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Benefits of AI chatbots and engagement of senior high school students in Divine Word College of San Jose

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Abstract

Artificial Intelligence (AI) chatbot usage is becoming increasingly common in schools, as students today are digital natives accustomed to instant access to information and personalized experiences of modern technology. This descriptive correlational design determined the level of benefits of using AI chatbots and their significant relationship to student engagement. The adapted questionnaires were distributed to 206 respondents from Divine Word College of San Jose senior high school department, representing diverse academic tracks. This study revealed that the students have a moderate agreement regarding the benefits of using AI chatbots; moreover, a high degree of student engagement was revealed in student engagement. A significant relationship exists between the perceived benefits of AI chatbots and students' engagement levels. As students perceive greater benefits from using AI chatbots, their engagement level also increases, highlighting the potential of these tools to foster active participation and meaningful interactions in the learning process. This study provides insight into the benefits of using AI chatbots and student engagement of senior high school students. This study recommends that policymakers and administrators address potential challenges, such as data privacy and digital equity, to create a supportive environment for the widespread adoption of AI chatbots in education. Future researchers may also explore and study the specific school activities in which students are getting more engaged in using AI chatbots in an educational context.

Keywords: benefits of AI chatbots, student engagement, artificial intelligence, modern technology, learning process

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1. Introduction

The education landscape is profoundly transforming in a century marked by rapid technological advancements. Artificial Intelligence (AI) chatbot usage is becoming increasingly common in schools; empirical research has been conducted to investigate the benefits of using AI chatbots and student engagement due to their rising popularity, as stated by Wu & Yu (2023). Educational institutions, including Divine Word College of San Jose (DWCSJ), adapt to the demands of the 21st century, and it becomes imperative to investigate the benefits of AI chatbots on education. According to Ait Baha et al. (2023), using chatbots in the classroom can significantly improve students' engagement by letting them study at their own pace with less stress, saving time and keeping them engaged. Today, students are digital natives, accustomed to the instant access to information and personalized experiences of modern technology. In this context, AI chatbots represent a cutting-edge solution to address the evolving needs of learners. AI systems can assess students' learning preferences and skills and offer tailored advice and support to assist students' success. A more fair and inclusive education can be achieved by using AI technologies, as observed by Kooli (2023). By leveraging the power of AI and natural language processing, chatbots can engage students in meaningful conversations, answer questions, and offer guidance on a wide range of educational topics, all in real time.

Rapid advancements in AI and machine learning have brought attention to the potential for unintended and harmful behaviors in AI systems, termed "accidents," as mentioned by the paper of Amodei et al. (2016). This study seeks to explore the deployment of AI chatbots among students, aiming to learn about their potential advantages. Recognizing the intricacies of integrating AI chatbots into educational practices, the study acknowledges the need for a comprehensive understanding of technological capabilities and considerations. Employing quantitative research methods, this investigation aims to provide a nuanced perspective on the multifaceted dimensions of AI chatbot implementation. By conducting this research within the specific context of Divine Word College of San Jose, the study aims to significantly contribute to the broader discourse on the benefits of AI chatbots in education. Beyond informing educational policy and practice, the research aspires to catalyze fostering a more dynamic and effective learning environment. Through rigorous investigation and analysis, the researchers aimed to empower educators and institutions to make well-informed decisions regarding utilizing AI chatbots, ultimately enhancing student engagement.

Statement of the Problem - This research investigated the benefits of AI chatbots and student engagement among senior high school students at Divine Word College of San Jose (DWCSJ). To address this inquiry, the following key questions guide the study: (1) What is the level of students' benefits of using AI chatbots in the senior high school department? (2) What is the level of senior high school students' engagement regarding the benefits of using AI chatbots? (3) Is there a significant relationship between the benefits of AI chatbots and the student engagement of the senior high school students in Divine Word College of San Jose Senior High School?

