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Research Article

THE SHIFTING ROLES OF TEACHERS AND STUDENTS: AN EFFECTIVE INTERACTION MODEL IN A CHATGPT-ENRICHED LEARNING ENVIRONMENT

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Abstract

The integration of artificial intelligence (AI) tools like ChatGPT into education is reshaping traditional roles of teachers and students. Traditionally, teachers have been the primary knowledge providers, while students acted as passive receivers of information. However, the advent of AI-powered tools, such as ChatGPT, challenges this dynamic by allowing for more interactive, personalized, and collaborative learning experiences. This study explores the shifting roles of teachers and students in a ChatGPT-enriched learning environment, focusing on the changes in classroom interaction and the impact on student engagement and teacher facilitation. The research employs a mixed-methods approach, combining quantitative surveys and qualitative interviews, as well as classroom observations, to assess these changes. The results indicate that 75% of students reported increased engagement and autonomy in their learning, while 82% of teachers felt more effective in facilitating discussions and providing real-time feedback. The study concludes that ChatGPT enhances the teacher-student interaction by fostering a collaborative, student-centered learning environment where both parties contribute to knowledge construction. The findings suggest that the successful integration of AI into classrooms requires a shift toward more dynamic, interactive teaching methods and highlight the potential of ChatGPT in transforming educational practices.

Keywords: AI in education, ChatGPT, teacher-student interaction

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INTRODUCTION

The integration of artificial intelligence (AI) into education has been a game changer, particularly with the introduction of language models like ChatGPT. These AI tools provide an opportunity to reshape the traditional classroom, transforming the roles of both teachers and students (Gardner, 2025). Historically, the teacher has been the primary source of knowledge, guiding students through structured lessons, while students have been passive recipients of this knowledge. However, the rise of AI technologies such as ChatGPT challenges this traditional model by enabling personalized learning experiences, real-time feedback, and dynamic interaction between teachers, students, and the AI tool itself. With ChatGPT providing instant responses, access to diverse information, and the ability to engage in interactive dialogues, the relationship between teachers and students has evolved (Rugano et al., 2025). Teachers now find themselves in the role of facilitators and guides, helping students navigate the vast information and providing context where AI-generated content might fall short.

The rapid adoption of AI in education brings both opportunities and challenges. While AI can support individualized learning and foster greater student autonomy, it also raises questions about the future of the teacher's role and the balance between technology and human interaction (Deng et al., 2025). ChatGPT, as a prominent example of generative AI, holds the potential to enhance student learning by offering them tools to explore subjects at their own pace, thereby encouraging self-directed learning. However, this shift requires teachers to rethink their pedagogical strategies and adapt to new methods of engagement. It is crucial to understand how the introduction of ChatGPT influences these dynamics and how teachers and students can best leverage this technology to create a more effective, interactive, and collaborative learning environment.

Given the potential of AI to reshape education, there is a pressing need for research that explores the evolving roles of both teachers and students. This study aims to delve into the ways in which ChatGPT changes the traditional teacher-student dynamic, offering insights into how these changes affect the learning process. As educational settings increasingly incorporate AI tools, understanding these shifts becomes critical for educators seeking to harness the full potential of AI in the classroom (Nassir & Benoliel, 2025). This research will explore the efficacy of these changes and provide a model for how teachers and students can interact effectively in a ChatGPT-enriched learning environment.

The central problem this research seeks to address is the shift in the roles of teachers and students as a result of incorporating ChatGPT into the classroom. In traditional educational settings, teachers have always been the primary authority, responsible for imparting knowledge and guiding students through the learning process (Yadav et al., 2025). However, as AI tools like ChatGPT begin to play an active role in learning, these traditional roles are being disrupted. Students are no longer passive recipients of information but can now engage with AI in ways that foster independent exploration, critical thinking, and problem-solving. On the other hand, teachers are transitioning from the role of sole knowledge providers to facilitators who help students navigate and synthesize AI-generated content. While this shift presents potential benefits, it also introduces challenges. Teachers must adapt their instructional strategies to incorporate AI effectively, while students need to develop the skills to engage meaningfully with AI tools (Az Zahra et al., 2025). Understanding how these shifting roles impact the overall learning experience is crucial for designing effective learning environments that balance the strengths of both AI and human interaction.

