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Assessing attitudes and perceived usefulness of Artificial Intelligence in Science learning

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Abstract

Aim: This study aimed to assess junior high school students' attitudes toward artificial intelligence (AI) and their perceived usefulness of AI in science learning. Specifically, it sought to identify the most commonly used AI tools in science learning, determine students' attitudes toward AI, evaluate their perceived usefulness of AI, examine students' academic performance in science, and analyze the relationships among these variables.

Methodology: The study employed a descriptive–correlational research design involving 246 junior high school students from Dupax Del Sur National High School. Data were collected using a self-developed survey questionnaire that was reviewed and validated by four expert science teachers. Statistical analyses included frequency and percentage, mean and standard deviation, and Pearson's *r* to determine relationships among variables.

Results: Findings revealed that ChatGPT and Cici were the most commonly used AI tools in science learning. Students demonstrated a generally neutral attitude toward AI, while their perceived usefulness of AI in science learning was rated as useful. Students' academic performance in science was at a Very Satisfactory level. A significant relationship was found between students' attitudes toward AI and their perceived usefulness of AI in science learning. Moreover, students' attitudes toward AI showed a very weak but statistically significant negative relationship with academic performance, while perceived usefulness was not significantly related to academic performance.

Conclusion: The study concludes that more positive attitudes toward AI are associated with higher perceived usefulness; however, positive attitudes alone may lead to overreliance on AI when not properly guided. Awareness of AI's benefits is insufficient to improve academic performance without structured and responsible use. These findings underscore the need for guided, ethical, and pedagogically sound AI training programs to support effective integration of AI in science learning.

Keywords: *students' attitudes; perceived usefulness; artificial intelligence (AI); academic performance; science learning*

INTRODUCTION

The transformation of today's world is remarkable, and sophisticated inventions particularly artificial intelligence (AI) have significantly made daily life easier. Its applications extend across medicine, business, agriculture, and especially education, where it has gained increasing attention for its potential to enhance learning (Stryker & Kavlakoglu, 2024).

In the Philippine context, the Department of Education (DepEd) has acknowledged the potential of AI to enhance educational quality. Current policy directions encourage teacher education institutions to integrate AI-related content and instructional activities to ensure equitable access to digital learning opportunities (Serdenia et al., 2025). In line with this initiative, DepEd recognizes the transformative potential of AI and has established the Education Center for AI Research (E-CAIR) to promote AI-driven educational innovations. Although challenges such as disparities in digital infrastructure persist, the Philippine education system shows promising progress in AI integration to enhance teaching and learning practices (DepEd, 2025).

In the field of science education, AI has emerged as a valuable tool that supports both instruction and student learning. It offers numerous benefits in science classrooms, such as improving the learning environment, generating



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quizzes, assessing student outputs, and predicting academic performance (Jia et al., 2023). The Chatbots and simulations also help students understand complex scientific concepts by providing interactive and personalized learning opportunities (Almasri, 2024; Kim, 2021; Mangubat et al., 2025).

The integration of AI in education highlights the importance of evaluating students' attitudes toward its use, as these attitudes are influenced by their level of exposure, prior experiences, and the perceived relevance of AI tools in their studies. Equipping students with the knowledge and skills necessary to use AI tools effectively can help foster more positive attitudes toward AI (Milicevic et al., 2024; Sultana et al., 2025). Students' perceptions of AI likewise play a key role in enhancing learning and deepening their understanding of academic concepts (Pande et al., 2023). Another notable study conducted by Cervantes and Navarro (2025), students perceive AI tools as helpful and user-friendly and demonstrate a strong willingness to continue using them in their academic work, they also hold positive attitudes toward generative AI, recognizing its potential to enhance learning experiences. Similarly, Gonzales and Nabua (2025) found a significant association between students' perceptions of AI integration and academic performance, suggesting that positive attitudes toward AI may contribute to improved learning outcomes. These findings are consistent with research indicating that students in STEM fields tend to exhibit more favorable attitudes toward AI, which are reflected in stronger academic performance in science-related subjects (Hajam & Gahir, 2024; Kan'an, 2025). Moreover, ChatGPT has emerged as the most widely used AI tool, reflecting students' preference for applications that support writing and content development. Although students report that such tools are easy to use, they emphasize that effective AI utilization still requires active engagement and critical thinking (Cervantes & Navarro, 2025).

The Technology Acceptance Model (TAM) provides a solid theoretical foundation for understanding why students develop certain attitudes toward AI and how perceived usefulness influences their acceptance of AI-driven learning tools. According to TAM, students who view AI as useful and who feel positively toward it are more likely to use it effectively in their science learning. This results in better understanding, improved study habits, enhanced engagement, and ultimately, higher academic performance (Davis, 1989).

The significance of this study lies in its contribution to addressing gaps in understanding of junior high school students' attitudes toward AI, their perceived usefulness of AI in science learning, and the relationship of these factors to academic performance, particularly in public secondary schools. Although the literature on AI in education has expanded, including emerging Philippine-based studies, much of the existing research has focused on teachers, college students, or STEM-focused learners at the secondary level, with limited attention given to junior high school students. Furthermore, few studies in the Philippine context have examined the combined influence of students' attitudes toward AI and their perceived usefulness of AI on science achievement. This research gap is especially pronounced in rural and provincial settings, such as Dupax del Sur National High School, where access to AI tools, levels of exposure, and contextual conditions may differ substantially from those in urban schools. These limitations underscore the need for the present study. By applying the TAM, this study examines students' attitudes toward AI, perceived usefulness of AI in science learning, and how these factors relate to academic performance in science. Through examining these relationships, the study aims to generate ethical, reflective, and evidence-based insights that can inform the responsible integration of AI in education, support the development of targeted training programs, and ultimately contribute to improved science learning outcomes.

