

Exploring the Role of Artificial Intelligence in Enhancing Teachers' Lesson Planning and Classroom Management in Secondary Schools of Larkana, Pakistan

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ABSTRACT

The use of Artificial Intelligence (AI) is changing the way that teaching takes place because it provides applications that can be used to improve the lesson plans and classroom management. Effective utilization of AI gives teachers an opportunity to design coherent lessons, interact with students better and be more comfortable with monitoring classroom life. Nevertheless, problems like lack of training, institutional support and access may obstruct effective adoption. This paper discusses how AI can be used to improve the professional performance of teachers in Larkana, secondary schools in Pakistan. The research design used was quantitative, and it involved 300 secondary school teachers to gather the data by way of the structured Likert-scale questionnaire. The correlation and regression analysis analyzed the relationships between the use of AI, teaching challenges, and professional effectiveness. The findings suggest that educators actively using AI tools feel that the lesson planning and classroom management are more efficient, and the use of such tools is hindered by issues such as a lack of training. The results imply that AI in the educational process should be optimized with the help of professional development courses and institutional resources. The effects of AI on teaching quality and student learning

outcomes are yet to be investigated longitudinally in the future.

Keywords: Artificial Intelligence, Lesson Planning, Classroom Management, Teacher Effectiveness, Secondary Schools, Pakistan

Introduction

The concept of Artificial Intelligence (AI) has become a revolution in the field of education and has produced tools that facilitate instructional planning, classroom management, and teachings efficiency (Belloula, 2025). Conventional lesson designing and classroom arrangement continue to be time consuming activities to educators, usually constraining their possibilities to interact with pupils and be creative with instructional approaches. Recent studies prove that AI assisted tools have the potential to simplify the workload, differentiated instruction, and administrative tasks to enable teachers to devote more time to innovations and student centered tasks (Novita, 2025). Large language models and AI lesson planners are currently being implemented into a K 12 environment where teachers utilize them to create structured content and resources, as well as tailored activities (Novita, 2025; Delello et al., 2025).

Besides classroom management, AI is also used in planning support as well as behavior tracking, engagement tracking, and predictive analytics that guide instructional decisions (Fütterer et al., 2025). The systematic reviews demonstrate that AI has the potential to improve the organization in classrooms through sensor data and automated analytics, which can help teachers to maintain attention and adjust lessons dynamically (Fütterer et al., 2025). Additionally, teachers note that AI solutions assist them to cope with routine assignments like grading and record keeping, which leads to general efficiency in the workflow (Delello et al., 2025). Nevertheless, the contextual aspects of AI in classroom application like the privacy of data, biases, and professional autonomy are important factors to consider in successful implementation (Fütterer et al., 2025).

In spite of international concern on use of AI in education, there is still much gap in its application in developing nations such as Pakistan. According to research, the teachers in Pakistan are positive about the adoption of AI because they have seen its potential of supporting lesson planning and delivery, but they have challenges

related to insufficient training, lack of infrastructure and support by policy (Raza and Farooq, 2025; Pakistan Journal of Social Sciences Review, 2025). The willingness and IT-related skills of teachers are crucial to effective AI implementation, as they are in line with the broader results that teacher development and training are the key to effective AI implementation in educational process (Tan et al., 2024).

In the Pakistani framework, empirical studies on how AI affects pedagogical practices of the teachers are still in their infancy. In a prospective study of digital native teachers, it was revealed that teachers have become conscious of the benefits of AI tools in instructional activities including lesson planning and classroom management, but that furthermore, more AI training should be embedded into teacher education programs (Jamil et al., 2025). These results represent the general desire to have localized studies that examine the methods of adoption, perception, and successful usage of AI tools among active teachers, primarily in secondary schools where learning requirements and classroom situations are complicated.

Considering this new situation, the current paper explores how AI can be used to support teachers in planning their lessons and managing their classrooms in Pakistani secondary schools in Larkana. It explores AI technology utilisation by teachers, gives a set of crucial obstacles that prevent successful implementation, and the correlation between AI use and professional effectiveness of teachers provides evidence based ideas to influence policy, teacher training programs and further research in AI enhanced pedagogy.

