



# Exploring Artificial Intelligence Adoption in Teaching among School Teachers: A Gender-Based Analysis

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## Abstract

Artificial Intelligence (AI) has emerged as a transformative technology in the education sector, enabling teachers to enhance instructional practices, personalize learning experiences, and improve administrative efficiency. The successful adoption of AI in teaching is expected to influence teachers' professional experiences and overall job satisfaction. The present study aimed to examine the level of AI adoption in teaching and investigate whether significant gender-based differences exist in AI adoption among school teachers. A **quantitative, descriptive, and comparative research design** was adopted, and primary data were collected from **405 government and private school teachers** using a structured questionnaire. The collected data were analyzed using descriptive statistics and the **Independent Samples t-test** in IBM SPSS Statistics 26. The findings revealed that female teachers reported significantly higher AI adoption than male teachers. These findings suggest that effective AI integration can positively influence teachers' professional experiences by improving instructional efficiency and reducing routine workload. The study highlights the need for educational institutions to strengthen digital infrastructure, provide AI-related professional development programmes, and encourage the ethical and effective use of AI technologies in classrooms.

**Keywords:** Artificial Intelligence, AI Adoption, Teaching, School Teachers, Gender, Educational Technology.

## 1. Introduction

The rapid advancement of Artificial Intelligence (AI) has transformed numerous sectors, including education. AI has evolved from being a futuristic concept into an essential technological tool that supports teaching, learning, assessment, administration, and decision-making within educational institutions. Recent developments in generative AI technologies, intelligent tutoring systems, adaptive learning platforms, automated grading systems, predictive analytics, and virtual teaching assistants have significantly changed the educational landscape. These technologies are increasingly being adopted by educational institutions worldwide to improve instructional quality, reduce teachers' administrative workload, personalize learning experiences, and enhance institutional efficiency. The emergence of applications such as ChatGPT, Microsoft Copilot, Google Gemini, and other AI-powered educational platforms has accelerated AI integration into classroom teaching, making AI adoption an important area of educational research.

Teachers are the primary agents responsible for implementing educational innovations. Consequently, their willingness and ability to adopt AI technologies directly influence the effectiveness of AI integration in schools. Unlike previous educational technologies that primarily facilitated content

delivery, AI provides intelligent assistance by automating repetitive tasks, generating instructional materials, supporting lesson planning, providing personalized feedback, analyzing student performance, and facilitating differentiated instruction. These capabilities allow teachers to devote more time to pedagogical activities and student engagement rather than administrative responsibilities. As a result, AI has the potential to improve teachers' professional effectiveness and overall job satisfaction.

Job satisfaction has long been recognized as one of the most significant determinants of employee performance, commitment, motivation, retention, and psychological well-being. In educational settings, teachers' job satisfaction influences instructional quality, classroom management, organizational commitment, absenteeism, turnover intentions, and ultimately student achievement. Satisfied teachers tend to demonstrate higher motivation, greater creativity, stronger commitment toward educational goals, and more positive relationships with students. Conversely, dissatisfaction often leads to occupational stress, burnout, emotional exhaustion, and reduced teaching effectiveness. Recent meta-analytic evidence confirms that higher teacher job satisfaction is associated with lower turnover intentions and better educational outcomes.

The integration of AI into teaching has introduced both opportunities and challenges. On one hand, AI enables teachers to automate grading, prepare lesson plans efficiently, develop customized learning materials, monitor student progress, and improve instructional decision-making. Such benefits may reduce workload and improve work efficiency, thereby enhancing job satisfaction. On the other hand, concerns regarding technological complexity, ethical issues, privacy, data security, insufficient training, fear of replacement, algorithmic bias, and increased technological dependence may negatively influence teachers' perceptions and acceptance of AI technologies. Therefore, successful AI adoption depends not only on technological availability but also on teachers' attitudes, digital competencies, institutional support, leadership, and professional development opportunities.

The Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT) have frequently been applied to explain AI adoption among teachers. These models suggest that perceived usefulness, perceived ease of use, facilitating conditions, social influence, and behavioral intention significantly affect teachers' adoption of AI technologies. Recent systematic reviews indicate that performance expectancy and effort expectancy are among the strongest predictors of AI adoption in educational settings.

The Indian education system is also experiencing rapid digital transformation following the implementation of the National Education Policy (NEP 2020), which emphasizes digital learning, technology integration, innovation, and competency-based education. Schools are increasingly encouraging teachers to utilize AI-supported educational platforms for lesson planning, assessment, content development, and personalized instruction. However, despite growing institutional investment in AI technologies, empirical evidence regarding the relationship between AI adoption and teachers' job satisfaction remains limited, particularly among school teachers in developing countries. Most existing studies focus primarily on technology acceptance, digital readiness, or student outcomes rather than teachers' occupational well-being and satisfaction.

Furthermore, existing research has concentrated largely on higher education institutions, leaving school education comparatively underexplored. There remains insufficient evidence regarding whether teachers who actively adopt AI experience higher job satisfaction than those with lower levels of AI adoption. Understanding this relationship is essential because teacher satisfaction directly influences educational quality, institutional effectiveness, and long-term sustainability of technology implementation.

Against this background, the present study investigates the relationship between Artificial Intelligence adoption in teaching and job satisfaction among school teachers. Specifically, the study examines whether significant differences exist in job satisfaction between teachers demonstrating high AI adoption and those with relatively low AI adoption. The findings are expected to contribute to educational technology literature, provide empirical evidence for policymakers, and assist school administrators in designing effective AI implementation strategies that promote both technological innovation and teacher well-being.

## 2. Literature Review

Artificial Intelligence (AI) has emerged as one of the most transformative technologies in education, significantly influencing teaching methodologies, instructional planning, assessment practices, and teachers' professional experiences. Over the past decade, researchers have increasingly examined the adoption of AI technologies and their implications for teachers' job satisfaction, instructional effectiveness, and workplace well-being. The existing literature demonstrates that while AI enhances efficiency and instructional quality, successful implementation depends on teachers' technological readiness, institutional support, perceived usefulness, and professional development opportunities.

One of the earliest theoretical foundations explaining technology adoption was proposed by **Venkatesh et al. (2012)** through the Unified Theory of Acceptance and Use of Technology (UTAUT2). Their study aimed to extend the technology acceptance framework across consumer contexts using data collected from **1,512 technology users**. The findings revealed that performance expectancy, effort expectancy, facilitating conditions, habit, and social influence significantly predict technology adoption. Although the study was conducted across multiple technological settings rather than education specifically, the framework has become one of the most widely adopted theoretical models for explaining teachers' acceptance of AI technologies.

Research examining teachers' job satisfaction gained considerable attention during the last decade. **Toropova, Myrberg, and Johansson (2021)** investigated the determinants of teacher job satisfaction using data from approximately **2,500 lower secondary school teachers** collected through the OECD Teaching and Learning International Survey (TALIS). Their objective was to identify school-level and individual factors influencing teachers' satisfaction with their profession. The findings demonstrated that administrative support, professional autonomy, manageable workload, and collaborative school culture significantly enhanced teachers' job satisfaction, whereas excessive administrative responsibilities reduced satisfaction. These findings suggest that technologies capable of reducing teachers' workload, including AI-based instructional tools, may indirectly improve job satisfaction.

The role of artificial intelligence in transforming teachers' professional practices has attracted growing scholarly interest. **Celik et al. (2022)** conducted a systematic review of AI research involving teachers with the objective of identifying the opportunities and challenges associated with AI integration in educational settings. The review synthesized findings from **over 50 empirical studies** published internationally. Their analysis revealed that AI supports lesson planning, personalized instruction, automated assessment, and administrative efficiency. However, concerns regarding ethical issues, lack of AI literacy, privacy, transparency, and insufficient professional training were consistently reported as barriers to successful AI adoption. The authors concluded that continuous professional development and institutional support are essential for maximizing the educational benefits of AI.

