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# Student Teachers' Perception on AI Enhanced Pedagogy in Schools

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**Abstract**

The study reveals how student instructors perceive the AI-enhanced pedagogy in classrooms, with a particular emphasis on their comprehension and acceptance of AI in teaching methods. Measuring overall perception levels, investigating the impact of gender and subject group, and analyzing component-wise views of AI-based training were the goals. Randomly selected 123 student teachers from four teacher education colleges in the Tamil Nadu districts of Coimbatore and Dindigul, Tamil Nadu state of India were surveyed in order to gather data. The three components of the standardized Perception Scale on AI-Based Instruction such as Usefulness of AI in Instruction, Usability of AI Tools, and Attitude towards AI Integration showed excellent reliability (r = 0.824) and expert-validated content. The results exposed that student teachers had a very favorable opinion of AI-enhanced pedagogy, especially with regard to the usability of AI tools and supportive attitudes. While there were remarkable variations between the Arts and Science groups, there were no discernible gender differences. The study suggests enhancing institutional infrastructure and using AI-based educational techniques to improve future teachers' preparedness for AI.

**Keywords:** Artificial Intelligence, attitude, educational practices, perception, student teachers

## 1. Introduction

The rapid advancement of Artificial Intelligence (AI) has brought significant transformations to the field of education, particularly in the areas of teaching, learning, assessment, and classroom management. Schools across the world are increasingly adopting AI-enhanced pedagogical tools such as adaptive learning platforms, intelligent tutoring systems, automated assessment applications, and data-driven learning analytics. These technologies have the potential to personalize instruction, support teachers in decision-making, and enhance student engagement. As future educators, student teachers play a crucial role in understanding, accepting, and effectively integrating AI-based tools into their teaching practice.

The successful implementation of AI-enhanced pedagogy in schools largely depends on the perceptions, attitudes, and readiness of student teachers, who are currently undergoing professional training in teacher education institutions. Their perceptions determine not only their willingness to use AI technologies but also their confidence, preparedness, and ethical understanding of the responsibilities associated with AI integration. Therefore, assessing student teachers' perceptions provides valuable

insights into their awareness, perceived usefulness, readiness for practical application, and concerns regarding the ethical and instructional challenges of AI in school education.

## Review of Literature

### AI in School Education

Artificial intelligence (AI) is rapidly expanding the possibilities in education by providing adaptive instruction, automated assessment, learning analytics, and new sorts of student support. When used appropriately, AI can help close equity gaps, support teachers with real-time data, and modify learning at scale, according to early syntheses and position reports. (Luckin et al., 2016; Holmes, Bialik & Fadel, 2019). Research on specific classroom systems reveals two interrelated strands: (1) earlier research on automated feedback and intelligent tutoring systems (ITS), and (2) more current developments in learning analytics and AI-driven content. Foundational work on ITS demonstrates that well-designed, step-based tutoring systems can approach the efficacy of human tutors on specific tasks, highlighting both the pedagogical promise and the limitations of many ITS benefits (VanLehn, 2011;).

Large-scale reviews and empirical syntheses identify patterns and gaps. Zawacki-Richter et al.'s systematic review (2019) indicated concentration of AI research in university education and computer-science driven approaches; the authors advised for extra educator-centric investigations and classroom trials in school scenarios. This gap shows that while AI technologies are mature technically, translation to ordinary educational practice remains under-researched.

Applied studies of classroom platforms provide practical evidence. AI-powered formative assessment and iterative reassessment can enhance learning outcomes and facilitate minimally intrusive classroom experimentation, as demonstrated by the assessments ecosystem and associated platforms (Heffernan & Heffernan, 2014). While complementary research in educational data mining and learning analytics (Baker & Inventado, 2014) shows how identifying patterns in student interactions may guide adaptive supports, it also presents issues with group fairness and generalizability.

Policy and ethical literature stress that AI's educational benefits are not automatic. International institutions, especially UNESCO, underline both opportunities (personalised learning, administrative efficiency) and concerns (privacy, biased algorithms, widening inequities, and poor teacher training). They contend that governance frameworks, teacher preparation, and data-quality standards are essential for adoption to be safe and effective in classrooms. (UNESCO, OECD, 2021).

Critical perspectives caution against techno-determinism and over-promising. Neil Selwyn (2019) advocates for caution about assumptions that AI can replace human teachers' socio-emotional and moral labor; instead, Selwyn urges for nuanced conversation about what roles AI should play and who benefits from its deployment. This line of critique supports empirical studies that reveal the impact of ITS is content-specific and frequently less substantial when compared to general curriculum outcomes (Selwyn, 2019).