Therefore, this study aims to identify the most commonly used AI tools in science learning; assess students' attitudes toward the use of AI; evaluate the perceived usefulness of AI in science learning; and examine students' academic performance in science. In addition, the study investigates the relationship between students' attitudes toward AI and their perceived usefulness of AI, as well as how these factors are associated with their academic performance.

Review of Related Literature and Studies

The transformation of the modern world has been marked by remarkable technological advancements, particularly in artificial intelligence (AI). AI enabled machines to simulate human learning, comprehension, problem-solving, decision-making, creativity, and autonomy (Stryker & Kavlakoglu, 2024).

In the Philippines, the Department of Education (DepEd) recognizes the transformative potential of AI and has established the Education Center for AI Research to support AI-driven innovations in teaching and learning (DepEd, 2025). Globally, AI integration in education has gained significant attention due to its ability to personalize learning through adaptive platforms, real-time feedback, and simulations. These tools have been shown to enhance student engagement and comprehension, particularly in science education (Almusaed et al., 2023). Similarly, Almasri (2024) found that AI fosters active participation, strengthens understanding of scientific concepts, and boosts student



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motivation. Also, educators and administrators recognize AI as a powerful tool that can enhance instruction, simplify administrative work, and improve research productivity. While they acknowledge AI's potential to support learning and offer practical applications, they remain cautious of its limitations, particularly its inability to fully capture real-life experiences. Although teachers generally hold positive views toward AI, concerns about cheating, data fabrication, reduced creativity, and declining critical thinking skills persist (Giray et al., 2024).

The AI tools such as chatbots, simulations, and interactive platforms support science learning by accommodating individual needs, addressing cognitive challenges, and promoting personalized instructional practices (Mangubat et al., 2025). Studies also show that ChatGPT, Quillbot, and Grammarly are among the most frequently used tools, indicating students' preference for applications that support writing and content refinement (Cervantes & Navarro, 2025). Supporting this, Vieriu and Petrea (2025) revealed that 95.6% of students use AI for academic purposes, including tools like ChatGPT, Siri, and Google Assistant, which provide personalized learning opportunities and greater access to educational resources.

Furthermore, students generally hold positive attitudes toward AI in education. Herawati et al. (2024) found that many perceive AI as a tool that enhances learning experiences and broadens access to information. Attitudes toward AI are shaped by affective, cognitive, and behavioral components. Cervantes and Navarro (2025) further reported that students view AI tools as highly useful and easy to use, showing strong intent to continue utilizing them in their academic tasks. Additionally, students recognize AI's benefits in improving learning quality and providing continuous feedback, contributing to positive perceptions of AI-supported learning (Idroes et al., 2023). These positive attitudes often encourage ethical and responsible use of AI, as highlighted by Bianan et al. (2025). Another study by Gonzalez and Nabua (2025) indicated a correlation between students' attitudes toward AI integration and their academic performance, suggesting that favorable perceptions may positively influence learning outcomes. This aligns with the Technology Acceptance Model (TAM), which explains that perceived usefulness and positive attitudes increase the likelihood of effective AI use in learning. When students view AI as beneficial, they tend to develop better understanding, stronger engagement, and improved academic performance (Davis, 1989).

Despite these advantages, the integration of AI also presents challenges. Concerns include data privacy, ethical risks, excessive dependence on AI, reduced critical thinking, and the potential for inaccurate or biased information (Krvavica et al., 2025). Students acknowledge AI's efficiency but question its impact on learning quality and academic integrity, emphasizing the importance of responsible and balanced AI use in education (Fošner, 2024). Consequently, establishing a clear ethical framework is necessary to maximize AI's benefits while minimizing its risks. Addressing issues related to accuracy, cognitive engagement, and ethical practices is essential for effective and responsible AI adoption in learning environments (Vieriu & Petrea, 2025).

In the Philippine context, research on AI in education is expanding; however, most studies focus on higher education and senior high school settings. Limited research has explored AI use among junior high school students, especially in relation to science learning. Although some studies highlight AI's role in enhancing critical thinking and science process skills, insufficient attention has been given to its specific impact on science learning at the junior high school level (Rodrigo, 2024). To address these gaps, the present study seeks to identify the most commonly used AI tools in science learning, examine students' attitudes toward AI, determine the perceived usefulness of AI in science education, and assess the academic performance of junior high school students at Dupax Del Sur National High School. Understanding students' perspectives can provide valuable insights for developing a training program that promotes responsible AI use, ensures equitable access, and enhances science learning outcomes.

Conceptual Framework

The Technology Acceptance Model (TAM), developed by Davis (1989), is a well-established theoretical framework in information systems research that explains how users come to accept and adopt new technologies. The actual technology use is primarily determined by an individual's behavioral intention, which in turn is influenced by key cognitive and affective factors. As intention to use a technology strengthens, the likelihood of its adoption correspondingly increases (Scherer et al., 2019).

Within the TAM framework, attitudes toward AI reflect students' overall willingness to integrate AI into their learning activities and their perceptions of its educational value (Al-Rahmi et al., 2021). TAM highlights attitude as a critical determinant of technology acceptance, emphasizing that favorable attitudes significantly increase the probability of adoption. Students who hold positive attitudes toward AI may perceive it as a supportive tool that enhances learning efficiency and conceptual understanding, whereas those with negative attitudes may view it as a threat to autonomy or academic integrity (Alejandro et al., 2024). Another central construct of TAM is perceived usefulness, defined as the



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degree to which an individual believes that using a particular technology will enhance task performance, productivity, or goal attainment (Davis, 1989). Perceived usefulness has consistently been identified as one of the strongest predictors of technology acceptance. In the context of AI-assisted learning, Wang et al. (2021) demonstrated that students who perceived AI-powered personalized learning tools as useful were more likely to regard them as valuable components of their educational experience and to accept their integration into instructional practices.

