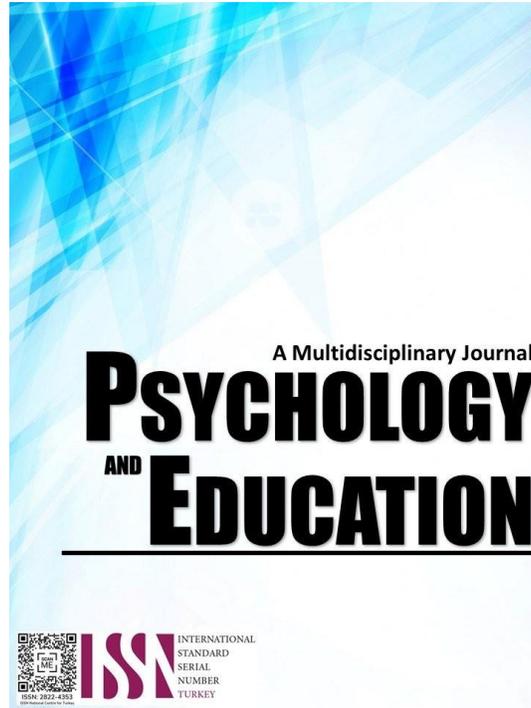


# THE USE OF AI TOOLS IN ENHANCING STUDENT LEARNING



## PSYCHOLOGY AND EDUCATION: A MULTIDISCIPLINARY JOURNAL

Volume: 37

Issue 4

Pages: 313-317

Document ID: 2025PEMJ3567

DOI: 10.70838/pemj.370401

Manuscript Accepted: 04-15-2025

## The Use of AI Tools in Enhancing Student Learning

Jomel M. Maborang,\* Princess Mae B. Pulintan, Geordan T. Javier,  
Derill Troy S. Tacang, Darin Jan C. Tindowen

For affiliations and correspondence, see the last page.

### Abstract

Artificial Intelligence (AI) tools in education have gained significant attention due to their potential to enhance learning experiences. This study aimed to determine the impact of AI tools in enhancing student learning in terms of engagement, interaction, behavioral intention, satisfaction, and academic performance. The study utilized a descriptive quantitative research design. There were 353 Junior High School students and 323 Senior High School Students who participated in the study and were selected through simple random sampling. The study was conducted in a Private Catholic Educational Institution. It was found out that integrating AI tools in education has a high impact in enhancing student learning. The study also highlighted that AI tools enhance student involvement in the classroom by fostering active participation and collaboration, while also facilitating meaningful interactions with academic content. Additionally, students express a strong intention to continue using AI tools due to their effectiveness in solving academic queries and improving learning outcomes. Integration and support will be essential to maximize the long-term benefits of AI in education and ensure sustained student success.

**Keywords:** *academic performance, Artificial Intelligence, Behavioral Intention*

### Introduction

The integration of Artificial Intelligence (AI) tools in education has gained significant attention due to their potential to enhance learning experiences. AI tools, including intelligent tutoring systems, adaptive learning platforms, and automated feedback systems, have become valuable resources for academic support, providing personalized assistance to students across various subjects. AI tools aim to improve academic performance, increase engagement, and support diverse learning styles (Abbas et al, 2023). As technology continues to evolve, the role of AI in supporting students academically is expected to expand, making it a critical area of research.

One of the primary benefits of AI tools is their ability to provide personalized learning experiences that can address the varying needs of students. Traditional classroom settings often struggle to cater to the unique learning paces and styles of individual students. AI tools, however, can dynamically adjust the difficulty level of tasks, offer real-time feedback, and provide supplementary resources to reinforce learning, making it easier for students to grasp complex concepts (Sutrisman, 2024). For example, AI-powered platforms in subjects like mathematics and language learning can offer immediate feedback, which is important for students' understanding and retention of material. This personalization not only improves learning outcomes but also increases student motivation and engagement, as they feel more supported in their learning journey.

