A STUDY ON TEACHER TRAINEES' AWARENESS AND PERCEPTION TOWARD AI TOOLS IN EDUCATION AND THEIR EFFECTIVENESS

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Abstract:

The integration of artificial intelligence in education has transformed teaching and learning dynamics, and concerns regarding readiness for future teachers are beginning to emerge. The aim of this research was to explore the awareness and perception that teacher trainees hold concerning AI tools, assessing its perceived effectiveness for improved education outcomes. Surveys along with open-ended questions involved with collecting data from the trainees. Findings indicated mixed levels of awareness and a generally positive view of AI tools with the potential to personalize learning, reduce administrative burdens, and enhance instructional strategies, although there were concerns around ethics, access, and overreliance on technology. This study underscores the need for structured training programs to equip teacher trainees with the knowledge and skills to effectively integrate AI tools in their professional practice. Recommendations for curriculum design and policy implications are discussed to foster a more AI-aware teaching workforce.

Key words*: Artificial Intelligence (AI), B.Ed teacher-trainees, D.Ed. teacher trainees.*

Introduction:

The rapid advancement in Artificial Intelligence is revolutionizing many domains, including the education arena, where the AI tools are changing how teaching is done and received. Thus, adaptive learning platforms, automated grading, and virtual teaching assistants seem to present some of the most impressive solutions to promote effectiveness and quality in both teaching and learning. AI has the prospect of transforming education into an entirely more efficient and engaging business by personalizing instruction, reducing administrative workloads, and providing data-driven insights to educators. However, to a large extent, the effectiveness of these technologies depends on educator preparedness and perceptions - indeed, those of teacher trainees, who are next to become teaching professionals.

Teacher trainees are at the point of no return for educational change. Their familiarity with AI tools, attitudes toward using them, and confidence in implementing them can facilitate the realization of an AI-enabled education environment. With so much promise for AI, its implementation does create some issues of access, ethical implications, and how far technology can be trusted by teachers in their

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classrooms. Teacher trainees' awareness and acceptance of AI tools determine a great extent their acceptance within pedagogical activities, as well as their capability of effectively meeting diverse learners. Despite the increasing presence of AI in education, little research has been conducted on teacher trainees' awareness and perceptions of these tools. This gap underscores the need for an examination of their preparedness to adopt AI and their opinions on its effectiveness in enriching teaching and learning. Insights into this area are crucial to designing teacher education programs that address potential barriers, misconceptions, and challenges.

This study aims to investigate teacher trainees' awareness and perceptions of AI tools in education and assess how these perceptions influence their willingness to integrate AI into their teaching practices. The findings will inform strategies for equipping future educators with the knowledge and skills necessary to navigate the AI-driven transformation of education effectively.

Rationale of the Study:

This rationale of this study stems from the fact that increased pressures are being experienced in trying to know how teacher trainees, as future teachers, see and interact with the use of AI tools for learning. As the technology increases in classrooms globally, the need to investigate is essential: whether the tools would make teacher trainees believe they are equipped enough, or if they consider using such tools effective for upgrading the teaching and learning process. This study can reveal gaps in teacher education programs and help in the strategy for better preparation of trainees to work in AI-enabled classrooms.

By studying teacher trainee's awareness and perceptions, this paper seeks to contribute to the emerging literature on AI in education and provide practical implications for curricula of teacher training. The findings may also serve as a basis for developing

targeted professional development programs that can help alleviate any misconceptions or apprehensions and thereby foster a more confident and prepared teaching workforce to seize the potential of AI tools.

It is timely and important, especially at this accelerating pace of the integration of AI tools in education, wherein the concern of making the teacher trainees aware about these technologies but also treat them as friendly partners throughout their teaching careers becomes evident.

Need of the Study:

The integration of AI tools into education changes teaching and learning practices, offering personalized instruction, efficiency, and creative solutions to classroom problems. However, effective use depends on the preparedness and perceptions of the teacher trainees who will be the future educators. Understanding their awareness of AI tools, perceptions of their usefulness, and readiness to implement them in bridging the gap between the available technology and its application in classrooms is necessary. This study is fundamental in identifying gaps in teacher training, addressing potential barriers, and equipping teacher trainees to effectively harness AI for enhanced educational outcomes. Thus the researcher felt it imperative to study the awareness, perception and effectiveness of AI tools in case of B.Ed. and D.Ed. teacher trainees.

Aim of the Study:

To study the Teacher Trainees' awareness and perception toward AI tools in education and their effectiveness.

Null Hypotheses of the study:

1. There is no significant difference in awareness and perception toward AI tools in education between B.Ed. and D.Ed. teacher trainees.

2. There is no significant relationship between awareness and effectiveness of AI tools in education in case of B.Ed teacher trainees.