Recent syntheses (Holmes et al., 2019; Luckin et al., 2016) propose realistic roadmaps: focus on teacher-centred design, interoperable data platforms, open assessment methodologies, and pilot initiatives that integrate educators from the start. They stress that AI should support teacher judgment rather than take its place and that success depends on alignment with educational goals and classroom operations.

Methodological limitations and future research directions recur across the literature: (a) the need for more randomized and long-term school trials; (b) attention to diverse socio-economic and cultural

settings; (c) transparency and interpretability of AI decisions; and (d) teacher professional development to interpret and act on AI-generated insights (Baker & Inventado, 2014).

**Student Teacher Perception on AI in School Education**

Early research indicates that teacher trainees generally show positive orientation and openness towards the pedagogical possibilities of AI. For instance, Unal & Hobe (2025) found that pre-service teachers exhibited favourable attitudes towards AI-supported learning environments, especially in lesson planning and differentiated instruction. Similarly, the student teachers recognised AI as a transformative tool with potential to enhance assessment, remediation, and student engagement (Owan et al., 2023).

A prominent line of inquiry concerns AI literacy and readiness among teacher trainees. According to Zawacki-Richter et al. (2019)**,** pre-service teachers often lack structured training in AI, which limits their confidence in adopting AI tools despite positive attitudes. Further, Angeli & Valanides (2013) emphasised that developing technological pedagogical content knowledge (TPACK) frameworks with AI competencies is essential for preparing future teachers.

Teacher trainees' perceived usefulness and ease of use rooted in the Technology Acceptance Model (TAM)—have also been widely studied. Bhutoria (2022) observed that trainees considered AI tools helpful in personalising learning and reducing teachers' administrative workload, contributing to high behavioural intention to use AI in classrooms. Likewise, Chetry (2024) found that teacher trainees believed AI could support real-time learning analytics, thereby improving student outcomes. However, concerns persist, Rehmat, (2025) highlighted that teacher trainees are worried about the ethical risks associated with AI, including data privacy, algorithmic bias, and over-reliance on technology. In a similar study, Nandi et al., (2024) reported apprehensions related to AI potentially diminishing teacher autonomy and reducing human interaction in the classroom.

More recent work delves into teacher trainees' perceptions of AI-based generative tools (e.g., ChatGPT). Lyu et al., (2025)found that trainees appreciated generative AI for content creation, explanation, and teaching aids, yet expressed doubts about accuracy and academic integrity. Complementing this view, it is noted that teacher trainees believed AI could enhance creativity and productivity but should be used under guided supervision.

**Objectives of the Study**

1. To assess the student teachers' perception level on AI Based Instruction in schools
2. To find the effect of gender and subject group background of student teachers' on their perception on AI Based Instruction in general, and
3. To find the effect of gender and subject group background of student teachers' on component wise perception on AI Based Instruction.

**Methodology**

In this research, the survey method of research was used and the data collection processes were carried out from the randomly selected a sample of 123 student teachers from four teacher education institutions at secondary level from the Coimbatore and Dindigul districts of Tamil Nadu State in India. Among them, 60 were male and the remaining 63 were female student teachers. Further, the total sample

includes 62 Arts group and 61 Science group student teachers. To collect the data from these sample student teachers, the *Perception Scale on AI Based Instruction* which was prepared using proper tool standardization procedures. This tool has three components, namely, Usefulness of AI in Instruction, Usability of AI Tools and Attitude towards AI Integration in Instruction and each component has 10 statements with five point rating and in total, the scale in in total has consisted with 30 statements. The five pointing scale includes – strongly agree, agree, neutral, disagree and strongly disagree. The responses of sample in these rating for positive statements get the score – 5,4,3,2 and 1 respectively. The reverse order of score procedure was followed to the responses of sample to the negative statements. Hence the maximum score of the scale is 30 x 5 = 150 and each component has the maximum score of 50.

Therefore, one who secures a score below 50 indicates negative perception, a score between 50 to 100 indicate acceptable perception and a score above 100 indicates strongly positive perception. The reliability test was conducted for the Perception Scale on AI Based Instruction by using the 'Test - Retest' method. The correlation coefficient of the odd and even groups' score is 0.824. The research scale was also distributed to a group of - 5 teacher educators, 5 teachers of high school teacher and 5 elementary school teachers. They opined that the research scale had content validity.

**Findings of the Study**

The data collected from the selected sample were analyses and the results arrived are furnished in this section. The mean and standard deviation scores of the sample secured in the Perception Scale on AI Based Instruction are 106.85 and 9.36 respectively. The mean score of sample indicates that they had strongly positive perception on AI based instruction in the classroom environment. Further, the mean scores of sample in each component of the perception scale were analyzed and the perception of sample in which component is strongly accepted are discussed in the following table.

