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STUDENT'S ARTIFICIAL INTELLIGENCE USAGE AND STUDY HABITS ON MATHEMATICS ACHIEVEMENT AMONG BSED MATH 2 STUDENTS

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ABSTRACT

This study examined the levels of artificial intelligence (AI) usage, study habits, and mathematics achievement among second-year Bachelor of Secondary Education major in Mathematics (BSED Math 2) students at Don Carlos Polytechnic College, as well as the relationships among these variables. Using a descriptive-correlational research design, data were gathered from all second-year BSED Mathematics students through adopted questionnaires and their Mathematics General Average.

The findings revealed that the respondents demonstrated a high level of AI usage, indicating strong confidence in using AI tools and recognizing their usefulness and ease of use in learning mathematics. The students also exhibited a high level of study habits, particularly in note taking and time management, while library use was found to be moderate. In terms of academic performance, the respondents achieved a good level of mathematics achievement. The study further found that there was no significant relationship between AI usage and mathematics achievement, and no significant relationship between study habits and mathematics achievement.

These results suggest that although students actively used AI tools and practiced effective study habits, these factors did not directly influence their performance in mathematics. Other factors, such as motivation, prior knowledge, instructional quality, and learning environment, may have a greater impact on academic achievement.

The study recommends that students continue to use AI responsibly as a supplementary learning tool and maintain effective study practices, while educators provide guidance on ethical AI integration and foster balanced, technology-enhanced learning environments. These findings provide valuable insights for improving mathematics instruction and supporting student.

Keyword: Artificial Intelligence Usage, Study Habits, Mathematics Achievement

1. INTRODUCTION

Mathematics achievement is a fundamental indicator of students' cognitive development, analytical thinking, and problem-solving abilities, particularly among pre-service mathematics teachers. It reflects both mastery of mathematical concepts and readiness for future teaching responsibilities. Despite continuous improvements in educational systems, mathematics performance remains a global concern. International assessments, such as the Programme for International Student Assessment (PISA), consistently report low proficiency levels among students, including those in developing countries (OECD, 2022). In the Philippines, students similarly demonstrate below-average performance in mathematics, indicating persistent challenges in teaching and learning processes.

At the tertiary level, these challenges become more pronounced as students are expected to engage in higher-order thinking and independent learning, yet many continue to struggle with abstract mathematical concepts and exhibit low academic performance (Manalastas & Mallari, 2021). Despite the increasing availability of artificial intelligence tools and established effective study strategies, mathematics achievement among pre-service teachers remains low. Moreover, the combined influence of AI usage and study habits on academic performance is not yet fully understood, particularly in the context of higher education in the Philippines.

One emerging factor influencing students' learning in mathematics is the use of artificial intelligence (AI). AI technologies, such as intelligent tutoring systems, adaptive learning platforms, and generative AI tools, provide immediate feedback, personalized instruction, and accessible academic support (Holmes et al., 2021). These tools have the potential to enhance student engagement and conceptual understanding. However, their effectiveness largely depends on how students utilize them. Studies suggest that while AI can support learning, excessive reliance on these tools may hinder deep learning and critical thinking, particularly when students depend on AI-generated answers without fully understanding the underlying processes (Kasneci et al., 2023; Tlili et al., 2023).

Another important factor that influences mathematics achievement is study habits. Study habits refer to students' consistent behaviors and strategies in managing their academic tasks, including time management, note-taking, and utilization of learning resources. Research has consistently shown that effective study habits significantly contribute to improved academic performance by promoting deeper understanding and retention of knowledge (Credé & Kuncel, 2017). Furthermore, evidence-based learning strategies such as spaced practice, self-testing, and active engagement have been found to enhance long-term retention and academic success (Dunlosky et al., 2016). In mathematics, where consistent practice and conceptual clarity are essential, disciplined study habits play a crucial role in helping students overcome learning difficulties and achieve better outcomes.