The relationship between attitude toward AI and perceived usefulness of AI, Du et al. (2025) found that perceived usefulness positively influences users' attitudes, indicating that when students recognize tangible benefits from a system, they are more likely to develop favorable dispositions toward its use. Similarly, Vieriu and Petrea (2025) reported that students believe AI contribute positively to their academic performance in assessments, projects, and overall grades. Gonzales and Nabua (2025) likewise identified a significant association between students' attitudes toward AI integration and academic performance, suggesting that positive perceptions of AI may translate into improved learning outcomes.

The TAM informed variable selection by identifying students' attitudes toward AI and perceived usefulness of AI as the primary independent variables relevant to technology acceptance in science learning. These constructs were selected based on TAM's premise that positive attitudes and strong perceptions of usefulness increase the likelihood of technology adoption and effective utilization in educational settings. The survey questionnaire were also constructed based on TAM-based instruments and use the context of AI use in science education. The attitude scale measured students' positive or negative evaluations of AI integration in science learning, while the perceived usefulness scale assessed students' beliefs regarding the extent to which AI enhances their understanding of scientific concepts, learning efficiency, and academic performance. Additionally, TAM shaped data analysis and interpretation by serving as the analytical lens through which the relationships among attitudes toward AI, perceived usefulness, and academic performance were examined.

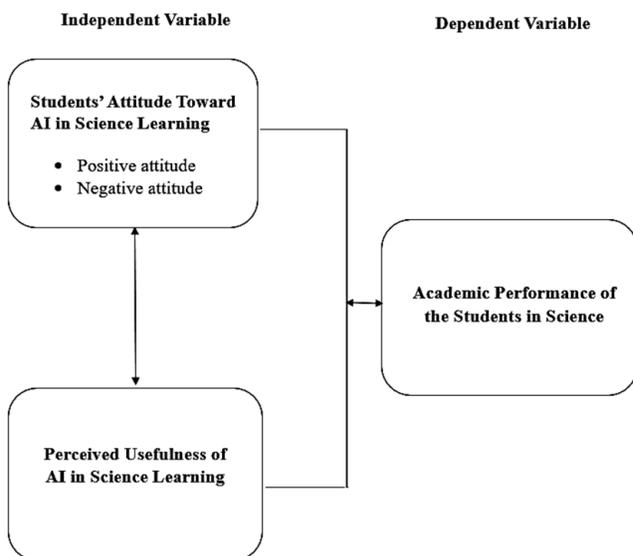


Figure 1. Conceptual framework of the study showing the relationship of the Independent and Dependent variables.

Figure 1 presents the conceptual framework of the study, which includes the independent variables students' attitudes toward AI in science learning (positive or negative) and perceived usefulness of AI in science learning and their potential influence on the dependent variable, academic performance of Junior High School students, as measured by their transmuted grades for the second quarter.



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Statement of the Problem

Artificial intelligence (AI) has become increasingly integrated into science education, providing students with easy access to digital tools that support learning, information processing, and academic tasks. While many students recognize the efficiency and usefulness of AI, existing studies have also raised concerns related to data privacy, ethical issues, excessive reliance on AI that may weaken critical thinking skills, the potential for inaccurate or biased information, and threats to academic integrity. Despite the growing body of research on AI in education, most empirical studies have focused on higher education and senior high school contexts, with limited attention given to junior high school learners, particularly in Philippine public schools.

This lack of localized and level-specific evidence presents a gap in understanding how junior high school students perceive AI, how useful they consider it in science learning, and how these perceptions relate to their academic performance. Without such understanding, schools may struggle to design appropriate interventions that promote responsible and ethical AI use. Addressing this gap is necessary to guide educators and policymakers in developing evidence-based training programs that support the effective, ethical, and meaningful integration of AI in junior high school science learning.

Research Objectives

General Objective

To assess students' attitudes toward artificial intelligence (AI) and their perceived usefulness of AI in science learning among junior high school students at Dupax Del Sur National High School, as a basis for proposing a training program that promotes the responsible use of AI in science learning.

Specific Objectives

1. To identify the most commonly used AI tools in science learning.
2. To determine the level of students' attitudes toward the use of AI in science learning.
3. To evaluate the level of students' perceived usefulness of AI in science learning.
4. To examine the level of students' academic performance in science.
5. To determine the relationship between students' attitudes toward AI and their perceived usefulness of AI in science learning.
6. To determine the relationship between students' attitudes toward AI, their perceived usefulness of AI, and their academic performance in science.

Research Questions

1. What are the most commonly used AI tools in science learning?
2. What is the level of students' attitudes toward the use of AI in science learning?
3. What is the level of students' perceived usefulness of AI in science learning?
4. What is the level of students' academic performance in science?
5. Is there a significant relationship between students' attitudes toward AI and their perceived usefulness of AI in science learning?
6. Is there a significant relationship between students' attitudes toward AI, their perceived usefulness of AI, and their academic performance in science?

Hypotheses

The following hypotheses were tested at the 0.05 level of significance:

Hypothesis 1

- H_{01} : There is no significant relationship between students' attitudes toward AI and their perceived usefulness of AI in science learning.
- H_{a1} : There is a significant relationship between students' attitudes toward AI and their perceived usefulness of AI in science learning.

Hypothesis 2

- H_{02} : There is no significant relationship between students' attitudes toward AI, their perceived usefulness of AI, and their academic performance in science.



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- H_{a2} : There is a significant relationship between students' attitudes toward AI, their perceived usefulness of AI, and their academic performance in science.

METHODS

Research Design

This study employed a descriptive–correlational research design. This quantitative approach was utilized to examine the relationships among variables without manipulating them. Using this design, the researchers were able to observe and analyze how two or more variables interact within their natural settings (Barooah, 2025). The primary purpose of correlational research is to determine the nature and strength of relationships among variables and to identify patterns that may be used to predict potential outcomes based on existing data. Accordingly, this research design was deemed appropriate for examining the relationships between students' attitudes toward AI, and their perceived usefulness of AI, as well as how these variables relate to students' academic performance in science.