Teacher job satisfaction has also been examined through comprehensive evidence synthesis. **Hoque et al. (2023)** reviewed research published between **2010 and 2021** to identify factors influencing teachers' job satisfaction and its relationship with student achievement. The objective was to synthesize empirical evidence regarding determinants of teacher satisfaction. Their review incorporated findings from numerous international studies and concluded that supportive leadership, organizational commitment, work-life balance, professional recognition, and opportunities for career development significantly improve teacher job satisfaction. Furthermore, satisfied teachers demonstrated greater instructional effectiveness, higher commitment, and improved student learning outcomes, emphasizing the importance of supportive work environments in educational institutions.

Similarly, **Wartenberg et al. (2023)** conducted a large-scale systematic review and meta-analysis including **105 empirical studies** to examine the correlates of teachers' job satisfaction. Their objective was to determine how job satisfaction influences teachers' professional behaviour and student outcomes. The meta-analysis found strong positive relationships between teachers' job satisfaction and instructional quality, teacher-student relationships, organizational commitment, and student achievement. Conversely, low job satisfaction was strongly associated with turnover intentions, absenteeism, and burnout. These

findings indicate that organizational innovations such as AI technologies may improve teachers' satisfaction if implemented in ways that reduce workload rather than increase technological stress.

With the rapid emergence of generative AI technologies such as ChatGPT, researchers have increasingly investigated teachers' readiness to adopt AI. **Cukurova, Miao, and Brooker (2023)** examined factors influencing AI adoption among **792 school teachers** using adaptive learning platforms. Their objective was to identify predictors of teachers' engagement with AI technologies in schools. The findings demonstrated that teacher confidence, institutional trust, ownership, technical support, workload reduction, and ethical assurance significantly predicted AI adoption. Interestingly, traditional factors such as technological knowledge alone were insufficient to explain actual AI usage, highlighting the importance of organizational readiness and support systems for sustainable implementation.

Recent empirical evidence also highlights the relationship between AI adoption and teachers' job satisfaction. **Shah, Parveen, and Abid (2024)** conducted a quantitative survey among primary and secondary school teachers in Pakistan to examine the relationship between AI adoption and job satisfaction. Their objective was to investigate whether teachers' perceptions of AI technologies influence their professional satisfaction. Using standardized measurement scales, the study found a significant positive relationship between favourable perceptions of AI adoption and teachers' job satisfaction. Teachers who perceived AI as useful for lesson planning, classroom management, and instructional support reported higher levels of professional satisfaction and teaching effectiveness than those expressing technological anxiety.

The integration of AI within higher education has also received substantial attention. **Kumar et al. (2025)** investigated AI utilization among **500 university and college teachers in India** with the objective of examining the relationship between AI adoption and teachers' job satisfaction. Using Exploratory Factor Analysis (EFA), Confirmatory Factor Analysis (CFA), and Structural Equation Modeling (SEM), the researchers found that AI adoption positively influenced teaching efficiency, instructional innovation, and teachers' professional satisfaction. Participants reported that AI-assisted lesson preparation, automated assessment, and administrative support substantially reduced routine workload, enabling teachers to devote more time to student engagement and innovative pedagogical practices.

Recognizing the growing volume of AI research in education, **Xue, Ghazali, and Mahat (2025)** conducted a systematic review synthesizing **33 empirical studies** published between 2015 and 2024. Their objective was to identify dominant themes, theoretical frameworks, and research gaps related to teachers' AI adoption. The review found that the Technology Acceptance Model (TAM) remains the most widely used theoretical framework, while perceived usefulness, ease of use, AI literacy, and institutional support consistently emerged as the strongest predictors of AI adoption. The authors also highlighted the limited availability of qualitative investigations, insufficient research involving school teachers, and the need to examine AI adoption across different educational contexts and demographic characteristics.