Significance of the Study - The findings of this study may provide valuable insights into the educational process, informing educational policy and practice. Moreover, this research sheds light on the role of technological infrastructure in the implementation and effectiveness of AI chatbots in education. This research has the potential to benefit various stakeholders in education, such as students; They may understand the use of AI chatbots as part of the learning process by uncovering how AI chatbots benefit their engagement and support learning; they may potentially improve academic achievement and inform best practices for integrating AI technology into education, benefiting both this specific study location and the broader educational community. This research may help teachers with innovative methods to leverage technology in their classrooms, allowing them to adapt and incorporate these tools into their teaching practices. Administrators can have a strong positive relationship

between the benefits of AI chatbots and student engagement, which can provide them insights into optimizing administrative processes, managing resources efficiently, and enhancing communication within the school. Parents can be better equipped to understand and address their children's educational needs. This heightened engagement may foster a collaborative relationship between parents and educators, ultimately contributing to the student's overall academic success and well-being at Divine Word College of San Jose. For future researchers, the findings of this study may serve as a valuable reference, offering empirical data and methodological insights specific to Divine Word College of San Jose Senior High School, guiding their investigations on the use of AI chatbots in educational contexts.

2. Methodology

Research Design - This study utilized a descriptive correlational approach to describe the benefits of AI chatbots and student engagement and to test the relationship between the independent and dependent variables.

Respondents of the Study - The respondents of this study were randomly chosen from 206 senior high school students out of a total population of 443 from the Divine Word College of San Jose Senior High School department. The respondents are selected from diverse academic tracks within the Divine Word College of San Jose Senior High School department, which includes 141 Science, Technology, Engineering, and Mathematics (STEM) students, 31 Accountancy, Business, and Management (ABM) students, and 34 Humanities and Social Sciences (HUMSS) students both from grades 11 and 12. The researchers used Slovin's formula with a 5% margin of error and a 95% confidence level to determine the sample size.

Research Instrument - This study utilized adapted questionnaires from Vanichvasin (2022) on the benefits of AI chatbots. Moreover, the researchers adapted Swargiary and Roy's (2024) questionnaires about student engagement. The adapted questionnaires were validated using expert validity with the assistance of their research adviser and experts in the field of research at Divine Word College of San Jose. They checked the applicability and appropriateness of each indicator in the instrument to the study's problem. The researchers incorporated the experts' comments and suggestions to refine the instrument.

Data Gathering Procedure - The researchers first asked the total population of the Divine Word College of San Jose senior high school department through a letter to the senior high school coordinator. The adapted and validated questionnaires were distributed personally to the senior high school students during each section's free time. The researchers collected the distributed questionnaires after two days so that they could read and understand the items carefully. The data gathered from answered questionnaires was checked, classified, tabulated in Excel, and analyzed according to the research design.

Statistical Treatment of the Data - Descriptive statistics using a weighted mean were used to measure the extent of the benefits of using AI chatbots and the level of students' engagement with these benefits. Moreover, Pearson correlational and regression analyses were applied to analyze the significant relationship between the variables.

Ethical Considerations - Conducting research requires careful consideration to avoid discrepancies throughout the process. The researchers ensured adherence to ethical considerations in this study. Researchers prioritized the participants' right to privacy and confidentiality regarding their information. Before administering the questionnaire, participants were given a thorough understanding of the research. Production transparency was upheld by maintaining comprehensive records of data collection procedures, including any modifications made during the study. Analytical transparency was ensured by clearly defining statistical methods, grounding interpretations in statistical significance and data support, demonstrating adherence to ethical standards, and fostering credibility in the study's findings and conclusions.

