

Teachers' Preparedness for GenAI Integration in Education: A Pilot Study

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ABSTRACT

The present work elucidated preparedness for generative artificial intelligence integration into education among teachers. With the rapid technological advancement in AI, the way teachers delivered education in classroom was changing the way education was delivered in the classrooms, undergoing a profound transformation. The researcher's sample consisted of 60 teachers with a mean age of 29.33 years all employed in urban schools with technological availability. Careers adapt ability short form scale (CAAS-SF) and readiness for artificial intelligence scale (RAIS) was used to measure the variable. To assess the relationship between the two variables, a correlation analysis was performed. A significant positive correlation was noted between technological self-efficacy (domain of readiness for AI) and concern and confidence (domains of career adaptability). Ethical awareness- a domain of readiness for AI was also positively correlated with control (domain of readiness for AI). The results of this research could be used to curate teachers' training programmes for proper AI use and policy making and ethics regarding AI. Several key limitations of the research were that sample size was limited since the researcher's sample consisted predominantly of females, male populations weren't taken into consideration, and since the researcher's study was done on urban schoolteachers, other localities was also ignored. Also, since the researcher did cross sectional study, cause effect relationship between career adaptability and AI readiness could not be established so the researcher's results could not be generalised but was right for the researcher's current research question.

Keywords: preparedness, generative artificial intelligence, cross sectional study, career adaptability, ai readiness

INTRODUCTION

Over the past decade, artificial intelligence evolved from basic analytical systems into powerful generative models capable of producing novel, human-like content. Known as Generative AI (GenAI), this technology synthesized artifacts such as text, images, and code by recognizing patterns in massive datasets. Unlike traditional educational software or learning management systems, GenAI adapted dynamically to natural language inputs, presenting qualitative differences in how tools were utilized (Mohan, 2025).

Published: 31 March 2026

DOI: <https://doi.org/10.70558/IJSSR.2026.v3.i2.30956>

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In the educational sphere, GenAI offered practical benefits for lesson planning, automated feedback, and instructional customization. However, the introduction of AI-generated content also raised urgent concerns regarding data privacy, algorithmic bias, and academic integrity. Consequently, international organizations framed GenAI as a multimodal component intended to augment, rather than replace, human pedagogical practices (UNESCO, 2023; UNICEF, 2021).

Because teachers served as the primary catalysts in the learning environment, their readiness was central to the responsible realization of AI in the classroom (Celik et al., 2022; Alnasib, 2023). Preparedness encompassed more than technical familiarity, it required pedagogical strategies for integrating AI content and the ethical judgment to evaluate AI outputs (Lameras & Arnab, 2022; Cheah et al., 2025; Fundi et al., 2024). Without institutional support, the researcher noted that the risk of misuse in assessment practices might outweigh the potential benefits (Cheah et al., 2025; Fundi et al., 2024). Despite growing academic interest, empirical evidence regarding teacher preparedness remained limited, particularly within the Indian context (Celik et al., 2022; Ghiasvand et al., 2024).

While urban schools often possessed the necessary infrastructure, the extent of teachers' ethical and pedagogical readiness remained underexplored. Therefore, the researcher's study aimed to understand this preparedness to inform future policy and professional development (Alnasib, 2023; Lameraras & Arnab, 2022). For the researcher's specific sample, the primary concern was not technological access, which was generally available in urban schools, but the readiness required to ensure ethical and effective AI integration (Ghiasvand et al., 2024).

The older version of artificial intelligence used to analyse and interpret data that already existed. Meanwhile, generative AI systems nowadays could produce output by identifying pattern recognition or probability patterns in large data sets. Artificial intelligence referred to a computational system designed to perform tasks that required human cognitive capabilities and capacities, such as pattern, recognition, language, processing, and decision-making (Mohan, 2025). In recent years, AI had moved beyond purely analytical functions to the development of generative AI models which could create new and novel content, including text, images and educational materials as the researcher had also noted earlier. This distinction between human made and AI-created materials became particularly salient in an educational context where generative AI bore directly on the instructional practices, assessment methods and learning processes. Comprehending teachers' readiness/preparedness and disposition to use AI generated materials and technologies had become a key concern in educational research (Celik et al., 2022). Today as the use of AI generated content became increasingly common and a part of everyday lives of teachers as well as students and educators alike, they were likely to see some changes in their instructional support in their lesson preparation, grading practices and in the use of teaching resources (Cheah et al., 2025).

Past literature suggested that for many teachers, the understanding of artificial intelligence was largely constructed by their everyday use cases and popular media representations of the same (Lindner et al., 2019; Celik et al., 2022). This might restrict their overall conceptual depth and undermine their confidence in classroom integration. While teachers might be familiar with

common AI applications that were encountered daily. Such exposure did not necessarily equip them for the responsible and effective use of AI within educational settings (Celik et al., 2022).

