



The Role of Chatgpt as A Virtual Assistant in Increasing Student Learning Collaboration

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ABSTRACT

The rapid development of artificial intelligence (AI) has led to the integration of AI tools like ChatGPT into various sectors, including education. One of the most promising applications is the use of AI as a virtual assistant to enhance student collaboration and learning experiences. Traditional education methods often struggle to foster effective collaboration among students, particularly in large, diverse classrooms. This study aims to explore the role of ChatGPT as a virtual assistant in increasing student collaboration and enhancing the learning process. The primary objective is to evaluate how ChatGPT can assist students in collaborative learning tasks, promote peer interaction, and provide personalized support. A mixed-methods research design was employed, combining qualitative and quantitative data collection methods. The study involved 150 students from different academic disciplines, who were introduced to ChatGPT as a collaborative tool for group projects. Data was collected through surveys, interviews, and collaboration performance assessments. The results indicate that ChatGPT significantly improved student collaboration, with students reporting increased interaction, engagement, and productivity during group tasks. Additionally, ChatGPT's personalized assistance helped students overcome knowledge gaps and foster a collaborative learning environment. This study concludes that ChatGPT can be an effective virtual assistant in enhancing student collaboration and improving overall learning outcomes, offering valuable insights into AI's potential in education.

Keywords: *AI in Education, Collaborative Learning, ChatGPT*

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INTRODUCTION

The increasing integration of artificial intelligence (AI) into education has led to the development of various tools aimed at enhancing the learning experience. Among these tools, virtual assistants like ChatGPT stand out due to their potential to foster collaborative learning among students (Fyfield dkk., 2024; Wan, 2024). As students face an ever-expanding range of academic demands, the need for collaborative platforms that support communication, problem-solving, and knowledge sharing has never been more critical. Traditional learning methods, while effective in some contexts, often struggle to fully

engage students in collaborative activities, particularly in large and diverse classrooms. With the advent of advanced AI technologies, it has become possible to introduce intelligent systems that can facilitate communication, provide instant feedback, and promote active learning (Al-Emran, 2024; Nguyen dkk., 2024). ChatGPT, a language model developed by OpenAI, offers a promising solution to the challenges of student collaboration by acting as a virtual assistant that can support, guide, and mediate collaborative learning efforts. The growing interest in AI-powered learning tools has made it essential to explore how these technologies can be utilized to enhance student collaboration, making learning more interactive, engaging, and effective.

The problem addressed by this research centers on the need for effective tools that enhance student collaboration in educational settings (Jain dkk., 2024; Masters dkk., 2024). While many traditional methods encourage collaborative learning, students often face challenges such as lack of engagement, ineffective communication, and unequal participation in group activities. The increasing reliance on digital platforms and remote learning environments has highlighted these issues further, as students may struggle to maintain interaction and productive collaboration in virtual spaces. Additionally, students may face difficulties in organizing ideas, dividing tasks efficiently, and resolving conflicts within groups. This research focuses on the role of ChatGPT as a virtual assistant to alleviate these issues by providing support during group activities (Neupane dkk., 2024; Simetgo dkk., 2025). By offering real-time feedback, facilitating communication, and helping students navigate complex academic tasks, ChatGPT has the potential to enhance collaboration by fostering more dynamic, equitable, and effective group interactions. This study will explore how ChatGPT can mitigate common challenges in student collaboration and improve both the process and outcome of collaborative learning.

The primary objective of this study is to investigate the role of ChatGPT as a virtual assistant in increasing student learning collaboration. Specifically, the research aims to evaluate how ChatGPT can facilitate communication within student groups, encourage engagement, and help students manage and organize their collaborative tasks more effectively. By acting as a mediator and guide, ChatGPT could potentially improve the dynamics of student collaboration, leading to better outcomes in group assignments and projects (Kovačević dkk., 2024; Lee, 2024). Furthermore, this study seeks to assess how the use of ChatGPT impacts student perceptions of collaboration, including their levels of motivation, participation, and satisfaction with group work. The research will focus on a series of collaborative learning activities where ChatGPT is integrated as a tool for facilitating communication and providing support throughout the process. By measuring both qualitative and quantitative outcomes, this study aims to provide insights into the specific ways ChatGPT can contribute to enhancing collaboration and improving student learning experiences. The ultimate goal is to demonstrate how AI-powered tools like ChatGPT can become valuable resources for supporting collaborative learning in educational contexts.

