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The AI-Augmented Educator: Transforming Teaching Practices, Professional Development, and Educational Administration in the Digital Age

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ARTICLE INFO	ABSTRACT
Received: July 10, 2026 Revised: July 24, 2026 Accepted: August 08, 2026 Available Online: August 21, 2026 Keywords: Artificial Intelligence, Digital Education, Educational Administration, Professional Development, Teaching Practices, Technology Integration Corresponding Author: Dr. Zahid Hussain Sahito Email: Zahid.Sahito@salu.edu.pk	Artificial intelligence (AI) is revolutionizing education by redefining teaching methods, professional growth and school management. In this study, the role of AI in the development of an AI-augmented educator and its perceived contribution to education's effectiveness were explored. A descriptive/cross sectional quantitative approach was used to which 300 Educational institutions (public and private) educators and administrative personnel responded. A structured 5-point Likert scale questionnaire was used to collect the data, which focused on four aspects of AI-supported educational administration: AI-supported teaching practices, AI-supported professional development, AI-supported educational administration, and perceived educational effectiveness. Data were analyzed with descriptive statistics, Pearson correlation and multiple regression analysis in SPSS. High scores were observed in AI-supported teaching practices ($M = 3.91$, $SD = 0.67$), professional development ($M = 3.84$, $SD = 0.71$), educational administration ($M = 3.76$, $SD = 0.73$) and perceived educational effectiveness ($M = 3.88$, $SD = 0.65$). The results showed that there was a significant positive correlation between AI-supported teaching practices and educational effectiveness ($r = .68$, $p < .01$), followed by professional development ($r = .64$, $p < .01$) and educational administration ($r = .61$, $p < .01$). The regression analysis results revealed significant predictor variables such as teaching practices ($\beta = .40$, $p < .001$), professional development ($\beta = .29$, $p < .001$) and educational administration ($\beta = .27$, $p < .001$) for the variance of educational effectiveness ($R^2 = .58$). The study concludes that effective application of AI can enhance the instructional, professional and administrative capacities of educators with proper training and policies, institutional structures and participatory decision-making.

Introduction

It is booming that the use of Artificial Intelligence (AI) — or more aptly Generative Artificial Intelligence (GenAI) is rapidly reshaping the teaching profession by affecting the curriculum and content planning, learning content development, assessment of learning, delivery of feedback, and communication with learners. Technology is not being used as an extra resource in the

classroom, but is now being integrated into classroom activities. Recently, the implementation of GenAI has been shown to support all aspects of lesson design, generation of personalized learning resources, automated feedback, and creation of innovative teaching methods, placing novel demands on teachers that demand professional judgement and critical thinking (Kapar et al., 2025; Ellis et al., 2025).

The implications for teachers' learning to adapt their working has also a technological and professional nature, in that they are required to adapt their own teaching practice with another layer of technology and profession. Human-centred thinking, AI ethics, AI foundations and applications, AI pedagogy, and AI-supported professional learning are key aspects of the UNESCO AI Competency Framework for teachers (Miao & Cukurova, 2024). Additionally, there is empirical evidence recent enough that teachers have different kinds of uses of GenAI, ranging from pedagogical ones to varying levels of AI literacy, linked to pedagogical knowledge, confidence, availability of pedagogical resources and institutional atmosphere (Cheah et al., 2025; Ellis et al., 2025).

Background of the Study

As AI becomes more nearly ubiquitous, there are new opportunities for teacher professional development, such as on-demand access to AI-created educational resources, models, and tools, to try out new instructional techniques, to have AI help plan teaching and learning, and to continually grow their understanding of how to use AI for education. Teachers also have new opportunities, such as using the professional learning opportunities that they can access, exploring new teaching approaches, having learning plans developed for them with the aid of AI, and building their knowledge and skills in AI for teaching purposes. A recent scoping review identified empirical studies related to the use of GenAI in teacher development, where the functions of GenAI included resource creation, personalized teacher support, environment creation and the benefits mentioned were augmentation of teacher knowledge, lesson design, action in the teaching process, teacher confidence and understanding of AI (Tan, 2025). Similarly, Kapar et al. (2025) asserted that GenAI has the potential to extensively support teachers in their professional development through individualized learning content, interactive exercise learning experiences, and automatic grading and tailored feedback. Additionally, there is evidence that teachers get passionate about GenAI in the beginning, but ultimately find the generated content too unaligned with content and/or pedagogical needs and context (Kohnke et al., 2025).

AI transformation is not just about teaching; it's about reshaping the education landscape by impacting administration and institutional decisions. In Educational Institutions (EI), AI-powered systems can be adopted for processing administrative operations and documents, student-staff communication, assessment tracking, data analysis, timetabling, reporting and organisation planning. Based on the results of the study, there were various domains in which GenAI can be applied in the field of education, such as teaching and learning, assessment, and administration, as well as institutional readiness, the capabilities of teachers, AI literacy of teachers, ethical concerns, teacher professional development, and teacher technical support.

Objectives of the Study

1. To understand how AI is impacting teaching or instructional decisions for teachers.
2. To explore the potential of AI to help teachers continually improve their skills and competencies, and in their professional development.
3. To evaluate the impact of incorporating AI in educational administration, efficiency, and decision-making.

Research Questions

- Q1.** What impact does AI have on classroom instruction and instructional decision making for teachers?
- Q2.** How does the integration of AI aid teachers' professional learning, AI competencies, and ongoing learning?
- Q3.** How does the use of AI impact educational administration, institutional efficiency, and decision-making processes?