Despite the advantages, the implementation of AI tools in education is not without challenges. Access to AI-based academic support is often limited by factors such as socioeconomic status, geographic location, and institutional resources, leading to unequal opportunities for students (Crompton, 2024). Students from disadvantaged backgrounds may have limited access to the technology and resources needed to fully benefit from AI tools, exacerbating existing educational inequalities. Additionally, there are concerns regarding the over-reliance on AI, as excessive use of technology may reduce face-to-face interactions between students and instructors, limiting the development of important social and communication skills (Kharis & Indriyani, 2024). Furthermore, issues related to data privacy, security, and the ethical use of student data must be addressed to ensure the responsible use of AI in academic environments (Huang, 2023).

Given the growing reliance on AI tools as academic support, it is essential to understand how students engage with these technologies and the impact they have on their academic outcomes. This study aims to explore the impact of AI tools in providing academic support to students. This research will contribute valuable insights into the role of AI in modern education by assessing how AI tools are integrated into educational settings and how students interact with them. Furthermore, it will provide recommendations for improving the use of AI tools to ensure that all students, regardless of background, can benefit from these advancements in educational technology.

### Research Questions

This study aimed to assess the impact of AI tools in enhancing student learning. Specifically, it sought to answer the following questions:

1. What is the profile of the respondents in terms of the following:
  - 1.1. Unit
  - 1.2. Sex
  - 1.3. Frequency of AI tool Usage
  - 1.4. Type of AI tools used

2. What is the impact of AI tools in enhancing student learning in terms of:
  - 2.1. Student's Engagement
  - 2.2. Student's Interaction
  - 2.3. Behavioral Intentions
  - 2.4. Student's Satisfaction
  - 2.5. Improve Student's Academic Performance

## Literature Review

### *Artificial Intelligence*

Artificial Intelligence (AI) refers to the development of computer systems capable of performing tasks that typically require human intelligence, such as reasoning, learning, and problem-solving. AI has shown sustainable growth and impact in the 21st century, becoming more open-minded and influenced by influential papers, researchers, and institution (Liu et.al, 2018).

AI has found applications across numerous industries, significantly enhancing efficiency and innovation. In healthcare, it can support physicians in making diagnoses, predicting disease spread, and customizing treatment paths (Secinaro et.al, 2021). It also plays in revolutionizing business by enabling data analytics, automation, pattern recognition, decision making, and content creation, improving operations and productivity across various areas (Walia, 2024). The transportation sector benefits from AI through autonomous vehicles that navigate safely and efficiently, while logistics operations utilize AI for route optimization and supply chain management (Wang, 2024). Additionally, AI-driven virtual assistants and chatbots also enhance customer service by providing instant, personalized responses to inquiries.

Despite its benefits, it also poses disadvantages. AI can lead to job loss and over-reliance on technology, particularly in sectors like healthcare and education, where it might replace certain roles or reduce the need for human intervention (Sahoo et.al, 2025). Additionally, the integration of AI in various sectors raises significant concerns about data privacy and security. AI systems often require access to large datasets, which can lead to potential breaches and misuse of sensitive information (Crain et.al, 2025). While AI offers significant benefits, such as improved efficiency and personalized services, it also presents challenges like job displacement, privacy concerns, and potential biases. Addressing these disadvantages requires careful consideration of ethical implications, transparency, and equitable access to AI technologies.

### *AI in Education*

Artificial Intelligence (AI) is increasingly being integrated into educational settings, transforming how teaching and learning occur. AI technologies, such as machine learning, natural language processing, and intelligent tutoring systems, are being used to enhance educational experiences by personalizing learning, improving administrative efficiency, and providing innovative teaching tools. AI is playing a pivotal role in making education more accessible, engaging, and effective. As AI continues to develop, its applications in education offer significant potential to reshape the learning environment, helping both students and educators achieve better outcomes (Chen et al., 2020; Harry, 2023).

One of the most significant contributions of AI in education is the ability to provide personalized learning experiences. AI can adapt to educational content to meet the specific needs of individual students, allowing them to learn at their own pace and according to their learning preferences. This personalization can improve student engagement and academic performance by offering tailored resources, feedback, and learning pathways (Chen et al., 2020).

Additionally, AI-driven systems like intelligent tutoring systems (ITS) and chatbots provide students with real-time feedback and support, assisting with everything from homework help to conceptual understanding. Furthermore, AI systems can automate grading and assessments, reducing the burden on educators and providing consistent, unbiased feedback to students (Zawacki-Richter et al., 2019).