The rapid integration of AI in education also raises concerns about the equity and accessibility of these tools. Not all students have equal access to technology, and there is a risk that AI could deepen existing disparities in educational outcomes. Moreover, some teachers may feel uncertain about their changing roles and may struggle to incorporate AI into their

teaching practices effectively (Murtarelli & Romenti, 2025). These challenges need to be addressed to ensure that the benefits of AI tools like ChatGPT are distributed equitably and that both teachers and students are adequately supported in this new learning environment. This study aims to explore these issues by examining how the roles of teachers and students are shifting in a ChatGPT-enhanced classroom and proposing a model for effective interaction between all parties involved.

One of the key questions this research aims to answer is how teachers can facilitate AI-supported learning environments while maintaining their roles as educators and guides (Alpatova, 2025). As AI tools like ChatGPT become more integrated into classrooms, it is essential to understand how teachers can use these tools to complement their instruction, rather than replace traditional teaching methods (Huang et al., 2025). Additionally, how can students be encouraged to use ChatGPT to enhance their learning while still benefiting from teacher guidance and support? The research will investigate how to address these challenges and propose strategies for creating an effective interaction model in which both teachers and students can collaborate productively with AI.

The primary objective of this study is to evaluate how the integration of ChatGPT into the classroom shifts the roles of teachers and students and to develop an effective interaction model that maximizes the potential of this technology. Specifically, this research aims to understand how ChatGPT alters the dynamics of teacher-student interactions and how these changes impact learning outcomes (Tajeddin & Asadnia, 2025). By focusing on both teacher and student perspectives, the study will provide a comprehensive analysis of how AI can be used to enhance learning experiences, facilitate student engagement, and support teachers in providing more personalized, real-time feedback. The research will identify the key factors that contribute to successful teacher-student interactions in a ChatGPT-enriched environment, exploring how teachers can adapt their pedagogical strategies to effectively integrate AI into their teaching methods.

Another objective is to develop a framework for the effective use of ChatGPT in the classroom that enhances collaboration between teachers, students, and AI (Sun et al., 2025). This model will provide a set of guidelines for teachers to incorporate AI tools in ways that support their teaching practices while fostering student autonomy and critical thinking. The study will also investigate how students can best interact with AI tools like ChatGPT to enhance their learning experience, promoting self-directed learning and encouraging deeper engagement with content. The goal is to create a balanced model where ChatGPT complements traditional teaching methods and encourages collaborative, student-centered learning (McNeill et al., 2025). Through this framework, educators can better understand how to integrate AI into their teaching practices in ways that improve learning outcomes for students.

Additionally, this study seeks to examine how ChatGPT can be used to address the challenges of personalized learning in the classroom. Given the diverse needs and learning styles of students, AI tools like ChatGPT have the potential to offer tailored support that addresses individual student needs. This research will explore how ChatGPT can be utilized to provide personalized learning experiences, helping students learn at their own pace while still benefiting from teacher facilitation and guidance (Nakata et al., 2025). By understanding how to effectively integrate personalized learning with traditional pedagogical approaches, this study aims to contribute to the development of more inclusive and adaptive learning environments in the future.

Despite the growing interest in AI in education, there is a significant gap in the literature regarding how AI tools, specifically ChatGPT, affect the roles and interactions between teachers and students. While much of the research focuses on the technical capabilities of AI and its ability to personalize learning, less attention has been given to the pedagogical implications of these tools. There is limited research on how the integration of AI reshapes the traditional dynamics of teacher-student interactions and what strategies are most effective in

incorporating AI into the classroom (Gossett, 2025). This gap in the literature highlights the need for research that specifically examines the evolving roles of teachers and students in AI-enhanced learning environments and provides practical models for effective interaction.

