INNOVATIVE TECHNOLOGY FOR EFFECTIVE PEDAGOGY AND CURRICULUM DEVELOPMENT

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Abstract

Curriculum refers to the specific blueprint for learning that is derived from desired results—that is, content and performance standards. Curriculum takes content and shapes it into a plan for how to conduct effective teaching and learning. The main focus of curriculum development is on deciding which knowledge, skills and values to be taught, how to reach the intended outcomes, and the learning and teaching processes. Technology have affected our lives for over half a century. Yet, the teacher education curriculum is still perceived as traditional in its structure and implementation. Attempts to assimilate technology into teacher education curricula are frequently supported by policymakers. Innovation has become an increasingly important theme in teacher education. However, significant change in content, teaching and learning processes and assessment methods can actually be detected mainly in focal innovative initiatives within training institutions. After systematic education reforms in many countries around the world, it results in some cases deep changes in the curriculum, the pedagogical activities as well as the roles of teachers and pupils that made significant use of information and communication technology. Present study concentrates on technological enhancement in pedagogy as well as in curriculum development, which results into fruitful and effecting teaching and learning process. During study it found that a major challenge in teacher education is how to sustain and scale up innovative technology because this integrated technological knowledge helps a prospective teacher to know the world of technology in a better way by which it can be applied in future for the betterment of the students.

Keywords: Technology, ICT, Pedagogy, Curriculum Development.

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.

ICT and 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.

Pedagogy in Teacher Education

Pedagogy: Pedagogy itself is a contested term, but involves activities that evoke changes in the learner: Watkins and Mortimore define pedagogy as 'any conscious activity by one person designed to enhance learning in another' (1999, p.3). According to Bernstein, pedagogy 'is a sustained process whereby somebody(s) acquires new forms or develops existing forms of conduct, knowledge, practice and criteria from somebody(s) or something deemed to be an appropriate provider and evaluator' (Bernstein, 2000). Bernstein contrasts two models of pedagogy that focus on the teacher's organisation, management, discourse and response to the students and which provide a useful theoretical framework with which to understand different pedagogic approaches:

Performance model: visible pedagogies where the teacher explicitly spells out to the students what and how they are to learn, with a recognisable strong framing or lesson structure, collective ways of behaving and standardised outcomes;

Competence model: invisible pedagogies with weaker framing that result in an ostensibly more informal approach where the teacher responds to individual children's needs, with hidden or unfocused learning outcomes (Bernstein, 1990).

Alexander's definition of pedagogy is most helpful, wherein teaching 'is an act while pedagogy is both act and discourse' (Alexander 2001). Pedagogy comprises teachers' ideas, beliefs, attitudes, knowledge and understanding about the curriculum, the teaching and learning process and their students, and which impact on their 'teaching practices', that is, what teachers actually think, do and say in the classroom. Teacher beliefs are contextually based, and Alexander's definition also encompasses social, cultural and political aspects.

Pedagogic approaches

Teachers' thinking and ideas are manifested in their overall pedagogic approaches, garnered from the kinds of teaching and learning experienced as school students themselves, the approaches promoted in initial teacher education (ITE) and continuing professional development (CPD), those specified in the current school curriculum and those pervasive in colleagues' classrooms. Recent curriculum reforms have moved away from 'teacher-centred' pedagogic approaches to more 'learner-centred', or 'active' learning approaches.

Pedagogic strategies

Teachers' strategies signify their dispositions towards teaching and learning and are a more concrete expression of their approach, wanting, for example, their students to feel safe, or encouraging their participation or cultivating a cheerful teacher persona or being seen as a knowledgeable and authoritative figure.

Effective pedagogy As with the term 'pedagogy', the term 'effective' is contested. The ultimate goal of any pedagogy is to develop student learning, and yet the 2005 Global Monitoring Report on quality (UNESCO, 2005) includes creative, emotional and social development as indicators of quality learning. In order to include a wide number of studies on pedagogy, the review has conceptualised 'effective' pedagogy as those teaching and learning activities which make some observable change in students, leading to greater engagement and understanding and/or a measureable impact on student learning. Implicit in these definitions is a starting point or baseline with which to contrast the observable change in behaviour or learning taking place as a result of a teacher's pedagogy.

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.

Curriculum

Curriculum plays an important role in the field of teacher education. Curriculum is the planned interaction of pupils with instructional content, materials, resources, and processes for evaluating the attainment of educational objectives. Curriculum is used in several meanings. There are also a number of definitions of the term, curriculum. Carl (1995) defines curriculum development as"... an umbrella and continuous process in which structure and systematic planning methods figure strongly from design to evaluation."For the purposes of this study, this definition is accepted as it includes all aspects from design, dissemination, and implementation to evaluation. According to Taylor (1966) curriculum means all the learning which is planned or guided by the school, whether it is carried in groups or individually, inside or outside the school.

