



Applicability and Emergence of Digital Pedagogy in the present scenario of teacher-education in North 24-Parganas of West Bengal: A post COVID 19 Pandemic Exigency

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Abstract:

Background

Digital Pedagogy is a study that focuses specifically on the use of technology thoughtfully and purposefully in education to remove the existing learning barriers as well as create joyful and productive learning experiences. This study mainly focused to investigate the transformation of pedagogy from losing the importance of conventional pedagogy to building the new era of digital pedagogy in the surge of post-pandemic necessity.

Methods

A qualitative approach of thematic analysis was used in this study to find out the perception of twenty teacher educators and student teachers from four different Teacher Education Institutions of North 24-Parganas in West Bengal. The interviews were taken based on a convenient sampling of teacher educators and student teachers.

Results

The finding of this study disclosed that losing the relevance of conventional pedagogy, monotonous online classrooms, and the absence of any specific pedagogy for online and post-pandemic blended classroom practices have given the necessity of digital pedagogy in teacher education.

Conclusion

This finding can be used to gain the current perception of the need for changing approaches in Teacher Education.

Keywords: *Teacher Education, Digital Pedagogy, Irrelevance of conventional pedagogy, pedagogy in online and blended education*

1. A Backdrop of Pedagogical transition in the context of Teacher Education

Teacher Education is undoubtedly one of the most significant domains when we consider the broader educational realm. In the period when our surrounding is rapidly changing and adopting mechanical as well as artificial growth to all potential extent, our approach towards life is not an exception to it. Our life is showing all possible efforts to maximize its standard towards embracing the mechanical as well as digital amalgamation through applying it in day-to-day lives. As the proximity of our lives is concerned, we cannot consider it except educational sanctity. Education is inexplicably the most crucial determinant in the growth of our life. Digital and artificial intelligence have encompassed the education sector significantly changing the teaching constraints like methods, strategies, pedagogical approaches; and overall teaching competencies while transacting the curriculum to students. Our Teacher Education Curriculum has included ICT witnessing the accelerating importance of technology in Education. With the introduction of ICT in 2013 in the curriculum, Teachers and education practitioners accepted it as a boon to teaching learning advancement. TPACK framework, derived from PCK and the TPACK model worked as a concrete backbone to teachers' action or practice-driven knowledge about teaching with technology and portrayed its importance in framing technology for professional learning of teachers. But the whole situation took a turning point amidst the arrival of the

COVID crisis which brought a challenge before the world stagnated all the lives and work cycles of the world. It was a stringent situation for all stakeholders as the education sector was inherently based on face-to-face learning and conventional pedagogy. Though some countries have used online and digital education to extrapolate the changing scenario but India had to shift their education abruptly by taking an online and digital mode of instructional approach. The scenario of digital education is different as it not only includes digital medium or mere technological integration but also it demands non-conventional teaching strategy, pedagogy, and a modified version of the pupil-teacher relationship.

The Indian government has stressed digital education with utmost importance, especially after witnessing the COVID-19 crisis. By introducing New Education Policy in 2020 Government has taken an oath to make our future generation competent enough to deal with 21st-century skills which are incomplete without digital integration in each domain. To impart these skills teachers must be proficient in appropriate digital pedagogy which can only be transacted if the existing teacher-education curriculum embodies these new-age pre-requisite knowledge and practices.

However digital pedagogy cannot replace the importance of teachers and teachers will continue to boost students with their knowledge. In preparing future teachers in the teacher education framework, there are huge roles for teacher-educators to carry forward. So they have obvious urgency to be flexible enough to construct digitally embedded teaching instruction in the present learning construct. Their positive approach and adaptability towards digital pedagogy will surely accelerate the current status of usages of digital pedagogy and triggered the strong base for futuristic digital education to ensure life-long learning for all learners.

While discussing the current status quo of digital pedagogy it automatically revolves around the existing practices of digital pedagogical approaches in teacher education curriculum. Teacher education is an important part of the education sector and has many infrastructures involved in it which will take time to fully implement at the grassroots level. Our country has so many teacher education institutions widely spread among urban and rural areas. It has been observed several times that the institutions residing in rural areas have comparatively lower access to digital infrastructure. Now as per New Education policy of 2020 emphasizes the importance of digital education to be imparted for future generations it is an urgent call for the regulatory bodies concerning teacher education on pre-service and in-service levels along with teacher education institutions to accumulate virtual as well as blended artificial educational augmentation where digital pedagogy plays a pivotal role.

2. Rationale for study

This research study will surely bring forth the present scenario of applicability and accessibility of digital pedagogy in teacher education curricula. The researcher here gets a very realistic portrayal of the current situation about the usages of digital pedagogy which lays a strong foundation in implementing the government's long-term insightful goal to impart and evolve digital education nationwide in India by the year 2030.