Population and Sampling

The participants in this study were junior high school students enrolled at Dupax del Sur National High School. They were deliberately selected as participants based on the criterion that they were originally enrolled at the school and were not transferees. From a total population of 415 students, a sample of 246 respondents was selected using simple random sampling. This sampling technique ensures that each member of the population has an equal and independent chance of being included in the study, thereby reducing selection bias and enhancing the representativeness of the sample (Thomas, 2023).

The study was conducted at Dupax del Sur National High School, a public secondary school situated in a rural setting. This context provides a relevant and meaningful environment for examining students' attitudes toward AI and their perceived usefulness of AI in science learning, as rural schools often encounter distinct challenges and opportunities related to technology access and integration. Focusing on this setting allows the study to capture authentic student experiences with AI in science learning.

Instruments

The study employed a self-developed survey questionnaire anchored in the TAM (Davis, 1989). The instrument consisted of three sections: (1) demographic information, including age, sex, grade level, and second-quarter science performance; (2) commonly used AI tools in science learning; and (3) students' attitudes toward AI and perceived usefulness of AI in science learning, comprising 20 TAM-based items contextualized for science education.

Items in Sections II and III were rated using a five-point Likert scale ranging from *Strongly Agree* to *Strongly Disagree*. Content validity was established through expert review conducted by four junior high school science teachers with at least ten years of teaching experience and demonstrated expertise in science instruction and educational technology. A pilot test involving 30 students from another school was conducted, and reliability analysis using Cronbach's alpha yielded coefficients of 0.81 for the attitude scale and 0.88 for the perceived usefulness scale. These results indicate satisfactory internal consistency and confirm the instrument's suitability for the study.

Data Collection

Following the finalization of the research instrument, data collection was conducted using Google Forms as the primary survey platform. The study was conducted at Dupax del Sur National High School after securing formal permission from the school administration. Once approval was granted, the survey questionnaire was administered to the randomly selected Junior High School students.

The data collection was conducted during the second quarter of School Year 2024–2025. Participants were provided with sufficient time to complete the questionnaire to ensure thoughtful and accurate responses. Upon completion of data collection, all responses were systematically reviewed for completeness and consistency. The verified data were then organized, coded, and prepared for statistical analysis.

Treatment of Data

The collected data were coded using Microsoft Excel and analyzed with the SPSS. Descriptive statistics, including frequencies and percentages, were used to identify the AI tools most commonly used by students in science learning. Means and standard deviations were computed to determine the levels of students' attitudes toward AI and



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their perceived usefulness of AI in science learning. Pearson’s product–moment correlation coefficient (r) was employed to determine the relationships between students’ attitudes toward AI, perceived usefulness of AI, and academic performance in science. The results were presented in tables and figures to support clear interpretation of the findings.

Ethical Considerations

Ethical standards were strictly observed throughout the conduct of the study, particularly during the data collection process. The researchers ensured full compliance with the Data Privacy Act of 2012, thereby safeguarding the confidentiality, privacy, and security of all information collected from the student participants. Prior to data collection, permission was obtained from the school administration, and informed consent forms were distributed to all selected respondents. The purpose of the study, along with the rights of the participants, was clearly explained. Participants were informed that their involvement was entirely voluntary and that they could withdraw from the study at any time without penalty. To protect participants’ identities, all responses were treated as anonymous and confidential. Collected data were securely stored and made accessible only to the research team, ensuring that ethical principles of respect, confidentiality, and responsible data management were consistently upheld.

RESULTS and DISCUSSION

This section presents the tables showing the commonly used AI tools in science learning, the level of students’ attitudes toward AI, their perceived usefulness of AI in science learning, and students’ academic performance in science. It also examines the relationships between students’ attitudes toward AI and perceived usefulness of AI, as well as how these variables relate to students’ academic performance in science.

Profile of the Respondents on AI Tools Used in Science Learning

The table below presents the most commonly used AI tools used in science learning among the Junior High School students.

Table 1. Frequency and Percentage of AI Tools Used in Science Learning

AI Tools	Frequency	Percentage (%)
ChatGPT	143	36.11
Cici	104	26.26
Meta AI	70	17.68
Google Gemini	64	16.16
Others	15	3.80
Total	396	100 %

These results suggest that students tend to favor AI tools that offer conversational interfaces and immediate feedback, as these features may enhance conceptual understanding and support independent learning in science. The predominance of ChatGPT indicates a preference for platforms that facilitate explanations, problem-solving, and content clarification, thereby making science learning more accessible and engaging. The total frequency exceeded the number of respondents because students were permitted to select more than one AI tool used in science learning.

Furthermore, these findings are consistent with the studies of Cervantes and Navarro (2025) and Vieriu and Petrea (2025), which emphasize the widespread popularity of ChatGPT in educational settings. Their studies highlight that ChatGPT’s capacity to deliver personalized learning experiences and expand access to educational resources significantly contributes to its frequent use among learners.

Profile of the Respondents on the Level of Attitudes Toward the Use of AI in Science Learning

The table below presents the level of students’ attitudes toward the use of AI in science learning.