Despite the growing body of research on AI applications in education, there remains a gap in the literature regarding the specific role of AI-driven virtual assistants in

enhancing student collaboration. Many studies have focused on the use of AI for individual learning, assessment, or personalized instruction but have not fully explored its potential to support group interactions and collective problem-solving (Casella dkk., 2024; Liashenko & Semerikov, 2024). Existing literature tends to emphasize the technical aspects of AI tools, such as their ability to analyze data or deliver content, but often overlooks the social and collaborative dimensions of learning that are critical in educational settings. Furthermore, there is limited research examining how tools like ChatGPT can specifically influence collaboration in diverse learning environments, particularly in terms of fostering communication and supporting students in real-time during group tasks (Casella dkk., 2024; Jamshed dkk., 2024). This study aims to fill this gap by focusing on how ChatGPT can serve as an active participant in group learning activities, facilitating collaboration and enhancing the overall experience for students. The research will contribute to the existing literature by providing empirical evidence on the practical application of AI-driven virtual assistants in promoting effective collaboration among students.

This research is both novel and important for several reasons. Firstly, the application of ChatGPT as a virtual assistant to increase student collaboration represents an innovative use of AI in education (Nair dkk., 2024; Rädell-Abläss dkk., 2025). While AI has been explored in educational contexts primarily for personalized learning and content delivery, its potential to enhance collaboration remains underexplored. By examining how ChatGPT can function not just as a passive tool but as an active facilitator of student communication and group dynamics, this study offers new insights into the broader application of AI in collaborative learning environments. Additionally, the findings of this research are significant for the field of educational technology, as they provide a concrete example of how AI can be harnessed to support cooperative learning, particularly in digital and remote learning environments. The increasing shift toward digital and hybrid learning models makes this research particularly timely, as it offers a practical solution to enhancing collaboration in settings where face-to-face interaction is limited. By showcasing how AI can address common challenges in student collaboration, this study also has the potential to inform the development of future educational tools aimed at supporting group learning in various academic contexts.

RESEARCH METHODOLOGY

This study utilizes a mixed-methods research design, combining both qualitative and quantitative approaches to examine the role of ChatGPT as a virtual assistant in increasing student learning collaboration. The research design integrates an experimental approach with pre- and post-assessment to measure the effect of ChatGPT on student collaboration and engagement (Hellen dkk., 2024; Peng, 2024). In addition to analyzing performance data, qualitative data is collected through surveys and interviews to understand students' experiences with using ChatGPT as a collaborative tool. This mixed-method approach allows for a comprehensive evaluation of both the outcomes and experiences associated with ChatGPT's implementation in collaborative learning tasks.

The population of this study consists of undergraduate students enrolled in various disciplines at a large university. A total of 200 students will participate in the study, selected from different faculties to ensure diversity in academic background and collaborative learning experience (Buradkar dkk., 2025; Singh & Singh, 2024). These students will be divided into groups of 4-5, each group being required to engage in collaborative learning tasks. The sample is chosen to represent a broad spectrum of students who may have varying levels of prior experience with collaborative learning and technology. This ensures that the findings will be applicable to a wide range of educational contexts and provides insights into the generalizability of ChatGPT's effectiveness as a collaborative tool.

The primary instruments used in this research include the ChatGPT platform, pre- and post-assessment questionnaires, surveys, and semi-structured interview guides. ChatGPT is utilized as the virtual assistant in this study, facilitating communication and providing support during group tasks (Al-Dahoud dkk., 2024; Wójcik dkk., 2024). Pre- and post-assessment questionnaires will measure student collaboration skills and performance outcomes before and after using ChatGPT. Surveys will assess students' perceptions of ChatGPT's effectiveness in fostering collaboration, and semi-structured interviews with students and instructors will provide in-depth insights into their experiences and perspectives on the platform's role in facilitating group work.

The procedures for this study are carried out in several phases. First, students are introduced to ChatGPT and trained on how to use the platform for collaborative learning tasks. Groups are assigned tasks related to their academic coursework, and each group uses ChatGPT for communication, task organization, and problem-solving (Garrido-Merchán dkk., 2024; Wójcik dkk., 2024). The interaction with ChatGPT is monitored, and data is collected during each phase of the group task, including engagement levels, the quality of collaboration, and student satisfaction. Pre-assessments are conducted prior to the start of the study to gauge students' collaboration skills, and post-assessments are administered at the end of the study to evaluate any improvements. Following the completion of the group tasks, students and instructors participate in surveys and interviews to provide feedback on their experiences (Kodors dkk., 2024; Lukkahatai & Han, 2024). Data from both quantitative and qualitative sources is analyzed to determine the impact of ChatGPT on student collaboration and learning outcomes.

RESULTS AND DISCUSSION

The dataset for this study was collected from 200 undergraduate students who participated in a collaborative learning task using ChatGPT as a virtual assistant. The study collected both quantitative and qualitative data, including pre- and post-assessment scores, survey responses, and interview feedback (Gaitan, 2024; Lukkahatai & Han, 2024). The primary quantitative measures were student collaboration scores, group productivity, and overall performance on group assignments, while the qualitative measures focused on students' perceptions of ChatGPT's effectiveness as a collaborative

tool. Table 1 below summarizes the key statistical findings, including the average pre-test and post-test scores of students in terms of collaboration skills and academic performance.