Significance of the Study

The study is valuable as it offers a thorough understanding of the impact of artificial intelligence on the profession of teaching, professional learning and educational leadership. The study will support teachers to understand how AI could be used in their lesson planning, teaching, assessment, feedback and professional development in an effective manner while not sacrificing pedagogical judgement on a human level. The results can be used by educational administrators to gain insights into the capabilities of AI in enhancing administrative efficiency, data-driven decision-making, communication, and institution management. The results may also help policy makers and educative institutions to develop education programmes, ethics principles, digital competencies frameworks, and institutional policies on responsible use of Artificial Intelligence. Furthermore, the study supportively contributes to the ongoing scholarly debate on the role of the AI augmented educator by emphasizing

the need for educators to leverage the technology with their own professional pedagogical expertise, creativity, critical thinking, and ethical responsibility.

Literature Review

Artificial Intelligence and the Transformation of Teaching Practices

A.I. is also playing an increasingly important role in the lesson preparation process, notably when combined with generative A.I. technologies in the classroom for planning learning activities, feedback and evaluation, and creating resources for teaching lessons. New studies suggest the use of AI has the potential to enhance teachers' abilities to create tailored and adaptable learning experiences, and save time on routine teaching duties. In this study, S. Tan et al (2025) studied the use of AI in teaching and found that while research on using AI has advanced significantly, the application of AI in pedagogy is not as well developed as that of other studies. Likewise, studies with K-12 teachers reveal that AI incorporation is linked with novel pedagogical planning and teacher decision-making processes, while teachers are very different in terms of their preparedness and confidence for using AI effectively (Yue et al., 2024).

The ability of teachers to combine the technical skills of technology with learning objectives is a key factor in the successful application of AI-driven teaching methods. The technical ability to combine the technical features with pedagogical objectives is essential for the implementation of successful use of AI teaching methods within this area. AI generated content can assist teachers in accessing ideas for lessons, activities, questions, explanations, and assessment in a timely fashion, but the teachers are then accountable for the accuracy, relevance, Inclusiveness and checks on the curriculum parameters. Teacher preparedness for GenAI shows that many teachers are wary of using AI directly in lessons due to issues of reliability, ethics, interpersonal interactions, and institutional support in using AI (Kohnke et al., 2025). Furthermore, teachers typically compose pedagogical tasks during classroom sessions but they are not leveraging GenAI for these tasks, rather they are using it instead for tasks related to lesson preparation and assessments, highlighting a shift in emphasis from GenAI usage for teachers' tasks as an exception to their tasks being supported by GenAI (Lo et al., 2025).

AI can facilitate more sophisticated and insightful pedagogical approach, too. Teachers are not restricted to teaching from the same content as the students they have in class – they can generate other content (alternative explanations, differentiated activities, formative assessment questions, learning resources and more) for students that require a different approach. AI assisted teaching research also reveals that teachers' technological-pedagogical readiness has an impact on their attitudes to AI teaching and their intentions to use AI related teaching practices (Yue et al., 2024). Furthermore, the systematic studies demonstrate how teachers' roles and involvement in students' learning of AI are crucial, covering support for and scaffolding during students' process of learning, the question of more authentic learning environments, and the question of how to design suitable evaluation methods to integrate AI technology into students' learning activities (Liu & Zhong, 2024).

Artificial Intelligence, Teacher development and AI skills development

With the increasing pace of technology advancement in AI, constant professional learning is necessary to give teachers the skills they didn't think were required for them to be the best of the class. AI PD includes understanding AI, review of AI produced content, learning how to create effective prompts, and learning about the limitations of algorithms, as well as learning how to ensure that data is being protected, and how to incorporate AI into a particular subject-area pedagogies. Du et al. (2024) showed that AI literacy of teachers is not something that can be achieved with a technology tool alone, but also through their willingness and capacity to learn about AI, indicating the importance of fostering teachers' knowledge and confidence rather than merely providing them with a technology tool. It is interesting to note that the study by Du et al. (2024) does not simply focus on access to the AI tools themselves but rather on the teacher's willingness and capacity to learn about the tool of AI; these two aspects are closely tied to their AI literacy. One of the findings reinforces the value of professional development as an enabling pathway for teachers to immerse deeper in the world of AI and to use it as a valuable tool in their teaching.

Probably most significantly, generative AI has made opportunities to self learn and continually evolve as a teacher. AI can be used as a support tool to research the best ways to teach, explain lessons, brainstorm ideas, evaluate presented lesson plans and create new ones, instead of only using lesson plans from a scheduled workshop or formal learning program. Other findings from the study done by Li et al. (2025) indicated that the teachers adopted generative AI tools to find ideas for classroom teaching, pedagogies, and activities, and AI-powered interaction also facilitated self-management and self-monitoring in their professional learning.

Another aspect to teachers' PD in the context of AI is their attitudes, concerns and perceived professional learning needs. The findings of the large scale study (1454 teachers) showed that the professional needs differed depending on context and levels of teaching, whereby some teachers highlighted that establishing an awareness of AI literacy as a base level is important while others indicated the need to understand how to direct students to use AI appropriately and possible how to identify AI-generated

compositions (Loh et al., 2025). The differences highlight that the generic training of AI does not adequately cater to the wider range of teachers. Professional development should instead be customized to reflect the teachers' abilities, content and grade level(s) taught, and specializations. This emerging body of literature calls for a developmental approach to AI competence that includes four areas: first, technical knowledge; second, pedagogical use of AI; third, ethical sensitivity towards AI; and forth, critical analysis and a sense of lifelong learning.

AI in Educational Administration and Institutional Decision-Making

AI's impact is now beyond the classroom, affecting educational leadership and administration. Educational administrators can utilize AI tools to manage information, document it, communicate, schedule, analyze data, report, and make decisions. With data gathered from 302 school leaders, approximately a half of them identified as 'early major user' of civil rights of AI and declared AI enabled instructional leadership was one of the most prominent leadership practices. This evidence is important because it takes the dialogue from the anecdotal prediction to an empirical research of the practical applications of GenAI in schools for organizational leadership. This evidence is significant not only in bringing general concepts and predictions of AI's use in educational administration into a realm of empirical study, but in its breadth and depth in helping to highlight the diversity of instructional and technological contexts for the creation of this tool.

