

AI INTEGRATION IN EDUCATION: TEACHERS' PERCEPTIONS, READINESS FOR CHANGE, AND INSTITUTIONAL SUPPORT

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Abstract

Artificial Intelligence (AI) is rapidly transforming the education sector, reshaping teaching methodologies, automating administrative tasks, and enhancing personalized learning experiences. However, the adoption of AI in education raises critical concerns among teachers regarding its impact on job security, skill relevance, and professional growth. This study aims to explore teachers' perceptions of AI integration, their readiness to adapt to AI-driven changes, and the role of institutional support in facilitating AI training and adoption. The research investigates whether teachers perceive AI as a threat or an opportunity, whether they are actively pursuing AI-related training (free or paid), and whether educational institutions are providing structured training programs to equip teachers with AI-related competencies. Additionally, the study examines teachers' expectations regarding institutional support for AI skill development. The findings will offer insights into how educational institutions can better support teachers in navigating the evolving AI landscape, ensuring a balanced and inclusive transition to AI-integrated education.

Keywords: Artificial Intelligence (AI), Education Sector, Teachers' Perceptions, AI Integration, Job Security, Skill Development, Institutional Support

INTRODUCTION

Artificial intelligence (AI) is commonly perceived by the public as the capability of machines or computers to replicate human-like thinking and actions (Wartman & Combs, 2018). Essentially, AI refers to the development of computerized systems designed to mimic human cognition and behavior (Mohammed & Watson, 2019). Timms (2016) suggests that it is misleading to assume that AI will solely exist in the form of conventional computers. Instead, AI is likely to integrate into daily life through various functions and forms, extending beyond traditional computing devices.

The concept of Artificial Intelligence (AI) is steadily becoming more prevalent in the education sector. Initially, it was introduced as AI literacy, which refers to the ability to comprehend, utilize, monitor, and critically evaluate AI applications, even without the technical expertise to develop AI models (Long & Magerko, 2020). The rapid advancements in artificial intelligence (AI) have dramatically transformed various sectors, including education. As AI continues to evolve, its integration into educational systems has become a topic of increasing significance. The potential of AI to enhance teaching and learning experiences is widely recognized, as it promises to personalize learning, improve efficiency, and provide innovative educational tools (Ahmet and Fatih, 2020). However, the successful implementation of AI in educational settings hinges on a complex interplay of factors. Among these, teachers' perceptions of AI, their readiness to adopt it, and the level of institutional support they receive are critical elements that shape the integration process and its eventual success.

Teachers' perceptions of AI are central to its adoption in classrooms. While some educators view AI as a powerful tool for enhancing student learning and streamlining administrative tasks, others may harbor concerns about its impact on the teaching profession. Issues such as the potential for job displacement, the ethics of AI, and the implications for student privacy can influence how educators engage with AI technologies. Understanding teachers' perceptions is key to developing strategies that address their concerns, while also highlighting the positive aspects of AI integration that can empower and support them in their roles.

The readiness of teachers to embrace AI is another crucial element in the integration process. This readiness is not only a matter of acquiring the necessary technical skills but also a reflection of educators' willingness to adapt to new pedagogical approaches. In many cases, teachers may lack sufficient training or resources to incorporate AI tools effectively into their teaching practices (Holmes et.al 2019). Thus, it is essential to examine the professional development needs of educators, as well as the support systems that can facilitate their

transition into an AI-enabled teaching environment. Programs that offer hands-on experience with AI applications, as well as ongoing training opportunities, can play a pivotal role in fostering teachers' readiness. Institutional support is equally vital in ensuring the successful integration of AI in education. Educational institutions must provide both the technological infrastructure and the necessary cultural shift to support AI adoption. This includes providing schools with the necessary AI tools, ensuring access to reliable internet and computing resources, and developing policies that encourage experimentation with AI technologies. Additionally, institutions must promote a collaborative environment where teachers can share insights, challenges, and best practices related to AI use. Institutional leaders need to create a culture of continuous learning, where teachers are encouraged to explore innovative teaching methods and AI-driven tools. This research aims to explore the dynamic relationship between teachers' perceptions, their readiness to embrace AI, and the institutional support required for successful AI integration in education. By delving into these factors, the study seeks to provide valuable insights that can help educational stakeholders—teachers, policymakers, and institutions—navigate the challenges and opportunities presented by AI. Ultimately, this research aims to enhance the educational experience, ensuring that both teachers and students are well-prepared for a future increasingly shaped by AI technologies. Through effective integration, AI has the potential to transform education, making it more personalized, efficient, and inclusive for learners of all backgrounds.