Table 1: Summary of Student Collaboration and Academic Performance

Measurement	Pre-Test Average	Post-Test Average	Improvement (%)
Collaboration Skills Score	65.4	80.3	22.8%
Academic Performance Score	70.1	82.5	17.8%
Student Engagement (Survey Score)	3.6	4.2	16.7%

The data shows a significant improvement in both collaboration skills and academic performance after using ChatGPT. Collaboration skills saw an average increase of 22.8%, with students reporting better communication, task division, and problem-solving abilities in their group work (de Araujo dkk., 2024; Wu dkk., 2024). Academic performance also improved by an average of 17.8%, indicating that ChatGPT contributed positively to student learning. Additionally, the survey data reveals that student engagement, measured on a scale of 1 to 5, increased from an average of 3.6 to 4.2, suggesting that ChatGPT had a meaningful impact on students' motivation and involvement in group activities. These results underscore the role of ChatGPT in facilitating improved collaboration and learning outcomes.

Inferential analysis was conducted using paired sample t-tests to assess the significance of the changes in collaboration skills, academic performance, and engagement. The t-test results indicated that the improvements in collaboration skills ($t = 4.29$, $p < 0.001$) and academic performance ($t = 3.81$, $p < 0.001$) were statistically significant. This means that the use of ChatGPT as a virtual assistant had a measurable and positive effect on both collaboration and learning outcomes (Krauss dkk., 2024; Tien & Van Huong, 2024). The improvement in student engagement was also significant ($t = 4.02$, $p < 0.001$), suggesting that the platform contributed to a more engaging and interactive learning experience. These statistical findings support the hypothesis that ChatGPT positively influences student collaboration and performance in academic tasks.

The relationship between collaboration skills, academic performance, and engagement was explored using correlation analysis. A strong positive correlation was found between collaboration skills and academic performance ($r = 0.74$, $p < 0.01$), indicating that improvements in student collaboration were closely linked to better academic outcomes. Additionally, a moderate positive correlation ($r = 0.63$, $p < 0.01$) was found between engagement and both collaboration skills and academic performance, further emphasizing the interconnected nature of these factors. (Cooper, 2024; Vatsavai & Mantena, 2024) The data suggests that students who were more engaged with ChatGPT's collaborative features also demonstrated higher levels of academic achievement and stronger collaboration skills. This relationship highlights the importance of engagement in driving both collaboration and performance in group learning tasks.

In a case study conducted in one of the participating groups, a group of five students working on a project about climate change used ChatGPT to assist with research, task

division, and the development of their final presentation (Marques dkk., 2024; Rocha A. & Vaseashta A., 2025). The group faced initial challenges in communication, with some students struggling to contribute equally. After introducing ChatGPT as a collaborative tool, the students began to interact more effectively, using ChatGPT to clarify doubts, structure their research, and communicate their ideas. The group's collaboration score improved from 62 to 84, and their academic performance on the project increased from 70 to 85. Students reported in interviews that ChatGPT provided clear instructions, generated ideas, and acted as a mediator when conflicts arose. This case study illustrates how ChatGPT facilitated better group communication and task management, leading to higher collaboration and better academic outcomes.

The case study data supports the broader findings of the study, showing that ChatGPT played a crucial role in improving both collaboration and academic performance. In particular, the students in this group noted that the platform helped them stay organized, provided continuous feedback, and encouraged equal participation from all members (Concannon & Tomalin, 2024; Kakar dkk., 2024). These observations suggest that ChatGPT not only enhanced task efficiency but also fostered a collaborative and supportive environment, helping students develop both academic and interpersonal skills. The case study exemplifies how ChatGPT can be a valuable tool for mediating group dynamics and supporting students in collaborative tasks, enhancing their overall learning experience.

In summary, the results of this study show that ChatGPT can significantly improve student collaboration and academic performance. The statistical analyses confirm that the use of ChatGPT positively impacted collaboration skills, academic outcomes, and student engagement. The strong correlation between collaboration and performance further highlights the importance of fostering collaboration in academic settings. The case study provides a practical example of how ChatGPT can enhance communication, task management, and problem-solving among students. These findings suggest that AI-powered virtual assistants like ChatGPT have great potential to support and enhance collaborative learning, offering a promising tool for educators seeking to improve student engagement and outcomes in group-based activities.

The results of this study indicate that ChatGPT, as a virtual assistant, significantly enhanced both student collaboration and academic performance. Students demonstrated an improvement in collaboration skills, with scores increasing by an average of 22.8%. Academic performance also saw a notable rise of 17.8%. Additionally, student engagement increased, as reflected in survey responses that showed a boost in involvement during group tasks. These findings suggest that the use of ChatGPT in collaborative learning activities fostered better communication, task management, and overall group dynamics, contributing positively to student performance.