Table 2. Level of Students’ Attitudes Toward the Use of AI in Science Learning

Students’ Attitudes Toward the Use of AI in Science Learning	Mean	Standard Deviation	Qualitative Description
1. I think using AI tools in my science subject makes my learning effective and meaningful.	3.70	0.77	Positive Attitude



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2. I am concerned about ethical issues, data privacy, and transparency when using AI tools for my science schoolwork.	2.21	0.61	Negative Attitude
3.I find AI makes learning science easier by giving suggestions, feedback, and lessons that match my own pace and needs.	3.75	0.77	Positive Attitude
4.I believe AI cannot completely replace important aspects of science learning, such as hands-on experiments, creativity, and deep understanding.	2.29	1.02	Negative Attitude
5.I feel more motivated and interested in science when AI tools are part of my learning experience.	3.31	0.86	Neutral Attitude
6.I am concerned that relying on AI in science learning might decrease my effort to think critically or solve problems independently.	2.09	0.71	Negative Attitude
7.I experience more engagement and motivation in science when I use AI tools.	3.29	0.89	Neutral Attitude
8.I worry that AI tools could give inaccurate, biased, or misleading information in science.	2.09	0.69	Negative Attitude
9.I benefit from AI tools because they provide explanations, extra resources, or guided assistance when I study science.	3.78	0.75	Positive Attitude
10.I feel uneasy relying on AI because it might lower my confidence in using my own reasoning or doing original work.	2.15	0.69	Negative Attitude
Overall Mean	2.29	0.35	Neutral Attitude

Scale	Range	Qualitative Description
5	4.21-5.00	Very Positive Attitude
4	3.41- 4.20	Positive Attitude
3	2.61-3.40	Neutral Attitude
2	1.81-2.60	Negative Attitude
1	1.00-1.80	Very Negative Attitude

The findings indicate that students perceive AI as a supportive learning tool that enhances their understanding of science, particularly through explanations, personalized feedback, and access to supplementary learning resources. However, the overall neutral attitude observed in the quantitative results suggests that students are not fully convinced of the reliability of AI technologies. While they acknowledge several benefits of AI in science learning, they concurrently express reservations regarding its use. This may reflect limited experience or exposure to AI tools, as well as insufficient knowledge of how to effectively integrate these technologies into science learning.

A neutral attitude further implies that students are open to using AI but remain critical and selective in its application, underscoring the need for appropriate guidance, ethical awareness, and the responsible integration of AI in science education (Bianan et al., 2025). Concerns related to ethical issues, data privacy, overdependence, diminished critical thinking, and the potential for biased or inaccurate information are consistent with the findings of Krvavica et al. (2025), who reported similar apprehensions among learners. Although students recognize the efficiency of AI, their cautious stance aligns with Fošner's (2024) assertion that learners often question the implications of AI for learning quality and academic integrity. Consequently, the present findings support the recommendation of Vieriu and Petrea (2025) to establish clear ethical guidelines and responsible AI practices to ensure that AI enhances learning without undermining cognitive engagement or ethical standards.



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Profile of the Respondents on the Level of their Perceived Usefulness of AI in Science Learning

The table below presents the level of students' perceived usefulness of AI in science learning.

Table 3. Level of Students' Perceived Usefulness of AI in Science Learning

Students' Perceived Usefulness of AI in Science Learning	Mean	Standard Deviation	Qualitative Description
1.AI supports my understanding of difficult science topics by offering personalized feedback and customized learning materials.	3.70	0.81	Useful
2.AI tools help me work more efficiently, saving time when completing assignments and research tasks.	3.78	0.75	Useful
3.AI improves my academic performance by giving additional learning resources that support my science studies.	3.39	0.90	Moderately Useful
4.AI makes accessing relevant information and learning materials more accessible based on my academic needs.	3.54	0.75	Useful
5. AI provides immediate feedback that helps me improve my understanding of science topics.	3.68	0.78	Useful
6. AI helps me study more effectively by organizing information in a clear and understandable way.	3.60	0.82	Useful
7.AI tools make learning science quicker and more efficient compared to traditional methods.	3.30	0.92	Moderately Useful
8.AI tools keep me motivated and engaged while learning science.	3.37	0.89	Moderately Useful
9.AI improves my confidence in science learning by providing reliable information, clear communication, and real-time assistance.	3.49	0.82	Useful
10.AI supports my ongoing skill development and keeps me updated with the latest knowledge in science.	3.60	0.78	Useful
Overall Mean	3.54	0.57	Useful

Scale	Range	Qualitative Description
5	4.21-5.00	Very Useful
4	3.41- 4.20	Useful
3	2.61-3.40	Moderately Useful
2	1.81-2.60	Slightly Useful
1	1.00-1.80	Not Useful

The findings suggest that students view AI as a practical and helpful tool that supports efficiency, understanding, and access to learning resources in science. In particular, AI's strongest value lies in saving time, providing immediate feedback, and helping students understand complex scientific topics. Nevertheless, the relatively lower ratings related to motivation and academic performance imply that AI alone may not be sufficient to fully engage students or significantly boost achievement. This underscores the importance of integrating AI thoughtfully into science instruction.

These results are reliable with studies showing that AI tools such as chatbots, simulations, and interactive platforms support science learning by accommodating individual needs, addressing cognitive challenges, and promoting personalized instructional practices (Mangubat et al., 2025). Similarly, Almasri (2024) reported that AI fosters active participation, strengthens understanding of scientific concepts, and increases student motivation. And those students who perceived AI-powered personalized learning tools as more useful were more likely to accept and value them as integral resources in their educational experience (Wang et al., 2021).



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Profile of the Respondents on Academic Performance in Science

The table below presents the academic performance of students in the science subject.

Table 4. Level of Students' Academic Performance in Science

Performance Level	Frequency	Percentage %
Outstanding	110	44.7
Very Satisfactory	69	28.0
Satisfactory	42	17.1
Fairly Satisfactory	25	10.2
Did not meet expectations	0	0
Total	246	100%

Grade	Qualitative Description
90-100	Outstanding
85-89	Very Satisfactory
80-84	Satisfactory
75-79	Fairly Satisfactory
60-74	Did not meet expectations

The findings denote that students are generally performing well in science, with most achieving Outstanding performance. This suggests that the current teaching strategies, learning resources, and support systems are largely effective in helping students meet and even exceed academic expectations. Still, the presence of students in the Satisfactory and Fairly Satisfactory categories indicates the need for continued academic support. In particular, providing additional learning opportunities, such as introducing AI tools that can help explain complex science concepts, may further enhance students' understanding and performance. Although the absence of students who did not meet expectations reflects a positive learning environment, continuous monitoring and targeted interventions remain important to ensure that all students are supported in reaching higher levels of academic achievement in science.