3. Purpose of the study

In the present study, the researchers examined the applicability and emergence of digital pedagogy of teacher education after the COVID-19 pandemic in North 24 Parganas of West Bengal, India. To know and understand the above matters the researchers divided their research into three objectives; i.e.-

- O1:** To know the perspectives regarding the applicability of conventional pedagogy in digital education in teacher education
- O2:** To know how the pedagogy was being applied in online and blended modes of teacher Education during and after the COVID scenario;
- O3:** To know how digital pedagogy is emerging as the most important pedagogical approach in teacher Education at the current time.

4. Research question

- RQ1:** What are the perspectives regarding the applicability of conventional pedagogy in digital education in teacher education?
- RQ2:** How pedagogy was being applied in online and blended Education during and after COVID-19 in Teacher Education?
- RQ3:** How digital pedagogy is emerging as the most important pedagogical approach in teacher Education?

5. Literature Review

Research has shown that meaningful teaching-learning activities have a huge impact on the improvement of knowledge and skills in dealing with Web 2.0 technologies among student teachers which in the long run will be resulted in digital pedagogy-related expertise. These activities will give authentic experiences to teacher educators and pre-service teachers about the appropriateness of digital pedagogy (Sailin & Mahmor, 2018).

Digital Pedagogy is the study and use of contemporary digital technologies in teaching and learning having its root in the constructivist educational approach. It means the vast use of electronic rudiments like multimedia, productivity-based application, cloud computing, etc. to intensify the educational ambiance and reshape the teaching-learning interdependence to produce such a diverse and well abundant experience that can serve our digital generation to its extent (Dangwal & Srivastava, 2017). Though it started as a mere pedagogical approach soon 'Digital pedagogy' has become an emergent field of education where the philosophy of technology and information theory amalgamates with critical pedagogy and educational philosophy (Lewin & Lundie, 2016). By the term pedagogy, we mean the reflective practice of teaching and related praxis. In the digital age, we need to rethink the pedagogy in more advanced and technological abreast winding up the boisterous period of education in dealing with conventional teaching approaches and technology-based integration (Beetham & Sharpe, 2017). The functional components of digital pedagogy features like content-based, environmental, technological, and competency are based on the method triangulation of discursive analysis and synthesis of ideas of modern technologies (Toktarova & Semenova, 2020). Modification in teacher education framework holistically is, therefore crucial to keep our future teachers well-congruent with the digital generation (Dangwal & Srivastava, 2017).

6. Method and Sampling

This is a qualitative based research study mainly focused on thematic data analysis based on interview transcripts collected from audio-based interviews of teacher educators and student teachers. The interviews were conducted at the convenience of each participant such as common room or classroom. The researcher has set the teacher-educators and student teachers of teacher education institutes in West Bengal as the population of the study. Twenty teacher-educators and student teachers were selected as samples from four of North 24-Parganas teacher education institutes. A Convenient sampling technique was applied by the researcher. The data collected from the interviews were based on the participant's views and beliefs. The researcher had no control over their responses.

7. Procedure

Data Analysis is a key component of qualitative research. Transcripts made of audio-recorded interviews were checked against the original recording. Extensive coding of the interview was created by the researcher. After that, the codes were organized to form categories that formed themes based on the research questions. Data were organized around each research question which was related to the experience of both the teacher-educators and student teachers regarding the relevance of conventional pedagogy and the pedagogical experience they faced in online classes due to the COVID period and post-COVID period. There were several factors considered under the research question namely experiences, using tools or methods, and techno-pedagogical frameworks in classrooms. Positive attributes of the participants included changing needs, needs of digital pedagogy, positive attitude

towards the change of pedagogy in teacher education, effectiveness in the 21st century, etc. Whereas the negative attributes cover the lack of accessibility to digital modes in teacher education institutes, boredom in online classrooms, and lack of knowledge and awareness regarding digital pedagogy among teacher educators and student teachers. The imitation of the analysis was discussed in the findings chapter of the study. Table 1 provides the subthemes and some mentions of coding from codebooks created by the researcher.

8. Results

The thematic analysis produced three themes overall based on the codes and categories made by the researchers. The Irrelevancy of conventional pedagogy in recent times:

Most of the participants highlighted that they feel that conventional pedagogy is slowly losing its relevancy in today's context. There are some illustrative shreds of evidence given below.

