

AI-Based Education: Prospective Teachers' Perception towards AI Tool Usage

Dr. Neetu Singh

Associate Professor, Department of Education, University of Lucknow, Lucknow (U.P.)

Email: neetu_stp@rediffmail.com



Received 05 May 2026

Accepted 15 May 2026

Published 20 May 2026

Corresponding Author:

Dr. Neetu Singh

Email: neetu_stp@rediffmail.com

Doi: <https://doi.org/10.64880/ijeagr.v1i2.12>

Funding: This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sector.

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Abstract

AI tools gradually increase their popularity among students, Teachers, administration for various purposes. The advent of Artificial Intelligence (AI) in the educational sphere is a reality, and its integration is essential for success, making it crucial to understand the perception of prospective teachers toward the integration of AI in the classroom. This paper examines the perceptions of 108 pre-service teachers studying at the University of Lucknow towards the application of Artificial Intelligence (AI) technologies. In the conduct of this study, a descriptive survey research methodology was employed, and the data for the study were gathered through a 20-item questionnaire developed by the researcher on a Likert scale. Descriptive statistics such as mean and standard deviation were used together with independent sample t-test for analysing the obtained data. The results suggested that the perceptions regarding the use of AI tools were similar across students in Arts and Science Streams. Similarly, there was no statistically significant difference between the perceptions of males and females who intend to be teachers in the future. However, a statistically significant difference emerged between urban and rural prospective teachers, where urban prospective teachers were more likely to have high mean value of perception toward AI tools usage. The results indicate that there is a digital divide between urban and rural environments, yet there is overall acceptance of AI. The absence of significant differences based on Gender and Academic stream suggests that acceptance of AI tools is not determined by demographic or disciplinary factors. As users gain exposure to AI technologies and recognize their educational value, their willingness to use these tools appears to become more uniform. This highlights the inclusive nature of AI-supported learning across diverse student's groups. The study suggests the following policy implications: Promoting AI-based targeted training for rural teacher education programs is an important measure in facilitating equitable professional development; Improving technological infrastructure is a key step for achieving equitable access to professional development.

Keywords: Artificial Intelligence, AI tools, prospective teachers, perception, teacher education

1. Introduction

The rapid implementation of artificial intelligence within the area of education, reflects a shift toward technology-enhanced learning environments. AI- powered tools are becoming common across classrooms, supporting learners from diverse backgrounds through adaptive and interactive educational experiences. Artificial Intelligence tools have been in the discussion about their role in education over the years. It is now being widely accepted that AI will affect today's education at all levels and will change how education happens right from the pedagogy to the curriculum (U. S. Department of Education, 2023). Artificial intelligence tools have gradually increased their acceptance amongst teachers, students, researchers, prospective teachers, and other academicians over the years (Gârdan et al., 2025). Since AI tools have become and are continuing to become an inevitable part of education, researching how prospective teachers feel about these tools is of great importance (Kizilcec, 2023).

Artificial Intelligence promises endless opportunities and improvements when it comes to education, but if no teachers accept these tools and are ready to incorporate them into their classroom learning then what is the use of it (Viberg et al., 2024). It has been proven by various studies that teachers' perception, belief and acceptance of technology play a major role in how technology turns out in education (Zafiroopoulos & Velli, 2024). Prospective teachers are teachers who haven't officially begun their career as a full-fledged teacher yet and their perception matters the most when it comes to technology because they are the future of classroom settings (Ambika & Priya, 2026).

In India, many background factors like gender, stream and location are important background variables when it comes to the context of the study. Since India is a country with a large urban-rural divide it is important to take into consideration the background locale of the Indian prospective teachers (NORRAG, 2024; Yadav et al., 2025). India's digital distribution among the urban and rural areas is still not equal as rural India lacks access to technological devices, the internet and vocational trainings about technology (IJNRD, 2025). Because of this lack of technology acceptance in rural India the differences in perception of urban vs rural Indian teachers may prove to be an interesting study for the policymakers and teachers and administration.

Hence, this study was conducted to find out the Perception of Prospective Teachers towards AI tool usage at University of Lucknow and to see if there is any difference based on gender, stream and locale.