Despite its benefits, the integration of AI in education raises several concerns, particularly around data privacy, security, and ethical use. Since AI relies on vast amounts of student data to deliver personalized content and feedback, ensuring that student information is protected from misuse is a critical challenge (Berendt et al., 2020).

AI systems can also inadvertently perpetuate biases present in the data they are trained on, leading to unfair or discriminatory outcomes. It is essential to design AI applications in education that are transparent, unbiased, and ethical, ensuring they are fair to all students and do not perpetuate existing inequalities (Wang, 2024). Addressing these issues will require continued research and collaboration among educators, policymakers, and AI developers to create systems that prioritize student well-being and privacy while maximizing the potential of AI to enhance learning.

AI holds immense potential to revolutionize education by enabling personalized learning experiences, improving efficiency, and providing innovative teaching tools. However, challenges such as privacy concerns, bias, and the ethical use of AI must be carefully addressed to fully realize its benefits. The future of AI in education will depend on ongoing interdisciplinary collaboration and the development of ethical frameworks to ensure that AI is used responsibly and effectively in educational settings.

## Methodology

### Research Design

The research utilized a descriptive quantitative research design to determine the impact of AI tools in enhancing student learning

### Respondents

The respondents of the study were the 353 Junior High School students and 323 Senior High School Students from a Private Catholic Institution.

### Instrument

The study utilized a questionnaire as its data gathering tool. It was adopted in the study of Khairuddin et.al (2024). It was divided into two parts. Part I contains the profile of the respondents and Part II consists of 20 items on the use of AI tools in enhancing student learning.

### Procedure

The researchers asked permission from the Senior Director of the University Research and Innovation Office for the conduct of the study. After the permission is granted, the researcher will send a letter to the principal of the Basic Education School in administering the questionnaire through google form. The researcher will also ask permission from the advisers to facilitate and supervise the conduct of the questionnaire. After the data will be gathered, it was analyzed.

### Ethical Considerations

The respondents received a detailed briefing and key information about the objective of the study before it was conducted. The respondents signed the informed consent to show transparency in participating in the study. In order to guarantee anonymity, secrecy, and avoidance of potential harm, all information was held and handled with utmost confidentiality in accordance with RA 10173 or the Data Privacy Act.

## Results and Discussion

This section presents the findings according to the study's research questions. To determine the impact of AI tools in enhancing student learning, mean was used. This part is composed of the different tables including the profile variables and the impact of AI tools in enhancing tools in student learning.

Table 1. *Characteristics of the Respondents*

<i>Characteristics</i>	<i>Categories</i>	<i>Frequency</i>	<i>Percentage</i>
Unit	Junior High School	353	52.22
	Senior High School	323	47.78
	Total	676	100.00
Sex	Male	240	35.50
	Female	436	64.50
	Total	676	100.00
Frequency of AI tool usage	Daily	163	24.11
	Weekly	316	46.75
	Monthly	70	10.36
	Rarely	127	18.78
	Total	676	100.00
Type of AI tools used	ChatGPT	458	
	Canva	354	
	Grammarly	349	
	Meta AI	120	
	Quillbot	243	
	Brainly	153	
	Quizlet	80	
	Google Translate	121	
	Duo Lingo	78	

Table 2. *Impact of AI in Enhancing Student Learning*

<i>Categories</i>	<i>Mean</i>		<i>Overall</i>	<i>Interpretation</i>
	<i>Junior High</i>	<i>Senior High</i>		
Students' Engagement	3.08	3.17	3.13	High
Students' Interaction	3.03	3.17	3.10	High
Behavioral Intentions	2.79	2.99	2.89	High
Student's Satisfaction	2.99	3.12	3.06	High

Improve Students' Academic Performance	3.05	3.16	3.11	High
		Overall Mean	3.06	High

The research provides valuable insights into the integration of AI tools in students' learning experiences, focusing on various aspects such as engagement, interaction, behavioral intentions, satisfaction, and academic performance. The data gathered from respondents—comprising both Junior and Senior High School students—demonstrates how AI tools are increasingly becoming part of their educational routines. Respondents were primarily female students, and a significant portion of them reported regular use of AI tools, with many engaging with them on a weekly basis. A smaller group of students used AI tools daily or infrequently. This shows that AI tools are widely adopted in the student community, with a noticeable trend toward regular, though not necessarily daily, usage. Popular AI tools included platforms for writing assistance, content creation, and grammar checking, underscoring the diverse ways in which AI is supporting various aspects of student learning.