Despite the recognized importance of AI usage and study habits, several research gaps remain, particularly among college students. Existing studies on AI in education are still limited in higher education mathematics contexts, with most focusing on general technology use or basic education (Kasneci et al., 2023). Moreover, previous research often examines AI usage and study habits independently, resulting in limited understanding of their combined effects on mathematics achievement. There is also insufficient focus on pre-service mathematics teachers, who are expected to integrate technology effectively in their future teaching. Additionally, the impact of AI dependency on deep learning and critical thinking remains unclear, especially in problem-solving subjects such as mathematics (Tlili et al., 2023). In the Philippine context, empirical studies examining the relationship among AI usage, study habits, and academic performance are still scarce (Arceo & Reyes, 2023), highlighting the need for further investigation.

This study examined how artificial intelligence usage and study habits influenced mathematics achievement among BSED Math 2 students. As the use of AI tools in education continued to expand, understanding how these technologies interacted with students' learning behaviors became increasingly important. The study emphasized that while AI could provide academic support and personalized learning opportunities, effective study habits remained essential for meaningful learning and academic success. By exploring these factors among pre-service mathematics teachers, the study sought to contribute to the growing body of knowledge on technology integration and student learning in higher education.

1.1 Statement of the Problem

The study was conducted to assess the students' artificial intelligence usage and study habits and to determine their relationship to mathematics achievement among BSED Math 2 students. Specifically, it aimed to answer the following questions:

1. What is the level of artificial intelligence usage of BSED MATH 2 students in terms of:

   a. self-efficacy;
   b. technological readiness;
   c. perceptions about usefulness;
   d. perceptions about ease of use;
   e. attitude; and
   f. AI tools usage?

2. What is the level of study habits of BSED MATH 2 students in terms of:

   a. note taking;
   b. use of library; and

c. time allocation to study?

3. What is the level of mathematics achievement of BSED MATH 2 students?

4. Is there a significant relationship between mathematics achievement and students' artificial intelligence usage?

5. Is there a significant relationship between mathematics achievement and study habits?

1.2 Hypothesis of the Study

The following hypotheses were drawn based on the objectives given.

Ha_1: There is a significant relationship between students' artificial intelligence usage and mathematics achievement.

Ha_2: There is a significant relationship between study habits and mathematics achievement.

2.METHODOLOGY

This chapter presented the research methodology of the study. It includes the research design, locale of the study, map of the locale of the study, respondents of the study, sampling procedure, research instrument, scoring procedure, administration of the research instrument, ethical considerations, data gathering procedure, and statistical treatment.

2.1 Research Design

This study employed a descriptive–correlational research design to determine the levels of students' artificial intelligence usage and study habits and to examine their relationship with mathematics achievement among BSED Mathematics second-year students of Don Carlos Polytechnic College.

A descriptive–correlational research design is a non-experimental research approach that aimed to describe variables as they naturally occurred and to determine the nature and degree of relationships among two or more variables without manipulating them (Creswell & Creswell, 2018). According to Fraenkel, Wallen, and Hyun (2019), correlational research is appropriate when the purpose of the study is to examine associations among variables and to understand how changes in one variable were related to changes in another in real-world educational settings. Similarly, Cohen, Manion, and Morrison (2018) emphasize that descriptive–correlational designs were suitable for educational studies where experimental control was impractical or unethical.

2.2 Locale of the Study

The study was conducted at Don Carlos Polytechnic College (DCPC), situated in P-2 Norte, Don Carlos Bukidnon. The college is operated by the Local Government Unit (LGU) of Don Carlos, making it a vital part of the local educational landscape.

Don Carlos Polytechnic College (DCPC) is a community-based public college stablished to provide accessible and affordable tertiary education to students with in Don Carlos and nearby municipalities. As an LGU-run institution, DCPC aims to develop competent professionals and future educators who will contribute to local and national development.

The respondents of this study were consisted of thirty-seven (37) students enrolled in the Bachelor of Secondary Education major in Mathematics, second year (BSED Mathematics 2), during the Academic Year 2025–2026. These students were officially enrolled in the second year of the BSED Mathematics program at the time the study was conducted.

2.3 Sampling Procedure

The respondents were selected using total enumeration sampling. Total enumeration sampling was a sampling technique in which all members of the population were included in the study. Instead of selecting only a portion of the population, the researcher collected data from every individual in the group.