2. Objectives

Objectives of the current research were as follows-

- 1.To find out whether there is a statistically significant difference between the perception scores of males and females among prospective teachers with regards to AI tools usage.
2. To find out the difference between the perception scores of prospective teachers from the streams of Arts and Sciences with regards to the AI tool usage.
3. To find out if there is a difference between perception scores of prospective teachers from urban and rural regions with regards to the AI tool usage.

3. Hypothesis

The null hypotheses for the study were:

H₀₁: There is no significant difference between the mean perception score of males and females among prospective teachers concerning the AI tool usage.

H₀₂: There is no significant difference between the mean perception score of prospective teachers of Arts and Science streams concerning the AI tool usage.

H₀₃: There is no significant difference between the mean perception score of prospective teachers of urban and rural backgrounds concerning the AI tool usage.

4. Methodology

The present study has applied descriptive survey design to find out prospective teacher's perceptions regarding AI tools based on gender, stream and location wise. In descriptive research surveys, aim to depict the existing scenario in the population of interest (Ambika & Priya, 2026). Educational research relies heavily on descriptive survey designs to investigate the current situation of attitudes among a particular set of respondents.

4.1 Population

Population of the study consists of Prospective teachers who were studying in University of Lucknow. Based on the study requirement Prospective teachers 108 respondents were selected by using random sampling technique (Creswell & Creswell, 2018). 61 Respondents were males (56.48%) and 47 were females (43.52%). 59 Respondents were from arts graduate and 49 respondents were science graduate, 41 respondents were from urban and 67 respondents were from rural.

4.2 Tool

The researcher formulated the questionnaire consisting of twenty statements to attain the goals of the research. Responses of each question were noted on the basis of a five-point Likert scale, which included options of Strongly Agree to Strongly Disagree. For positively framed statements the options were mentioned in the right side of the question paper. The Likert type scale has been widely used to measure attitude among teacher education Students (Hermanto et al., 2025).

4.3 Administration

The questionnaires were administered to prospective teachers after giving sufficient instruction. Respondents were informed that their information would be kept confidential and used for research purposes ONLY. There was no time constraint but requested them to complete it in the shortest possible time. The responses were collected and subjected to statistical analysis.

4.4 Statistical Analysis

Mean, SD and t-ratio (Independent samples test) statistical tools were used for data analysis. T-test statistical tool has been used widely among educational researchers to infer about the difference between means of two independent groups (Kim, 2022). The findings were presented in tabular form which were interpreted based on objectives of the study.

5. Data Analysis and Interpretation

Table-1 Category-wise Descriptive Statistics.

Variable	Category	N	Mean	SD
Gender	Male	61	64.31	7.53
	Female	47	66.74	8.70
Stream	Arts	59	65.13	7.19
	Science	49	65.65	9.17
Locale	Urban	41	67.86	6.83
	Rural	67	63.85	8.51

Table 1 shows the descriptive statistics of prospective teachers' scores according to gender, stream, and locale. Female respondents obtained a slightly higher mean score (**M = 66.74, SD = 8.70**) than male respondents (**M = 64.31, SD = 7.53**). Among the academic streams, science students had a marginally higher mean score (**M = 65.65, SD = 9.17**) than arts students (**M = 65.13, SD = 7.19**). With respect to locale, urban respondents recorded a higher mean score (**M = 67.86, SD = 6.83**) compared to rural respondents (**M = 63.85, SD = 8.51**).

5.1 Gender-Based Comparison

Table 2 Gender wise comparison of mean scores of the perception towards AI tool usage

Gender	N	Mean	SD	t-value	Remark
Male	61	64.31	7.53	1.526	Not significant at 0.05 level
Female	47	66.74	8.70		

Table 2 shows the results of the independent samples t-test comparing the mean scores of male and female prospective teachers. Female prospective teachers (**M = 66.74, SD = 8.70**) obtained a slightly higher mean score than male prospective teachers (**M = 64.31, SD = 7.53**). However, the obtained **t-value of 1.526** was not statistically significant at the **.05 level ($p > .05$)**. Hence, there was no significant difference between male and female prospective teachers in their mean scores, and the null hypothesis was not rejected.