These findings further suggest that innovative instructional tools, including AI, have the potential to support and enhance science learning outcomes. However, as noted by Rodrigo (2024), while several studies emphasize AI's role in improving critical thinking and science process skills, limited attention has been given to its specific impact on science learning at the junior high school level. The present results therefore highlight the importance of guiding students in the effective integration of AI into their science learning. By aligning classroom instruction with appropriate AI-supported strategies, educators may better address the diverse needs of students across performance levels and maximize the potential of AI to improve academic achievement in science.

Relationship between Students' Attitudes Toward AI and their Perceived Usefulness of AI in Science Learning

The table below presents the correlation between students' attitudes toward AI and their perceived usefulness of AI in science learning.

Table 5. Relationship Between Students' Attitudes Toward AI and Their Perceived Usefulness of AI in Science Learning

Perceived Usefulness of AI in Science Learning			
	Pearson's r	p-value Sig.(2-tailed)	Remark
Attitudes toward AI in Science Learning	0.524	<.001	Significant

The findings imply that students' attitudes toward AI play an important role in shaping how useful they believe AI is for their science learning. When students are open, comfortable, and positive about AI, they are more likely to view it as a helpful learning tool rather than a threat. Consequently, this highlights the importance of creating positive and supportive experiences with AI in science learning.

These findings are consistent with the TAM, which explains that users' attitudes and perceived usefulness significantly influence their acceptance and use of technology. According to Du et al. (2025), perceived usefulness has a positive effect on users' attitudes, suggesting that individuals who view a system as beneficial are more likely to



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develop favorable attitudes toward it. In this context, the moderate positive relationship found in the present study supports TAM's assertion that students who perceive AI as useful are more inclined to hold positive attitudes toward its use in learning science.

Relationship Between Students' Attitudes Toward AI and Their Perceived Usefulness of AI in Relation to Academic Performance in Science

Table 6. Relationship Between Students' Attitudes Toward AI and Their Perceived Usefulness of AI in Relation to Their Academic Performance in Science

	Academic Performance in Science		Remarks
	Pearson's r	p-value Sig. (2-tailed)	
Attitudes toward AI in Science Learning	-.139	.029	Significant
Perceived Usefulness of AI in Science Learning	-.052	.414	Not Significant

The findings revealed a very weak yet statistically significant negative relationship between students' attitudes toward AI and their academic performance ($r = -.139$). This result suggests that although students may be open to or enthusiastic about using AI, such attitudes are not necessarily associated with improved learning outcomes in science. This finding is consistent with the study of Gonzalez and Nabua (2025), who reported that students' attitudes toward AI integration are related to academic performance but emphasized that favorable perceptions alone do not automatically guarantee academic gains. In the present study, the negative direction of the relationship may reflect patterns of AI use in which positive attitudes are not accompanied by sufficient instructional guidance, potentially corresponding with reduced cognitive engagement in science learning.

Similarly, the non-significant relationship between perceived usefulness of AI and academic performance indicates that recognizing AI as useful does not necessarily correspond with better academic outcomes. This finding is consistent with Cervantes and Navarro (2025), who observed that although students often perceive AI tools as useful and easy to use, such perceptions are more closely associated with their intention to continue using AI rather than with measurable academic achievement. This pattern suggests that perceived usefulness may be associated with usage behavior without necessarily being linked to performance unless AI is effectively integrated into learning practices.

Furthermore, these results are consistent with the observations of Fošner (2024), who noted that students acknowledge the efficiency of AI while simultaneously questioning its implications for learning quality and academic integrity. Such concerns may help explain why perceived usefulness alone was not significantly related to academic performance in this study. In the absence of clear pedagogical guidance, students may engage with AI primarily for convenience rather than for deeper conceptual understanding, thereby limiting its educational value. In this regard, Vieriu and Petrea (2025) emphasized the importance of ethical frameworks, accuracy, and cognitive engagement in maximizing the educational value of AI in learning environments. The present findings are consistent with this perspective, indicating that students' attitudes and perceived usefulness of AI may need to be complemented by structured, ethical, and pedagogically grounded implementation to be meaningfully associated with academic performance.

Moreover, the results resonate with Rodrigo (2024), who highlighted that despite growing interest in AI's role in developing critical thinking and science process skills, limited research has examined its specific association with junior high school science learning. The weak relationships observed in this study suggest that the potential educational benefits of AI at this level may remain underutilized, possibly due to insufficient student knowledge and guidance regarding its appropriate use. While some studies report that students perceive AI as beneficial for examinations, projects, and overall grades (Vieriu & Petrea, 2025), the present findings emphasize that meaningful academic improvement is more closely associated with how effectively and responsibly AI is integrated into science learning rather than with attitudes or perceived usefulness alone.

Conclusions

This study examined students' attitudes toward AI and their perceived usefulness of AI in science learning. The results indicate that the most commonly used AI tools were ChatGPT, Cici, and Meta AI. This reflects students' preference for tools that provide conversational interfaces and immediate feedback, which may support understanding and independent learning. Overall, students' attitudes toward AI were neutral, indicating cautious acceptance. While



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students recognized AI as a supportive tool that aids comprehension through explanations, personalized feedback, and access to additional learning resources, they also expressed uncertainty regarding its reliability. This finding underscores the need for appropriate guidance, ethical awareness, and responsible integration of AI in science education.