This sampling technique was appropriate because the study aimed to examine the relationship between students' artificial intelligence usage, study habits, and mathematics achievement among BSED Mathematics secondyear students. Thus, only students who belonged to the identified group were included in the study. The total population of 37 BSED Mathematics secondyear students was utilized as respondents to ensure accurate representation of the target group.

2.4 Research Instrument

This research employed a questionnaire as its primary data-gathering instrument, designed to explore three core variables among Bachelor of Secondary Education major in Mathematics, second-year (BSED

Mathematics 2) students: their use of artificial intelligence (AI), study habits, and mathematics achievement. The questionnaire was structured into three distinct sections.

Part I focused on AI usage, drawing from the framework developed by Oluwanife Segun Falobita and Petrus Jacobus Kok (2024). To comprehensively capture students' engagement with AI, this section examined key dimensions such as self-efficacy, technological readiness, perceived usefulness, ease of use, and attitudes toward AI tools.

Part II assessed students' study habits by adapting items from the instrument Study Habits and Academic Performance of Secondary School Students in Mathematics developed by Sakindeen and Sanni (2017). This section consisted of 15 statements with five response options and utilized a 5point Likert scale.

Part III assessed the students' mathematics achievement. This was measured using the respondents' final grades in their mathematics major subjects during the first semester of Academic Year 2025–2026. Students were asked to provide their numerical grades in at least four (4) mathematics subjects, from which the Mathematics General Average (MGA) was computed. The computed average served as the basis for determining the level of mathematics achievement. The Mathematics General Average was interpreted using the institutional grading system and was treated as the dependent variable of the study.

2.5 Scoring Procedure

In determining the level of artificial intelligence usage of Bachelor of Secondary Education major in Mathematics (BSED Math 2), the following scale was used:

Rating	Mean Range	Descriptive Rating	Qualitative Interpretation
5	4.50-5.00	Strongly Agree	Very High
4	3.50-4.49	Agree	High
3	2.50-3.49	Neutral	Moderate
2	1.50-2.49	Disagree	Low
1	1.00-1.49	Strongly Disagree	Very Low

In determining the level of study habits of Bachelor of Secondary Education major in Mathematics (BSED Math 2), the following scale was used:

Rating	Mean Range	Descriptive Rating	Qualitative Interpretation
5	4.50-5.00	Strongly Agree	Very High
4	3.50-4.49	Agree	High
3	2.50-3.49	Neutral	Moderate
2	1.50-2.49	Disagree	Low
1	1.00-1.49	Strongly Disagree	Very Low

In determining the level of mathematics achievement of Bachelor of Secondary Education major in Mathematics (BSED Math 2) is measured using:

- Students' final grades in their Mathematics major subjects during the first semester of Academic Year 2025–2026 were used. Mathematics General Average (MGA) was calculated by using this formula:

$$MGA = \frac{S\qquad oMhMa\ G}{SuGo\ Sa}$$

After computing the MGA, the results were interpreted based on the institutional grading system to determine the level of mathematics achievement. The grade is according to the 1.00 to 5.00 scale range, with 1.00 as the highest grade, 3.00 as the passing grade and 5.00 a failed grade as shown below:

Grade	Percentage Equivalent	Description
1.00	98–100%	Excellent
1.25	95–97%	Very Good
1.50	92–94%	Very Good
1.75	88–91%	Good
2.00	85–87%	Good
2.25	82–84%	Average
2.50	80–81%	Fair
2.75	76–79%	Poor
3.00	75%	Passing
5.00	74% and below	Failed

2.6 Ethical Considerations

This study followed ethical principles in conducting research involving human participants, particularly the principles of respect for persons, beneficence, and justice. The participation of the BSED Mathematics secondyear students was voluntary, and respondents had the right to decline or withdraw at any time without penalty or academic consequence. Informed consent was obtained from all participants after the purpose and procedures of the study were explained. The participants' names were collected for research identification purposes, particularly in obtaining and verifying their mathematics grades. However, the researchers ensured that all personal information was kept strictly confidential and was not disclosed to unauthorized individuals. The collected data were used solely for research purposes and were presented only in summary or aggregate form. Permission to conduct the study was obtained from the College of Education and the administration of Don Carlos Polytechnic College. The researchers prioritized the ethical treatment of all participants throughout the study to ensure the integrity and credibility of the research.