Administering through AI can also add to data-informed institutional operations. Administrators are not just dealing with a lot of data on student accomplishments and enrollment, assessment, teacher time usage, the use of school resources, and communication, they are making the transition to doing so. This information can give leaders an advantage in organizing and interpreting the information, which may allow them to sense trends and reallocate resources more effectively. The widespread move into more aspects of school leadership is highlighted by the increased use of GenAI, which Berkovich (2025) says isn't simply about automating processes but also comes as part of how teachers take up leadership in a managerial, instructional, social, political and moral sense. AI's role in administration requires a mixture of technological expertise and integrity and a professional attribute.

The insights drawn from the literature suggest that the shift in educational administration needs to be understood in the context of an institutionalized transformation towards AI-assisted education. To implement AI effectively, organisations need to be ready, backed by leadership, guided with clear policies, with systems to review decisions taken with the help of AI, and with professional development activities being carried out. While recent research offers continuing insights into teachers' and leaders' use of AI, there are still significant gaps in understanding how teachers and leaders will go about their work and how this will be supported in overall professional development and administration. The role of the educator and the possibilities it brings, whether pedagogical or administrative, are already the subject of a number of studies; altogether, however, there are few studies that examine these aspects of AI together. Given the potential significance of a transition to AI, it may be important to address this gap to gain a broader sense of the implications of the shift to AI and to create learning spaces that do not undermine but reinforce human expertise and institutional responsibilities.

Research Methodology

Research Design

The research method employed was quantitative – cross-sectional design which was selected to help analyze the role of AI for transforming teaching practice, colleague learning and educational administration across the cross section survey. Quantitative approach was used since its nature enabled the study to numerically measure the educators' perceptions of AI integration to examine relative relationships statistically among the major study variables. A cross-sectional design was employed as data were not collected from participants over a religious period, but rather over one period of time.

Population of the Study

These respondents included teachers and educational administrators in educational institutions of Pakistan. The participants were educators with experience in digital educational technologies and with awareness/exposure to AI education applications. The teacher's were added since they are directly involved in processes of planning, teaching, assessing, and planning for professional learning; the educational administrators were added because they are directly involved in institutional planning, decision making, communication, documentation and administrative management. By including both groups, the study enabled them to investigate AI transformation both from an instructional standpoint and an organizational one. Having both groups helped the study explore AI transformation from instructional and organizational perspectives.

Sample and Sampling Technique

In the study 300 educators and educational administrators were sampled. In order to get the perspective from teachers and administrators of educational institutions working in different environments, a sample of teachers and administrators from

public and private education institutions was used. The participants were recruited through purposive sampling focusing on those with relevant technology experience and support with digital technologies or AI-based learning activities. By doing so, it allowed the respondents to make informed perceptions regarding the integration of AI instead of completing the surveys without previous exposure to any educational technologies. The participants had to be either currently involved in teaching or educational administration and basic familiarity with AI-based tools (ChatGPT, AI-supported assessment systems, automated content-generation tools, or other educational AI applications). Sample size of 300 were found adequate for descriptive and inferential statistical analysis and made it comparable to similar quantitative studies about teachers adoption of AI recently conducted by researchers in Pakistan.

Research Instrument

The data were gathered using a structured questionnaire based on the aims of the study and literature review on AI in education. The questionnaire was divided into two main parts. The first part collected demographic data – gender, age, educational qualification, teaching or administrative experience, institutional sector, level of education. In the second section, the major constructs of the study were measured using likert type statements. The items were rated on a 5-point Likert Scale, wherein 'Strongly Disagree' and 'Strongly Agree' were represented by 1 and 5, respectively. The substantive dimension included the four following dimensions: AI in teaching practices, Professional Development supported by AI, Educational Administration supported by AI, and perceived educational effectiveness. Products related to AI use in addressing classroom concerns for lesson design, creating instructional material, tailoring to individual student needs, evaluation, feedback, and decisions for instruction. Professional development items considered AI supported learning, skill development, reflective practice, access to professional resources and continuous learning. Administrative items assessed AI-supported documentation, communication, data analysis, institutional planning and decision-making.

Data Collection Procedure

The data collection process was done using a structured data collection method and an Internet-based questionnaire. A brief statement about the purpose of the research, self-reporting that was voluntary, and the confidentiality of the responses was presented before the individuals began the questionnaire. The informed consent was acquired from the participants before they started the questionnaire. The survey link was mailed via institutional contacts, network and professional connections, email, and popular platforms for digital communication. There was adequate time allowed to complete the questionnaire and reminders were used to increase the response rate. For the final analysis 300 usable answers were obtained. Responses were scanned for quality before analysis and incomplete or unusable responses were dropped from the final data set. The online approach provided access to educators from various educational institutions, and it was suitable for the study, which examined technology-related practices.

Data Analysis

Collected data then entered into IBM SPSS Statistics used to do statistical analysis. The demographic characteristics and response to the questionnaire, as a whole, were summarized using descriptive statistics (frequencies, percentages, mean and SD). Pearson correlation was used to examine the direction and magnitude of relationships of AI integration with the variables of teaching practice, professional development, educational administration, and perceived educational effectiveness. Multiple regression was then carried out to test the prediction of perceived educational effectiveness by AI-based teaching practices, teacher teacher professional development and educational administration. Relevant assumptions were tested prior to regression analysis including test of multicollinearity, normality, linearity, and independence of errors. The number of possible multicollinearity among predictors was assessed through examining variance inflation factor (VIF) and tolerance.

Results and Analysis

Demographic Characteristics of the Respondents

The study analyzed responses from 300 educators and educational administrators.