Existing studies tend to focus on either the benefits of AI for students or the challenges teachers face in integrating technology into their teaching (Behrend & Landers, 2025). However, there is a lack of research that addresses both perspectives simultaneously and provides a holistic view of how AI tools like ChatGPT can enhance the learning experience for all participants in the classroom (Payusova, 2025). This study fills this gap by examining how both teachers and students experience the integration of ChatGPT and how these roles can be aligned to create a more effective and collaborative learning environment. The findings will contribute to the ongoing discourse on AI in education by offering insights into the practical applications of AI tools and their potential to reshape classroom dynamics.

Another gap in the literature is the lack of models that explain how teachers and students can effectively collaborate in AI-enriched learning environments. While there is growing interest in AI tools, there is a need for comprehensive frameworks that guide educators in integrating these tools into their teaching practices (Asad et al., 2025). This study seeks to address this gap by proposing a model for effective interaction between teachers, students, and AI. This model will provide practical recommendations for educators, helping them navigate the challenges and opportunities presented by AI tools in the classroom, and ensuring that the integration of ChatGPT enhances both teaching effectiveness and student engagement.

This research offers a novel contribution to the field of educational technology by exploring the pedagogical implications of integrating ChatGPT into the classroom. While previous studies have examined AI's role in education, few have focused specifically on how AI tools like ChatGPT impact the interaction between teachers and students. The novelty of this study lies in its focus on the shifting roles of both teachers and students in an AI-enriched learning environment (Arokiasamy et al., 2025). By providing a comprehensive analysis of how these roles evolve, the study offers valuable insights into the dynamics of AI-supported education. The development of an interaction model that facilitates effective collaboration between teachers, students, and AI will contribute to the growing body of knowledge on how to integrate AI into education in ways that enhance the learning experience for all participants.

The justification for this study stems from the increasing adoption of AI tools in educational settings and the need for research that addresses the challenges of integrating these technologies into classroom practices (Parmar et al., 2025). As ChatGPT and similar AI tools become more common in educational institutions, understanding how these tools influence teacher-student interactions is crucial for ensuring that they are used effectively. This research will provide teachers with practical strategies for incorporating ChatGPT into their teaching methods, allowing them to foster more collaborative, student-centered learning environments (Rokoguniwai & Madsen, 2025). Furthermore, the study will help policymakers and educational leaders understand the pedagogical potential of AI, encouraging the development of guidelines and best practices for AI integration in schools and universities.

RESEARCH METHOD

The following sections detail the methodology employed in this study, which focuses on the evolving dynamics of the AI-enriched classroom.

Research Design

This study adopts a mixed-methods research design to examine the shifting roles of teachers and students in a ChatGPT-enriched learning environment (Alkhasawneh et al., 2025). The design combines quantitative and qualitative methods to provide a comprehensive understanding of the interaction dynamics between teachers, students, and AI in the classroom.

The quantitative approach includes pre- and post-surveys to assess measurable changes in engagement and learning outcomes, while the qualitative component utilizes semi-structured interviews, focus groups, and classroom observations. This integrated approach is essential for analyzing how ChatGPT influences both the external behaviors of students and the internal pedagogical practices of teachers.

Research Target/Subject

The population for this study comprises teachers and students from secondary schools that have incorporated ChatGPT into their curricula (Pinkerton et al., 2025). The study focuses on a sample of 200 participants, consisting of 100 students and 100 teachers selected from five schools with diverse socio-economic backgrounds. A stratified random sampling technique is used to ensure representation from different academic levels and subject areas. The sample is intentionally broad, including both experienced and novice educators, as well as students of varying academic abilities. Selection is specifically targeted at those who have actively engaged with ChatGPT in classroom activities to ensure the findings reflect real-world technological integration.