Problem Statement

Artificial Intelligence (AI) system can be integrated into education to transform teaching, especially in lesson planning and classroom management. Nonetheless, in spite of the increased access to AI tools, a significant number of educators cannot successfully use these technologies to become more productive professionals (Raza and Farooq, 2025; Fütterer et al., 2025). The major problem is that limited digital literacy, the lack of professional training, and the insufficient institutional support may not allow teachers to fully use AI in their teaching (Tan et al., 2024; Delello et al., 2025). Therefore, it is clear that there is a gap in knowledge in how AI can be utilized to gain more efficiency in lesson planning and classroom management,

particularly in the situation of Pakistani secondary schools. The proposed research will fill this gap because it will explore the level of AI adoption, the obstacles to its use, and how AI influences the professional performance of teachers in Larkana.

Significance of the Study

This paper is important because it reflects the importance of AI on the professional activity of teachers, such as planning lessons and classroom management. Proper application of AI can enhance the efficiency of teaching, learning, and the general classroom structures, whereas improper implementation may restrict these advantages (Belloula, 2025; Novita, 2025). Defining what helps or becomes an obstacle to the integration of AI, this study can be valuable to educators, school administrators, and policymakers. The results will be useful in developing professional development programs so that educators would get the required training and resources to utilize AI tools successfully. Finally, the research will provide a contribution to the establishment of more effective, interactive, and student-centered classrooms, which will foster improved education results in Pakistani secondary schools.

Research Objectives

1. To examine the extent of AI usage by teachers in lesson planning and classroom management in secondary schools of Larkana.
2. To identify the challenges teachers face while using AI tools in instructional practices.
3. To determine the impact of AI usage on teachers' professional effectiveness.

Research Questions

1. To what extent do teachers use AI tools for lesson planning and classroom management in secondary schools of Larkana?
2. What challenges do teachers encounter while integrating AI into their teaching practices?
3. How does the use of AI tools influence teachers' professional effectiveness in lesson planning and classroom management?

Hypotheses

H1: Teachers in secondary schools of Larkana significantly use AI tools for lesson

planning and classroom management.

H2: Teachers face significant challenges while integrating AI tools into their instructional practices.

H3: The use of AI tools has a significant positive impact on teachers' professional effectiveness in lesson planning and classroom management.

Literature Review

Introduction to AI in Education

Artificial Intelligence (AI) is becoming an acknowledged revolutionary instrument in education, as it allows educators to improve lesson planning, classroom management, and delivery of instructions (Noor et al., 2025; Tan, Cheng, and Ling, 2024). Artificial intelligence helps teachers to offer more efficient, personalized and student centered learning experiences by automating repetitious tasks and providing data-driven insights (Karpouzis et al., 2024). According to recent research, the implementation of AI can help decrease the workload of teachers and enable them to concentrate on new methods of instruction, the interaction with students, and the high level of teaching (Belloula, 2025; Novita, 2025).

AI in Lesson Planning

Lesson planning is one of the most popular uses of AI in the sphere of education. The AI-based systems have the potential to create organized lesson plans and propose learning materials as well as adjust the content to the learning requirements of students, which saves teachers a lot of time (Novita, 2025; Noor et al., 2025). Studies indicate that teachers who incorporate AI technologies in lesson planning indicate positive increases in their instructions and more curriculum complianthness (Jamil, Rasheed, and Muhammad, 2025). In addition to it, AI systems have the potential to suggest varied activities to various learners and facilitate inclusive education and personal learning (Karpouzis et al., 2024).

AI in Classroom Management

In addition to planning, AI is also found in the classroom, where real-time monitoring and analytics could be used by teachers to monitor student engagement, behavior, and participation (Fütterer et al., 2025; Niculescu et al., 2025). The AI-based tools, which process multimodal classroom data to give feedback on teaching

behaviors, make it possible to make reflective decisions and implement dynamic classroom behavior (Oxford Academic, 2024; Tan et al., 2024). Research shows that classrooms that have AI-supported management systems mention greater student engagement and fewer disruptive students, which is why AI is important in enhancing learning conditions (Delello et al., 2025).