3. Results and Discussions

Table 1

Mean level of students benefits' of using AI chatbots

Indicators	Weighted Mean	Verbal Description
1. AI chatbots are comfortable to use as part of the learning process.	3.57	High Extent
2. AI chatbots provide accurate and timely responses.	3.33	Moderate Extent
3. AI chatbots are easy to use anytime and anywhere.	3.95	High Extent
4. AI chatbots can be used many times as preferred.	3.77	High Extent
5. AI chatbots provide content that is easy to understand and suit student's needs.	3.75	High Extent
6. AI chatbots provide responses immediately.	3.91	High Extent
7. AI chatbots provide efficient and time-effective approach to seeking academic support compared to traditional methods like use of textbooks or reference books.	3.69	High Extent
8. AI chatbots are effective tools for fostering independent learning and problem-solving skills.	3.25	Moderate Extent
9. AI chatbots help in organizing and managing academic tasks efficiently.	3.52	High Extent
10. AI chatbots effectively address specific learning needs and preferences of students.	3.47	Moderate Extent
Composite Mean	3.62	High Extent

Legend: 4.50-5.00-Very High Extent-3.50-4.49-High Extent; 2.50-3.49-Moderate Extent; 1.50-2.49-Low Extent;1.00-1.49-Very Low Extent

Table 1 shows the mean level of students' benefits' of using AI chatbots. The ten item indicators above recorded an overall mean of 3.62, which is within the high extent. This finding implies that Al chatbots are perceived as comfortable to use as part of the learning process, indicating that students find them user-friendly and accommodating within the educational environment. This also shows that the implementation of Al chatbots has contributed positively to the overall learning experience, fostering a more conducive and engaging atmosphere. While students generally perceive Al chatbots to provide accurate responses, the moderate extent of agreement regarding the timeliness of these responses suggests that there may be room for improvement in terms of responsiveness. Al chatbots must provide prompt and accurate assistance to enhance students' learning experiences effectively. The verbal description of the high extent to which students find Al chatbots easy to use anytime and anywhere (3.95), indicates that Al chatbots offer flexibility and convenience, allowing students to access academic support and resources seamlessly, regardless of time or location constraints. This aspect aligns well with the demands of modern education, where digital tools are expected to be readily available.

The finding that Al chatbots can be used often as preferred suggests that students perceive these tools as versatile and adaptable to their learning needs. This supports the study of Cowin (2021), who found that technologies align with the characteristics of contemporary students as digital natives. This reusability aspect contributes to the efficiency and effectiveness of Al chatbots in supporting students' academic endeavors, allowing them to engage with the technology repeatedly to reinforce their understanding of concepts or seek assistance as needed. This aligns with a study by Ait Baha et al. (2023) from a community college, which also found that AI chatbots positively influenced personalized learning and student engagement. Overall, the findings indicate a generally positive perception of Al chatbots among senior high school students regarding their benefits. The high ratings for indicators such as comfort, ease of accessibility, and reusability highlight the potential of Al chatbots to enhance the learning experience and support students' academic progress effectively. However, the moderate extent of agreement regarding the timeliness of responses suggests that there may be areas for

improvement in ensuring prompt and efficient assistance from Al chatbots. Educators and developers must consider these findings and continue refining AI chatbot systems to meet students' needs and expectations. Address any shortcomings identified, such as response time, and further capitalize on the strengths.

Table 2

Mean Level of Senior High School Students' engagement in terms of the Benefits of using AI Chatbots

Indicators	Weighted Mean	Verbal Description
1. The use of AI chatbots increases my interest in learning.	3.06	Moderate Extent
2. The use of AI chatbots helps me to stay focused during class activities.	2.79	Moderate Extent
3. The use of AI chatbots makes my learning experience more engaging	3.00	Moderate Extent
4. The use of AI chatbots improves my collaboration skills during group activities.	3.07	Moderate Extent
5. The use of AI chatbots motivates me to improve my learning outcomes.	3.14	Moderate Extent
6.. The use of AI chatbots helps me better understand complex concepts	3.52	High Extent
7. The use of AI chatbots in the classroom improves my overall performance.	3.23	Moderate Extent
8. The use of AI chatbots improves my learning confidence.	3.15	Moderate Extent
9. The use of AI chatbots helps me progress at my own pace.	3.23	Moderate Extent
10. The use of AI chatbots helps me address my learning gaps.	3.28	Moderate Extent
Composite Mean	3.15	Moderate Extent