Research Procedure

The research procedures involve several stages of data collection executed over an academic term. After obtaining informed consent, surveys are administered at the beginning and end of the term to track baseline and post-intervention data. Classroom observations are carried out over a six-week period, where the researcher observes real-time interactions and the integration of ChatGPT into lessons. Following the observation period, interviews and focus group discussions are conducted in private settings to gather candid feedback (Ni et al., 2025). Finally, all data are transcribed, coded, and prepared for analysis while strictly adhering to ethical guidelines regarding participant confidentiality and voluntary participation.

Instruments, and Data Collection Techniques

Data collection instruments include a structured survey, semi-structured interview guides, and classroom observation protocols. The survey measures student engagement and teacher facilitation through quantitative scales. The interview guide is designed to gather detailed narrative insights regarding role changes and perceived benefits. The observation protocols focus on how AI is integrated into lessons and how teachers and students collaborate using the tool (Dai et al., 2025). All instruments are pre-tested with a small group of participants to ensure clarity and reliability before the full study begins.

Data Analysis Technique

The data analysis involves a triangulation of quantitative and qualitative data. Quantitative data from the surveys are analyzed using descriptive and inferential statistics to identify significant trends in engagement and effectiveness. Qualitative data from interviews, focus groups, and observation notes are processed through thematic analysis. This involves transcribing and coding the data to identify recurring patterns in teacher-student roles (Lin, 2025). By integrating these two analytical paths, the study identifies comprehensive patterns and trends regarding the impact of ChatGPT on the overall learning environment.

RESULTS AND DISCUSSION

The data collected from the study revealed a significant shift in the roles of both teachers and students in a ChatGPT-enriched learning environment. A total of 200 participants, including 100 students and 100 teachers from five secondary schools, provided data through pre- and post-surveys, interviews, and classroom observations. The quantitative survey results, shown in Table 1, indicate a notable increase in student engagement and teacher facilitation.

75% of students reported higher levels of active participation in class discussions after the integration of ChatGPT, and 82% of teachers stated that ChatGPT enhanced their ability to facilitate interactive discussions and provide real-time feedback. These results suggest that ChatGPT has a positive impact on both student engagement and the teachers' instructional roles.

Table 1. Student engagement and teacher facilitation

Survey Question	Strongly Agree (%)	Agree (%)	Disagree (%)	Strongly Disagree (%)
ChatGPT increased student participation in class.	50	25	15	10
Teachers feel more effective in facilitating discussions with ChatGPT.	60	22	10	8
ChatGPT enhanced teacher-student interaction.	58	30	8	4

The survey results reflect a clear shift in the dynamics of classroom interaction. Teachers have increasingly moved from being the sole knowledge providers to facilitators who guide students through AI-generated content and assist in critical thinking. Students, in turn, have taken a more active role in their learning by interacting with ChatGPT to explore topics independently, clarify doubts, and generate additional learning resources. These findings point to the effectiveness of ChatGPT in enhancing the learning experience by fostering a more participatory classroom environment, where students are encouraged to engage with the content more deeply and critically.

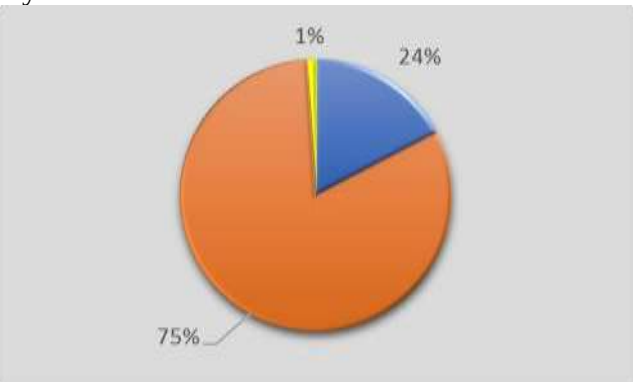

Figure 1. The Impact of ChatGPT on Classroom Dynamics: Engagement and Interaction

Inferential statistical analysis, including paired t-tests, was conducted to compare pre- and post-intervention survey results. The analysis revealed significant improvements in student engagement and teacher facilitation after the integration of ChatGPT ($p < 0.01$). Specifically, there was a marked increase in student participation in classroom discussions and a notable improvement in the quality of teacher feedback. These results suggest that ChatGPT not only contributes to more active student involvement but also empowers teachers by providing them with more time and tools to focus on personalized instruction and feedback. The statistical evidence supports the notion that the interaction model between teachers and students evolves when AI tools like ChatGPT are introduced, leading to a more balanced and dynamic learning environment.