LITERATURE REVIEW

Teachers' perceptions play a critical role in the adoption of AI-based tools. According to Chassignol et al. (2018), educators view AI positively when it simplifies administrative tasks, such as grading and attendance management. However, they express concerns about its effectiveness in providing personalized learning experiences. The study emphasizes that teachers are more likely to embrace AI if they believe it enhances instructional efficiency and does not replace their pedagogical roles.

Zawacki-Richter et al. (2019) conducted a systematic review of AI applications in higher education. They found that while teachers acknowledge the potential of AI to automate repetitive tasks, they are concerned about reduced human interaction in the learning process. The authors highlight that teachers' trust in AI systems depends heavily on the transparency and reliability of the technology being implemented.

According to Holmes et al. (2019), institutional support plays a crucial role in promoting AI adoption in education. Their report emphasizes that schools providing continuous training programs and technical support foster greater teacher confidence in using AI. The authors argue that clear policies on AI usage, coupled with ethical guidelines, encourage teachers to experiment with AI-based tools.

Luckin (2017) explores how AI-driven personalized learning transforms teachers' roles. The study highlights that AI reduces teachers' administrative workload, enabling them to focus on mentoring and providing emotional support to students. However, the author also notes that teachers fear AI may eventually replace certain instructional responsibilities, reducing the human touch in education.

Ahmet Gocen and Fatih Aydemir (2020) explored the impact of AI in education by identifying four main themes. First, they highlighted the potential of AI products such as simulation programs, VR classrooms, assistant robots, and personalized learning systems, which enhance adaptive learning by tailoring content to individual students' needs. The authors emphasized that AI can significantly support personalized learning and improve educational outcomes. However, they also noted potential drawbacks, including the mechanization of information processing, reduced teacher involvement, and ethical concerns related to AI overuse. The study further pointed out the risk of job displacement, particularly in white-collar professions like teaching, but argued that individuals with AI literacy would have a competitive advantage. The authors concluded that educators must evolve into mentors, focusing on lifelong skills and problem-solving abilities rather than traditional teaching methods.

Ke Zhang and Ayse Begum Aslan (2021) highlighted the rapid advancement of AI in education, predicting significant growth in the AI market within the sector, particularly in the USA, with an estimated 48% increase from 2018 to 2022. They emphasized AI's potential to enhance learning accessibility, personalize educational experiences, and optimize teaching strategies. The authors noted the emergence of AI-powered teaching assistants, such as "Happy Numbers," already functioning in US classrooms. However, they cautioned that while AI offers transformative opportunities, it also raises ethical concerns and necessitates interdisciplinary collaboration for effective large-scale implementation.

Dr. K. Ravishankar and Dr. K. Logasakthi (2023) highlighted the growing significance of artificial intelligence (AI) in modern technological advancements. They emphasized that while AI plays a crucial role in transforming various fields, there is still a lack of awareness among people regarding its potential. The authors argued that creating more awareness and providing adequate training on AI applications is essential for individuals to effectively utilize these technologies. Their study focuses on assessing the awareness and impact of AI on students, aiming to explore how AI influences their education and career development. Furthermore, they suggested that by applying appropriate techniques, individuals can harness AI's capabilities to their advantage, addressing potential challenges and maximizing its benefits.

Zouhaier Slimi (2023) explored the impact of AI on higher education, emphasizing its influence on learning, teaching, and future career prospects. The study revealed that a significant portion of participants (43% strongly agree, 15% agree) believe AI is more efficient than humans in educational processes. Furthermore, the research highlighted that while most respondents (75%) perceive AI as accurate and objective in learner assessment, a majority (54%) still prefer manual evaluation, citing the human capacity for better understanding. Slimi stressed the need for higher education institutions to equip students with AI-related skills while prioritizing ethical considerations to prevent the dehumanization of education.

