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Smart Pedagogy: A Smart Approach to Prepare Prospective Teachers of Digital Era

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ABSTRACT

In the present era of technology and digitalization, the focus of teacher education is to equip prospective teachers with advanced pedagogy. To prepare competent future teachers is an important goal of teacher education. However, this goal can be realized through the use of smart pedagogy in teacher education institutions. Smart pedagogy is a teaching learning pattern in which students are taught through a variety of smart technologies. The concept of smart pedagogy in academic scenario encompasses the use of latest and advanced technologies like smart phones, smart tools, smart boards, Wi-Fi along with use of ICTs (information and communication technologies) on-line learning and at the most advanced level Web 2.0 technologies. The core purposes of this concept paper were; to highlight the imperative role of smart pedagogy for preparing smart prospective teachers to enable them to face the challenges of teaching smartly; to explore the importance of infusing teacher education curricula with smart technological practices for future educators. The secondary data has been gathered from official websites, eBooks, and periodicals. After a review of the literature, it is concluded that Smart pedagogy has emerged as an informed and rigorous approach of teaching workable for both teachers and students. It is proven after COVID-19 that teacher educators had to go hand in hand with technology based education and learning and in future they will also rely on use of smart technologies as these are more time saving, user friendly, advanced, adaptable and personalized/individualized. The study recommends that teacher educators need to foster a positive attitude in prospective teachers for the use of technology by incorporating technology in their classroom and giving them technology based assignments. In this regard, first of all teacher educators will have to be trained then in turn they can train their students. For better implementation in the Pakistani scenario, it is recommended that advanced computer labs, digital libraries be provided in educational institutions to promote Smart pedagogy. Special funds be allocated by the Higher Education Commission to teacher training departments for the purchase of soft-wares, license and smart tools.

Keywords: Smart Pedagogy, Teacher Education, Prospective Teachers

INTRODUCTION

Teacher education in Pakistan is facing new challenges in form of low quality curriculum, lack of advanced training practices, less use of technology based teaching techniques and incompetency of teachers for using advanced pedagogy especially smart pedagogy. Smart pedagogy refers to technique of working and process of learning through ICT tools to aid the valuable and quality learning experiences for future teachers and educators of modern age. In this way, Smart pedagogy provides the opportunities to prospect teachers for understanding of activities performed by them as modern age learners of digital age who can enjoy the learning in a digitalized academic milieu (Dangwal & Srivastava, 2016).

Teacher education demands a paradigm shift to digital and smart pedagogy from traditional and out dated pedagogy. We are passing through a digital age in which students are digital natives who have more exposure to latest and advanced technologies like wireless Internet, mobile gaming, smart phones, iPads and various form of social media. Therefore, this is need of hour to incorporate all these in teacher education to equip future teachers with latest tools. Today's pre-service teachers are confined in a digital world. It is better to say that they are digital natives. Therefore, to keep them involved with this technological world is a challenging task for teacher education. Although teacher education is striving to reach the goal of techno pedagogy, teacher educators are getting involved in applying such strategies which may enable these future teachers to opt 21st century techno skills and in turn they may use this smart pedagogy in their teaching profession in upcoming days. It is need of time to welcome smart pedagogy by including use of Web 2.0 technologies as vital and mandatory aspect of scheme of study of teacher preparation programs. For this purpose, necessary practices are needed by the educators for the creation of stimulating, enriched and activity based teaching environment in classroom (Sailin & Mohamar, 2018).

In Pakistan, the standardization of pre-service teachers training programs is not much old. In 2009 the Government of Pakistan first time launched a four years teachers training program, B.Ed. (Hons), across the country. B. Ed (Hons) is the first training program in the country where technology is integrated to support teacher's content as well as pedagogy. The idea of technology integration emerged from National Education Policy of Pakistan (2009) and National Professional Standards for Teachers (2009). Both documents emphasized that educators should impart strong knowledge of technological inventions (Jalani, 2020). It is unanimously acknowledged that smart or digital pedagogy be used in teacher education institutions to prepare modern teachers who are able to use technology technically and theoretically while executing any lesson plan (Stepanyuk et al., 2022).

Objectives of the study

- To highlight the imperative role of smart pedagogy for preparing smart prospective teachers
- To introduce latest innovative smart learning technologies to be blended with smart pedagogy
- To explore the importance of infusing teacher education curricula with smart technological practices for future educators

Methodology

The research is conceptual. The secondary data has been gathered from various sources including Official websites, eBooks, Blogs, ICT Research Journals and Periodicals.

Literature Review: Concept of Pedagogy

Pedagogy has been defined as the discipline that deals with theoretical concepts and practical educational approaches (Lorenzo & Gallon, 2019). In view of Dangwal & Srivastava (2016) pedagogy encompasses the composed practices of teaching- learning methods and processes, techniques and strategies which comprise information regarding instruction and learning as well as measurement and assessment of learning process of students.