Table 1. Demographic Characteristics of the Respondents (N = 300)

Demographic Variable	Category	Frequency (f)	Percentage (%)
Gender	Male	132	44.0
	Female	168	56.0
Age	21–30 years	78	26.0
	31–40 years	108	36.0

Demographic Variable	Category	Frequency (f)	Percentage (%)
Professional Role	41–50 years	72	24.0
	51 years and above	42	14.0
	Teacher	234	78.0
Qualification	Educational Administrator	66	22.0
	Bachelor's degree	54	18.0
	Master's degree	156	52.0
	MPhil/MS	66	22.0
Institutional Sector	PhD	24	8.0
	Public	174	58.0
	Private	126	42.0
Professional Experience	1–5 years	72	24.0
	6–10 years	96	32.0
	11–15 years	78	26.0
	More than 15 years	54	18.0

As revealed in table 1, 168 respondents (56.0%) was the female while 132 respondents (44.0%) were the males. The age distribution showed that the age group of 31 – 40 years had the highest number of participants (36.0%), followed by the age group of 21 – 30 years (26.0%), 41 – 50 years (24.0%) and 51 years and above (14.0%). However, this distribution suggested that the sample was composed at the early and middle part of professional life. This kind of composition was important to study AI adoption, since teachers differ from one another in their teaching experience, giving different views about technology in teaching and administration. Among the professionals the distribution was 234 teachers (78.0%) and 66 Educational Administrators (22.0%). According to the educational qualification profile, 52.0% had a master's degree, 22.0% had an MPhil/MS degree, 18.0% had a Bachelor's degree and 8.0% had a PhD. In terms of institutional sector, 174 respondents (58.0%) were working in public institutions while 126 respondents (42.0%) were working in the private institutions. Professional experience was divided into four categories, and the biggest group (32.0%) reported professional experience for 6-10 years. The participants who were veteran with 11–15 years 26.0%, 1–5 years 24.0% and more than 15 years experience 18.0%, respectively.

Demographic Profile of Respondents (N = 300)

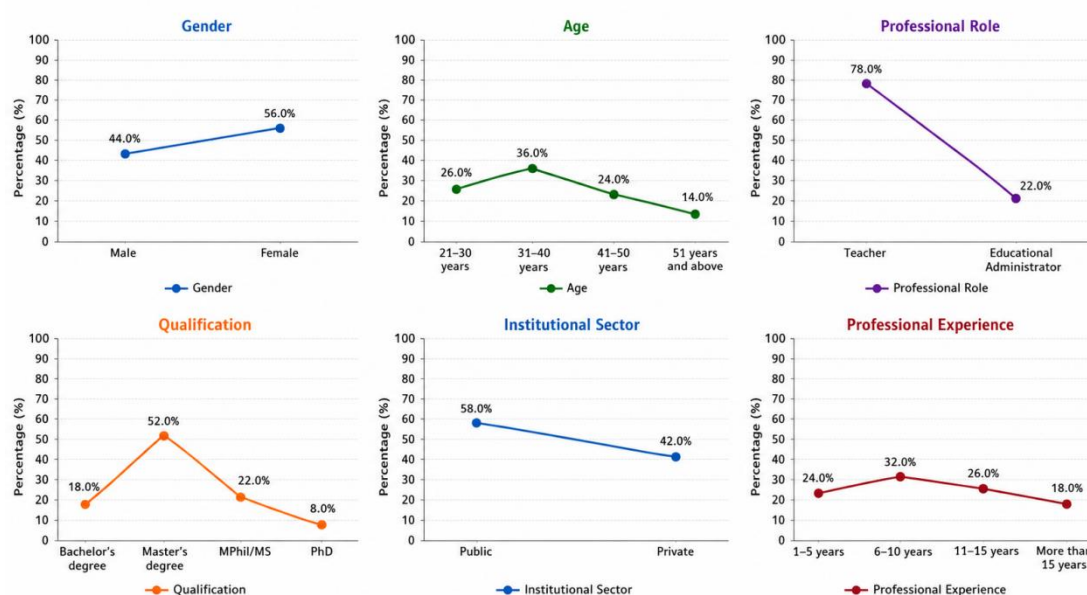


Figure 1. Demographic Characteristics of the Respondents (N = 300)

Descriptive Statistics of the Study Variables

Descriptive statistics were calculated to determine the overall levels of AI integration across teaching practices, professional development, educational administration, and perceived educational effectiveness.

Table 2. Descriptive Statistics of the Major Study Variables (N = 300)

Variable	Mean (M)	Standard Deviation (SD)	Interpretation
AI-Supported Teaching Practices	3.91	0.67	High
AI-Supported Professional Development	3.84	0.71	High
AI-Supported Educational Administration	3.76	0.73	High
Perceived Educational Effectiveness	3.88	0.65	High

Table 2 showed that the mean scores of all the four items of the study variables were above the middle of the five-point scale. The mean score in AI-supported teaching practices was the highest ($M = 3.91$, $SD = 0.67$). The outcome showed consensus among the participants regarding the role of AI in lesson planning, creating instructional materials, enhancing personalized learning, assessment, and feedback. The perceived educational effectiveness was set at 3.88 ($SD = 0.65$), whereas the perceived effectiveness of the professional development with AI was 3.84 ($SD = 0.71$). The results showed that, overall, the respondents had a positive attitude towards AI as a tool to improve education and a facilitator of continuous professional development. Professional development score indicated that they understood the possibilities of Artificial Intelligence (AI) allowing access to teaching materials, professional knowledge, teaching ideas, and opportunities for self-directed learning. AI-supported educational administration had a mean score of 3.76 ($SD = 0.73$), faring the least strongly of all the four variables measured; however, the level of agreement was still high. The result indicated that participants perceived that the AI contributes more to administrative documentation, data analysis, communication, planning and decision making, to some extent less prominent than in instructional applications.

