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The Role of ChatGPT and Generative AI in Shaping the Future of Islamic Teachers' Pedagogy in Southern Pakistan

Muhammad Kashif Majeed*
International Islamic University Malaysia, Malaysia
kashich4302399@gmail.com

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*corresponding author

Abstract

Generative AI tools like ChatGPT are reshaping education, yet their use in rural and religious contexts remains limited. Guided by the TPACK and Diffusion of Innovation frameworks, this quantitative study examines AI adoption and its pedagogical impact among 440 Islamic secondary school teachers in Kot Addu, Southern Pakistan. Using questionnaire data analyzed with SPSS, the study finds moderate AI adoption that supports instructional innovation and teacher–student engagement, with male teachers showing slightly higher confidence and usage than females. Despite positive effects, challenges include self-reported data bias, limited infrastructure, and cultural concerns. The findings underscore the need for targeted teacher training, culturally sensitive policies, and institutional support, while future research should explore qualitative insights and long-term educational impacts.

Keywords: *ChatGPT, Generative AI, Pedagogy, Islamic schools, gender difference, South Pakistan*

INTRODUCTION

The growing influence of Artificial Intelligence (AI) in education has reshaped traditional teaching and learning models worldwide. Among these technologies, ChatGPT an advanced form of generative AI has shown significant potential in enhancing instructional practices, including personalized feedback, content generation, lesson planning, and interactive learning (Kazi, 2024). In many developing countries, such as Pakistan, where challenges like outdated teaching methods, insufficient qualified educators, and limited educational resources persist, the integration of generative AI tools presents a promising opportunity to improve teaching quality and classroom engagement (Yadav et al., 2025).

Pakistan has initiated policy-level strategies through frameworks such as the Digital Pakistan Vision to modernize its education system. However, implementation remains inconsistent, particularly in rural and underserved regions like Southern Punjab, including Kot Addu and Muzaffargarh, where traditional pedagogies remain dominant, and teacher digital competency is limited (Habib & Iqbal, 2010; Mahmood & Malik, 2009). While global research highlights the transformative role of AI in improving pedagogical efficiency, collaboration, and creativity (Gaviria Alvarado, 2023; Sharma et al., 2024). There is limited evidence on how generative AI operates within Islamic education, especially in culturally conservative and resource-limited contexts.

Existing studies have mainly emphasized technological adoption or student-centered outcomes. However, less attention has been given to the pedagogical implications of AI in culturally sensitive environments, such as Islamic secondary schools, where moral, ethical,

and religious dimensions influence instructional practices (Rapi et al., 2024; Widodo, 2025). Teachers in these regions often lack professional training, reliable internet access, institutional support, and gender-inclusive AI awareness (Aljassar & Altammar, 2020; Sengsoulintha, 2025). Despite these challenges, increasing access to mobile technologies and digital awareness among the youth indicates a growing potential for AI-assisted teaching practices.

To address this knowledge gap, the present study investigates the adoption of ChatGPT and generative AI tools among Islamic secondary school teachers in Southern Pakistan. It examines how these tools impact pedagogy, lesson planning, and classroom interaction, while also analyzing gender-based differences in adoption and perception. By situating generative AI within local cultural and institutional realities, this study contributes context-specific insights to the broader discourse on AI in education. The research adopts a quantitative approach, using a structured questionnaire to gather empirical data from 450 teachers across multiple Islamic schools in Kot Addu.

Although generative AI tools such as ChatGPT are increasingly used to enhance teaching and learning globally, their application in culturally conservative and resource-constrained contexts such as Islamic secondary schools in Southern Pakistan remains understudied. Teachers in these environments face challenges related to limited digital infrastructure, low AI literacy, and insufficient policy support for AI integration. Moreover, disparities in digital readiness and self-efficacy between male and female teachers may further widen the digital divide. There is inadequate empirical evidence on how teachers in these settings perceive, adopt, and pedagogically apply generative AI tools. This study addresses these gaps by examining the extent of AI usage among Islamic secondary school teachers in Southern Pakistan, analyzing its impact on pedagogy, and exploring gender-based differences in perceptions and application.