Students' perceived usefulness of AI in science learning was rated as useful, particularly in terms of improving efficiency, enhancing understanding, and expanding access to learning resources. However, its perceived contribution to motivation and academic performance was limited, highlighting the importance of carefully integrating AI into science instruction. In terms of academic performance, students generally achieved an Outstanding performance, suggesting that existing teaching strategies, learning resources, and support systems are effective. Nevertheless, the presence of students in the Satisfactory and Fairly Satisfactory categories points to the need for continued academic support, including additional learning opportunities such as AI-assisted explanations of complex scientific concepts.

The analysis revealed a statistically significant relationship between students' attitudes toward AI and their perceived usefulness of AI in science learning. This finding indicates that students who hold more positive and comfortable attitudes toward AI tend to perceive it as more useful in their science learning. Such a relationship emphasizes the importance of fostering supportive and well-structured experiences with AI in the classroom.

Furthermore, students' attitudes toward AI showed a small but statistically significant relationship with academic performance. This weak association suggests that positive attitudes toward AI are not necessarily linked to higher academic achievement and may, in some cases, be associated with patterns of use that limit sustained engagement with learning materials. In contrast, perceived usefulness of AI was not significantly related to academic performance, indicating that awareness of AI's potential benefits alone may be insufficient without guided and responsible use. The differing patterns observed between attitudes, perceived usefulness, and academic performance highlight the need for targeted training and instructional strategies that promote ethical, purposeful, and effective use of AI to support meaningful improvements in science learning outcomes.

Recommendations

Based on the findings and conclusions of the study, the following recommendations are proposed to support the effective, ethical, and pedagogically sound use of AI in junior high school science learning. Given students' generally neutral attitudes and concerns regarding the reliability of AI tools, structured instructional guidance is necessary to clarify how AI can meaningfully support conceptual understanding, problem-solving, and inquiry-based learning while preserving students' active engagement with scientific content. Rather than functioning as optional or supplementary resources, AI tools may yield greater educational value when deliberately embedded within instructional designs, such as through AI-supported explanations, formative feedback, and reflective questioning aligned with clearly defined learning objectives.

Furthermore, attention to ethical and responsible AI use is likewise essential, particularly in addressing issues related to accuracy, academic integrity, and potential overreliance. Learning activities that promote critical evaluation, verification of AI-generated information, and awareness of data privacy concerns may help cultivate responsible and discerning use of AI in science contexts. Although overall academic performance was rated as Outstanding, the presence of students performing at lower levels underscores the need for continued academic support. In this regard, AI-assisted tools may contribute to differentiated instruction by providing targeted feedback, additional practice, or simplified explanations for learners who require further assistance with complex scientific concepts. Moreover, as students' attitudes toward AI were significantly associated with perceived usefulness, classroom experiences that encourage informed, balanced, and reflective perspectives on AI may help strengthen its meaningful adoption in science learning. Lastly, future research may explore additional factors influencing the relationship between AI use and academic performance, including frequency and type of AI-supported tasks, teacher facilitation, and students' digital literacy, with experimental approaches offering deeper insight into the effective integration of AI in junior high school science education.

REFERENCES

- Al-Rahmi, W. M., Yahaya, N., Alamri, M. M., Alyoussef, I. Y., Al-Rahmi, A. M., & Kamin, Y. B. (2021). Integrating innovation diffusion theory with the technology acceptance model: Supporting students' attitude towards using a massive open online courses (MOOCs) system. *Interactive Learning Environments*, 29(8), 1380–1392. <https://eric.ed.gov/?id=EJ1324188>



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- Alejandro, I. M. V., Sanchez, J. M. P., Sumalinog, G. G., Mananay, J. A., Goles, C. E., & Fernandez, C. B. (2024). Pre-service teachers' technology acceptance of artificial intelligence (AI) applications in education. *STEM Education*, 4(4), 445–465. <https://doi.org/10.3934/steme.2024024>
- Almasri, F. (2024). Exploring the impact of artificial intelligence in teaching and learning of science: A systematic review of empirical research. *Research in Science Education*, 54, 977–997. <https://doi.org/10.1007/s11165-024-10176-3>
- Almusaed, A., Almssad, A., Yitmen, I., & Homod, R. Z. (2023). Enhancing student engagement: Harnessing AIED's power in hybrid education—A review analysis. *Education Sciences*, 13(7), 632. <https://doi.org/10.3390/educsci13070632>
- Barooah, I. (2025). Descriptive correlational research design: Best practices and examples. *Merren*. <https://merren.io/descriptive-correlational-research/>
- Bianan, N. M., Eufrazio, F. M. G., Gareza, A. G., Panes, R. D., & Cabatac, R. T. (2025). Exploring attitude and responsible use of AI among university students. *United International Journal for Research & Technology*, 6(7). <https://doi.org/10.13140/RG.2.2.24677.92649>
- Cervantes, J., & Navarro, E. (2025). Business students' perceptions of AI in higher education: An analysis using the technology acceptance model. *Journal of Interdisciplinary Perspectives*, 3(6), 6–12. <https://doi.org/10.69569/jip.2025.194>
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319–340. <https://doi.org/10.2307/249008>
- Department of Education. (2025). DepEd launches AI center for education. <https://www.deped.gov.ph/2025/02/20/deped-launches-ai-center-for-education/>
- Du, T. T., Dung, D. T. B., Ly, H. T. B., Huong, N. T. K., Triet, A. M., & Xuan, N. T. (2025). Students' perceptions of artificial intelligence in academic writing: A case at a university in Vietnam. *Eurasian Journal of Applied Linguistics*, 11(2), 122–134. <https://doi.org/10.32601/ejal.11210>
- Fošner, A. (2024). University students' attitudes and perceptions towards AI tools: Implications for sustainable educational practices. *Sustainability*, 16(19), 8668. <https://doi.org/10.3390/su16198668>
- Giray, L., De Silos, P. Y., Adornado, A., Buelo, R. J. V., Galas, E., Reyes-Chua, E., Santiago, C., & Ulanday, M. L. (2024). Use and impact of artificial intelligence in Philippine higher education: Reflections from instructors and administrators. *Internet Reference Services Quarterly*, 28(3). <https://doi.org/10.1080/10875301.2024.2352746>
- Gonzales, D. K. P., & Nabua, E. B. (2025). Learners' perception of AI utilization in education and their conceptual understanding in Grade 11 life science. *International Journal of Research and Innovation in Social Science*. <https://doi.org/10.47772/IJRIS.2025.903SEU0040>
- Hajam, K. B., & Gahir, S. (2024). Unveiling the attitudes of university students toward artificial intelligence. *Journal of Educational Technology Systems*, 52(3), 335–345. <https://doi.org/10.1177/00472395231225920>
- Herawati, A. A., Yusuf, S., Ilfiandra, Taufik, A., & Habibi, A. S. Y. (2024). Exploring the role of artificial intelligence in education: Students' preferences and perceptions. *Al-Ishlah: Jurnal Pendidikan*, 16(2), 1029–1040. <https://doi.org/10.35445/alishlah.v16i2.4784>
- Idroes, G. M., Noviandry, T. R., Maulana, A., Irvanizam, I., Jalil, Z., Lensoni, L., Lala, A., Abas, A. H., Tallei, T. E., & Idroes, R. (2023). Student perspectives on the role of artificial intelligence in education: A survey-based analysis. *Journal of Educational Management and Learning*, 1(1). <https://doi.org/10.60084/jeml.v1i1.58>