2.7 Data Gathering Procedure

A formal letter of request was submitted by the researcher to the administration of Don Carlos Polytechnic College seeking permission to conduct the study among second-year Bachelor of Secondary Education major in Mathematics students. Upon approval, the researcher coordinated with the College of Teacher Education and the subject instructors to arrange an appropriate schedule for data collection that would not interrupt regular class activities. In addition, a separate request was made to the Mathematics Program Coordinator to obtain the students' academic grades, which were used as part of the data for the study.

Prior to the administration of the research instrument, the researcher explained the purpose and significance of the study to the participants. Informed consent was obtained from all respondents, ensuring that participation was voluntary. The respondents were also assured that all information gathered would be treated with confidentiality and used solely for academic purposes. Likewise, the obtained academic grades were handled with strict confidentiality and were used only for research purposes.

A structured questionnaire was utilized to gather the necessary data. The instrument consisted of three main sections: (1) students' profile information, (2) level of artificial intelligence usage in academic tasks such as research, problem-solving, and assignment completion, and (3) students' study habits in terms of time management, learning strategies, and academic engagement.

The questionnaires were personally distributed to the respondents and were retrieved immediately after completion. The collected data were checked for completeness, organized, tabulated, and subjected to appropriate statistical treatment to answer the research questions and test the hypotheses of the study, including the analysis of the students' academic grades obtained from the Mathematics Program Coordinator.

2.8 Statistical Treatment

The data gathered were statistically analyzed to address the research objectives. To describe the levels of artificial intelligence (AI) usage, study habits, and mathematics achievement of BSED Mathematics second-year students, descriptive statistics such as mean, standard deviation, and frequency distributions were utilized.

To determine the nature and degree of the relationships between AI usage and mathematics achievement, as well as between study habits and mathematics achievement, the Pearson Product-Moment Correlation Coefficient was employed.

3.RESULTS AND DISCUSSIONS

3.1 The Level of Artificial Intelligence Usage of BSED Math Second Year Students in Terms of Self-Efficacy

The data in Table 1 presents the level of artificial intelligence (AI) usage among BSED Mathematics second-year students in terms of self-efficacy. The overall weighted mean was 3.76, interpreted as "agree" and high, indicating that students generally possessed confidence in using AI tools. The highest mean (3.95) corresponded to the statement "I am able to adapt my use of AI tools to fit the specific needs of different projects or situations," which showed that students could effectively adjust AI tools based on task requirements. Meanwhile, the lowest mean (3.65) corresponded to "I am comfortable experimenting and troubleshooting when using AI tools," suggesting slightly lower confidence in handling technical challenges.

Table 1. Artificial Intelligence Usage of BSED Math Second Year Students in Terms of Self-Efficacy

Statements	Mean	Qualitative Interpretation
I am able to adapt my use of AI tools to fit the specific needs of different projects or situations.	3.95	High
I believe I have the necessary skills and knowledge to get the most out of AI tools.	3.78	High
I feel confident in my ability to use AI tools effectively to accomplish my tasks.	3.76	High
I feel in control when working with AI tools and achieve the outcomes I desire.	3.65	High
I am comfortable experimenting and troubleshooting when using AI tools.	3.65	High
Weighted Mean	3.76	High

Legend:

Range	*Descriptive Rating*	*Qualitative Interpretation*
4.50-5.00	*Strongly Agree*	*Very High*
3.50-4.49	*Agree*	*High*
2.50-3.49	*Neutral*	*Moderate*
1.50-2.49	*Disagree*	*Low*
1.00-1.49	*Strongly Disagree*	*Very Low*

The findings indicated that students were capable of using AI tools in flexible and practical ways across different academic tasks. However, the lower mean in experimentation and troubleshooting revealed a gap in deeper technical skills and confidence. This suggested that while students were comfortable with basic and guided use of AI, they may have struggled when dealing with unfamiliar features or when independent problem-solving was required. The variation in scores reflected a difference between general usability and advanced competency in AI usage.