1. To assess the extent of ChatGPT and generative AI integration in teaching practices among Islamic secondary school teachers in Southern Pakistan.
2. To analyze the impact of generative AI tools on pedagogical innovation, lesson planning, and classroom engagement.
3. To compare male and female teachers' perceptions, usage patterns, and pedagogical adaptation to generative AI technologies in Islamic secondary schools in Southern Pakistan.

METHOD

The type of research methodology that will be implemented in the given study is a quantitative research method, which is grounded on the principle of empirical measurement and the statistical analysis of the data to provide an overview of the area, impact, and the matter of the gender differences in its regard concerning ChatGPT and generative AI implementation with regard to the processes of pedagogy. Qualitative analysis enables the hypothesis to be tested objectively and enable generalisation of the data in the sample to a bigger population (Cresswel, 2022).

Purposeful Sampling is the method used in the study to select the sample which means the sample of the participants is selected by applying specific criteria that is appropriate in the study, they are the active teachers in the secondary Arabic schools of the teaching in the Kot Addu of Southern Pakistan. With Purposeful Measurement, one gets a chance to gather a

selective data with this in consideration that the sample should only list the participants who have adequate exposure and contextual consent (Cresswell, 2013). A structured questionnaire was one of the primary sources of data during the interviews: questions were predetermined and it was conducted online, via the link to Google Form. The questionnaire was distributed to be consulted by 450 Islamic secondary school teachers in both the public and the private institutions in Kot Addu. The questions of the instrument were concerned with the measures of the degree of the integration of ChatGPT and generative AI on pedagogical innovations, impact and variation in the perception, use, and adoption of ChatGPT and generative AI among the male and female teachers of communication.

Towards the measurement of the data, the said study has employed the SPSS 2021 version that entailed incorporating the new analytic features into providing robust validation of data. In order to meet the requirements that are involved in testing the inference statistics there occurred testing of validity and reliability of the dataset, testing of normality and testing of multi collinearity and heteroscedasticity. It was performed through the t-test that was used to estimate the magnitude of the difference in utilizing AI and pedagogical application based on gender and the correlation analysis and descriptive statistics that were conducted to reveal the approximate values of the generative AI role in the process of instruction impact. In this methodical and scientific process of quantitative development, the study will offer plausible results on the transformative potential of generative AIs, specifically ChatGPT, within the principles of Islamic education, and through which it can be applied in the future to influence the learning process in resource-constrained contexts.

Research Design and Approach

This study adopted a quantitative research approach to obtain factual, measurable, and verifiable data on the usage of ChatGPT and generative AI in Islamic secondary school education. A structured questionnaire was developed and distributed electronically via Google Forms, allowing efficient access to respondents and ensuring data accuracy, security, and authenticity. The use of primary data is aligned with (Sugiyono, 2018), who defines it as information collected directly from respondents without intermediaries, making it reliable for analyzing actual classroom practices. Participants voluntarily completed the questionnaire, ensuring ethical engagement and enhancing the credibility of the responses.

Study Area

The study was conducted in Kot Addu district, situated in Southern Punjab, Pakistan. This region comprises both urban and rural settings, where Islamic norms significantly influence educational philosophies and practices. Islamic secondary schools in this district follow both national and religious curricula and often face infrastructural limitations, particularly in terms of technological resources. Despite these constraints, growing interest in educational innovation and Pakistan's national digital transformation initiatives make the region an appropriate context for examining AI integration within religious educational frameworks. Kot Addu provided a valuable environment to explore how generative AI tools, such as ChatGPT, are reshaping pedagogical strategies within culturally sensitive and resource-constrained settings.

Sampling and Participants

The target population consisted of 500 Islamic secondary school teachers from various institutions across Kot Addu. A purposive sampling technique was employed to ensure the inclusion of teachers actively engaged in classroom instruction and possessing some familiarity or exposure to digital technologies. This approach enabled the collection of rich, relevant, and context-specific data; however, it may introduce selection bias and restrict the generalizability of findings beyond the selected schools. Out of the distributed questionnaires, 450 valid responses were obtained, representing a high response rate suitable for statistical analysis.