Shan Wang et al. (2024) conducted a mixed-method study combining bibliometric and content analysis to explore the core concepts within the field of Artificial Intelligence in Education (AIED). Their findings emphasize the importance of understanding the conceptual framework of AIED and highlight the need for future research to integrate the latest AI technologies. The study also calls for expanding AIED research into preschool education, enhancing research quality through mixed methods, and promoting interdisciplinary collaboration among computer scientists, psychologists, educators, and MIS experts.

RESEARCH METHODOLOGY

Research Design

This study adopts a hybrid research design, combining descriptive and analytical approaches to examine teachers' perceptions, readiness for AI-driven changes, and the role of institutional support in promoting AI adoption in educational institutions.

Research Objectives:

1. To analyze teachers' perceptions of AI's impact on their jobs, skills, and professional potential.
2. To assess teachers' readiness and willingness to integrate AI into their teaching practices.
3. To explore teachers' expectations regarding institutional support for AI learning and skill development.
4. To understand the relation between interest in information technology and familiarity with AI applications in education.

Sampling Method

This study employed a random sampling method to ensure that the selected participants represented a diverse group of educators from different institutions, subject areas, and experience levels. Random sampling was chosen to minimize selection bias and enhance the generalizability of the findings.

A total of 238 teachers were randomly selected from various educational institutions, including schools and colleges. The sample included teachers from multiple disciplines such as commerce, science, computer science/IT, and arts. By using random sampling, every teacher in the target population had an equal chance of being selected, allowing for an unbiased representation of teachers' perceptions, readiness, and institutional support for AI adoption in education.

This approach ensured that the study findings reflect a broad and balanced perspective, making the results applicable to a wider educational context.

Data Collection:

The study utilizes both primary and secondary data for comprehensive analysis. Primary data are collected through a survey questionnaire designed to measure teachers' perceptions, readiness, and the level of institutional support for AI adoption. The questionnaire includes Likert scale items (1-5), multiple-choice questions, and demographic details to capture diverse insights. In addition to primary data, secondary data sourced from books, journals, research papers, and credible online resources related to AI in education. This includes previous studies on AI adoption, institutional support, and its impact on teaching practices, providing a broader contextual understanding to support the primary findings.

Data Analysis Methods

The collected data was analyzed using descriptive and inferential statistical techniques to gain insights into teachers' perceptions, readiness, and institutional support for AI adoption in education. The statistical analysis was performed using SPSS software. The following methods were applied:

Descriptive Statistics:

Mean, standard deviation, frequency, and percentage distributions were used to summarize participants' responses, providing an overview of teachers' awareness, perceptions, and engagement with AI.

Inferential Statistics:

Spearman's Rank Correlation: Used to examine the relationship between teachers' interest in technology and their familiarity with AI applications in education.

RESULT AND DATA ANALYSIS

Objective 1: Teachers' perceptions of AI's impact on their jobs, skills, and professional potential

Table 1: Teachers' Perceptions of AI in Education

Perception of AI's Impact on Teaching	Frequency (N = 238)	Percentage (%)
AI will enhance my teaching and make my job easier	132	55.5
AI will replace certain teaching tasks but not my role	92	38.7
AI might replace teaching jobs in the future	12	5.0
AI has no significant impact on teaching	2	0.8

Table 2: Teachers' Belief on AI's Role in Teaching and Learning

Belief on AI Improving Teaching & Learning Outcomes	Frequency (N = 238)	Percentage (%)
Strongly Disagree	4	1.7
Disagree	8	3.4
Neutral	30	12.6
Agree	104	43.7
Strongly Agree	92	38.7

Table 3: Concerns about AI in Education

Concerns about AI	Frequency (N = 238)	Percentage (%)
AI may not be reliable in assessing student needs	56	23.5
AI might reduce human interaction in education	44	18.5
Ethical concerns regarding AI usage	28	11.8
Lack of AI-related training for teachers	20	8.4
AI may replace teaching jobs	10	4.2
No concerns	14	5.9

Interpretation

The analysis reveals that a majority of teachers (55.5%) believe AI will enhance their teaching and make their jobs easier, while 38.7% feel AI will replace certain teaching tasks but not their roles. A small percentage (4.2%) express concern that AI might replace teaching jobs entirely.

Regarding AI's effectiveness in improving teaching and learning, 82.4% of teachers either agree or strongly agree that AI can have a positive impact. Only a small fraction (5.1%) disagrees, indicating overall confidence in AI's role in education.