According to Nanjundaswamy et al. (2021) pedagogy can be termed as teaching styles of teacher which are executed under a theory and they have certain assessment and feedback techniques. Pedagogy of teaching refers to the educator's style of delivery of the content presented before prospective teachers. In teacher education, teacher educator can use teacher centered and learner centered pedagogy along with learning centered and interactive or participatory pedagogy depending on course and its nature of the content. The spectrum of pedagogy covers techniques of assessment used by the teacher, his lesson planning, teaching and classroom management strategies according to the principles of learning (Jalani, 2020).

Concept of Smart Pedagogy

Smart pedagogy is a teaching learning pattern in which students are taught through a variety of smart technologies. When a teacher opts a pedagogy that can be provided anywhere, anytime which is resource enriched and technology embedded we may refer it as Smart pedagogy. Other similar terms of smart pedagogy are smart education, digital pedagogy, techno-pedagogy, mobile pedagogy and smart learning. Technically, SMART stands for Self-Monitoring Analysis and Reporting Technology. However, in academic scenario, when technology is incorporated in teaching learning process then traditional pedagogy shapes up into Smart pedagogy. Smart pedagogy, was developed under the logic of Grounded Theory by Glaser and Strauss (1967) according to which the technology is fused into a Smart learning environment of classroom (Daniela, 2019). This idea gave birth to smart classroom. Inception of smart classroom is rooted in San Diego State University when in 1995 a smart classroom was built to foster enhanced level learning by fusing technologies of that time like clickers, symposium and multichannel audio system (Yang et al., 2018).

When teachers construct students' knowledge based on problem-solving and higher order cognitive and meta-cognitive skills, it can be termed as their Smart pedagogy as with the help of these skills they enable students for creating, editing and publishing online. In this way, ultimately they foster critical analysis, Meta cognition, and reflection in their students (Sailin & Mohamor, 2018). Smart pedagogy refers to the usage of ICT tools and techniques, different gadgets including social media, mobile and internet related applications, cloud computing, online games etc. The main purpose is to boost or to modernize experience of education that transforms teaching and learning through well-to-do, miscellaneous and updated learning opportunities for a generation of this modern and digital age (Dangwal & Srivasatva, 2016).

Smart pedagogy demands inculcation of pedagogical digital competence (PDC) in contemporary teacher educators under a robust in service teacher training program. So that they may enable themselves to incorporate it in their classrooms. However, teachers can equip themselves in PDC while meeting three phases of PDC those are interactional, course and organizational phase. At interactional phase teachers are involved pedagogically with students, at course phase they design, implement digital technologies in their courses and at organizational phase they develop academic goals and strategies to create a digital, interactive and virtual environment (Vaataja & Ruokamo, 2021).

Smart Technologies in Smart Pedagogy

Various smart technologies are used in smart pedagogy like smart phones, tablets, iPads, personal computers, internet, virtual libraries and laboratories. However, the most useful and latest smart technologies which can be incorporated into teaching and learning and those gaining attention of teacher educators are Web 2.0 technologies. Social networking applications, blogs, wikis, web-based presentation tools, cloud computing and online mind mapping tools fall under the spectrum of Web 2.0 technologies (Sailin & Mahmor, 2018).

ViLLE interactive learning platform is also an innovation in smart pedagogy in which students' learning progress is assessed digitally with the help of statistics on daily basis(https://www.utu.fi).ViLLE is a web-based learning environment with additional unique functions that support collaborative learning and enable automatically assessed exercises with immediate feedback developed at the Centre for Learning Analytics of the University of Turku, Finland as the interactive learning platform (Pongsakdi, et al. 2021).

Uskov et al.(2018) introduced few more advanced, innovative and smart teaching and learning strategies for a smart academic environment those are; Augmented and Virtual Reality (AVR), Virtual Assistants (VA) and Stealth Assessment (SA).Through AVR students interact with computer based simulation which enables them to be involved in learning deeply. They are presented with course content in contextual reality which seems similar to real one. Prospective teachers can use this strategy for the preparation of their teaching practicum, a compulsory component of pre-service teacher education program.

At the more advanced level VA introduces them with face, voice and gesture recognition features that enables them to manage recording and automatic sharing of learning material.SA is helpful in enabling students to be adjusted with simulated environment. Even teachers can give them tasks as per their competency level. Students get immediate feedback on their performance. It offers variety of tactics to teachers to incorporate assessment and feedback into computer games. As per UNESCO (2008, p. 9) these "new technologies require new teacher roles, new pedagogies, and new approaches to teacher training"

Role of Smart Pedagogy in Teacher Training

Smart pedagogy has the potential to create more interactive and responsive learning environments in which learners actively engage in the learning process through knowledge creation and evaluation. Smart technologies encourage an active learning process which stimulate learners' thinking skills and even teachers' teaching and assessment skills (Saili & Mahmor, 2018). Like, ViLLE learning platform by University of Turku Finland offers the teacher an opportunity to assess and ensure during remote teaching that the students have understood the concepts that have been taught. With the help of automatically generated statistics, the teacher can identify the learners who are in need of more

support, and differentiation can also be implemented on this platform. This is extremely important in this situation where the teacher is not in the classroom observing or organizing traditional evaluations then weekly use of ViLLE is proven to enhance the students' learning (https://www.utu.fi).