Legend: 4.50-5.00-Very High Extent-3.50-4.49-High Extent; 2.50-3.49-Moderate Extent; 1.50-2.49-Low Extent;1.00-1.49-Very Low Extent

Table 2 shows the mean level of senior high school students' engagement in the benefits of using AI chatbots with a composite mean of 3.15, interpreted as a moderate extent. This means that using Al chatbots increases students' interest in learning, suggesting that while there is some positive impact, it may only be universally felt among some students. Students showed a moderate extent of focus during class activities with the assistance of Al chatbots. This finding indicates that while Al chatbots may contribute to maintaining focus to some extent, other factors may also influence students' engagement during class sessions. The moderate extent to which students perceive their learning experience to be more engaging with the use of Al chatbots explains that these tools have the potential to enrich the educational journey by providing interactive and dynamic learning opportunities. Students perceive a moderate improvement in collaboration skills during group activities with the assistance of AI chatbots, which indicates that these tools can facilitate cooperative learning experiences and promote teamwork. Students reported a moderate extent of motivation to improve their learning outcomes with the assistance of Al chatbots.

This finding underscores the potential of Al chatbots to serve as motivational tools, encouraging students to strive for academic excellence. This is supported by the study of Johnson et al. (2023) that AI chatbots influence students' engagement, highlighting that students interacting with AI exhibit a heightened level of engagement during problem-solving tasks and interactive learning scenarios. Students also reported a moderate improvement in their overall performance using Al chatbots in the classroom. This finding implies that Al chatbots contribute positively to students' academic achievements and success. The moderate extent to which students perceive an improvement in their learning confidence with the assistance of Al chatbots indicates that these tools can boost students' self-assurance and belief in their abilities.

Table 3

Correlation coefficient and p-value for hypothesis testing

Variables	Correlation Coefficient	Effect Size ($r^2 r^2$)	Critical value	t-value	*P-value*	Interpretation
Benefits of AI Chatbots→ Student Engagement	0.719	0.517	1.972	14.78	0.000	Highly Significant

Legend: p-value<0.01 Highly Significant ; p-value<0.05 Significant

Table 3 shows the statistical result of testing the relationship between the benefits of AI chatbots and student engagement. This reveals a strong positive correlation between the two identified variables. Moreover, a p-value of 0.000 (highly significant at P<0.01) indicates strong evidence against the null hypothesis. The researchers reject the null hypothesis, concluding that there is a significant relationship between the benefits of using AI chatbots and student engagement. Students feel more engaged when using AI chatbots, especially when learning difficult things. Researchers also found that students think AI chatbots are helpful because they're comfortable, easy to use, and can be used multiple times. AI chatbots help students understand things better and feel more confident about learning. This also proves that when students feel AI Chatbots are helpful, they tend to be more engaged in learning. Building upon established research in this field, Johnson et al. (2021) conducted an in-depth exploration of AI, such as ChatGPT's influence on students' engagement. Their comprehensive study highlighted that students interacting with ChatGPT exhibited heightened levels of engagement during problem-solving tasks and interactive learning scenarios. The conversational nature of ChatGPT fostered deeper interactions, positively impacting overall academic participation. Montenegro-Rueda et al. (2023) also corroborated these findings by emphasizing how ChatGPT facilitated personalized learning experiences, promoting active engagement among students. Their research showcased how the adaptive nature of ChatGPT encouraged students to delve enthusiastically into complex topics, resulting in enhanced engagement with course materials. This is supported by Garcia and Patel (2019), who also found the impact on students' active involvement and engagement within educational settings. Their study unveiled a positive correlation between students' interaction with AskAI and increased engagement levels. AskAI's capacity to stimulate deeper interactions and facilitate collaborative learning environments contributed significantly to students' heightened engagement with educational tasks.