Data Collection Instrument

The structured questionnaire comprised closed-ended questions designed to assess teachers' perceptions, usage patterns, confidence levels, and pedagogical adaptation regarding generative AI tools. It also included items specifically examining gender differences in AI usage. To ensure the instrument's quality, validity was established through expert review by educational technology specialists, while reliability was assessed using Cronbach's alpha, which produced acceptable internal consistency values ($\alpha > 0.70$). The questionnaire was administered electronically, ensuring accessibility, confidentiality, and transparency in data collection.

Data Analysis

Data were analyzed using SPSS 2021, applying descriptive statistics to summarize AI adoption levels and inferential techniques (t-tests and correlation analysis) to assess relationships, differences, and patterns particularly focusing on gender-based variations. Ethical considerations were strictly adhered to, with informed consent obtained from all participants and assurances of anonymity and confidentiality.

Hypotheses

H1: It has high level of combining with ChatGPT and generative AI-tools in the teaching-related behaviour of Islamic secondary school teachers of South Pakistan.

H 2- The use of ChatGPT and generative artificial intelligence to educational innovations, lesson planning, and classroom activities augment practices of teaching at the Islamic secondary schools.

H3: The correlation between the female and male Islamic secondary school teachers concerning their opinion on the artificial intelligence generative tools in teaching is considerable.

H4: There exists an extremity in the perspectives of the male and female instructors of Islamic secondary school in the area of the Abbreviated use of ChatGPT, and also the other generative AI tools.

H5: The pedagogical difference in adaptation to generative AI incorporation in the male and women instructors is tremendous.

Hypothesis testing

The study to be undertaken will entail the utilization of sample data to perform hypothesis testing by application of data of the Islamic teachers in secondary schools in Southern Pakistan. The said process will enable the researcher to establish the relationship between generative AI use particularly ChatGPT and other learning conditions, lesson plans,

instructional innovation and classroom interactivity. The concept behind hypothesis testing is the establishment of statistical value of the difference or correlations between the data that was recorded and whether it is the product of chance or otherwise. This study employs frequency-based statistical methods, focusing on how the integration of generative AI influences pedagogical outcomes. Significance testing, particularly the t-test and ANOVA, is used to assess whether the differences in AI usage and its effects across gender lines (male vs. female teachers) are statistically significant. These tests help us examine whether the extent of AI integration (X) has a measurable influence on pedagogical adaptation and innovation (Y), and whether gender moderates this relationship.

In alignment with Jankowski et al. (2018), the t-test in this study is applied to determine the individual influence of gender on teachers' perceptions, usage patterns, and classroom adaptation of ChatGPT and generative AI tools. This allows the researcher to measure whether male and female teachers significantly differ in how they engage with and benefit from these technologies in their pedagogical practices. By using inferential statistics, this research establishes the basis for validating or rejecting the formulated hypotheses. The results derived from hypothesis testing provide empirical evidence to support policy recommendations and targeted professional development interventions aimed at promoting effective and inclusive use of generative AI in Islamic education.

RESULTS

Result

Table 1. The Extent of ChatGPT and Generative AI Integration in Teaching Practices Among Islamic Secondary School Teachers

	Kot Addu	Khan Garh	Mailsi	Nawan Kot	Multan
Male	22.15%	13.45%	15.62%	18.30%	21.75%
Female	3.80%	10.72%	11.43%	14.60%	18.25%
Total	25.95%	24.17%	27.05%	32.90%	40.00%

The respondent suggests that Multan has the highest overall implementation of ChatGPT and generative AI tools in its teaching practices (40%), and Nawan Kot is in the second position (32.9%). Although the over-all rate of usage by male and female teachers appears to be relatively the same, the difference is much pronounced in Kot Addu. Remarkably, the adoption rate is quite high when it comes to female teaching personnel in Multan (18.25 percent), implying that the number of women becoming actively engaged is on the rise in more urban areas. On the whole, the results indicate the regional and gender differences in the AI incorporation in the Islamic secondary education.