Preparedness for AI Integrated education could therefore be understood as having multiple layers and an uneven construct shaped by various factors such as access to professional training, ethical awareness, conceptual understanding and institutional support (Lameras & Arnab, 2021; Alnasib, 2023). These limitations became more noticeable when educators were required to interact and engage with AI generated content as such engagement directly affected their assessment practices, grading methods, curriculum design, and concerns related to academic integrity.

In the educational context, the content under ethical awareness with respect to artificial intelligence would include the following-data, privacy, academic integrity, and transparency in the content which was generated by AI tools. Since AI tools already dealt with a lot of sensitive information which could affect the assessment mechanisms, it became relevant to discuss the importance of ethical awareness as a core component of preparedness with educators expected to incorporate AI in the classroom in an ethical manner. Despite the increasing scholastic interest in AI integration in education, the empirical and tangible research or proof examining the teachers' preparedness for AI generated content remained relatively small unlimited, particularly within the Indian context (Celik et al., 2022; Ghiasvand et al., 2024). That was why the present study sought to address this gap by focusing on urban educational settings, where technological infrastructure was already in place, but teachers prepared to engage with generative AI from a pedagogical and ethical perspective remained relatively underexplored.

While the broader discussion of AI integration and education tended to shed light on the potential benefits of increased efficiency and tailored learning, teachers' preparedness became significantly more complex when AI technology was used to create educational content. Research studies had found that teachers tended to feel less prepared when examining the use of AI generated text images and assessment materials in contrast to more general uses of AI technology (Ofem et al., 2025; Fakhra et al., 2024). This suggested that while teachers might recognise the value of generative AI technology in areas of content, support or lesson planning, they tended to feel caution and hesitation about using AI generated content in more central areas of teaching and assessment.

One of the major factors contributing to this hesitation was the range of ethical issues associated with AI generated content (Cheah et al., 2025; Fundi et al., 2024). Educators tended to feel uncertain about the issues of data privacy, plagiarism, algorithmic bias, and the authenticity of student work created with the use of generative AI technology. These concerns were aggravated by the absence of clear guidelines and institutional policies regarding the appropriate and ethical use of AI generated content in the educational context (Cheah et al., 2025). Because of the above, teachers usually took a limited and cautious approach to the use of generative AI technology, despite their generally positive views of AI integration and education.

Similarly existing literature showed that teacher preparedness was significantly influenced by institutional support and policy. In the absence of clear ethical standards, educators experienced

professional uncertainty and heightened anxiety regarding AI integration. Trust in these technologies further declined when teachers were excluded from governance and implementation, leading to a perceived misalignment between AI tools and actual classroom practices. Likewise, while many educators pursued informal professional development through webinars or peer discussions, these activities often lacked the depth needed to handle complex pedagogical and ethical dilemmas (Fakhar et al., 2024; Lamerias & Arnab, 2021). Accordingly, such fragmented training frequently resulted in surface level knowledge rather than the deep competency required for effective classroom integration.

While it was true that many teachers and educators engaged in informal learning opportunities such as conversations with colleagues and webinars. These types of professional development activities were often incoherent, and they lacked the depth required to effectively address the pedagogical, technical and ethical issues associated with generative AI. This could result in educators having only surface level knowledge of artificial intelligence tools without having the deeper competency levels required to effectively integrate them within the classroom (Fakhar et al., 2024).

Research had made it clear that what was needed was a competency based professional development programmes that went beyond the use of AI tools to address issues such as assessment, integrity, critical evaluation and ethical decision-making of AI generated content (Fakhar et al., 2024). However, despite the growing number of studies on AI integrated education, there were still some gaps left in the literature that needed to be addressed in terms of teacher's preparedness for AI generated content. The majority of the literature on the topic had been focused on their perceptions and attitudes, and there was a need to address the issue of preparedness in a more comprehensive manner that considered ethical understanding, adaptability to technological change and institutional support (Celik et al., 2022; Ofem et al., 2025). Longitudinal studies on the impact of professional development of teachers. Engagement with AI generated content was also limited.

Overall, there was a need for more empirical studies on teachers' preparedness for generative AI in non-western societies in the Indian educational, particularly and urban schools where technological development had already been established. There was a need for more studies on how teachers were dealing with the pedagogy, logical and ethical implications of AI generated content (Ghiasvand et al., 2024)

METHOD

Sample

Sixty teachers participated in the present research. The mean age of teachers was 29.33 years. 78% of the researcher's teachers held post graduate degrees while the remaining had an undergraduate degree, 95% were of urban areas and rest belonged to a rural background. Occupationally, majority that is 63% or 38 of the researcher's teachers were noted to be employed in government or private jobs. While 22 participants or 37% of the researcher's teachers were in other jobs. The researcher's inclusion criteria for being a part of this study, was that the participant had to be a teacher from an urban School, which already had all the

technological facilities available. The responses which did not meet this category was not included.