4. Conclusions

Based on the findings, the following conclusions are drawn: students show a high extent of interest in the ten-item indicators of benefits in using AI chatbots. The moderate extent to which students perceive their learning experience to be more engaging with the use of Al chatbots revealed that these tools have the potential to enrich the educational journey by providing interactive and dynamic learning opportunities. A significant relationship exists between the perceived benefits of AI chatbots and students' engagement levels. As students perceive greater benefits from using AI chatbots, their engagement level also increases, highlighting the potential of these tools to foster active participation and meaningful interactions in the learning process.

Recommendations - In the conclusion from the findings, the following recommendations are made. Further research may be conducted to explore how the flexibility and convenience of AI chatbots can be maximized to support students in remote or underserved areas. Educators may incorporate AI chatbots as supplementary tools to traditional teaching methods, ensuring a balanced approach that caters to different learning styles and preferences. Policy-makers and administrators may address potential challenges, such as data privacy and digital equity, to create a supportive environment for the widespread adoption of AI chatbots in education. Future researchers may explore and study the specific school activities in which students are getting more engaged in using AI chatbots in

an educational context.

5. References

Ait Baha, T., El Hajji, M., Es-Saady, Y. & Fadili, H. (2023). The impact of an educational chatbot on student learning experience, *Education and Information Technologies*, 1-24. https://doi.org/10.1007/s10639-023-12166-w

Amodei, D., Olah, C., Steinhardt, J., Christiano, P., Schulman, J., & Mané, D. (2016). Concrete problems in AI safety. arXiv. https://doi.org/10.48550/arXiv.1606.06565

Cowin, J.(2021). The Fourth Industrial Revolution: Technology and Education. *Journal of Systemics, Cybernetics, and Informatics*, 19(8), 53-63.https://doi.org/10.54808/JSCI.19.08.53

Garcia, S. & Patel, R. (2019). AskAI's Influence on Students' Active Involvement and Engagement. *International Journal of Artificial Intelligence in Education,* 29(4), 512-527. http://hdl.handle.net/2429/86185

Johnson, D., Goodman, R., Patrinely, J., Stone, C., Zimmerman, E., Donald, R. & Wheless, L. (2021). Assessing the accuracy and reliability of AI-generated medical responses: An evaluation of the Chat-GPT model. *Research square.* https://doi:10.21203/rs.3.rs-2566942/v1

Johnson, R. D., Van Slyke, C. & Sarabadani, J. (2023). Generative Artificial Intelligence in Information Systems Education: Challenges, Consequences, and Responses. *Communications of the Association for Information Systems,* 53(1), 14.https://doi: 10.17705/1CAIS.05301

Kooli, C. (2023). Chatbots in education and research: A critical examination of ethical implications and solutions. Sustainability, 15(7), 5614. https://doi.org/10.3390/su15075614

Montenegro-Rueda, M., Fernández-Cerero, J., Fernández-Batanero, J.M. & López-Meneses, E. (2023). Impact of the Implementation of ChatGPT in Education: *A Systematic Review. Computers*, 12(8):153. https://doi.org/10.3390/computers12080153

Swargiary K., & Roy K., (2024). Transformative Impact of Artificial Intelligence in Education: A comprehensive analysis of Student and Teacher Perspectives. https://doi.org/10.13140/RG.2.2.18681.03685

Vanichvasin P. (2022). Impact of chatbots on student learning and satisfaction in the entrepreneurship education programme in the higher education context. *Canadian Center of Science and Education.* https://doi.org/10.5539/ies.v15n6p15

Wu, R., & Yu, Z. (2023). Do AI chatbots improve students learning outcomes? Evidence from a meta-analysis. *British Journal of Educational Technology*. https://doi.org/10.1111/bjet.13334