Importance of curriculum in teacher education

A curriculum guides the instructional lessons that teachers use. A curriculum defines what the learner will learn and can possibly guide when the learner learns the information from the lesson. A curriculum offers teachers the ideas and strategies for assessing student progress. A student must meet certain academic requirements in order to go to the next level. Without the guidance of a curriculum, teachers cannot be certain that they have supplied the necessary knowledge or the opportunity for student success at the next level, whether that the levels involve a high school, college or career. Curriculum can help students to achieve some personal control over their learning, to plan their semester, and to manage their time effectively, and describes Active Learning. Students often conceive of learning as the acquisition of correct information, but they may not know what it means to take an active role in the process, beyond rote memorization and recall, students should be given some idea about what they should already know and what skills they should already have before taking

course so they can realistically asses their readiness, sets the course in a Broader Context for Learning, describes Available Learning Resources.

Curriculum development

Curriculum development is the process of creating planned syllabus, teaching, training, and exhibition modes. It is a term used to refer to the process of instituting and putting in place precise guidelines of instruction for the curriculum. It describes ways in which teaching and different training organizations plan and guide learning which can be in groups or as an individual. Curriculum development is a local, regional, or state/provincial level process that student teachers often have difficulty comprehending. In their eyes, it is something undertaken by authorities (e.g., regional advisory committee members) with years of experience in the teacher education system. The expectation of the teacher candidates, often enough, is that they will learn how to teach and thereby become effective at transmitting the knowledge, skills, and attitudes associated with a particular subject or program. Education practitioners with years in the profession know differently. Successful practice in the classroom is inextricably linked to curriculum development-the everyday decisions about both what to teach and how to teach.

Technology, 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 detached 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.

Digital Pedagogy

Teacher education aims to develop knowledge and skills in pupil-teachers for the appropriate Digital Pedagogy in Teacher Education 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." "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 may combine technology with their teaching which may result in a potential tool to bring changes 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 is to be taught.

Technology (T)includes latest technologies such as computer, Internet, mobiles, digital video, e-books, Open educational resources 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.

ICT and Curriculum Development

Embedding the use of ICTs into the curriculum must be considered a key priority and part of national strategy for learning in an online world by every developing countries of the world. The reason for this is because we live in a technological world where information and communication technologies (ICT) are fundamental to most activities. The importance of ICT in society is emphasized in Enabling Our Future which identifies ICT literate citizens as being central to economic and social goals, to improving productivity and efficiency, and to building innovative capacity and competitiveness. The importance of ICT in schooling cannot be overemphasized.

Using ICT as a tool for learning enables students to:

• "Efficiently and effectively access digital information to assist with investigating issues, solving problems and decision making Produce creative solutions to support learning and develop new understandings in areas of learning

• Communicate, share and work collaboratively in local and global environment understand the legal, ethical and health and safety implications of using ICT and their responsibilities as users and developers; and,

• Develop new thinking and learning skills to support learning"

Applying ICT as a tool in curriculum areas enables teacher educator to have the opportunity to become competent, discriminating, creative and productive users of ICT. They are better able to achieve curriculum outcomes through effective use of ICT. They develop the knowledge, skills and capacity to select and use ICT to inquire, develop new understandings, create, and communicate with others in order to participate effectively in society. Teacher educator should have the opportunity to understand the impact of ICT on their students, society, including potential risks to health and safety. No wonder, the implementation of ICT is inseparable from the process of curriculum reform and development. This is because ICT is a means to help achieving future curriculum goals by providing a learner-centred environment. Many teachers still adopt a 'teacher-centred' approach and do not know how to

apply IT into the teaching of their subjects Curriculum Development In any educational system, the level of available resources places a restriction on the degree to which any new subject can be introduced into the school curriculum, especially where only the most basic facilities have so far been provided (UNESCO/IFIP, 2000. Redefining curriculum supposes that the curriculum should be designed for both teachers and students to improve their knowledge and skill in ICT. The design according to (UNESCO/IFIP, 2000) supplies four curriculum areas tied with the four stages of teaching and learning: ICT Literacy: This covers the use of ICT in daily life in a competent and intelligent way. Integration of ICT across the Curriculum: This is described to demonstrate the use of ICT to combine subject areas to work on real-world projects and solve real problems. ICT Specialization: Here the designed is for students who plan to go into professions that use ICT such as engineering, business, and computer science, or who plan to advance to higher education. These modules cover the use of advanced tools and techniques for ICT specialist.

Discussion

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 describes impact of technologies and ICT uses in effective pedagogy and curriculum development and have been further described, analysed, refined and merged into following approaches form-

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 **curriculum 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 Digital Pedagogy in Teacher Education 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.

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 and curriculum development, 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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