Comparing these findings with previous research reveals some key similarities and differences. Previous studies have highlighted the benefits of AI-driven tools for personalized learning and student engagement. For example, research by Liu et al. (2021) demonstrated how AI can enhance individual learning experiences by providing

personalized feedback and support. However, the current study distinguishes itself by focusing specifically on how AI, in the form of ChatGPT, can be used to facilitate collaboration in group settings. While many studies have focused on the use of AI in individual learning contexts, there is limited research on its role in promoting group interaction and collaboration. The results of this study fill this gap by providing empirical evidence that ChatGPT can enhance the collaborative learning experience, an area that has been less explored in the existing literature.

The findings of this study reflect a broader shift toward integrating AI technologies into collaborative learning environments. The improvements observed in collaboration and academic performance signal a significant potential for AI tools like ChatGPT to transform how students interact in group tasks. It suggests that students may benefit not only from individual learning support but also from the collaborative capabilities of AI. As traditional learning methods struggle to foster effective collaboration, AI presents a promising alternative that can help bridge gaps in communication and cooperation among students. These results are a clear indication that virtual assistants like ChatGPT can enhance the overall learning experience by supporting students in managing group dynamics and facilitating productive collaboration.

The implications of these findings are far-reaching for educators and policymakers. The use of AI to enhance collaboration in educational settings could provide an effective solution to longstanding challenges such as unequal participation and communication barriers in group work. By incorporating AI tools like ChatGPT, educators can foster a more inclusive and interactive learning environment, where all students can actively engage in the learning process. This can lead to improved academic outcomes and better development of collaboration skills, which are essential in today's increasingly collaborative and digital work environments. Additionally, this research highlights the importance of integrating AI into educational practice in a way that supports group learning, making it relevant for future educational technologies designed to enhance student interaction and teamwork.

The results of this study are consistent with the hypothesis that AI-powered virtual assistants can positively influence student collaboration. ChatGPT's ability to assist students with task management, provide real-time feedback, and facilitate communication likely contributed to the improved group dynamics observed in the study. These outcomes suggest that AI technologies can enhance the collaborative process by making communication more efficient, helping students stay organized, and offering immediate assistance when needed. Moreover, the increased engagement levels highlight that students find AI tools like ChatGPT to be motivating and useful in collaborative settings. This outcome is likely due to the interactive nature of AI, which encourages active participation by providing personalized support and feedback in real time.

Looking ahead, future research should explore the long-term effects of using AI in collaborative learning. It is crucial to assess whether the improvements observed in this study are sustained over time and whether AI tools can continue to enhance collaboration and academic performance in more complex and varied learning environments. Further

studies should also investigate how different types of AI, such as natural language processing tools, can be integrated into diverse group tasks across various subjects. Additionally, the role of educators in facilitating the use of AI tools like ChatGPT should be explored, as teacher involvement may further impact the success of AI integration in collaboration. These directions will help refine and expand the application of AI in collaborative learning, ensuring its continued relevance and effectiveness in education.

CONCLUSION

The most significant finding of this research is that ChatGPT, as a virtual assistant, significantly enhances student collaboration by improving communication, task division, and problem-solving within group activities. This study shows that the integration of an AI-powered assistant like ChatGPT can lead to notable improvements in group dynamics, increasing overall group engagement and boosting academic performance. The results suggest that ChatGPT is not only capable of providing personalized support to individual students but also plays an active role in facilitating collaborative interactions among group members, making it a valuable tool for promoting effective teamwork in academic settings.

This research contributes to the field of educational technology by offering a novel perspective on the application of AI in collaborative learning environments. Unlike previous studies that have mainly focused on the role of AI in personalized learning for individual students, this study highlights how AI can actively support group work and collaboration. The methodological approach, which combines both quantitative assessments of academic performance and qualitative feedback on group collaboration, provides a comprehensive view of how AI can impact the social and cognitive aspects of learning. The findings offer valuable insights into how AI tools like ChatGPT can be designed to enhance collaboration and facilitate more interactive, supportive learning experiences in group settings.

A limitation of this study is the relatively short duration of the intervention, which lasted only four weeks. This limited timeframe may not have fully captured the long-term effects of using ChatGPT in student collaboration. Additionally, the study's sample size, while adequate for an initial assessment, may not fully represent the diversity of student experiences across different educational contexts. Future research should extend the duration of the intervention and explore the sustained impact of ChatGPT on student collaboration over a longer period. Additionally, further studies should involve a larger and more varied sample of students across different academic disciplines, which would provide a more comprehensive understanding of how ChatGPT can support collaborative learning in a range of educational settings.

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