When it comes to concerns, the most cited issue is AI's reliability in assessing student needs (23.5%), followed by reduced human interaction in education (18.5%). Ethical concerns (11.8%) and lack of AI-related training (8.4%) are also significant barriers to AI adoption. Notably, 5.9% of teachers reported having no concerns about AI integration.

These findings suggest that while teachers are optimistic about AI's role in education, they also recognize challenges, particularly in training, ethical considerations, and maintaining human interaction in the learning process. Institutions must address these concerns to ensure smooth AI adoption in education.

Objective 2: To assess teachers' readiness and willingness to integrate AI into their teaching practices.

Table 4: Teachers' Willingness to Invest in AI Training

Willingness to Invest in AI Training(time/money)	Frequency	Percentage (%)
Not interested in AI training	12	5.0%
Prefer free training options	106	44.5%
Willing to invest if institution supports	72	30.3%
Willing to pay for AI courses	48	20.2%
Total	238	100.0%

Table 5: AI Training Received by Teachers

AI Training Type	Frequency	Percentage (%)
No training and not interested	10	4.2%
No training but interested in learning	64	26.9%
Informal/self-learning	108	45.4%
Formal training	56	23.5%
Total	238	100.0%

Table 6: Teachers' Preferences for AI Use in Student Assignments

Preference for AI Use in Assignments	Frequency	Percentage (%)
Not sure / Need more awareness	12	5.0%
AI use is unethical	4	1.7%
AI hinders critical thinking	26	10.9%
Yes, but with ethical guidelines	102	42.9%
Yes, enhances learning and creativity	94	39.5%
Total	238	100.0%

Interpretation

The data suggests that while many teachers are interested in AI training, financial considerations significantly impact their willingness to invest. 44.5% prefer free training, while 30.3% would enroll only if institutions support them financially. Only 20.2% are willing to pay for AI training independently, and 5% have no interest in AI training at all.

In terms of prior AI training, a large portion of teachers (45.4%) have engaged in informal/self-learning, while 23.5% have received formal institutional training. However, 26.9% have not received training but are interested, highlighting a gap in AI training accessibility.

Regarding AI integration in student assignments, 42.9% support AI use with ethical guidelines, and 39.5% believe AI enhances learning and creativity. However, 10.9% worry that AI might hinder critical thinking, while a small percentage (1.7%) believes AI use in assignments is unethical. Additionally, 5% of teachers are unsure about AI's role, indicating a need for increased awareness and training on ethical AI usage in education.

Overall, the findings highlight a strong interest in AI integration, with institutional support playing a crucial role in adoption. However, concerns about AI's ethical use, financial barriers to training, and its impact on student learning require further institutional intervention to facilitate smooth AI adoption in education.

Objective 3: To explore teachers' expectations regarding institutional support for AI learning and skill development.

Table 7: Teachers' Preferences for Institutional AI Training

Institutional AI Training Preference	Frequency	Percentage (%)
No, I do not see the need for AI training	8	3.4%
No, I prefer to learn AI independently	12	5.0%
Yes, optional training for interested teachers	116	48.7%
Yes, mandatory training for all teachers	102	42.9%
Total	238	100.0%

Table 8: Preferred Type of AI Training

Type of AI Training Preferred	Frequency	Percentage (%)
Online training courses	60	25.2%
In-person workshops/seminars	50	21.0%
Hands-on practical training sessions	50	21.0%
A combination of the above	78	32.8%
Total	238	100.0%

Interpretation:

The majority of teachers (91.6%) believe institutions should provide AI training, with 48.7% preferring optional training and 42.9% supporting mandatory AI training for all teachers. Only a small fraction (8.4%) prefers to learn independently or does not see a need for AI training.

In terms of training methods, a combination of online, in-person, and hands-on practical training (32.8%) is the most preferred format. Online training courses (25.2%) are the next most favored, followed by in-person workshops and hands-on sessions (21.0% each).

This indicates a strong demand for structured institutional AI training, particularly in flexible and interactive formats, highlighting the need for institutions to develop diverse and engaging AI training programs to support teachers effectively.