Participant 1: "I don't think that conventional pedagogy can serve the technology-based education. Considering the current advancement in technology I think conventional pedagogy is not enough". Here participants mainly pointed out the changing scenario of pedagogical approaches with the advent of technology. Some other participants have also stated on this behalf;

Participant 2: "I don't think conventional pedagogy can be used in advanced teaching models. Today's time is technologically well advanced. As a student teacher, I have read many new learning approaches like design-based learning, interactive game, game-based learning, AI-based learning, etc. We cannot deal with this so advanced technique with the same old structured pedagogy. I don't think conventional learning strategy can do justice with these new methods"

Participant 16: "Conventional pedagogy certainly has its limitation. I think old conventional pedagogy did not fully consider innovation in the teacher Education field. It has not given importance to any technology support in teaching-learning. So, I think it is a little bit outdated". Here participants viewed the newer approach of learning in the technologically advanced scenario which cannot be supported by conventional pedagogy which certainly is its limitation. But few participants supported conventional pedagogy in their responses stating:

Participant 8: "I think conventional pedagogy can be enough if teacher or teacher-educators can apply it innovatively with smart use of basic technology. Conventional pedagogy provides the needed framework of any pedagogical approach if it can be used properly". Here participants supported that conventional pedagogy can be enough in teacher education if it is used with basic technology.

A Shift in pedagogical approaches for online and blended Education:

As this study focuses mainly on the pedagogical approaches in teacher education institutions during the post-COVID scenario, the pedagogical practices of online classes and blended classes in post COVID situation must be acknowledged. The mode of education shifted here and in this regard, many participants asserted the need for new approaches to online education. Here are some pieces of evidence mentioned below:

Participant 11: "As we have learned pedagogy is an art of teaching-learning, it can also lead to effective online teaching-learning. Without proper pedagogy, teaching cannot be effective. So, I think pedagogy for online education is most needed". One participant has pointed out that.

Participant 12: "I found online classes to be quite boring as there was only lecture method. Absolutely no varieties of methods were applied. Pedagogy for this mode of education is urgently needed". Whereas another participant said

Participant 19: “In COVID 19 education went total in online mode which is also an example of advanced technology, so conventional education could not serve the purpose, and an advance pedagogical approach is needed”.

These participants mainly felt the need for new pedagogical approaches for online classes due to the lack of effective methods and class boredom. But very few participants considered that conventional pedagogy is enough to serve the online classroom. The evidences are mentioned below.

Participant 6: “I did not feel the necessity of any online-based pedagogy. I think conventional pedagogy could serve online education”.

In cases of blended approach that mainly started after the COVID-19 scenario to maintain the simultaneous classes the blended approach started where both online and offline approaches were there. Most of the participants preferred blended classes but there was hardly mention of any innovative pedagogy for the blended classes. There are some examples mentioning

Participant 7: “A Blended approach is indeed a good option. But balance should be maintained between the traditional and digital or technological-based teaching approach so that students don’t get confused. I used both offline and online teaching. But no specific model or pedagogical approach was used by me in classes”.

Participant 20: “Blended pedagogy may be more effective. I consider the blended approach needs hybrid pedagogy which means pedagogy for both conventional and digital methods. Learning becomes more engaging and meaningful with this approach. But no such pedagogy was practiced in class”.

The responses reported that a blended approach could be more effective if proper pedagogy is implanted in the classroom. Table 1 provides the subthemes and some mentions of coding from codebooks created by the researcher.

Table 1: List of themes, categories, and some coding from the codebook

Theme	Category	Coding
The Irrelevancy of conventional pedagogy in Recent times	Not relevant to today’s context	Not Sufficient
	Still relevant	Losing importance Fails to gain interest Older approach Not purposeful
	Conventional Pedagogy is enough	It is enough Provides basic framework Good to handle only traditional classes Still important
The Shift in Pedagogical Approaches for online and blended	Applicable with the use of innovative technological approach	Should include advanced technology Techno-pedagogy should include An Innovative approach should include
	Experiences in online classes	Not enjoyed online classes Boredom in online classes No chances of interaction between students and teachers

<p>classrooms</p>	<p>Pedagogies in online classes</p> <p>Experiences in Blended Classes</p> <p>Pedagogies in Blended Classes</p>	<p>Specific pedagogy is needed for online classes. Needs techno-pedagogy Limited to the lecture method No pedagogy was used in online classes</p> <p>Started after COVID A Better approach than online Both traditional and digital useful Interesting Engage students both online & offline Effective learning</p> <p>Both conventional and techno pedagogy Keeping a balance between online and offline approach Usage of both pedagogy simultaneously No specific blended approach used</p>
<p>The Emergence of Digitalization in Pedagogy During Post COVID scenario</p>	<p>Need for Digitalization of pedagogy in current time</p> <p>Effective Pedagogies for Digitalization</p>	<p>Needed for the education of 21st century Highly effective for technology and digitally integrated classroom Innovative Approach to Teacher Education Engaging in meaningful digital activity Learner automation or personalized education Pedagogical approaches become more effective using digitalization</p> <p>Collaborative methods with digital integration Student interaction and discussion using video-conferencing tools Activity-based pedagogy Project work using software Demonstration methods with maximum use of technology</p>

The Emergence of Digitalization in Pedagogy during the post-COVID Scenario:

In terms of the recent emergence of digitalization in pedagogy in teacher education, many of the students talked about the need of advance pedagogy especially when the new Education policy of 2020 advocated for more digital and online education as this will be the core need for 21st-century teacher education. In this regard, participants mainly revealed their experiences and considered pedagogy that can be best for the digitalized environment with the help of advanced pedagogy and tools.