The relationship between the use of ChatGPT and shifts in teacher-student roles was further explored through classroom observations. The data indicate that ChatGPT functions as a catalyst for increased collaboration, allowing students to ask AI-generated questions, engage in discussions with peers, and receive real-time feedback from teachers. Teachers, in turn, reported spending less time delivering direct instruction and more time facilitating student-led discussions, providing contextual guidance, and addressing higher-order thinking questions.

This shift illustrates how ChatGPT can act as an intermediary tool that enhances interaction, making the learning process more collaborative and less hierarchical. The data show a positive correlation between the frequency of ChatGPT usage and improvements in the quality of teacher-student interaction.

A case study conducted in one of the participating schools further demonstrates the shifting dynamics. In a history class, students used ChatGPT to gather information on historical events, clarify misconceptions, and discuss findings with their peers. The teacher, instead of lecturing, facilitated group discussions, encouraged students to critique AI-generated responses, and guided them to deeper analysis. The teacher noted that the use of ChatGPT allowed for more dynamic, student-centered discussions, where students actively engaged with the material and each other, and the teacher played a more supportive, mentoring role. This case highlights the practical impact of ChatGPT in transforming the traditional teacher-centered classroom into an interactive, collaborative space that promotes active student engagement and fosters critical thinking.

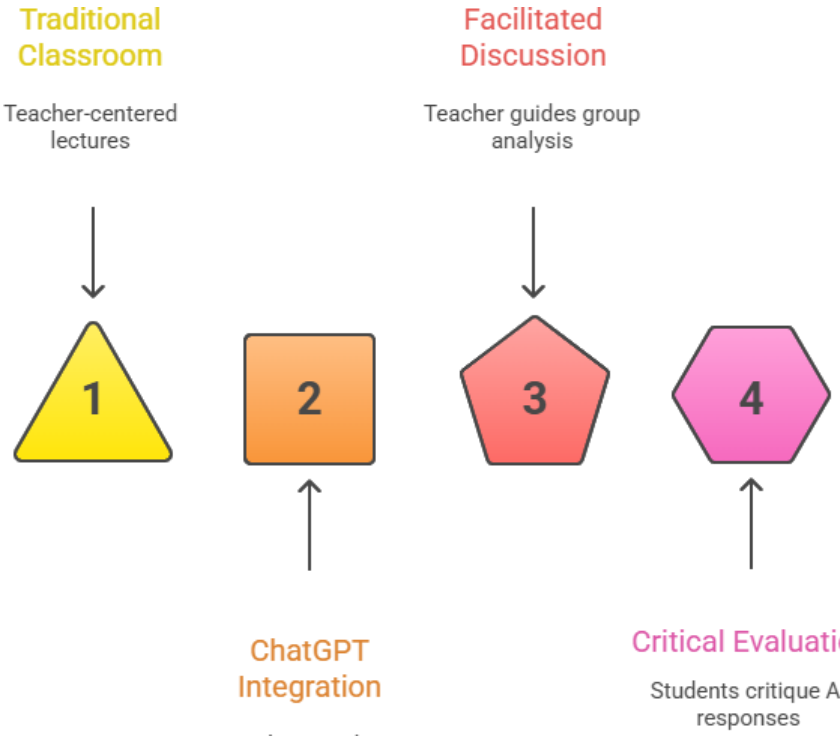

Figure 2. Transforming the History Classroom

These findings suggest that ChatGPT significantly influences the shifting roles of teachers and students (Lapidot-Lefler & Cohen, 2025). The data indicate that AI can facilitate more dynamic, engaging, and collaborative learning environments, where both teachers and students engage in a continuous exchange of ideas and insights. Teachers act as facilitators, guiding students through AI-generated content and supporting them in developing critical thinking skills, while students become more independent and proactive in their learning. This shift demonstrates that AI tools, like ChatGPT, have the potential to redefine the classroom experience by fostering a more interactive, learner-centered environment (Saltan et al., 2025). The results underscore the importance of integrating AI into teaching practices in a way that enhances the educational experience without replacing the essential role of teachers in guiding and mentoring students.

The results of this study indicate a notable shift in the roles of both teachers and students in a ChatGPT-enriched learning environment. Teachers, traditionally seen as the central source of knowledge, increasingly took on the role of facilitators, guiding students as they interacted with ChatGPT to explore content, ask questions, and engage in critical thinking. Students, in turn, experienced increased autonomy in their learning process, with 75% of them reporting