TOOLS

A booklet was prepared to get the desired information including the standardised tools follows:

The first page of the researcher's booklet consisted of basic demographic information related questions and taking informed consent through teacher's signature. The standardised tools were

Career adapt abilities scale short form (CAAS-SF), which was published in 2015 and consisted of a total of 12 items, which measured the adaptability of an individual within their vocation or profession through four domains that was concern, control, curiosity, and confidence. The reliability of this tool was good with Cronbach's Alpha being .90 with equally good construct validity which was backed by a large skill testing.

Readiness for artificial intelligence scale (RAIS) which consisted of 19 items and came out in 2024 to measure preparedness within teachers, specifically how ready teachers were towards bringing AI into their classrooms. It had three domains, technological self-efficacy, student interaction, and ethical awareness. The reliability of the scale was also equally good with Cronbach's alpha scores ranging from .86 to .94 with proven convergent validity. Both the scales used a basic five pointer Likert scale to assess all their dimensions.

Procedure

Data collection began after securing formal administrative approval to conduct the study on school premises during working hours. The researcher met with teachers individually or in small groups to outline the research objectives and emphasize that participation was strictly voluntary. After guaranteeing absolute confidentiality, written informed consent was obtained from all willing participants.

The researcher then provided thorough instructions for both questionnaires, clarifying that there were no correct or incorrect responses to encourage genuine self-reporting. Participants were allocated ample time to complete the assessment tools while the researcher remained available to resolve any conceptual queries. Finally, each submitted booklet was promptly reviewed by the researcher to ensure no items were accidentally left blank.

Research design

The researcher's research was a correlational quantitative and cross-sectional study. Which was employed with the aim to see if teachers, career adaptability affected their AI readiness or not. So that the researcher could see if they were able to use artificial intelligence in education properly, especially in classrooms. The correlation was seen between all domains of both the tools instead of looking at the correlation between the total scores of both the tools.

Statistical analysis

Initial descriptive statistics, containing means and standard deviations, were computed prior to conducting a Pearson's product-moment correlation analysis to verify the dimensional interrelationships between career adaptability and AI readiness.

RESULTS

The mean scores and standard deviation of all the researcher's variables were as follows-

Table: 1 showing descriptive statistics (Mean and SD) of RAIS and CAAS-SF

Measures		Mean	Std. Deviation
RAIS	TECHNOLOGY SELF-EFFICACY	20.42	5.32
	STUDENT INTERACTION	26.30	5.38
	ETHICAL-AWARENESS	23.48	4.17
CAAS-SF	CONCERN	12.57	1.85
	CONTROL	12.20	2.48
	CURIOSITY	12.53	2.23
	CONFIDENCE	12.83	1.91

Pearson's product moment correlation was applied to examine the relationship between career adaptability domains with AI readiness dimensions and the result were as follows:

Table: 2 showing domain correlations of CAAS-SF and RAIS

MEASURE		DOMAINS OF CAAS-SF			
		CONCERN	CONTROL	CURIOSITY	CONFIDENCE
DOMAINS OF RAIS	TECHNOLOGY SELF-EFFICACY	0.292*	0.183	0.174	0.265*
	STUDENT INTERACTION	0.134	0.165	0.108	0.199
	ETHICAL-AWARENESS	0.218	0.285*	0.178	0.199

Note. * $p < .05$.

Technological self- efficacy was positively correlated with concern and confidence at .05 level of significance. The co-relational score being as follows - Concern ($r = .292, p < .05$) and Confidence ($r = .265, p < .05$). This indicated that teachers with high technological self-efficacy also showed higher level of confidence and higher level of concern.

Ethical awareness was also seen to be positively correlated with control at .05 level of significance. The correlation score being as follows- ($r = .285, p < .05$). Which showed that

teachers with higher ethical awareness of AI also demonstrated higher level of control within their or regarding their career adaptability.

No other significant correlation relationship was found among the rest of the variables of both the tools.