Participant 19: “Technology demands more advanced methods to use all types of methods like virtual labs, artificial intelligence, or personalized adaptive learning which we have learned in our curriculum, needs more advanced pedagogy. I mentioned earlier if as future teachers we want to use all the advanced technology in education..... Demonstration of any scientific or abstract concept can be easier with using digital tools like videos, animations, etc. so it will be a great option”

Participant 15: “...Not fully but in part of some approaches should include the digital-based concept to prepare us, the future teachers. Any activity-based pedagogy like the project or collaborative method would be more interesting if it include a digital approach in its method”.

Some participants said that they thought the techno-pedagogic approach is a better option in online or blended education rather than evolving any new pedagogy or digital pedagogy. One participant pointed “We have learned about the techno-pedagogy framework. I think it can be useful in that context. We have learned that techno-pedagogy combines content pedagogy technology in a single approach so certainly it can deliver effective learning in online or digital classes” Another participant reflected that:

“Of course, digitalization of pedagogy is important. As student teachers, we must learn these new approaches to counter all the innovative educational technology of nowadays. Any kind of project method can be used through the use of technology”.

So, the emergence of digitalization in pedagogy especially in teacher education has slowly taken place where some of the participants felt the need of bringing any new pedagogical approach for future technologically advanced classrooms whereas some of them have supported the available techno-pedagogical framework for the same. Here researcher presents another table where a summary has been presented having mentioned the themes, frequencies, inherent meaning, and relevant quotation as evidence.

Table 2: List of themes with frequencies, meaning & evidence with mentioned Quotes

Theme	Frequency	Meaning	Evidences
Irrelevancy of conventional pedagogy in recent time	5	Here Teacher- Educators and student teachers who have been through conventional pedagogies and usages. There are several responses regarding the relevance, usefulness and sufficiency of Conventional Pedagogy. The feedbacks are more likely to be in favor of non-relevance of conventional pedagogy in today’s context.	“I don’t think conventional pedagogy can be used in advance teaching models. Today’s time is technologically well advanced. As a student teacher I have read many new learning approaches like design based, game based and AI based learning etc. We cannot deal with this so advanced technique with same old structured pedagogy. I don’t think conventional learning strategy can do justice with these new methods” (P 15)

Shift in pedagogical approaches for online and blended Education	7	In responding to the questions related to the experiences and pedagogies used in online and blended learning different responses of teacher-educators and student teachers are recorded. Most of the teacher educators and student teachers felt the need of a pedagogical framework in online and blended classroom to support the advance technology in teacher education.	“It’s really needed to have pedagogy for online and blended learning which can guide teachers like us. Well, blended approach is good approach as it mixes all the online and offline or conventional approach simultaneously. Student and teachers can experience effective learning”.(p 8)
Emergence of digitalization in Pedagogy during post COVID scenario	8	Teacher-educators and student teachers have asserted their positive affirmation for bringing digitalization in conventional pedagogy. They have also considered techno-pedagogy but with more innovative aping roach which is leading towards more personalized learning.	“The need of today’s generation is much more complex and innovative so conventional pedagogy is not enough. To keep on relevance cater 21 st century learning demands, to support digital India, to support learner-centric education and to maintain global connectivity in education evolution of digitalized pedagogy may be a wise decision especially for teacher education” (P 2)

9. Discussion

Traditionally conventional pedagogy has served the regular teacher education class in West Bengal till yet. Teacher Education being a professional educational course has its method for teaching student teachers and guides them with the available pedagogy. Though the teacher Education curriculum has Information and Technology based subjects included in the curriculum, it only provides theoretical knowledge. While interviewing the participants most of them mentioned that though ICT- based classrooms are available in institutes, the use of it is minimal. The available techno-pedagogical framework in the education field had also very less exposure. In the recent past, the advent of the internet and different technological mediums has drawn the student’s attention towards them as a result the conventional teaching method is slowly losing its importance which is evident with the mentioned responses of participants. It was during the COVID-19 period when teacher education faced a critical shift in the mode and method of education. It was clear from the responses of participants that the absence of any basic pedagogical framework made the online classroom ineffective and boring for most of the participants. So, they felt the need of evolving an advanced pedagogical framework for digital or online classes. This need has led to the emergence of digital pedagogy in teacher education. While discussing with participants the researcher has pointed mentioning of some terms and methods that came repeatedly which ensured the common context and views about the development of digital pedagogy in digital classes. The Researcher has shown the repeatability of terms using the mentioned picture below.