Further evidence regarding AI adoption has been provided by **Nguyen et al. (2025)** through a grounded meta-analysis of **45 peer-reviewed studies** published between 2020 and 2024. Their objective was to identify the factors influencing educators' AI adoption across different educational settings. The analysis identified four major dimensions influencing AI adoption: individual factors (AI literacy, beliefs, and self-efficacy), institutional infrastructure (organizational support and resources), technological characteristics (perceived usefulness, ease of use, reliability, and transparency), and perceived educational impact. The study emphasized that teachers are more likely to adopt AI when adequate institutional infrastructure, ethical guidelines, and continuous professional development are available.

Overall, the existing literature consistently demonstrates that AI has considerable potential to improve teaching effectiveness, reduce administrative burden, and enhance teachers' professional experiences. Simultaneously, job satisfaction remains strongly influenced by organizational support, workload management, professional autonomy, technological confidence, and institutional readiness. Although several international studies have investigated AI adoption and teacher job satisfaction independently,

empirical evidence simultaneously examining the influence of AI adoption on job satisfaction among **school teachers**, particularly within the Indian school education context, remains limited. Most existing studies focus either on higher education, technology acceptance models, or systematic reviews rather than school-level empirical investigations. This gap provides strong justification for the present study examining the impact of AI adoption on teachers' job satisfaction among school teachers.

### 3. Research Gap

Although numerous studies have explored **Artificial Intelligence (AI) adoption** in education several research gaps remain. First, most existing studies have focused on **higher education institutions**, while limited empirical research has been conducted among **school teachers**, particularly in the Indian context. Second, previous studies have primarily examined teachers' acceptance of AI using technology acceptance models (e.g., TAM and UTAUT), with comparatively less attention given to how AI adoption influences **teachers' job satisfaction**. Third, much of the available evidence is based on developed countries, making it difficult to generalize the findings to developing countries such as India, where technological infrastructure, digital literacy, and institutional support differ considerably. Finally, there is a lack of studies using a large and diverse sample of school teachers to compare perceptions across demographic groups. Therefore, the present study aims to bridge these gaps by examining the impact of AI adoption in teaching of school teachers using empirical data.

### 4. Research Objectives

1. **To assess the level of Artificial Intelligence (AI) adoption in teaching among school teachers.**
2. **To examine the significant difference in AI adoption in teaching among school teachers based on gender.**

### 5. Corresponding Hypotheses

**H01:** There is no significant difference in AI adoption in teaching among school teachers based on gender.

**H11:** There is a significant difference in AI adoption in teaching among school teachers based on gender.

### 6. Research Methodology

The present study adopted a *quantitative, descriptive, and comparative research design* to examine the adoption of Artificial Intelligence (AI) in teaching. A cross-sectional survey method was employed to collect data from school teachers. The study also compared teachers' perceptions based on **gender** using the Independent Samples t-test. The target population comprised government and private school teachers working in Haryana. A total of 405 school teachers of Haryana participated in the study. A **stratified random sampling technique** was adopted to ensure adequate representation of male and female teachers from different schools. A structured questionnaire was used comprising two sections. Demographic Profile and AI adoption in teaching (10 items). Responses were measured using a five-point Likert scale ranging from 1 = Strongly Disagree to 5 = Strongly Agree. The collected data were analyzed using IBM SPSS Statistics 26. The statistical techniques were employed as Frequency and Percentage, Mean and Standard Deviation and Independent Samples t-test

### 7. Reliability of the Instrument

Cronbach's Alpha was used to examine the internal consistency.

**Table1: Reliability of the Instrument**

Variable	Items	Cronbach's Alpha
AI Adoption	10	0.889

Source: Primary Data

The reliability coefficients exceeded the recommended value of **0.70 (Field, 2009)**, indicating satisfactory internal consistency.

## 8. Results and Discussion

### 8.1 Demographic Profile of the Respondents

The demographic characteristics of the respondents provide important background information about the study sample and help in understanding its composition. Variables such as **gender** and **type of school** were considered to ensure that the sample adequately represented different categories of school teachers. A total of **405 school teachers** participated in the study. The demographic analysis was conducted using **frequency and percentage** to describe the distribution of respondents. The results are presented in Table 2.