These results implied that students were generally confident and adaptive AI users but still needed support in developing higher-level skills such as troubleshooting, critical thinking, and independent exploration of AI tools. High self-efficacy was important because it promoted persistence, motivation, and effective use of technology in learning. Enhancing students' confidence in experimenting with AI tools could help them become more independent and better prepared for complex academic and real-world technological tasks.

These studies collectively argued that self-efficacy was a key factor in shaping effective and meaningful use of technology, especially in education. Bandura (2018) explained that self-efficacy influenced individuals' thoughts, behaviors, and performance, making learners more likely to engage with and persist in using new technologies. Supporting this, Zhao et al. (2021) and Venkatesh et al. (2016) found that higher technological self-efficacy led to greater efficiency, adaptability, acceptance, and actual use of digital tools, indicating that confidence reduced hesitation and improved performance. In the learning context, Schunk and DiBenedetto (2020) and Tondeur et al. (2017) emphasized that self-efficacy enhanced persistence and was strengthened through hands-on experience and guided practice, suggesting that it developed alongside skill acquisition. Furthermore, Holmes et al. (2019) and OECD (2021) highlighted that confidence and familiarity were essential for meaningful engagement with AI and digital tools, enabling learners to move beyond basic use toward independent and effective application. Overall, the literature showed that technological self-efficacy served as both a driver and outcome of successful technology use, influencing adoption, competence, and sustained engagement in digital learning environments.

3.2 The Level of Artificial Intelligence Usage of BSED Math Second Year Students in Terms of Technological Readiness

Table 2 presents the level of artificial intelligence (AI) usage among BSED Mathematics second-year students in terms of technological readiness. The overall mean of 3.74, interpreted as "agree" and high, indicated that students generally possessed a strong level of preparedness in adopting AI tools for academic purposes. This suggested that most respondents were comfortable with technology and demonstrated a positive disposition toward integrating AI into their learning processes.

Table 2. Artificial Intelligence Usage of BSED Math Second Year Students in

Terms of Technological Readiness

Statements	Mean	Qualitative Interpretation
I am generally eager to try out new technologies.	4.03	High
I feel comfortable learning and using new technologies.	3.81	High
I perceived the benefits of using AI tools to outweigh any potential drawbacks.	3.76	High
I am willing to invest time and effort to master new technological tools.	3.57	High
I stay up to date with the latest technological advancement.	3.54	High
Weighted Mean	3.74	High

Legend:

Range	*Descriptive Rating*	*Qualitative Interpretation*
4.50-5.00	*Strongly Agree*	*Very High*
3.50-4.49	*Agree*	*High*
2.50-3.49	*Neutral*	*Moderate*
1.50-2.49	*Disagree*	*Low*
1.00-1.49	*Strongly Disagree*	*Very Low*

The highest mean (4.03) corresponded to the statement "I am generally eager to try out new technologies," which reflected students' openness and willingness to explore innovations. On the other hand, the lowest mean (3.54) corresponded to "I stay up to date with the latest technological advancement," indicating slightly lower engagement in continuously updating their technological knowledge.

The findings showed that students had a positive attitude toward using new technologies, particularly in terms of willingness to try and adopt AI tools. However, the lower score in staying updated suggested a gap in continuous learning and awareness of emerging technological trends. This indicated that while students were open to innovation, they did not consistently invest time in keeping themselves informed about the latest developments. The variation in responses highlighted a difference between initial readiness (eagerness to try) and sustained readiness (continuous learning and updating skills).

These results implied that students demonstrated a favorable level of technological readiness, especially in terms of openness and adaptability.

However, there was a need to strengthen their habit of staying updated with technological advancements to fully maximize the benefits of AI in education. Continuous learning and awareness were essential for effective and responsible use of AI tools. Enhancing this aspect could help students become more competent, informed, and innovative users of technology in both academic and real-world contexts.

These findings were supported by several studies. Parasuraman and Colby (2016) explained that technological readiness significantly influenced individuals' acceptance and actual use of new technologies. Similarly, Cheng and Yuen (2020) emphasized that technological readiness enhanced students' engagement and adaptability in digital learning environments. Venkatesh et al. (2016) highlighted that users' readiness and perceptions of technology strongly affected their intention to use and actual usage behavior. Tondeur et al. (2017) noted that continuous exposure and training improved not only technological skills but also users' confidence and willingness to adopt innovations. Additionally, Schunk and DiBenedetto (2020) pointed out that motivation and readiness to learn were key factors in sustaining engagement with new tools. Furthermore, OECD (2021) reported that students who actively kept up with technological developments were more capable of maximizing digital tools for meaningful learning experiences.