One of the most significant findings of this research is the positive impact of AI tools on student engagement. Both Junior and Senior High School students reported a high level of involvement in classroom activities when AI tools were incorporated into the learning process. This aligns with existing research, such as that of Chen et al. (2020), which suggests that AI can enhance student motivation and engagement. By enabling personalized learning experiences, AI tools contribute to a more interactive and participatory learning environment. The tools allow for individualized support, which keeps students active in the learning process, thereby improving their engagement levels. AI tools also facilitated better interaction between students and academic content. Students felt comfortable using AI tools to seek information, ask questions, and engage in real-time feedback. This seamless communication not only boosts engagement but also deepens learning by providing instant support when students need it, helping them stay on track with their academic goals. Salameh (2025) highlights that AI's capacity for real-time feedback promotes deeper learning, and the research findings in this study support that notion. The high level of interaction facilitated by AI tools is crucial for fostering an environment where students can explore course content more thoroughly.

Behavioral intentions to continue using AI tools were generally positive, with students expressing a strong commitment to using these tools regularly for academic queries and recommending them to others. Although these intentions were slightly lower than the reported engagement and interaction levels, they still indicate a strong sense of utility and motivation to use AI tools in the future. This suggests that AI tools have successfully embedded themselves into students' academic routines. However, the slightly lower behavioral intention could indicate a need for continued support and integration to ensure their long-term adoption, as noted by Fošner (2024). The research also found that students were highly satisfied with the use of AI tools in their learning processes. They reported that AI tools improved the efficiency of their study interactions, making learning more enjoyable and effective. This finding echoes the work of Wang (2024), who argued that AI tools contribute to more effective learning environments by enhancing students' ability to gather and construct knowledge. The positive impact on satisfaction demonstrates that students not only find AI tools useful but also view them as an important factor in enhancing their overall educational experience.

Finally, the research highlights the role of AI tools in improving students' academic performance. The data suggests that AI tools contribute to higher levels of creativity, knowledge retention, and learning effectiveness. AI systems can adapt to individual learning needs, providing tailored content and facilitating problem-solving, which helps students perform better academically. This aligns with research by Xu et al. (2021), which emphasizes the positive effects of AI-driven systems on academic outcomes. By offering personalized feedback and learning experiences, AI tools support students in achieving better academic results. In summary, the research indicates that AI tools have a substantial and positive impact on students' engagement, interaction, satisfaction, and academic performance. The data suggests that AI tools are effectively integrated into students' learning routines and are enhancing various aspects of their educational experience. As the use of AI in education continues to grow, the findings of this study support the broader integration of AI technologies into classrooms, highlighting their potential to foster a more interactive, personalized, and effective learning environment. Future research and educational initiatives should continue to focus on maximizing the benefits of AI tools to ensure their sustained and meaningful impact on student learning.

## Conclusions

The integration of AI tools in education has shown a significant positive impact on various aspects of student learning, including engagement, interaction, satisfaction, and academic performance. The data highlights that AI tools enhance student involvement in the classroom by fostering active participation and collaboration, while also facilitating meaningful interactions with academic content. Additionally, students express a strong intention to continue using AI tools due to their effectiveness in solving academic queries and improving learning outcomes. Despite minor variations in behavioral intentions, the overall impact of AI on student learning is clear, suggesting that AI tools are an invaluable asset in modern education. Therefore, integration and support will be essential to maximize the long-term benefits of AI in education and ensure sustained student success.

## References

Abbas, N., Ali, I., Manzoor, R., Hussain, T., & Hussain, M. (2023). Role of Artificial Intelligence Tools in Enhancing Students' Educational Performance at Higher Levels. Aug-Sept 2023. <https://doi.org/10.55529/jaimltn.35.36.49>.