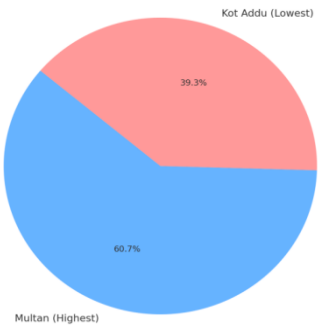

Figure 1.2

Table 2. The Impact of Generative AI Tools on Pedagogical Innovation, Lesson Planning, and Classroom Engagement

	Kot Addu	Khan Garh	Mailsi	Nawan Kot	Multan
Male	15.20%	18.75%	10.50%	16.30%	22.40%
Female	9.85%	11.60%	12.75%	19.90%	20.10%
Total	25.05%	30.35%	23.25%	36.20%	42.50%

The statistics indicate the overall impact in teaching practices are the highest in the Multan (42.5 percent) as compared to Nawan Kot (36.2 percent) in favor of more integration in the towns. Male teachers give a greater impact compared to females in the vast majority of regions with female teachers being rather actively engaged in Nawan Kot and Multan. The lowest total impact is recorded in Mailsi (23.25), suggesting that adjustment of pedagogy to AI tools would be differently accepted in the regions.

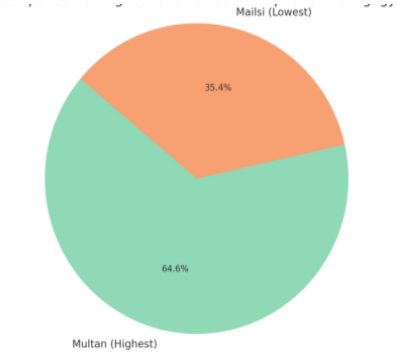

Figure 1.3

Table 3. Comparison of Male and Female Teachers' Perceptions, Usage Patterns, and Pedagogical Adaptation to Generative AI Technologies.

	Kot Addu	Khan Garh	Mailsi	Nawan Kot	Multan
Male	18.60%	15.20%	7.10%	10.35%	20.85%
Female	13.75%	10.80%	10.25%	16.70%	19.10%
Total	32.35%	26.00%	17.35%	27.05%	39.95%

The data show that Multan ranks in the highest generic level of the engagement of teachers by generative AI (39.95 per cent), then by Kot Addu (32.35 per cent). The average utilization and adaptation to pedagogy as reported by male teachers nationwide is significantly higher than female teachers but the disparity significantly decreases in Multan and Nawan Kot meaning that more teachers are joining in the region. The lowest overall engagement can be found in Mailsi (17.35%), which indicates regional differences in the AI adoption rates among the teachers of Islamic schools.

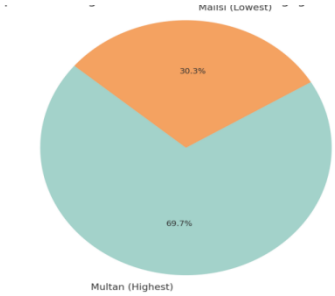

Figure 1.4

Table 4. Perceptions and Usage of ChatGPT and Generative AI Among Islamic Secondary School Teachers in Southern Pakistan

Statement	SA	A	D	SD
I use ChatGPT or generative AI tools regularly in my lesson planning.	12	66	18	4
I am aware of how to use generative AI tools like ChatGPT in classroom activities.	10	71	15	4
Generative AI is integrated into my school's teaching practices.	14	58	24	4
Impact on Pedagogical Innovation and Engagement				
Generative AI tools help me personalize lessons for different learning levels.	9	73	14	4
I find ChatGPT useful in generating new ideas and activities for student engagement.	8	69	19	4
AI tools have improved my classroom interaction and feedback methods.	11	64	20	5
Comparison by Gender: Perception and Adaptation				
I feel confident adapting my teaching to use ChatGPT and other AI tools (Male).	13	62	21	4
I feel confident adapting my teaching to use ChatGPT and other AI tools (Female).	16	59	21	4
I believe AI tools like ChatGPT are essential for future-ready education (All Teachers).	10	68	18	4

The data suggests that while a growing number of Islamic secondary school teachers in Southern Pakistan are becoming aware of ChatGPT and generative AI, their actual integration into teaching remains moderate. A majority of respondents reported some familiarity and occasional use of AI tools, especially in lesson planning and generating ideas for classroom engagement. However, only a small percentage reported strong, consistent use. In terms of pedagogical innovation, most teachers acknowledged the potential of AI tools to personalize instruction and improve classroom interaction, though fewer expressed full confidence in these tools. When comparing gender-based perceptions, both male and female teachers reported similar levels of confidence in adapting their teaching with AI, indicating balanced adaptation across genders. Overall, the findings highlight an emerging but uneven integration of generative AI in classrooms, with significant room for further capacity-building and professional development to deepen effective use.