By using smart pedagogy teacher educators can prepare prospective teachers for imparting technical skills needed to use digital technologies. In this way, they can enable them to use and apply digital technologies in different working situations like lesson planning, assessment of students and classroom management. Resultantly, these future teachers can evaluate digital technologies critically to deal with ethical issues, limitations, and challenges of smart technologies. Smart pedagogy provokes them to participate in digital practices to enjoy the digital culture (Pongsakdi, et al.2021).

Stepanyuk et al. (2022) conducted a pedagogical experimental study on prospective teachers' use of smart technologies. During the pedagogical experiment students were trained in use of interactive white and smart board and its various functions. Experimenters prepared exclusive work plan for prospective teachers for the use of learning Apps which they could use for their lesson plans. Future teachers were got involved in net surfing and downloading of learning Apps from various world software platforms. Moreover, they included relevant sections of mobile teaching to their lesson plans. Prospective teachers, created their own video lessons in which they incorporated modern video hosting and learned its role in teaching.

Importance of Smart Pedagogy for Teacher Education

In view of Sailini and Mahmor (2018) teacher educators can promote prospective teachers' creativity, thinking skills, reasoning ability and innovation by using smart pedagogy. Students' use of Internet empowers them in learning environment. In this way, they engage themselves into digital creation, online collaboration and sharing. Smart Pedagogy supports, enhances, and transforms the process of teaching and learning into latest one by offering enriched, assorted and flexible learning opportunities to prospective teachers. In this way, students enjoy constructive learning through which they are able to apply knowledge and skills in critical, focused and remarkable ways.

Smart Pedagogy provides opportunities for valid, reliable and contextualized assessment that may enhance learning in modern digital framework. Smart pedagogy is helpful in modern and contemporary teaching skills, learning strategies through exact engagement, connectedness to worldwide contexts because of its intellectually personalized features and through creating helpful and collaborative classroom environments and assessment procedures (Dangwal & Srivastava, 2016).

Stepanyuk et al. (2022) documented through their pedagogical experiment over prospective teachers that Smart pedagogy proved to be very useful, efficient and effective for lesson plans. Teachers' smart use of digital pedagogy and digital resources is main reason to improve the students' activity and motivation level. A noticeable change in attitude of experimental group participants was also observed. They focused on lesson plans with zeal. Students created their own accounts in the learning Apps and prepared personal video lessons. They also learned use of video editing. All these practices improved personal skills of lesson planning of future teachers

CONCLUSION

It is concluded that smart pedagogy is an informed and rigorous approach of teaching which is to shape up and reform previously used stereotyped conventional pedagogies. So, it has been started to use to improve professional practices. It is proven after COVID-19 that teacher educators had to go hand in hand with technology based education and learning and in future they will also rely on use of smart technologies as they are more time saving, user friendly, advanced, adaptable and personalized/individualized. It is the responsibility of teacher educators to prepare prospective teachers that develop in them the ability to incorporate modern and digital technologies while teaching in future. The future teachers must be able to understand their responsibilities in technologically oriented classrooms for the application of modern skills to make use of smart technologies. To prepare techno-pedagogues, teachers have to use smart pedagogy as a smart approach of teaching and learning. Worldwide use of smart pedagogy in teacher training will certainly open the doors of success of prospective teachers in their future career (Stepanyuk et al., 2022). Yilmaz (2021) concluded in his study that smart pedagogy brought a positive change in prospective teachers' academic performance and their utilization of various critical and creative thinking skills which enabled them to increase their focus of attention and on-task behavior while using smart tools, devices and apps.

RECOMMENDATIONS

The study recommends that teacher educators need to foster a positive attitude in prospective teachers for the use of technology by incorporating technology in their classroom and giving them technology based assignments. In this regard, first of all teacher educators will have to be trained then in turn they can train their students as direct use of technology by the students can be difficult for students.

To offer ICT only as a compulsory course in teacher preparation programs is not sufficient we have to necessitate that prospective teacher should make himself so much skillful through integrated approach to cope with digital classroom environment in all the courses. In this way, pre-service teachers can be updated with required skills and competencies related to digital pedagogy to a greater extent (Dangwal & Srivastava, 2016).In the same context, Yilmaz (2021) proposes that smart pedagogy should be practiced extensively both by the teachers and prospective teachers while performing academic activities which may boost their cognitive, affective and psychomotor skills.

For better implementation in the Pakistani scenario, it is recommended that advanced computer labs be established in educational institutions to promote smart pedagogy. Policies must be developed in this regard for the successful implementation of Smart pedagogy. Special funds be allocated to teacher education department to purchase soft wares and smart tools. Training of teacher educators be arranged by the Higher Education Commission. Higher Education Commission ensure easy access of students to digital libraries. Teachers' training be arranged in collaboration with IT departments of concerned universities by the Higher Education Commission. Teacher educators will have to empower prospective teachers to be well-prepared in applying digital resources and selecting the right resource at the right time.

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