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AI-ENHANCED INCLUSIVE PEDAGOGY IN TEACHER TRAINING CURRICULA: CHALLENGES AND OPPORTUNITIES

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ABSTRACT

The current education system has moved towards multi-faceted thinking. There is a lot of diversity in the current education system, where there are different students based on economic status, caste, religion, etc. To meet the needs of all those students, teachers also have to be skilled in the same way. Currently, the use of artificial intelligence has increased greatly for the development of education. Therefore, teacher training curriculum should provide such content, that after studying it, future teachers are able to meet the needs of students in all aspects. This study conducted to revealed the challenges and opportunities related to AI-enhanced inclusive pedagogy in teacher training curriculum. This research has been conducted through the analysis of various secondary sources such as published research papers, articles, various policy documents and various literature, books etc. The findings suggest that various key challenges faced by teacher educators and trainees in integrating AI tools for inclusive teaching practices like- insufficient training opportunities, limited access of resources, lack of institutional support, lack of digital infrastructure etc. However, opportunities offered by AI- based technologies for enhancing teacher competency and inclusion skills like- availability of advance tech tools, flexible teaching learning system, enhanced collaboration and network, support for inclusive education etc. Therefore, in today's 21st century education systems, teachers use a variety of technologies in the field of education and there must be knowledge about educational technology in the teacher education curriculum.

KEY WORDS: *21st Century Education, Artificial Intelligence, Inclusive Pedagogy, Educational Technology.*

INTRODUCTION

In 21st century education system has new transformation via inclusion of artificial intelligence into mainstream of education (Jaiswal & Arun 2021; Liua et al., 2021). AI enhanced inclusive pedagogy mainly focuses on the improve the quality of inclusive education through the use of educational technology (Salas-Pilco et al., 2022). Currently, teacher training curricula have reached the point where, teachers must also have the ability to bring all types of students under the same umbrella and teach (Singh et al., 2025). Also, currently, teachers need to have various qualities like adaptability, responsibility, technological expertise (Ajani, 2024). With all these qualities, digital transformation will become possible. Inclusive pedagogy creates a mindset in every student that, all students want to be engaged in the same education system (Jacquart et al., 2019). With rapid advancement in AI technologies teachers are being offered new tools to teach students, as well as to overcome various obstacles related to inclusivity (Fitas, 2025; Mehdaoui, 2024). Even today, there are many educational institutions where there are many obstacles in the way of technology inclusion (Hersh & Mouroutsou, 2019). There are many teachers in those educational institutions who are lagging behind in the implementation of technology in education due to many difficulties (Alenezi, 2017). Also, ethical questions are arrived due to data privacy, digital bias etc. The opportunities offered by AI enhanced inclusive pedagogy are immense. Therefore, it is possible to bring a new light to the education sector through the integration of technology in the teacher education curriculum (Vrasidas & McIsaac, 2001). The use of educational technology has made it possible to take the teacher education system to a better level. As a result of use of technology, it has become easier for teachers to teach using various modern tools and make students interested in learning (Chhabra, 2012). By educational technology, students can learn the content very quickly. Also, due to the connection of technology in the field of education, teachers are able to teach at their own pace and in a pleasant way, keeping up with the times (Prensky, 2007).

Need and significance of the study

Currently, as a result of the development of technology, a major transformation has taken place in the education system. One of the modern technologies is artificial intelligence. Artificial intelligence is one of the stimuli to shape the future teaching and learning (Srinivasan, 2022). Therefore, to use artificial intelligence in the field of education in a control manner, it is necessary for the teacher to have knowledge about AI (Gocen & Aydemir, 2020). Therefore, it is advisable for the teachers to have technological training to ensure compatibility with the current education system (Chen, 2011). Because in the traditional teacher training, the general focus was on how deliver curricula and less emphasis was placed on digital competence (Instefjord & Munthe, 2016). But currently, in the field of teacher education, it is necessary to emphasize the diverse knowledge and technological capabilities of the teacher (Mishra & Koehler, 2006). Therefore, with the help of AI enhanced inclusive pedagogy in teachers become technologically confident, pedagogically confident, capable of addressing the diverse needs of 21st century learners (Siddiqui et al., 2025).

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Objectives of the study

1) To identify the key challenges faced by teacher educators and trainees in integrating AI tools for inclusive teaching practices.
2) To explore opportunities offered by AI- based technologies for enhancing teacher competency and inclusion skills.

Methodology of the study

This study used secondary source to gather relevant qualitative data. Information was collected from various published research papers, article, books, reports etc.

DISCUSSIONS

Key challenges faced by teacher educators and trainees in integrating AI tools for inclusive teaching practices.