5.2 Stream-Based Comparison

Table 3 Stream wise comparison of mean scores of the perception towards AI tool usage

Stream	N	Mean	SD	t-value	Remark
Arts	59	65.13	7.19	0.323	Not significant at 0.05 level
Science	49	65.65	9.17		

From **Table 3** the results of the independent samples t-test comparing the mean scores of Arts and Science graduate prospective teachers. Science graduates obtained a slightly higher mean score (**M = 65.65, SD = 9.17**) than Arts graduates (**M = 65.13, SD = 7.19**). However, the obtained **t-value of 0.323** was not statistically significant at the **.05 level ($p > .05$)**. Therefore, there was no statistically significant difference between Arts and Science graduate prospective teachers in their mean scores, and the null hypothesis was not rejected.

5.3 Locale-Based Comparison

Table 4 Locale wise comparison of mean scores of the perception towards AI tool usage

Locale	N	Mean	SD	t-value	Remark
Urban	41	67.86	6.83	2.687	Significant at 0.05 level
Rural	67	63.85	8.51		

Table 4 shows the results of the independent samples t-test comparing the mean scores of urban and rural prospective teachers. Urban prospective teachers obtained a higher mean score (**M = 67.86, SD = 6.83**) than rural prospective teachers (**M = 63.85, SD = 8.51**). The obtained **t-value of 2.687** was statistically significant at the **.05 level ($p < .05$)**. Therefore, a significant difference was found between urban and rural prospective teachers in their mean scores, and the null hypothesis was rejected.

6. Discussion and Results

This study determined the perception of prospective teachers from University of Lucknow about the use of AI tools in education. Factors such as gender, academic stream, and locale were used to collect data from respondents. Findings from this study add to recent research about the use and adoption of AI technology among teacher education students (Gârdan et al., 20 25; Kizilcec, 20 23).

AI technology needs to be expanded, and technology infrastructure needs to be improved in our country. Proper policies and implementation strategies should be developed to ensure that AI tools are implemented effectively and safely for educational purposes (U.S Department of Education, 20 23). Challenges such as ethics in use, impact on student engagement, and reduction of creativity are still topics that need further discussion (Khattak et al., 20 25).

Similar to the studies by Iddrisu et al. (2025) and Viberg et al. (2024), gender was not found to have any significant effect on how respondents viewed or would use AI tools in their future classrooms. This might be because once students have been exposed to the usefulness of AI tools, their previous perception based on gender no longer has a significant effect on how they will use them. Similarly, academic stream did not show any significant difference. This means AI tools have features that cut across the background of our prospective teachers. This is also supported by the findings of Vivekananda (20 25) and Ambika and Priya (20 26). Urban respondents scored higher than rural respondents.

This difference might be because urban respondents have more access to technology and the technological infrastructure needed to use AI tools. They also likely had previous experience with AI tools during their undergraduate studies. Rural students and teachers have been left behind regarding AI use and digital literacy. NORRAG's (20 24) recent report highlights how Indians in rural areas have limited access to AI tools. The IJNRD (20 25) also revealed that most students and faculty in rural areas have no exposure to AI technology and AI training. If this digital divide is to close, policies need to prioritize the improvement of infrastructure and provision of AI-based training for students and faculty in rural areas.

This survey shows that there is still more to discover about the rising trend of using AI tools for educational purposes. As teachers prepare for shifts in their roles within AI-enabled classrooms, proper policies and implementation strategies should be considered to ensure AI tools are used effectively and safely to create meaningful learning experiences (U.S Department of Education, 20 23; Zafiroopoulos & Velli, 20 24).

7. Conclusion

Based on the results of the current study, it can be said that students at the University of Lucknow view positively the employment of artificial intelligence (AI) technology in education. It has been found out that both gender and academic streams do not affect the perceptions of the respondents, which implies that acceptance of the use of AI tools becomes common irrespective of the specified variables. Such result demonstrates the increasing awareness about the value of AI as an educational technology that can help in teaching and learning irrespective of various academic fields. At the same time, a statistically significant difference has been identified between those who come from rural and urban communities. The latter perceive the use of AI technology in education positively.

In summary, this study shows not only the rising acceptance of the use of AI in teacher education but also the pressing issue of overcoming inequality in access to technologies. Although AI offers many possibilities of enhancing classroom practices and learning experience, its use is contingent upon the presence of proper infrastructure, supportive policy, and effective training of both teachers and students. Particular attention should be paid to improving the conditions of digital facilities and AI skills development in rural schools. In addition, it is important to continue the research and consider the effects of the use of AI on teaching practice, students' involvement in the process, ethics, and teachers' changing role.

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