**Table 2: Demographic Analysis**

Category	Frequency	Percentage
Male	178	43.9%
Female	227	56.1%
<b>Total</b>	<b>405</b>	<b>100%</b>
Govt Teacher	220	54.3%
Private teachers	185	45.7%
<b>Total</b>	<b>405</b>	<b>100%</b>

Source: Primary data

Table 2 presents the demographic profile of the respondents included in the study. Out of the total **405 school teachers, 227 (56.1%) were female** and **178 (43.9%) were male**, indicating that female teachers constituted the majority of the study sample. This distribution provides adequate representation of both genders for conducting comparative statistical analysis.

Regarding the type of school, **220 respondents (54.3%) were government school teachers**, whereas **185 respondents (45.7%) were employed in private schools**. The relatively balanced representation of teachers from both government and private schools enhances the generalizability of the findings and enables meaningful comparisons between different institutional settings. Overall, the sample is considered appropriate for examining AI adoption in teaching among school teachers.

### 8.2 AI adoption in teaching among school teachers based on gender

To examine whether there is a significant difference in **AI adoption in teaching** between male and female school teachers, an **Independent Samples t-test** was performed. The test compares the mean scores of the two independent groups to determine whether the observed difference is statistically significant. The results of the analysis are presented in Table 3.

**Table 3: Independent Samples t-test for AI Adoption based on Gender**

Gender	N	Mean	SD	t	p-value
Male	178	3.79	0.58		
Female	227	3.95	0.60	-2.73	0.007*

Source: Primary data \*p < 0.05

The results indicate that female teachers (M = 3.95) reported significantly higher AI adoption compared to male teachers (M = 3.79). The calculated **t-value (-2.73)** with a **p-value of 0.007** is less than the significance level of 0.05. Therefore, the null hypothesis (**H01**) is rejected. It can be concluded that a significant gender difference exists in AI adoption in teaching among school teachers. Hence study accepted the alternate hypothesis that:

**H11:** There is a significant difference in AI adoption in teaching among school teachers based on gender.

## 9. Discussion

The findings indicate that **female school teachers exhibit higher levels of AI adoption than male teachers**. One possible explanation is that female teachers may perceive AI-based instructional tools as effective in reducing administrative workload, improving lesson planning, and enhancing classroom engagement. Consequently, the effective use of AI technologies contributes positively to teachers' professional experiences and satisfaction.

These findings are consistent with previous studies by **Celik et al. (2022)**, **Shah et al. (2024)**, and **Kumar et al. (2025)**, who reported that AI-supported teaching practices improve instructional efficiency and contribute positively to teachers' professional satisfaction. The results also align with **Toropova et al. (2021)**, who emphasized that supportive working environments and innovative teaching resources play a crucial role in enhancing teachers' job satisfaction.

### 10. Suggestions, Limitations, Future Research Directions, and Conclusion

The findings of the present study suggest that school administrations and educational policymakers should encourage the effective integration of Artificial Intelligence (AI) into teaching by providing regular training programmes, digital infrastructure, and continuous technical support for teachers. Professional development initiatives focusing on AI literacy and ethical use of AI tools can enhance teachers' confidence, improve instructional practices, and ultimately increase job satisfaction. Despite its contributions, the study has certain limitations. It was based on a sample of **405 school teachers**, and therefore the findings may not be generalizable to teachers from other states or higher educational institutions. Additionally, the study adopted a cross-sectional design and relied on self-reported responses, which may be subject to response bias. Future research may employ larger and more diverse samples across different regions, use longitudinal or mixed-method research designs, and investigate additional factors such as teachers' digital competence, organizational support, work-life balance, and technology readiness as mediating or moderating variables influencing AI adoption and job satisfaction. In conclusion, the study demonstrates that AI adoption has become an important component of modern teaching practices, with female teachers exhibiting significantly higher levels of AI adoption than male teachers. The findings indicate that integrating AI into educational settings has the potential to enhance teachers' instructional efficiency and professional experiences. Therefore, fostering a supportive technological environment and promoting AI-based teaching practices can contribute to improved teaching quality and greater job satisfaction among school teachers.

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