3.3 The Level of Artificial Intelligence Usage of BSED Math Second Year Students in Terms of Perceptions about Usefulness

Table 3 presents the level of artificial intelligence (AI) usage among BSED Mathematics second-year students in terms of perceptions about usefulness. The overall weighted mean was 4.14, interpreted as "agree" and high, indicating that students strongly perceived AI tools as useful in supporting their academic tasks and improving their performance. The highest mean (4.27) corresponded to the statement "AI tools would enable me to accomplish tasks more quickly," which showed that students clearly recognized the efficiency of AI tools in saving time and increasing productivity.

Meanwhile, the lowest mean (3.95) corresponded to "I would find AI tools to be useful in my daily work."

Table 3. Artificial Intelligence Usage of BSED Math Second Year Students in

Terms of Perceptions about Usefulness

Statements	Mean	Qualitative Interpretation
AI tools would enhance enable me to accomplish tasks more quickly.	4.27	High
AI tools would make it easier for me to complete my work.	4.22	High
AI tools would improve the quality and accuracy of my work.	4.16	High
Using AI tools would enhance my productivity and efficiency.	4.08	High
I would find AI tools to be useful in my daily work.	3.95	High
Weighted Mean	4.14	High

Legend:

Range	*Descriptive Rating*	*Qualitative Interpretation*
4.50-5.00	*Strongly Agree*	*Very High*
3.50-4.49	*Agree*	*High*
2.50-3.49	*Neutral*	*Moderate*
1.50-2.49	*Disagree*	*Low*
1.00-1.49	*Strongly Disagree*	*Very Low*

Although still rated high, this suggested that some students had not yet fully integrated AI tools into their everyday academic routines.

The results indicated that students had a strong recognition of the benefits of AI, particularly in terms of efficiency and productivity. However, the slightly lower score in daily use suggested a gap between perceived usefulness and actual consistent usage. This meant that while students acknowledged the advantages of AI, some were still in the early stages of integrating these tools into their regular study habits. Factors such as familiarity, accessibility, or established routines may have influenced this difference between belief and practice.

These findings implied that perceived usefulness was a powerful factor influencing students' acceptance of AI technologies. When students believed that AI could improve their performance, save time, and enhance the quality of their work, they were more likely to develop positive attitudes toward its use.

However, consistent integration into daily academic activities may have required further encouragement, training, or exposure. Strengthening this aspect could help students maximize the benefits of AI as a reliable and essential learning support tool.

These findings were supported by several studies. Venkatesh et al. (2016) emphasized that perceived usefulness remained one of the strongest predictors of technology adoption and usage behavior. Al-Emran et al. (2018) found that perceived usefulness significantly influenced students' acceptance of educational technologies, especially in digital learning environments. Scherer et al. (2019) reported that students' beliefs about the usefulness of technology directly affected their intention to use it in academic contexts. Additionally, Chatterjee and Bhattacharjee (2020) highlighted that perceived usefulness played a crucial role in the adoption of emerging technologies such as artificial intelligence. Nikolopoulou et al. (2021) further explained that when students perceived technology as beneficial and relevant to their academic tasks, they were more likely to integrate it into their daily use, reflecting higher levels of technological readiness. Moreover, OECD (2021) noted that students who recognized the value of digital tools demonstrated greater engagement and more confident use of technology-supported learning environments. Overall, these studies suggest that perceived usefulness is strongly associated with the level of artificial intelligence usage among BSED Mathematics second-year students in terms of their perceptions of usefulness, as it influences their willingness to engage with AI tools, their confidence in applying them to academic tasks, and their overall readiness to integrate AI into their learning practices.