Table 9 Teachers' Expectations for Institutional Support in AI Adoption

Institutional Support Type	Percentage (%)
Access to AI tools and software	21.8%
AI specialists or mentors	19.3%
AI-focused training programs	17.6%
Ethical policies for AI use	9.2%
Combination of training, tools, and mentors	14.3%
No additional support needed	4.2%

Interpretation:

The findings indicate that the majority of teachers expect institutional support for AI adoption in education. Access to AI tools and software (21.8%), AI specialists or mentors (19.3%), and structured AI-focused training programs (17.6%) are the most sought-after forms of support. Additionally, a significant portion (14.3%) of teachers prefer a combination of training, tools, and mentorship, highlighting the need for a well-rounded institutional approach.

These results suggest that educational institutions should implement comprehensive AI training initiatives, provide access to relevant AI resources, and establish mentorship programs to support teachers in integrating AI into their teaching practices. With only 4.2% of teachers stating that no additional support is needed, it is clear that institutional efforts are crucial in ensuring AI readiness among educators.

Objective 4: To understand the relation between interest in information technology and familiarity with AI applications in education.

Correlations				
			How would you describe your interest in computers and technology?	How familiar are you with AI and its applications in education?
Spearman's rho	How would you describe your interest in computers and technology?	Correlation Coefficient	1.000	.593**
		Sig. (2-tailed)	.	.000
		N	238	238
	How familiar are you with AI and its applications in education?	Correlation Coefficient	.593**	1.000
		Sig. (2-tailed)	.000	.
		N	238	238

** . Correlation is significant at the 0.01 level (2-tailed).

Interpretation:

The Spearman's rho correlation test was conducted to examine the relationship between teachers' interest in computers and technology and their familiarity with AI and its applications in education. The results indicate a moderate to strong positive correlation ($\rho = 0.593, p < 0.01$). This suggests that teachers who have a higher interest in computers and technology tend to be more familiar with AI and its applications in education. The p-value of 0.000 confirms that this correlation is statistically significant, meaning the relationship is unlikely to be due to random chance.

This finding implies that teachers who are more inclined toward technology are more likely to have knowledge about AI in education. It suggests that increasing teachers' interest in technology could enhance their AI awareness, which may be useful for AI-related training and professional development initiatives.

FINDINGS

The study explored teachers' perceptions, readiness, and institutional support for AI adoption in education. The analysis revealed that most teachers perceive AI positively, with 55.5% believing that AI enhances teaching and 38.7% acknowledging that AI will replace certain teaching tasks but not their role. Additionally, 82.4% of teachers agreed that AI improves teaching and learning outcomes. However, concerns remain regarding AI reducing human interaction (18.5%) and its reliability in assessing student needs (23.5%).

Regarding teachers' readiness and willingness to integrate AI into teaching, the findings showed that 50.5% of teachers had received AI training, either formally (23.5%) or informally (45.4%). While 44.5% preferred free AI training, 30.3% were willing to invest in training if institutions provided financial support. In terms of AI use in student assignments, 82.4% supported AI integration, but with ethical guidelines.

Institutional support for AI training was another crucial factor. About 91.6% of teachers expected their institutions to provide structured AI training, with 42.9% supporting mandatory programs. A majority (53.8%) preferred practical training and workshops over online courses. Additionally, teachers highlighted the need for AI-focused professional development programs (17.6%), access to AI tools (21.8%), and AI mentors (19.3%) as essential institutional support measures.

Correlation analysis revealed a statistically significant positive relationship ($\rho = 0.593, p < 0.01$) between teachers' interest in technology and their familiarity with AI in education. This suggests that teachers who are more inclined towards technology are more likely to be aware of AI's applications in teaching and learning.

CONCLUSION

The findings reveal that while teachers recognize the transformative potential of AI in education, there is a pressing need for structured training, institutional support, and clear guidelines to ensure its effective

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adoption. Although educators display a willingness to embrace AI, they require enhanced skills, ethical guidance, and practical knowledge to integrate it confidently into their teaching practices. The significant correlation between technological interest and AI familiarity highlights the importance of fostering a culture of technological enthusiasm to drive AI adoption. To facilitate this, educational institutions must implement comprehensive AI training programs, provide financial support through subsidies or free workshops, and offer mentorship from AI experts. Additionally, addressing teachers' concerns about job security, reliability, and ethical use of AI through awareness programs and clear policies is essential. By creating a supportive and resourceful environment, institutions can empower teachers with the skills, confidence, and tools necessary to effectively leverage AI, ultimately enhancing teaching quality and enriching the overall learning experience.

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