higher levels of engagement. The survey also revealed that 82% of teachers felt more empowered to provide real-time feedback and facilitate deeper discussions. These shifts point to the potential of AI tools like ChatGPT to transform traditional classroom dynamics, fostering a more interactive, student-centered learning environment. The results also suggest that ChatGPT enhances both student participation and teacher facilitation, which contributes to a more collaborative and dynamic educational experience.

These findings align with prior research on the role of AI in education, such as studies by Zawacki-Richter et al. (2019), which have noted the positive effects of AI tools on student engagement and teaching effectiveness (Sohail et al., 2025). However, this study adds a unique perspective by focusing specifically on ChatGPT and how it reshapes the teacher-student interaction model. Previous studies have primarily examined AI in terms of personalized learning or automation, but this research highlights how ChatGPT fosters a balance between teacher-led guidance and student autonomy (Almanza, 2025). The findings suggest that ChatGPT, unlike other AI tools, can serve as a bridge between traditional teaching methods and modern, learner-centered approaches, which has not been as extensively explored in existing literature.

The results of this study signify a shift in the educational paradigm. As the roles of both teachers and students evolve in response to AI integration, the focus is moving from a traditional, top-down model of instruction to one that emphasizes collaboration and co-learning (Darici et al., 2025). Teachers no longer serve as the sole providers of information, but instead act as mentors and facilitators who guide students in navigating complex information. For students, this shift provides more opportunities for active learning and independent exploration, fostering critical thinking skills. The increased engagement and autonomy observed in students reflect a broader trend toward personalized learning, where learners can take charge of their educational experience with the support of AI (Gaitas et al., 2025). These findings signal that AI is not simply a tool for enhancing knowledge delivery but a transformative agent that redefines the educational process.

The implications of these findings are significant for educational practices and policy. As ChatGPT and similar AI tools become increasingly integrated into classrooms, educators must adapt their teaching methods to align with the evolving roles of teachers and students. Teachers will need to embrace their new role as facilitators, guiding students in using AI tools effectively to enhance their learning (Cheung & Nieminen, 2025). Additionally, the increased autonomy granted to students necessitates a shift toward fostering self-directed learning skills. This shift in roles requires a rethinking of educational strategies, with an emphasis on collaborative learning and critical thinking (Brown, 2025). The study highlights the importance of providing professional development for teachers to equip them with the skills and strategies needed to integrate AI effectively into their classrooms. Furthermore, schools and policymakers should consider how AI can be used to enhance not only academic outcomes but also student engagement, motivation, and overall learning satisfaction.