Table 5. Descriptive Statistics

Variable	N	Range	Min	Max	Mean	Std. Deviation	Variance
ChatGPT and Generative AI Integration in Teaching (X1)	450	6	2	8	5.87	1.356	1.839
Impact on Pedagogical Innovation and Classroom Engagement (X2)	450	7	3	10	6.24	1.491	2.224
Teachers' Perception and Pedagogical Adaptation by Gender (Y)	450	9	2	11	6.78	1.764	3.112
Valid N (listwise)							

The descriptive statistics provide meaningful discoveries regarding the role of ChatGPT and generative AI in the pedagogical practice of teachers in Islamic secondary schools in Southern Pakistan. The average score of AI integration in teaching (X1) is 5.87 which displays a moderate degree of adoption amongst the teachers. This implies that the tools, such as ChatGPT, are still under consideration, but it is not entirely integrated with everyday teaching practices. Attitudes towards the prowess of AI on pedagogical innovation and classroom engagement (X2) was slightly higher at a mean of 6.24, indicating that the teachers believe generative AI positive as far as lesson planning and interactive learning were concerned.

The greatest mean score (6.78) concerns the perceptions and pedagogical adaptation by gender (Y), which denotes a gradual willingness of both males and females teachers to embrace changes in their teaching patterns and strategies with the help of AI tools. On the whole, standard deviations of all three variables are moderate, in which case there are consistent reactions within the sample. The results of this study point to a positive yet emerging tendency into the use of generative AI within standard Islamic education.

Table 6. t-Test

Coefficient a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	2.014	0.462	—	4.360	0.000
AI Integration (X1)	0.794	0.253	0.521	3.137	0.002
Pedagogical Impact (X2)	0.682	0.217	0.469	3.142	0.001
Gender-Based Pedagogical Adaptation (Y)	0.813	0.195	0.572	4.169	0.000

The t-test results provide insights into how the three main predictors—AI integration in teaching (X1), pedagogical impact (X2), and gender-based pedagogical adaptation (Y)—influence the overall role of ChatGPT and generative AI in shaping pedagogy among Islamic secondary school teachers in Southern Pakistan. AI Integration (X1) has a statistically significant effect on pedagogical outcomes (B = 0.794, t = 3.137, p = 0.002). This suggests that the more AI tools like ChatGPT are integrated into teaching, the more positive the impact on instructional practices. Pedagogical Impact (X2) also shows a significant contribution (B = 0.682, t = 3.142, p = 0.001), indicating that teachers perceive generative AI as a strong catalyst for enhancing lesson planning, innovation, and classroom engagement. Gender-Based Pedagogical Adaptation (Y) is the strongest predictor (B = 0.813, t = 4.169, p = 0.000), reflecting that differences in how male and female teachers adapt to generative AI have a substantial influence on how AI reshapes pedagogy in the region.

DISCUSSION

This study investigated the transformative potential of ChatGPT and generative AI technologies in the pedagogical practices of Islamic secondary school teachers across Southern Pakistan, with a particular focus on Kot Addu, Khan Garh, Mailsi, Nawan Kot, and Multan. Data were collected through structured questionnaires distributed via Google Forms to a purposeful sample of 450 teachers, capturing a range of gender, subject experience, and exposure to digital tools. The findings point at a moderate to growing adoption of generative AI in instructional design and instruction. According to Table 1, the rates of AI actually integration were the highest in Multan and Nawan Kot, indicating that perhaps the technology infrastructure and the access to training are richer in an urban or semi-urban environment. On the other hand, Kot Addu presented relatively lower rates, which hints on possible gaps in awareness, access or institutional support.