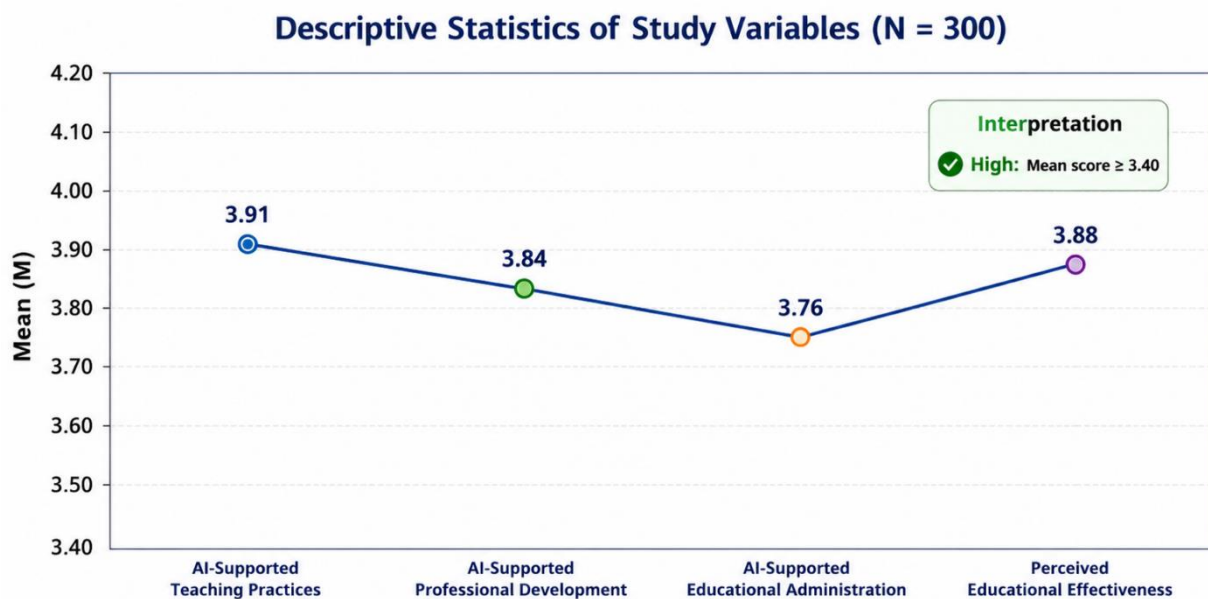


Figure 2. Descriptive Statistics of the Major Study Variables (N = 300)

Correlation Analysis

Pearson correlation analysis was conducted to examine the relationships among AI-supported teaching practices, AI-supported professional development, AI-supported educational administration, and perceived educational effectiveness.

Table 3. Pearson Correlations Among the Study Variables (N = 300)

Variable	1	2	3	4
1. AI-Supported Teaching Practices	1			
2. AI-Supported Professional Development	.62	1		

Variable	1	2	3	4
3. AI-Supported Educational Administration	.55	.59	1	
4. Perceived Educational Effectiveness	.68	.64	.61	1

$p < .01$ (2-tailed)

Table 3 indicated that there is strong positive relationship between all variables of the study. There was a high positive correlation between the use of AI in teaching and perceived educational effectiveness ($r = .68, p < .01$). The results suggested that those who were more proficient at using AI in instruction also felt more effective in their instruction. Professional development (PD) using AI also had a positive correlation with perceived "educational effectiveness" ($r = .64, p < .01$). Educational administration based on artificial intelligence proved to be significantly positively correlated with educational effectiveness ($r = .61, p < .01$). Such connections suggested that AI did not contribute to educativeness in one way but in many ways that were mutually interrelated aside from classroom teaching. The inter-correlations between the three independent variables were also statistically significant. There were moderately high positive correlations between AI-supported teaching practices and professions development ($r = .62, p < .01$) as well as between profession development and education administration ($r = .59, p < .01$).

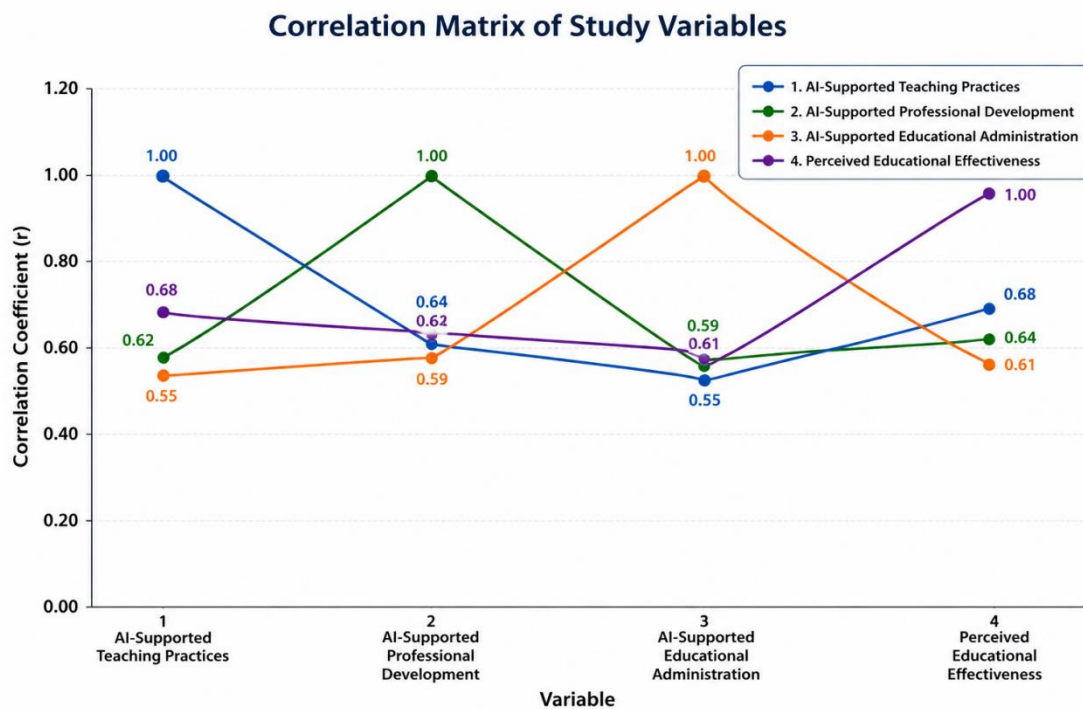


Figure 3. Pearson Correlations Among the Study Variables (N = 300)

Multiple Regression Analysis

To explore how well the three elements of AI-supported teaching practice, AI-supported professional development, and AI-supported educational administration predicted perceived educational effectiveness, multiple regression analysis was conducted.