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Significance of the Study:

The study on teacher trainees' awareness and perception towards AI tools in education holds significant importance in various dimensions. As AI technologies begin to influence educational practices more than ever, knowing the perceptions and involvement of the future educators is highly necessary for the effective incorporation of such tools into teaching settings. Teacher trainees' stand at the forefront of this change, and their preparation for the use of AI tools will be determining in the future of education.

This study sheds important light on teacher trainees' knowledge, attitudes, and concerns towards AI tools. It underscores possible shortcomings in teacher education programs, giving insights into how trainees might be better prepared for effective use of AI tools in classrooms.

Moreover, it educates the policymakers, curriculum developers, and instructors about the requirements for well-targeted training programs focused on eliminating misconceptions and increasing confidence in the use of AI tools. Addressing these issues brings the study closer to building a teaching workforce

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empowered with technology for AI-based education.

Methodology:

This is a descriptive study that seeks to examine the awareness and perceptions of B.Ed. and D.Ed. teacher trainees towards AI tools in education and how effective they perceive these tools to be. The causal-comparative survey methodology was adopted for studying teacher trainees. A survey was administered to assess their on awareness, perceived usefulness and effectiveness regarding AI tools.

Sample and Sampling Method:

This study is based on a purposive sample of teacher trainees who are enrolled in teacher education programs. The sample includes 49 B.Ed. teacher trainees and 42 D.Ed. teacher trainees.

Data Collection Tool:

A structured questionnaire is used as tool for data collection. It has closed-ended questions on awareness, perceived usefulness and effectiveness regarding AI tools.

Data Analysis and Interpretation:

Null Hypotheses 1: There is no significant difference in awareness and perception toward AI tools in education in case of B.Ed. and D.Ed. teacher trainees

Table 1: Numerical data and level of significance for difference in awareness and perception toward AI tools in case of B.Ed. and D.Ed. teacher trainees.

Variable	Group	N	df	Mean	Std. dev	t-value	LOS
Awareness of AI tools	B.Ed.	49	89	69.875	8.900	3.561	0.01
	D.Ed.	42		57.571			

The obtained t=3.561 is greater than the tabulated value of 2.63 at 0.01 level of significance. Therefore as 't' is significant at 0.01 level, the null hypothesis is rejected. Thus there is a significant difference in awareness and perception toward AI tools in case of

B.Ed. and D.Ed. teacher trainees. Also, the mean score of B.Ed. teacher trainees is significantly higher than D.Ed. teacher trainees

The main differences between B.Ed. and D.Ed. teacher trainees in terms of their awareness and perception of

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AI tools may be attributed to program objectives, curriculum structures, and exposure to technology. B.Ed. programs are generally secondary-level teaching programs, and often educational technology courses at higher levels focus on AI incorporation with other teaching strategies. In contrast, D.Ed. The programs, being elementary education programs, focus more on foundational pedagogical skills and expose trainees to minimal emerging technologies,

such as AI. Moreover, the institutional resources available for training on AI tools and the academic orientation of the trainees toward advanced educational methodologies can contribute to the observed differences in awareness and perception.

Null Hypotheses 2: There is no significant relationship between awareness and effectiveness of AI tools in education in case of B.Ed teacher trainees.

Table 2: Relationship between awareness and effectiveness of AI tools in education in case of B.Ed teacher trainees.

Variable	Group	N	df	Pearson's 'r'	LOS	$100r^2$
Awareness of AI & Effectiveness of AI	B.Ed. teacher-trainees	49	47	0.79456	0.1	63.13 %

The calculated value of r (0.79456) is greater than critical value of (0.372) at a 0.1 level of significance. Since 0.79456> 0.372, the correlation is statistically significant at the 0.1 level and the magnitude of correlation is high and positive. Thus the null hypothesis is rejected. There is significant relationship between awareness and effectiveness of AI tools in education in case of B.Ed teacher trainees.

The high positive correlation may be due to the exposure of B.Ed. trainees to AI tools and their integration into teaching practices. Higher awareness enhances their understanding of the potential of AI, and hence, it can be used effectively. As they apply AI tools in educational contexts, they see the benefits more clearly, reinforcing the connection between awareness and effectiveness in improving teaching strategies and learning outcomes.

Conclusion:

This descriptive study underlines the significance of knowing the awareness and perceptions that teacher trainees have concerning AI tools in education. This research shows how far trainees are aware of these

technologies and what they believe are the benefits and challenges posed by them. Teacher trainees' awareness and preparedness to use AI tools hold a very important place in the future of AI-based education.

This study suggests teacher education programs must be well planned to ensure comprehensive training for AI tools, thus helping bridge gaps in knowledge, alleviate usability concerns, and remove other ethical issues. By developing the right attitude and boosting confidence levels, this can enable effective use of AI for improved teaching and learning.

Ultimately, this study highlights the importance of teacher trainees in filling the gap between technological advancements and classroom practices, which will usher in a more adaptive and innovative learning environment empowered by AI.

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