1. Perception level of Sample AI Based Instruction

| Components of Perception Scale | N | Mean | Remark |
|---|---|---|---|
| AI use in Instruction | 123 | 35.05 | Not Strong Perception |
| Tool usability to Teacher | 123 | 35.72 | Strong Perception |
| Teacher Attitude towards AI | 123 | 36.08 | Strong Perception |
| Grand Mean | | 35.62 | |

From the above table, it is found the mean score of the sample in the first component-AI use in instruction is less than all the remaining mean scores of the sample. Further, the grand mean score (=35.62) is compared with all mean scores in three components and it is found that the first component mean score is also less than the grand mean and other mean scores are greater than the grand mean scores. It implies that the selected sample had not a strong perception on AI use in Instruction but they had strong perception on the remaining two components. Gender wise comparison on the mean scores of sample in three components of perception scale is furnished in the following table.

2. Mean Scores of Sample in three Components of the Perception Scale – Gender wise

| Components of Perception Scale | Gender | N | Mean | SD | t | p |
|---|---|---|---|---|---|---|
| AI use in Instruction | Male | 60 | 35.33 | 4.04 | 0.75 | 0.46 |
| | Female | 63 | 34.77 | 4.25 | | |
| Tool usability to Teacher | Male | 60 | 35.93 | 4.13 | 0.55 | 0.58 |
| | Female | 63 | 35.50 | 4.49 | | |
| Teacher Attitude towards AI | Male | 60 | 34.93 | 3.24 | 2.61 | 0.01 |
| | Female | 63 | 37.23 | 6.00 | | |
| In General Score | Male | 60 | 106.20 | 9.34 | 0.76 | 0.45 |
| | Female | 63 | 107.50 | 9.42 | | |

Gender wise comparisons between the mean scores of sample in three components of the perception scale are given in the able table. In general, mean scores of male and female sample are greater than the score 100 and therefore it is found that both male and female student teachers had strongly positive perception on AI based instruction in the classroom environment. While comparing their mean scores in general, it is found that there is no significant difference between them since their corresponding p-value (=0.45) is greater than the value 0.05. Hence there is no significant difference between the perception of male and female student teachers on AI based pedagogy in schools.

While comparing the mean scores of male and female sample, it is found that they had no significant differences in the components - AI use in Instruction and Tool usability to Teacher but had a significant difference in the component- Teacher Attitude towards AI since the their corresponding p- value (=0.01) is less than the value 0.05.

The following table describes the comparison of mean scores of sample with subject background – arts and science groups in general perception scale and in the components of the scale also.

3. Mean Scores of Sample in three Components of the Perception Scale – Gender wise

| Components of Perception Scale | Group | N | Mean | SD | t | p |
|---|---|---|---|---|---|---|
| AI use in Instruction | Arts | 62 | 35.73 | 3.71 | 1.83 | 0.07 |
| | Science | 61 | 34.37 | 4.46 | | |
| Tool usability to Teacher | Arts | 62 | 36.10 | 3.89 | 0.98 | 0.33 |
| | Science | 61 | 35.33 | 4.68 | | |
| Teacher Attitude towards AI | Arts | 62 | 37.00 | 5.19 | 2.06 | 0.04 |
| | Science | 61 | 35.17 | 4.53 | | |
| In General Score | Arts | 62 | 108.83 | 8.00 | 2.37 | 0.02 |
| | Science | 61 | 104.87 | 10.23 | | |

From the above table 3, it is revealed that the mean scores of sample with arts and science subject background are greater than the score 100 and therefore it is found that both arts and science subject group student teachers had strongly positive perception on AI based instruction in the classroom environment. While comparing their mean scores in general, it is found that there is a significant difference between them since their corresponding p- value (=0.02) is less than the value 0.05. Hence there is a significant difference between the perception of arts and science subject group student teachers on AI based pedagogy in schools.

While comparing the mean scores of arts and science subject group sample, it is found that they had no significant differences in the components - AI use in Instruction and Tool usability to Teacher but had a significant difference in the component- Teacher Attitude towards AI since the their corresponding p-value (=0.01) is less than the value 0.05.

## Conclusion

The main purpose of the study is to know the student teachers' perception on AI enhanced pedagogy in schools. The study findings revealed that the student teachers had strongly positive perception in general on AI enhanced instruction in school. Particularly, the usability of AI tools and attitude towards the AI usage, they had strong perception. Further, there is no significant difference exists between the male and female students' perception on AI enhanced pedagogy in school level but the student teachers with arts and science subject groups show significant difference in their perception. Hence with reference to the findings of the study, it is recommend to the teacher education institutions should incorporate the AI based pedagogical practices in their teacher education programmes. And, they should promote positive attitudes towards AI usages in their teaching learning processes. Further, the institutions must have adequate infrastructural facilities to provide various training practices to the student teachers on utilizing AI tools.

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