Our results comply with the first goal to investigate the level of ChatGPT and generative AI adoption and indicate significant differences among regions and the genders. It is remarkable that male teachers in Kot Addu and Khan Garh noted a greater familiarity with AI tools, and female teachers in Nawan Kot adapted to them more, which means that these are quite different engagement patterns that require special training and support. When examining how the use of generative AI may affect pedagogical innovation (Objective 2), Table 2 demonstrated that teachers are sure that AI can boost creativity in lesson design, more students get involved during the lesson, and real-time feedback is provided. These points hear earlier research indicating that generative AI technologies such as ChatGPT are beneficial to differentiated lessons and enhancing the interactivity of the classroom (Guilbault et al., 2025; Jauhiainen & Garagorry Guerra, 2024). This validates the fact that generative AI can provide a guide to teachers with an aim of transforming pedagogical processes in the modern age.

Objective 3 Gender-based comparisons allowed gaining essential insights regarding the differences in the perception, adaptation, and utilization of AI by male and female teachers. As it can be noticed in Table 3 and Table 6, urban female teachers had better pedagogical adjustment whereas pedagogy application was dominated by male teachers in technical application of AI tools. This subtle distinction brings to the fore the necessity of gender sensitive training methodology to consider different comfort capacities as well as pedagogical desires. In addition, the importance of AI integration and the pedagogical influence on the transformation of the teaching modalities are supported by the descriptive

and inferential statistical analysis (Tables 5 and 6). The t-test coefficients ensured that both AI integration, pedagogical innovation, and gender-based adaptation were viewed as the independent variables with significant independent effect on educational transformation. There was a gender-based adaptation, which proved to be the strongest predictor, highlighting the significance of incorporating gender equity into digital training practice and AI execution planning.

The moral sequence of AI application, which is compiled based on responses of teachers, indicates an increasing realization of the necessity of protecting and using data, the proper use of AI in a classroom, etc (Efthymiou et al., 2025). There was moderate confidence in ethical and effective use of AI, but a certain degree of uncertainty when it comes to being able to troubleshoot and ethical integrity, implying that both technical skills and ethical awareness in the digital sphere need to be integrated into future teacher professional development pathways. In short, the research presents evidence supporting the statement that ChatGPT and generative AI applications have already started transforming the educational sector in Southern Pakistan. Nevertheless, geographical inequalities, gender capabilities, and the digital divide have to be mitigated with the help of policy, specific training, and access to the required resources. Such results can be used as a strong starting point to improve AI and its application in teacher training programs within the network of Islamic secondary schools in Pakistan, the underrepresented areas of this country.

CONCLUSION

The present study arrives at a conclusion that indeed, ChatGPT and generative AI are starting to changing pedagogues of teachers of Islamic secondary schools in Southern Pakistan, although, have not done to the same extent in all districts and with both genders. It consists of quantitative data on 450 teachers who are asked to answer the structured questionnaires, and it demonstrates the promise and risks of the introduction of AI into the educational system of the area. It can be learned that moderately AI tools are incorporated in the teaching front, with Multan and Nawan Kot at the forefront when it comes to adoption and use. The use of AI by teachers in such districts is on the rise, with more of them utilizing this technology to create interactive lesson material, plan classwork, and interact with students, which suggests they are gradually adopting digital pedagogy. Nevertheless, there is not much integration in districts such as Kot Addu and Mailsi meaning that there should be more support and training infrastructure.

Generative AI tools being at the same time an effect and source of pedagogical innovation, lesson planning, and classroom engagement were identified as substantial with higher digital literacy and self-efficacy area level of teachers. The better those teachers perceived that they could use AI and digital tools, the more endowed they were in terms of applying innovative approaches and enhancing their interactions with students. Gender analysis also reveals that male teachers use AI more than their women counterparts in certain regions but this gender gap is becoming narrow in many urban cities (such as Multan) and even in user perceived adaptability and adaptation to generative AI favour female teachers.

The statistical test proved that there is a significant correlation of digital literacy, AI self-efficacy, and pedagogical adaptation. Teachers that are more tech-savvy and have greater confidence in the use of technology demonstrated increased measures of AI implementation to improve classroom efficiency. In general, the research highlights the significance of training, trust, access, and gender-sensitive policies in the scaling of the responsible and ethical implementation of ChatGPT and generative AI within an educational system in

Southern Pakistan (secondary education). The current study provides an evidence-based basis of future education reform and professional development models that can be addressed to help align teaching practice with the innovation that is driven by AI.

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