Professional Effectiveness of Teachers

Application of AI is positively related to the professional competence of teachers, such as better-quality instructions, time management, and pedagogical innovation (Raza and Farooq, 2025; Yousafzai, Ahmed, and Shaheen, 2025). Using AI in lesson planning, teachers are more confident about how to prepare a lesson and organize it, which results in improved student performance and more effective teaching processes. It is, however, conditional upon the digital literacy of teachers, their readiness to use AI, and an institutional support (Tan et al., 2024; Noor et al., 2025).

Challenges and Barriers

Although it has potential, AI usage has multiple issues in the educational setting. The main obstacles are low technical infrastructure, the inadequacy of teacher training, ignorance of AI tools, and ethical issues regarding data privacy and prejudice (Raza and Farooq, 2025; Futtner et al., 2025). In Pakistan, implementing AI has been identified as a potential solution that is not yet adopted by teachers in secondary schools due to a lack of the required resources and professional growth, as well as the lack of policy support (Pakistan Journal of Social Sciences Review, 2025; Jamil et al., 2025). These challenges need to be tackled so that AI can be a useful contribution to teaching and learning.

Gaps and Need for Localized Research

Despite the perceived advantages of AI in education in the discussed literature around the globe, local research in Pakistan is scarce, especially in terms of the context in secondary schools (Raza, and Farooq, 2025; Yousafzai et al., 2025). The literature on adoption of AI in higher education is usually concentrated in developed nations or in the high-end segment of the population and thus there is therefore a gap in knowledge about how AI is influencing lesson planning, classroom management, and professional performance of teachers in Pakistani schools. This

research will help address this gap by assessing the implementation of AI in secondary schools in Larkana, the patterns or trends of the application, the international obstacles, and the impact on the professional performance of teachers.

Theoretical Framework

The current research is based on the Technology Acceptance Model (TAM) (Davis, 1989; Venkatesh and Bala, 2008) that describes the way in which perceived usefulness (PU) and perceived ease of use (PEOU) determine the way individuals use technology. The technology taken into account in the case of secondary school in Larkana is lesson planning and classroom management AI tools, and the outcomes of interest are the attitudes of teachers, methods of their usage, and professional effectiveness. TAM postulates that when educators believe that AI can help in improving teaching planning and classroom management and when the tools are user-friendly, the latter are more likely to admit AI to the practice successfully (Raza and Farooq, 2025; Tan, Cheng, and Ling, 2024). Also, institutional support, training, and digital literacy are external variables that moderate the process of adoption, which demonstrates that professional development becomes the key to successful integration of AI (Jamil, Rasheed, and Muhammad, 2025).

Conceptual Framework

The study conceptual framework demonstrates the connection between the adoption of AI and the professional effectiveness of teachers. Perceived usefulness, perceived ease of use, and institutional support affect AI integration in lessons planning and classroom management (independent variable) whereas instructional quality, efficiency and classroom engagement measure the effects of AI integration on professional effectiveness of teachers (Belloula, 2025; Yousafzai, Ahmed, and Shaheen, 2025). The framework points out that the usage of AI can be very effective in improving planning performance, managing the classroom more effectively, and the overall teaching performance, but the potential can be hampered by the LSDs, including a lack of training or infrastructure. This model informs the investigation by directing the connection between the perception of the teachers and external support and the direct relationship with the outcomes of the professional work in a technology-enhanced learning environment.

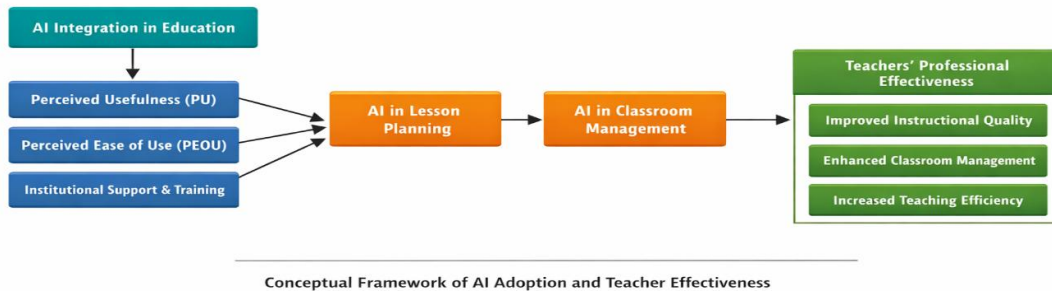
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Adapted from TAM (Davis, 1989; Venkatesh & Bala, 2008) and AI education studies (Belloula, 2025; Raza & Farooq, 2025); created by the author (2026).