- **Insufficient training opportunities**

Along with students, there is a great need for teacher development. There are still many teachers who are not able to develop technically due to lack of adequate training (Habibu et al., 2012). Due to this deficiency, they cannot teach students in line with the current era.

- **Limited access of resources**

Lack of resources is also a major deficiency in the field of education. Due to the lack of adequate teaching resources, many educational institutions are not able to achieve the highest level of educational success (Savasci & Tomul, 2013). As a result, the institutions as well as the students and teachers have fallen behind.

- **Attitudinal and mindset barriers**

Lack of attitude is a major obstacle in the way of introducing technology in education (Al-Senaidi et al., 2009). If the attitude of teachers and students in not possible towards technology, then the implementation of technology in education becomes complicated (Chen, 2008).

- **Lack of institutional support**

Teaching aids are a very necessary thing for the improvement of the education system (Ordu, 2021). Therefore, in the use of digital resources, positive attitude of both teachers and students along with institutional support is very necessary (Van Acker et al., 2013). Because in the education sector, administrative support is very necessary.

- **Fear of technology replacement**

One of the reasons why many educational institutions have not yet integrated technology to an adequate extent is fear of technology (Dinc, 2019). Many teachers believe that the integration of technology into education will increase their workload in many areas and make the teaching- learning process more complex (Ertmer et al., 2012).

- **Lack of digital infrastructure**

The lack of proper digital infrastructure in educational institutions complicates the integration of technology in education (Gupta & Hayath, 2022). Institutions need to have a digital infrastructure to make educational technology accessible to students.

Opportunities offered by AI- based technologies for enhancing teacher competency and inclusion skills.

- **Support for inclusive education**

The inclusion of technology in the education sector has made many impossible tasks easier and possible (Sheehy & Ferguson, 2008). Nowadays, technology specifically refers to the use of artificial intelligence (Pannu, 2015). Along with solving problems, artificial intelligence can also develop the teaching skills and inclusion skills of teachers (Zhang & Zhang, 2024). With the help of various technologies such as Braille, transistors, AI based digital tools etc., inclusion has become easy in the mainstream (Setiawan, 2024).

- **Support for professional development**

It is possible to achieve professional development by improving the skills and knowledge of teachers. Teachers can gain knowledge about various new things at their own pace from various online platforms such as Coursera, edX etc (Likovič & Rojko, 2022). Through which the professional development of teachers takes place. Through various AI driven platforms, teachers are able to easily find the gaps in their skills (Naseer & Khawaja, 2025).

- **Enhanced collaboration and network**

With the addition of technology in the field of education, experts from different parts of the world can share their insights with each other through various webinars, virtual workshops (Lieser et al., 2018). Also, through various online forums, various social media groups, different educators can collaborate with each other (Rabbany et al., 2013).

- **Resources optimization**

Nowadays, the use of technology has increased so much that the education system has undergone has a radical change. Resource optimization means the appropriate use of various available resources such as – Time, money, energy etc. through technology (Hegazy & Kassab, 2003).

- **Flexible teaching learning system**

The use of technology in education has brought about a radical change in the education system. The use of technology has made teaching and learning easier, simpler and more dynamic. Teachers can deliver lessons at their own pace through the use of technology (Johnston, 2004). Students are also given the freedom to learn according to their own wishes and needs. The use of technology has made the teaching and learning system much more flexible (Moran & Myringer, 2002).

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- **Availability of advance tech tools**

The role of advance tech tools in the development of the education system is immense (Bansal, 2023; Dinesha & Agrawal, 2011). As a result of the inclusion of technology, the use of various modern tools has been seen to operate the teaching learning system (Meskhi et al., 2019). Digital tools such as- a-AI tools, online assessment tools, mobile learning apps etc. All these tools have made the teaching learning system more enjoyable. Advance tools play a very beneficial and pioneering role in the progress of teachers and students (Almufarreh & Arshad, 2023).

SUMMARY AND CONCLUSION

21st century education system is change day by day, so the development of the teachers also is very important. Through this development society also be developed. Because teachers is one of the important pillars of the society. If teachers' education is developed then societal development is also be done in same manner. The incorporation of technology into the current education system has made it imperative to improve the quality of teacher education technologically. The use of modern technology like AI has begun to have a very widespread impact in the current education sector. Even if new technology is used in education, the teacher must also have knowledge about technology. Therefore, special emphasis should be given to educational technology training within the teacher education curricula. There are many problems and opportunities that arise when incorporating this technology and these activities must be carried out through analysis. Therefore, this educational step is absolutely necessary given the current education system. Through the use of ICT in education teachers can create a enjoyable and engaging teaching learning environment. Therefore, to curb the use of technology in the current education sector, emphasis should be placed on the inclusion of technology in the teacher education curriculum. In addition, future teachers should be given adequate training on technology so that they can teach in line with the current education system.

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