaching learning, etc. Therefore, objective must be shift from mere acquisition of knowledge and understanding to the attainment of application and skill. Offering ICT as a compulsory subject only will not work anymore in addition to this; there is need to study ICT in an integrated approach along with methods courses. This will help pre-service teachers in the development of the required skills and competencies related to digital pedagogy to a greater extent.

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