Research Methodology

Research Design

The research design utilized in this study is quantitative research design to establish a connection between AI adoption and the professional effectiveness of teachers in secondary schools in Larkana, Pakistan. The quantitative design can be used to measure and analyze the perceptions of the teachers, the patterns of AIs use and the professional outcomes, in a systematic and statistical way. It allows the researcher to draw conditions between variables of AI integration, perceived usefulness, perceived ease of use, institutional support and professional effectiveness. The design also allows generalization of the results to the rest of the population of secondary school teachers in Larkana (Creswell and Creswell, 2023).

Population and Sample

The targeted population is the full population of secondary schools teachers in Larkana which covers both the public and the private schools teaching different subjects in their respective schools. Stratified random sampling was used to pick a sample of 300 teachers so that the sample could represent various types of schools, gender, and subject areas. Stratification makes it possible to represent more accurately, eliminate the sampling bias, which improves the validity of the research.

A sample of 300 was selected as it is big enough to generate adequate statistical power to conduct correlation and regression analyses and is also feasible in terms of data collection (Raza and Farooq, 2025).

Data Collection Instrument

Data was collected using a structured questionnaire that had a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). The questionnaire was aimed at the measurement of several constructs such as AI integration, perceived usefulness (PU), perceived ease of use (PEOU), institutional support, efficiency in lesson planning, classroom management, and professional effectiveness of teachers. The items were modified based on the prior valid test outcomes with the aim of making them relevant and reliable in the context of the similar studies (Belloula, 2025; Tan, Cheng, and Ling, 2024). The application of a Likert scale will enable the respondents to respond in the way of different levels of agreement with the statements, as well as give more delicate information about the way teachers perceive and experience AI.

Validity and Reliability

Three educational technology and teaching experts were consulted to help the researcher achieve content validity. They assessed the extent to which the items suited the constructs of interest, were articulate and suitably represented the purpose of the study. As per expert comments, there were slight revision on making it better and covering. Also, a pilot study involving 30 teachers was done to ascertain the reliability of the instrument. The pilot resulted in a Cronbachs alpha of 0.87 indicating that the instrument is highly internal-consistent, which implies that the instrument is measuring the desired constructs.

Data Collection Procedure

Data collection was done by distributing the questionnaire to the teachers in their respective schools, and the school authorities provided permission of the data collection. The participants were made aware of study objective, voluntariness of their participation and confidentiality of information. Enough time was provided to fill out the questionnaire and follow up reminders were made so as to get a high response rate. This systemic process guaranteed the correctness of data obtained, their thoroughness and their ability to reflect the study population.

Data Analysis

The SPSS (version 28) will be used to analyze the collected data. An overview of AI usage patterns and perceptions will be summarized using descriptive statistics (mean, standard deviation, frequency, and percentage) to present the responses of the teachers. The correlation analysis will be used to test the strengths and the direction of the relationships between independent variables (AI integration, PU, PEOU, institutional support) and dependent variables (lesson planning and classroom management efficiency). The predictive effect of the AI adoption and other factors on teacher professional effectiveness will be established using regression analysis. These statistical methods will enable the research to measure any relationship and make evidence-based conclusions regarding the role of AI in improving professional teaching practices (Jamil, Rasheed, and Muhammad, 2025).

Ethical Considerations

The right of the participants to this research were safeguarded by following the research ethical principles to guarantee that the dignity, privacy, and rights of the participants were not violated (Creswell and Creswell, 2023; American Psychological Association [APA], 2020). All the participants received informed consent before the data collection. All the participants were made clear about the objectives of the research, methods, and the anticipated results. This was clearly explained to them as they were made to know that taking part was fully optional and that they could pull out at any given point without any adverse effects or punishment. This will allow the participants their autonomy and at the same time make participation in the study entirely voluntary.