Table 4. Multiple Regression Predicting Perceived Educational Effectiveness

Predictor	B	Std. Error	Beta (β)	t	p	VIF
Constant	0.72	0.18	—	4.00	<.001	—
AI-Supported Teaching Practices	0.39	0.06	.40	6.50	<.001	1.67
AI-Supported Professional Development	0.27	0.06	.29	4.50	<.001	1.72
AI-Supported Educational Administration	0.24	0.06	.27	4.00	<.001	1.61

Model statistics: $R = .76$, $R^2 = .58$, Adjusted $R^2 = .58$, $F(3, 296) = 135.55$, $p < .001$, Durbin-Watson = 1.89.

As shown in table 4, the overall regression model was significant, $F(3, 296) = 135.55$, $p < .001$. The model had an R of .76, demonstrating a fairly high correlation between the combined predictors and the dependent variable, perceived educational effectiveness. An R^2 Value of .58 showed that on average 58% of the variance in the perceived effectiveness of teaching was collectively accounted for by AI-supported teaching practices, professional development and educational administration. The adjusted R^2 also did not change from .58, the efficacy of the model was not affected by number of predictors. AI assisted teaching practices correlated most strongly with the perceived effectiveness of education ($B = .39$, $\beta = .40$, $t(17) = 6.50$, $p < .001$). It could be known that among those other predictors statistically controlled, the positive standardized beta showed that the greater the level of awareness that teachers had about the integration of the use of AI in teaching, the higher the level of perceived educational effectiveness. Also, the effects of AI-supported professional development were large and positive ($B = 0.27$, $\beta = .29$, $t = 4.50$, $p < .001$). This finding suggested that how strongly participants perceived the effectiveness of their education due to professional learning with the support of AI was an independent factor. AI dapp enabled education administration also made a significant prediction to the perceived education effectiveness ($B = 0.24$, $\beta = .27$, $t = 4.00$, $p < .001$). Although the standardized effect was less pronounced than that of teaching practices and professional development, the effect was still statistically significant. The range of VIFs was likely 1.61 to 1.72, suggesting that there was no problematic multicollinearity among predictors, and was consistent across the different models. Durbin-Watson of 1.89 also showed reasonable independence of errors as well.

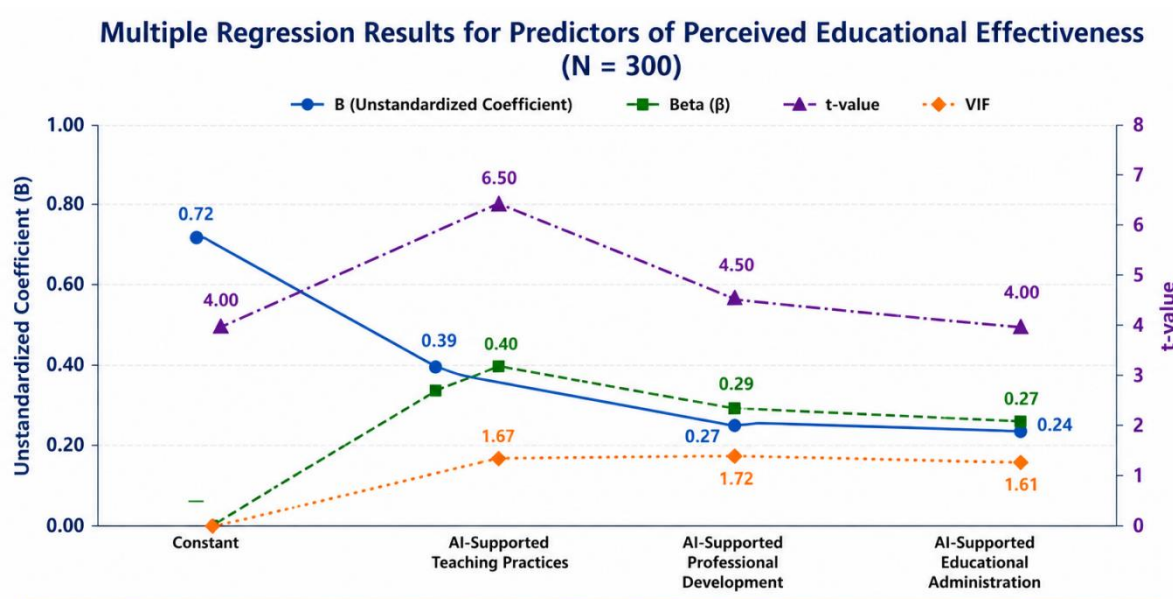


Figure 4. Multiple Regression Predicting Perceived Educational Effectiveness

Discussion

The results indicated that the dimension of AI-supported teaching practices stood out as the most reliable with a mean score of 3.91 ($SD = 0.67$) and a significant and positive correlation with perceived educational effectiveness ($r = .68$, $p < .01$) within the AI-augmented educator framework. Among the specific teaching practices, the regression analysis also revealed that the teaching practices supported by AI had the largest beta values and p-values when it came to the perception of educational effectiveness ($\beta = .40$, $p < .001$). This discovery highlighted several areas where participants saw a high value in AI and they were particularly aware of the value of AI to lesson planning, the development of instructional material, assessment, feedback, and personalized learning. Teachers' discharge of classroom strategy has been shown to be positively impacted by their AI literacy with respect to designing lessons created by AI (Ahmed et al., 2026). While teachers' view of AI can be a nuanced one regarding its utility for adapting, being flexible, or enhancing effectiveness in teaching, they certainly acknowledge the potential for it to assist them in these areas (Yilmaz et al., 2025).