- Berendt, B., Littlejohn, A., & Blakemore, M. (2020). AI in education: learner choice and fundamental rights. *Learning, Media and Technology*, 45, 312 - 324. <https://doi.org/10.1080/17439884.2020.1786399>.
- Chen, L., Chen, P., & Lin, Z. (2020). Artificial Intelligence in Education: A Review. *IEEE Access*, 8, 75264-75278. <https://doi.org/10.1109/ACCESS.2020.2988510>.
- Crain, C., Ewing, A., Billy, I., & Anush, H. (2025). The advantages and disadvantages of AI in higher education. *The Business and Management Review*. <https://doi.org/10.24052/bmr/v15nu03/art-16>.
- Crompton, H., Edmett, A., Ichaporia, N., & Burke, D. (2024). AI and English language teaching: Affordances and challenges. *British Journal of Educational Technology*. <https://doi.org/10.1111/bjet.13460>.
- Fošner, A. (2024). University Students' Attitudes and Perceptions towards AI Tools: Implications for Sustainable Educational Practices. *Sustainability*. <https://doi.org/10.3390/su16198668>.
- Harry, A. (2023). Role of AI in Education. *Interdisciplinary Journal and Hummunity (INJURITY)*. <https://doi.org/10.58631/injurity.v2i3.52>.
- Huang, L. (2023). Ethics of Artificial Intelligence in Education: Student Privacy and Data Protection. *Science Insights Education Frontiers*. <https://doi.org/10.15354/sief.23.re202>.
- Kharis, S., & Indriyani, A. (2024). Analyzing Social and Psychological Impacts: Shifting Student Interaction from Teachers to ChatGPT in the Learning Process. *EDUKATIF : JURNAL ILMU PENDIDIKAN*. <https://doi.org/10.31004/edukatif.v6i5.7109>.
- Liu, J., Kong, X., Xia, F., Bai, X., Wang, L., Qing, Q., & Lee, I. (2018). Artificial Intelligence in the 21st Century. *IEEE Access*, 6, 34403-34421. <https://doi.org/10.1109/ACCESS.2018.2819688>.
- Sahoo, R., Sahoo, K., Negi, S., Baliarsingh, S., Panda, B., & Pati, S. (2025). Health professionals' perspectives on the use of Artificial Intelligence in healthcare: A systematic review.. *Patient education and counseling*, 134, 108680 .
- Salameh, W. (2025). Exploring the impact of AI-driven real-time feedback systems on learner engagement and adaptive content delivery in education. *International Journal of Science and Research Archive*. <https://doi.org/10.30574/ijsra.2025.14.2.0299>.
- Secinaro, S., Calandra, D., Secinaro, A., Muthurangu, V., & Biancone, P. (2021). The role of artificial intelligence in healthcare: a structured literature review. *BMC Medical Informatics and Decision Making*, 21. <https://doi.org/10.1186/s12911-021-01488-9>.
- Sutrisman, H., Simanjuntak, R., Prihartanto, A., & Kusumo, B. (2024). The Impact of Using AI in Learning on Understanding of Material by Young Students. *International Journal of Educational Research*. <https://doi.org/10.62951/ijer.v1i3.43>.
- Walia, P. (2024). Role and Application of Artificial Intelligence in Business. *Shodh Sari-An International Multidisciplinary Journal*. <https://doi.org/10.59231/sari7700>.
- Wang, S. (2024). Artificial Intelligence in Transportation. *Journal of Advances in Engineering and Technology*. <https://doi.org/10.62177/jaet.v1i3.98>.
- Xu, W., Meng, J., Raja, S., & Priya, M. (2021). Artificial intelligence in constructing personalized and accurate feedback systems for students. *Int. J. Model. Simul. Sci. Comput.*, 14, 2341001:1-2341001:21. <https://doi.org/10.1142/s1793962323410015>.
- Zawacki-Richter, O., Marín, V., Bond, M., & Gouverneur, F. (2019). Systematic review of research on artificial intelligence applications in higher education – where are the educators?. *International Journal of Educational Technology in Higher Education*, 16. <https://doi.org/10.1186/s41239-019-0171-0>.

## Affiliations and Corresponding Information

### **Jomel M. Maborang**

University of Saint Louis Tuguegarao – Philippines

### **Princess Mae B. Pulintan**

University of Saint Louis Tuguegarao – Philippines

### **Geordan T. Javier**

University of Saint Louis Tuguegarao – Philippines

### **Derill Troy S. Tacang**

University of Saint Louis Tuguegarao – Philippines

### **Darin Jan C. Tindowen**

University of Saint Louis Tuguegarao – Philippines