Anonymity and confidentiality were strictly observed in the course of the research. There was no collection of personally identifying information, including names and contact details. The responses were coded and data were well kept to ensure that no one accessed it unauthorisedly. The data were applied only in academic purposes. The passwords were applied to the digital files, and the questionnaires were stored in a safe place accessible by the researcher only to meet the ethical research requirements (Creswell & Creswell, 2023).

Before data collection, the researcher sought permission with involved educational

authorities in Larkana such as school principals and institutional administration. This made it to be within institutional policies and local policies. Any research undertaken was aimed at ensuring that any physical, emotional, or psychological harm to the research subjects was avoided.

The questionnaire had been constructed with simple language to be easily understood so that all participants were able to reply correctly taking into account their different educational background and technological literacy. This strategy served to reduce a number of possible misunderstandings and enhance the quality of data (Belloula, 2025; Jamil, Rasheed, and Muhammad, 2025).

Moreover, the research has been conducted in complete understanding of cultural sensibilities and local norms regarding the Pakistani educational setting. The researcher has made sure that all the interactions were respectful and compliant with the social and professional expectation of the participants. A safe, comfortable, and respectful environment was developed and encouraged honest and authentic responses (APA, 2020).

To sum up, the research was responsible, ethical, and credible as it followed all the existing ethical guidelines in educational research, such as voluntary participation, informed consent, confidentiality, and cultural respect (Creswell and Creswell, 2023; APA, 2020).

Results and Analysis

Descriptive Statistics

The descriptive statistics were done to show an overview of the perception and use of AI tools among teachers in lesson planning and classroom management. Table 1 shows the mean (M), standard deviation (SD), and frequencies of the AI adoption dimensions, such as AI integration, perceived usefulness, perceived ease of use, and institutional support.

Table 1: *Descriptive Statistics of AI Adoption and Teacher Perceptions*

Variable	Mean (M)	Standard Deviation (SD)	Frequency (%)
AI Integration	4.1	0.82	56%
Perceived Usefulness (PU)	3.9	0.79	50%

Perceived Ease of Use (PEOU)	3.7	0.85	48%
Institutional Support	3.5	0.91	42%

Interpretation

Teachers reported high levels of AI integration in lesson planning ($M = 4.1$) and perceived usefulness ($M = 3.9$), indicating positive attitudes toward AI adoption. Perceived ease of use and institutional support were slightly lower, suggesting potential areas for improvement, such as training or infrastructure enhancement.

Correlation Analysis

Pearson correlation analysis was conducted to examine the relationship between AI adoption variables and teachers' professional effectiveness in lesson planning and classroom management.

Table 2: Pearson's Correlation between AI Adoption and Teacher Effectiveness

Variables	Lesson Planning (r)	Classroom Management (r)
AI Integration	0.62**	0.55**
Perceived Usefulness (PU)	0.58**	0.49**
Perceived Ease of Use (PEOU)	0.51**	0.47**
Institutional Support	0.45**	0.40**

Note: $p < 0.01$

Interpretation

AI integration showed the strongest positive correlation with both lesson planning ($r = 0.62$) and classroom management ($r = 0.55$), indicating that teachers who actively use AI tools experience greater professional effectiveness. Perceived usefulness and ease of use also demonstrated moderate positive relationships with teacher effectiveness, highlighting the importance of usability and practical benefits. Institutional support was positively correlated but slightly weaker, emphasizing the

need for administrative backing and professional development.

Regression Analysis

Multiple regression analysis was conducted to predict the effect of AI adoption variables on teachers' professional effectiveness.

Table 3: *Multiple Regression Analysis Predicting Teacher Effectiveness*

Predictor Variables	Lesson Planning (β)	Classroom Management (β)	p-value
AI Integration	0.53	0.47	<0.001
Perceived Usefulness (PU)	0.41	0.36	<0.01
Perceived Ease of Use (PEOU)	0.35	0.3	<0.01
Institutional Support	0.22	0.2	<0.05

Interpretation

AI integration is the strongest predictor of both lesson planning ($\beta = 0.53$) and classroom management efficiency ($\beta = 0.47$), indicating that teachers who effectively use AI tools enhance their professional performance. Perceived usefulness and ease of use significantly contribute to professional effectiveness, while institutional support, although weaker, still positively influences outcomes. These findings suggest that both teacher perceptions and organizational support are crucial for successful AI adoption in schools.