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- Jia, F., Sun, D., & Looi, C. (2023). Artificial intelligence in science education (2013–2023): Research trends in ten years. *Journal of Science Education and Technology*, 33(1), 94–117. <https://doi.org/10.1007/s10956-023-10077-6>
- Kan'an, D. A. F. (2025). Exploring students' attitudes toward integrating artificial intelligence (AI) in STEM learning. *Middle Eastern Journal of Educational Psychology Studies*, 5(3), 368–389. <https://doi.org/10.56961/mejeps.v5i3.1084>
- Kim, H. S. (2021). Is it beneficial to use AI chatbots to improve learners' speaking performance? *Journal of Asia TEFL*, 18(1), 161–178. <https://doi.org/10.18823/asiatefl.2021.18.1.10.161>
- Krvavica, A., Papić, A., & Micunovic, M. (2025). Students' attitudes towards the opportunities and challenges of generative artificial intelligence in the academic environment. *TEM Journal*, 14(2), 1520–1530. <https://doi.org/10.18421/TEM142-51>
- Mangubat, M., Manait, K., Marianito, L. J., & Embang, S. (2025). Learning gaps in science education through AI: Scale development among junior high school students in a laboratory high school. *Journal of Interdisciplinary Perspectives*, 3(10), 255–267. <https://doi.org/10.69569/jip.2025.606>
- Milicevic, N., Kalas, B., Djokic, N., Malcic, B., & Djokic, I. (2024). Students' intention toward artificial intelligence in the context of digital transformation. *Sustainability*, 16(9), 3554. <https://doi.org/10.3390/su16093554>
- National Privacy Commission. (2012). Republic Act 10173: Data Privacy Act of 2012. <https://privacy.gov.ph/data-privacy-act/>
- Pande, K., Sonawane, S., Jadhav, V., & Mali, M. (2023). Artificial intelligence: Exploring the attitude of secondary students. *Journal of e-Learning and Knowledge Society*, 19(3), 43–48. <https://doi.org/10.20368/1971-8829/1135865>
- Rodrigo, M. M. T. (2024). Using artificial intelligence to support basic education teachers in under-resourced contexts. *University of the Philippines Center for Integrative and Development Studies*. https://cids.up.edu.ph/wp-content/uploads/2024/12/Rodrigo_UPCIDS_Using-Artificial-Intelligence-to-Support-Basic-Education-Teachers-in-Under-resourced-Contexts.pdf
- Serdenia, J. R., Dumagay, A. H., Balasa, K., Capacio, E., & Lauzon, L. (2025). Attitude, acceptability, and perceived effectiveness of artificial intelligence in education: A quantitative cross-sectional study among future teachers. *LatIA*, 3-313. <https://www.researchgate.net/publication/393690129>
- Scherer, R., Siddiq, F., & Tondeur, J. (2019). The technology acceptance model (TAM): A meta-analytic structural equation modeling approach to explaining teachers' adoption of digital technology in education. *Computers & Education*, 128, 13–35. <https://doi.org/10.1016/j.compedu.2018.09.009>
- Stryker, C., & Kavlakoglu, E. (2024). What is artificial intelligence (AI)? *IBM*. <https://www.ibm.com/topics/artificial-intelligence>
- Sultana, A., Abdul Latheef, N., Siby, N., & Ahmad, Z. (2025). Exploring students' attitudes toward artificial intelligence (AI): Psychometric validation of AI-attitude scale. *SAGE Open*, 15(4). <https://doi.org/10.1177/21582440251378375>
- Thomas, L. (2023). Simple random sampling: Definition, steps & examples. <https://www.scribbr.com/methodology/simple-random-sampling/>
- Vieriu, A. M., & Petrea, G. (2025). The impact of artificial intelligence (AI) on students' academic development. *Education Sciences*, 15(3), 343. <https://doi.org/10.3390/educsci15030343>
- Wang, Y., Liu, C., & Tu, Y.-F. (2021). Factors affecting the adoption of AI-based applications in higher education. *Educational Technology & Society*, 24(3), 116–129. <https://eric.ed.gov/?id=EJ1306390>