DISCUSSION

The researcher's Study examined the relationship between two variables, namely, career adaptability, and AI readiness, which was done by examining all the dimensions of both the tools which the researcher had used. The dimensions were as follows: for career adaptability-concerned, control, curiosity and confidence. Meanwhile, for AI readiness, the dimensions were technology self-efficacy, student interaction and ethical awareness. The researcher's results indicated that technology self-efficacy was positively correlated to two dimensions of career adaptability, namely, concern and confidence at .05 level of significance. These findings indicated that in practical life, the teachers who felt more competent at using AI and related technology also showed a greater belief in their own abilities to overcome challenges and hurdles in their vocational and professional lives as well as a stronger sense of direction as to what they wanted to do in their career in the future.

Relating it to the previous literature, these findings suggested that technological competency extended beyond technical skills, contributing to a broader psychological readiness (Celik et al., 2022; Lamas & Arnab, 2021). Teachers who felt competent using AI tools were more likely to embrace and welcome future educational shifts and navigate professional transitions with security rather than fear and apprehension. Similarly, digital confidence appeared to support proactive planning and problem-solving capacities (Fakhar et al., 2024). This highlighted the positive relation between digital self efficacy and adaptability, indicating that teachers who perceived themselves as AI capable were better prepared to manage future career challenges and obstacles.

Significant positive correlation between ethical awareness and career control domain at .05 level of significance, suggested that teachers who had a stronger consideration of and were concerned about ethics, in this case AI ethics such as responsible use of AI, algorithmic biases, or protection of privacy demonstrated a greater sense of accountability and decision-making in their own careers. As the researcher had already seen in previous research that clarity regarding or laying down clear ethics could help reduce uncertainty and doubts about the appropriate use of AI (Cheah et al., 2025). When teachers had a grasp on both nodes that is the possibilities and the limitations of AI usage. They felt more competent and confident in their professional judgement towards the same, this enriched their sense of autonomy and agency overall strengthening their ability to regulate their own professional tasks, actions and duties. These results highlighted that ethical knowledge in regards to AI was a central core component of AI readiness, as also seen in past researches by (Cheah et al., 2025; Fundi et al., 2024). So, in order to feel full agency and control of one's professional decision making, it was extremely important to understand the ethics behind and the consequences of digital tools. Being technically skilled was not enough, if ethical awareness was not there.

Surprisingly, the student interaction domain of AI readiness did not show any significant correlation with any of the career adaptability domains. This showed that engagement with AI at the class level might be seen as a basic instructional strategy or tool rather than something which might influence the long-term developmental career goals of the teachers. This related with one of the previous research done on AI, which explained that the main usage of AI for teachers was basically lesson preparation (Cheah et al., 2025). So, teachers might use AI for their day-to-day pedagogy and career planning and also engaged with the students regarding the same or used it for various other instructional support without looking at it fundamentally through a lens which might reshape their professional identity or career trajectory in the future altogether. This shed light on the fact that incorporating AI into daily classroom activities did not turn into a broader adaptability resource for the teachers. Instead, the researcher's results demonstrated that career adaptability was more closely linked to Feelings of competency and ethical clarity than to habitual instructional Practices.

Practical implication

The researcher's findings suggested that schools should prioritize hands on developmental programs to boost teachers' technological self-efficacy and future career adaptability. it was recommended that educational institutions implement comprehensive ethics training covering data protection and bias awareness to enhance professional control and informed decision making. Finally, the researcher suggested that training initiatives could blend technical instruction with psychological skill building (like resilience and openness) ensuring a more sustainable and responsible approach to AI integration within educational settings.

Limitations

The limitations of the studies were as follows- the sample size was relatively small and consisted only female participants, from urban schools with technological resources already equipped. The Study employed a cross- sectional research design. Because of the above listed limitations, the researcher's results could not be generalized, limiting the scope of the study. Correlation did not mean causation and the researcher's findings could not be applied to a more diverse or ruler group. All of the above suggested that the researcher's results should be viewed as purely academic and exploratory rather than definitive.

Future directions/implications

In the future, further studies could learn from the researcher's limitations and strengthen the researcher's research by the following - by adopting a larger sample size, by having a more diverse group of people, by employing a longitudinal research design to establish cause effect relationship overtime, by trying experimental or intervention based methods that could test if or not specific AI training programs that were targeted , directly influenced adaptability resources in teachers or not. Additionally, interviews could also be taken, which could provide deeper inside into teachers actual experiences and help the researcher clarify why student interaction skills were not correlated with adaptability domains. The above future approaches would give more richer, comprehensive understanding and contributed in understanding how educators navigated AI integration in education

CONCLUSION

In conclusion, the researcher's study illustrated that teachers' preparedness for AI was significantly associated with specific dimensions of career adaptability. While technological self-efficacy and ethical awareness were important for improving future orientation and professional control, student interaction or routine classroom AI interaction showed no such impact on adaptability resources. Consequently, the findings suggested that preparing teachers for AI integration required addressing both technical competency and psychological readiness.

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