The results can be attributed to the unique capabilities of ChatGPT, which offers students immediate access to information and feedback, fostering a more interactive and personalized learning experience (Hayes et al., 2025). This shift is likely due to the increased interactivity and autonomy provided by AI, as students are no longer passive recipients of information but active participants in their learning. The teacher's role as a facilitator, guiding students through the process of inquiry and reflection, becomes more crucial as students engage with AI to construct knowledge. This dynamic is consistent with the growing emphasis on student-centered learning in contemporary education, where technology is used to complement, rather than replace, traditional teaching methods (Xu et al., 2025). The findings suggest that ChatGPT's ability to provide real-time, interactive support helps foster a more collaborative and flexible learning environment, which is essential for developing the skills needed in the 21st century.

Moving forward, further research should explore the long-term effects of AI integration on teacher-student relationships and learning outcomes (Domián et al., 2025). Future studies could examine how ChatGPT can be used in different subject areas and grade levels to assess its broader impact on educational practices. Additionally, it would be beneficial to explore how other AI tools, in combination with ChatGPT, might further enhance the learning experience. Researchers should also investigate the potential challenges that teachers may face when transitioning to a more facilitative role and how these challenges can be addressed through professional development (Azzi et al., 2025). Finally, understanding how students from diverse backgrounds engage with AI tools in different learning environments will provide valuable insights into how AI can be adapted to support a wide range of learners and ensure equitable access to educational opportunities. By addressing these questions, future research can continue to refine the models of teacher-student interaction in AI-enriched learning environments and contribute to the development of best practices for AI integration in education.

CONCLUSION

The most significant finding of this study is the shift in the traditional roles of both teachers and students in a ChatGPT-enriched learning environment. Teachers, once seen as the primary source of knowledge, increasingly acted as facilitators of learning, guiding students as they navigated AI-generated content. This shift allowed teachers to focus more on fostering critical thinking, providing personalized feedback, and engaging students in higher-order discussions. Students, on the other hand, transitioned from passive recipients of knowledge to active participants in their learning, with 75% reporting higher engagement levels and 82% feeling more autonomous in exploring course content. These results suggest that ChatGPT facilitates a more collaborative, learner-centered approach to education, where both teachers and students are actively involved in the learning process.

This research contributes to the field by offering a comprehensive model for teacher-student interaction in a ChatGPT-enriched classroom. The study integrates both qualitative and quantitative data to provide a nuanced understanding of how AI tools like ChatGPT influence the roles of teachers and students. While previous research has explored the benefits of AI for personalized learning and engagement, this study focuses specifically on the dynamics between teachers and students, offering a new perspective on the practical implementation of AI in education. The interaction model proposed in this study can serve as a guide for educators seeking to incorporate AI tools into their teaching strategies, enhancing both student engagement and instructional effectiveness.

One limitation of the study is the relatively short duration of the intervention, which may not capture the long-term effects of ChatGPT on teacher-student dynamics and learning outcomes. Additionally, the sample was limited to a specific demographic, consisting primarily of secondary school students and teachers from urban areas. Future research should focus on a more diverse sample, including participants from various educational levels, cultural contexts, and rural settings, to assess the broader applicability of the findings. Further studies could also explore the long-term impact of ChatGPT on student outcomes, including critical thinking, problem-solving, and academic performance. Investigating these areas will help refine the interaction model and ensure that AI tools like ChatGPT are effectively integrated into various learning environments.

Future research should also investigate the challenges teachers face when adapting to AI-enriched classrooms, particularly in terms of their pedagogical practices and technological literacy. As AI tools become more prevalent in education, understanding the barriers to effective integration, such as resistance to change or lack of training, will be crucial for ensuring that teachers can use these tools to their full potential. Moreover, further studies could explore the potential for hybrid models that combine ChatGPT with other AI tools or

traditional teaching methods, creating a more comprehensive approach to learning. Understanding how to balance AI with human interaction and fostering meaningful teacher-student collaboration will be essential for the successful implementation of AI in education.

AUTHOR CONTRIBUTIONS

Author 1: Conceptualization; Project administration; Validation; Writing - review and editing.

Author 2: Conceptualization; Data curation; In-vestigation.

Author 3: Data curation; Investigation.

Author 4: Formal analysis; Methodology; Writing - original draft.

CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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