Significant results also indicated that the level of AI supported professional development also achieved high levels ($M = 3.84$, $SD = 0.71$) with a statistically significant relationship to perceived educational effectiveness ($r = .64$, $p < .01$). Amidst the regression results, the interaction of professional development positively and independently predicted attitudes towards AI ($\beta = .29$, $p < .001$), which showed that the degree of professional development on AI was an essential factor of educational transformation. The need to keep upgrading the technological, pedagogical and evaluative ability of teachers is crucial because of how fast AI technologies are evolving and are being developed. The latest study suggests that PD that integrates AI can offer personalized, data-informed support and enhance teacher autonomy to empower teachers in the design of AI-supported

education. Furthermore, evidence indicates that teachers would like to be supported in ongoing, contextually-oriented, and practical professional development experiences instead of technical training at one single point in time (Bautista et al., 2025).

The mean for the educational administration supported by AI was also relatively high ($M = 3.76$, $SD = 0.73$), and had a very strong positive correlation with perceived educational effectiveness ($r = .61$, $p < .01$). After accounting for different levels of teaching practices and professional development, this regression coefficient was still statistically significant ($\beta = .27$, $p < .001$) and suggests that administrative uses of AI were a separate contribution. This is not just a discovery that happened in the classroom: It's one where students are building their capacity to reinvent their learning using AI to write, talk, analyze data, plan and make decisions for the institutions they serve. Recent studies have shown that educational institutions are more inclined to adopt AI in administration and organization, as well as in education, learning, and assessment, but the real benefits of the adoption will vary depending on various factors such as the readiness of an educational institution, its infrastructure, its leadership, and its interpretation of the adoption policy (Chiu et al., 2025). AI-driven research in the field of education also points to the importance of even administrative personnel being able to critically evaluate the AI-generated content and provide human oversight in the application of AI to the decisions about institutions (Berkovich, 2025).

However, the regression showed that 58% of the variance of perceived educational effectiveness ($R^2 = .58$) was explained by all three of these predictors, they were all statistically significant. Predictably, this is an outcome that indicates that not only is the use of a specific AI app, but the phenomenon of 'enhanced' teacher is a multidimensional experience. Comparatively high beta values for teaching practices ($\beta = .40$), professional development ($\beta = .29$), and educational administration ($\beta = .27$) suggested that the overall improvements in these areas helped bolster perceptions of educational effectiveness. The process of acquiring AI skills for teachers is an iterative one and depends on the number of years in teaching, content expertise, and the time and resources available for the teachers to continue learning about and using AI (Wang et al., 2025). Major findings related to the implementation of AI in teacher development are resource production, resource personalization, design of teaching roles, more confidence on teacher part, and teacher AI literacy (Tan 2025).

The results showed that grasping the opportunities of artificial intelligence (AI) while simultaneously tackling its implementation conditions were vital for AI transformation to be successful. There were moderate to high scores for teachers, administrator and professional development but the significant relationships among the three facilitated the understanding of a multi-faceted, interwoven transformation process in the field of education. The studies guided by recently AI integration highlight the vital role of practical assistance, institutional guidance, ethical awareness, and collaborative opportunities for educators in this context (Hutchins et al., 2025). Additionally, experienced and less-experienced teachers might need different sets of professional development programs given AI, and this suggests differentiated and continual professional development training programs (Wang et al., 2025). The findings indicate a need for embedding using AI tools, professional development, ethical safeguards, institutional policies, technical assistance, and education support opportunities into schools to foster the development of critical AI judgement.

Conclusion

The researchers realized that the power of AI in the learning realm of the 21st century was helpful, and that AI had been instrumental in forming the "AI-augmented teacher. The researchers came to understand that tools powered by AI were mighty helpers in 21st-century learning and that AI had helped build up the teacher-augmented by AI. The results indicated that the teaching technologies supported by the AI were all positively correlated with the perceived educational effectiveness, as were PD and educational administration. The use of AI in instructional creation, personalization, assessments and feedback had the greatest predictive effects on the three dimensions and teachers particularly valued the use of AI for lesson planning. Moreover, the findings suggested that taking up AI as a professional development initiative and for administrative purposes had significant impacts on enhancing educational effectiveness. The study revealed that the use of AI tools has the potential to be most impactful when used as a support tool that enhances professional expertise of educators rather than replacing them. So the teacher who assisted using the AI was a combination of technical skills, skills in pedagogy, ability to analyze, knowhow, and moral, it could be called.

Recommendations

Schools/universities should draw up broad guidelines and policies regarding the integration of LSTs and AI so as to provide educational staff and management with the principles of the proper and ethical use of LSTs in relation to pedagogical limitations. Continued PD provided to support AI educators' literacy and proficiency within creating prompts, critique of AI products in text, data privacy and curation of AI products for curriculum purpose. Training available must be designed to adapt to different levels of technological competence and professional functions of teachers. Institutions need to provide them with reliable digital infrastructure, technical assistance and support to introduce teachers to sharing good practice with AI in their teaching. When using AI in education, administrators can leverage it to document, communicate, analyze, plan and take

decisions, but remain actively present and accountable. The government policies should establish guidelines on privacy, transparency, academic integrity aspects, bias and the responsible use of AI in schools. These measures may help create sustainable impacts on implementing AI and promote the incorporation of technological advances with quality education and concerned human values.