Discussion

The results of this paper suggest that the usage of AI leads to a meaningful increase in the professional performance of teachers in the field of lesson designing and classroom management. Educators who have incorporated AI into their routine have claimed to be more efficient in planning lessons, creating activities, and controlling the classroom. This confirms the Technology Acceptance Model (TAM) that assumed that perceived usefulness and ease of use are important factors that determine the adoption of technology (Davis, 1989; Venkatesh and Bala, 2008).

The close correlation between AI integration and teacher performance corresponds

to the literature (Belloula, 2025; Raza and Farooq, 2025) that highlights the fact that a practical approach to the use of AI tools will enhance the efficiency of planning and classroom control. In a similar fashion, moderate correlations of the perceived usefulness and ease of use indicate that the teachers are more likely to be benefited by AI when they see it as useful and easy to use (Tan, Cheng, and Ling, 2024).

Professional effectiveness was also linked to institutional support, which is significant, signifying the role of the administrative support, training plans, and access to online resources. This observation goes in line with Jamil, Rasheed, and Muhammad (2025), who assert that external support is a critical consideration in the successful implementation of AI in the teaching profession.

The implications of these findings are that professional development interventions that aim to improve AI literacy, practical training, and ease of use may be further employed to facilitate the use of AI by teachers. Another point made by the study is that even useful AI tools do not have the chance of being used in the best way possible unless it is supported or understood properly.

Finally, the adoption of AI enhances the lesson planning and classroom management but the success of AI adoption depends on the perception of the teachers involved, their skill level and support of the institution. The task of schools that want to improve teacher performance is based on the practical training of AI, supportive infrastructure, and the development of positive attitudes toward the use of technologies.

Conclusion

This paper has examined how the use of AI should affect the professional performance of teachers, namely lesson planning and classroom management, in secondary schools in Larkana. The results show that AI implementation produces the most significant impact on the efficiency of teachers, who are able to plan their lessons more efficiently, deliver the instruction more efficiently, and manage the classroom easier. Educators who actively use AI tools state that they are more confident in their ability to structure the lessons, tracking students' progress, and ensuring the effective classroom settings. This highlights the importance of introducing AI in the everyday teaching process in order to improve the

performance of instruction.

Moreover, the perceived usefulness and ease of use were also reported as the most important factors that impacted the adoption of AI and professional performance. As educators change their attitudes toward AI tools and find them useful and convenient to use, they will implement these technologies on a higher level, which will lead to actual changes in the efficiency of teaching and student engagement. The latter emphasizes the need to implement user-friendly and intuitive AI tools that support the teaching requirements and processes of educators.

The institutional support is also significant in supporting the adoption of AI, although it has been revealed to be less prominent compared to individual perceptions of usefulness and ease of use. Teachers can easily integrate AI tools through the support of favorable policies, professional development initiatives, and access to technological tools. This research recommends that schools need to reinforce their training schemes and resources as well as making sure that their teachers possess the expertise, aptitude, and assurance to apply AI solutions effectively.

There were also significant implications of the findings in future research. Exploring the long-term impacts of AI integration would help to shed light on the long-term benefits of AI in teaching practices and student outcomes. Also, looking at the differences between different categories of schools, teachers, and subjects can assist in understanding situational variables that condition the adoption of AI. The use of longitudinal designs and the inclusion of several districts in the study sample would enable the more holistic representation of the development of AI-enhanced teaching with time and its impact on educational performance.

In general, this paper highlights the importance of using strategic AI implementation in schools with the support of professional development, administrative support, and user-friendly technology as one of the ways to improve the professional performance of teachers significantly. AI tools can revolutionize the workplace by facilitating better lesson planning, classroom administration, and participation in instructional tasks. Schools and policymakers are advised to provide the environment where AI will be used positively so that teachers and students alike

could enjoy the education based on technology.

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