Future Directions

The AI integration has not been studied across a long-term period and in-depth exploration of a Mixed Method approach is recommended for future research to increase understanding of how both teachers and teachers' admin evolves over time regarding their AI competencies, how AI is integrated into teaching events, and their professional development. Having comparative data about the implementation of AI or preparedness across public and private institutions, as well as by education, geographical area, and national context would be valuable for identifying variations in adoption or preparedness for introducing AI in these areas. Examples of specific ways generative AI can be used in the future for lesson planning, assessment, personalized learning, feedback and administration support are examples. A few potential avenues for future investigations include learning effectiveness regarding the use of specific generative AI applications in lesson planning, assessment, personalised learning, feedback and administrative decision making. Interviews, classroom observations, and case studies can provide valuable insights into the experiences of teachers, as well as the questions they face, the ethics they grapple with, and how they use AI. Further research is required that will investigate the views, learning outcomes, integrity around the use of AI in learning, data privacy, the impact of AI-based education in the long-term etc amongst the students. Looking ahead, the development and validation of more holistic frameworks of AI competency for teachers and school leaders will aid collaboration among stakeholders, purposeful teacher professional learning, and effective integration of AI in the schools.

References

- Ahmed, S., Rahman, M. M., & Islam, M. S. (2026). Artificial intelligence literacy and generative AI-supported lesson design: Implications for teachers' pedagogical practices. *Education and Information Technologies*.
- Alharbi, T. S., Al-Hafdi, F. S., & Alhalafawy, W. S. (2025). Exploring the framework for intelligent operations (FiOps) for teachers in the era of generative AI (GenAI). *International Journal of Learning, Teaching and Educational Research*, 24(8), 942–964.
- Bautista, A., Tan, C. K. K., & Wong, J. (2025). Teacher professional learning in the age of generative artificial intelligence: Opportunities, challenges, and implications for teacher agency. *Teaching and Teacher Education*, 151, 104786.
- Berkovich, I. (2025). The rise of AI-assisted instructional leadership: Empirical survey of generative AI integration in school leadership and management work. *Frontiers in Education*, 10, 1643023. <https://doi.org/10.3389/educ.2025.1643023>
- Chen, R., Lee, V. R., & Lee, M. G. (2025). A cross-sectional look at teacher reactions, worries, and professional development needs related to generative AI in an urban school district. *Education and Information Technologies*, 30, 16045–16082. <https://doi.org/10.1007/s10639-025-13350-w>
- Chiu, T. K. F., Xia, Q., Zhou, X., Chai, C. S., & Cheng, M. (2025). Systematic literature review on opportunities, challenges, and future research recommendations of artificial intelligence in education. *Computers and Education: Artificial Intelligence*, 6, 100211. <https://doi.org/10.1016/j.caeai.2024.100211>
- Du, H., Sun, Y., Jiang, H., Islam, A. Y. M. A., & Gu, X. (2024). Exploring the effects of AI literacy in teacher learning: An empirical study. *Humanities and Social Sciences Communications*, 11, 559. <https://doi.org/10.1057/s41599-024-03101-6>
- Ellis, R., Han, F., & Cook, H. (2025). Qualitatively different teacher experiences of teaching with generative artificial intelligence. *International Journal of Educational Technology in Higher Education*, 22, 33. <https://doi.org/10.1186/s41239-025-00532-2>
- Hutchins, R., Kelly, S., & O'Connor, M. (2025). Generative artificial intelligence in education: Teacher perspectives, professional learning, and institutional support. *Educational Review*.
- Kohnke, L. (2025). Empowering pre-service teachers with generative artificial intelligence and microlearning: Pathways to self-directed growth. *Australian Journal of Applied Linguistics*, 8(4), 102889. <https://doi.org/10.29140/ajal.v8n4.102889>
- Kohnke, L., Zou, D., & Zhang, R. (2025). Integrating generative AI into language teachers' professional development: A longitudinal study using the synthesis of qualitative data (SQD) model. *Professional Development in Education*. <https://doi.org/10.1080/19415257.2025.2586643>

- Li, Z., Wang, C., & Bonk, C. J. (2025). Generative AI for teachers' self-directed professional development: A mixed-methods study. *TechTrends*, 70, 23–38. <https://doi.org/10.1007/s11528-025-01123-8>
- Liu, Y., & Zhong, Y. (2024). In search of artificial intelligence (AI) literacy in teacher education: A scoping review. *Computers and Education Open*, 6, 100169. <https://doi.org/10.1016/j.caeo.2024.100169>
- Miao, F., & Cukurova, M. (2024). AI competency framework for teachers. UNESCO. <https://doi.org/10.54675/ZJTE2084>
- OECD. (2025). OECD teaching compass: Reimagining teachers as agents of curriculum changes. OECD Publishing. <https://doi.org/10.1787/8297a24a-en>
- OECD. (2025). What should teachers teach and students learn in a future of powerful AI? OECD Education Spotlights, No. 20. OECD Publishing. <https://doi.org/10.1787/ca56c7d6-en>
- Shrestha, B. L. L., Dahal, N., Hasan, M. K., Paudel, S., & Kapar, H. (2025). Generative AI on professional development: A narrative inquiry using TPACK framework. *Frontiers in Education*, 10, 1550773. <https://doi.org/10.3389/feduc.2025.1550773>
- Tan, Q. (2025). Reimagining teacher development in the era of generative AI: A scoping review. *Teaching and Teacher Education*, 168, 105236. <https://doi.org/10.1016/j.tate.2025.105236>
- Tan, X., Cheng, K. S., & Ling, M. H. A. (2025). Artificial intelligence in teaching and teacher professional development: A systematic review. *Computers and Education: Artificial Intelligence*, 8, 100355. <https://doi.org/10.1016/j.caeai.2024.100355>
- Wang, Y., Li, X., & Zhang, L. (2025). Developing teachers' artificial intelligence competence: Professional learning, pedagogical knowledge, and technology integration. *Education and Information Technologies*.
- Yilmaz, R., Yilmaz, F. G. K., & Sönmez, E. (2025). Generative artificial intelligence in education: Teachers' perceptions, pedagogical practices, and instructional challenges. *Educational Technology Research and Development*.
- Yue, M., Jong, M. S. Y., & Ng, D. T. K. (2024). Understanding K–12 teachers' technological-pedagogical readiness for artificial intelligence education. *Education and Information Technologies*. <https://doi.org/10.1007/s10639-024-12848-5>



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