3.4 The Level of Artificial Intelligence Usage of BSED Math Second Year Students in Terms of Perceptions about Ease of Use

Table 4. Artificial Intelligence Usage of BSED Math Second Year Students in

Terms of Perceptions about Ease of Use

Statements	Mean	Qualitative Interpretation
Interacting with AI tools would be clear and understandable.	4.00	High
I would find AI tools east to use.	3.95	High
I would find AI tools to be flexible to interact with.	3.81	High
Learning to use AI tools would be easy for me.	3.76	High
I would find it easy to get AI tools to do what I want them to do.	3.73	High
Weighted Mean	3.85	High

Legend:

Range	*Descriptive Rating*	*Qualitative Interpretation*
4.50-5.00	*Strongly Agree*	*Very High*
3.50-4.49	*Agree*	*High*
2.50-3.49	*Neutral*	*Moderate*
1.50-2.49	*Disagree*	*Low*
1.00-1.49	*Strongly Disagree*	*Very Low*

Table 4 presents the level of artificial intelligence (AI) usage among BSED Mathematics second-year students in terms of perceived ease of use. The overall weighted mean was 3.85, with a descriptive rating of "Agree" and a qualitative interpretation of high, indicating that students generally found AI tools easy to use and accessible. Among the indicators, the highest mean score (4.00) corresponded to the statement "Interacting with AI tools would be clear and understandable," showing that students perceived AI tools as userfriendly and easy to navigate. On the other hand, the lowest mean score (3.73) corresponded to "I would find it easy to get AI tools to do what I want them to do." Although still rated as "Agree," this suggested that some students experienced minor difficulties in fully controlling or maximizing AI tools for their specific needs.

The results indicated that students were generally comfortable interacting with AI tools, particularly in terms of understanding their interface and basic functions. However, the lower score related to controlling AI tools suggested a gap between basic usability and functional mastery. This meant that while students could easily access and navigate AI systems, they encountered challenges when trying to use more advanced features or when tailoring the tools to meet specific academic tasks. The variation in responses highlighted the need to go beyond surface-level familiarity and develop deeper operational skills.

These findings implied that although AI tools were perceived as easy to use, effective utilization required more than just ease of access. Students needed to develop stronger competencies in manipulating and maximizing AI tools to suit different learning contexts. Ease of use could encourage initial adoption, but sustained and meaningful use depended on users' ability to fully understand and control the technology. Therefore, enhancing students' technical skills, confidence, and hands-on experience was essential to promote more efficient and purposeful use of AI in education.

These findings were supported by several studies. Venkatesh et al. (2016) emphasized that perceived ease of use significantly influenced users' acceptance and continued use of technology. Salloum et al. (2019) found that ease of use positively affected students' engagement with digital learning tools by reducing barriers to interaction. Scherer et al. (2019) also highlighted that ease of use was a key factor in shaping students' intention to adopt educational technologies. Nikolopoulou et al. (2021) explained that students were more likely to integrate technology into their learning when it was perceived as simple and manageable. Additionally, Al-Emran et al. (2018) reported that ease of use played a crucial role in determining both acceptance and satisfaction with e-learning systems. Furthermore, OECD (2021) noted that students' ability to effectively use digital tools depended not only on accessibility but also on their level of digital competence and familiarity.

Overall, these studies suggest that perceived ease of use is closely associated with the level of artificial intelligence usage among BSED Mathematics second-year students in terms of their perceptions of ease of use, as it influences how simple, manageable, and accessible they perceive AI tools to be, thereby affecting their willingness to adopt and regularly use such technologies in their academic activities.

3.5 The Level of Artificial Intelligence Usage of BSED Math Second Year Students in Terms of Attitude

Table 5. Artificial Intelligence Usage of BSED Math Second Year Students in Terms of Attitude

Statements	Mean	Qualitative Interpretation
I like the idea of using AI tools.	3.86	High
I have a positive impression of using AI tools.	3.76	High
I feel good About the prospect of using AI tools.	3.73	High
Using AI tools is a good idea.	3.68	High
I feel there is nothing wrong with using AI tools usage	3.41	Moderate
Weighted Mean	3.69	High

Legend:

Range	*Descriptive Rating*	*Qualitative Interpretation*
4.50-5.00	*Strongly Agree*	*Very High*
3.50-4.49	*Agree*	*High*
2.50-3.49	*Neutral*	*Moderate*
1.50-2.49	*Disagree*	*Low*
1.00-1.49	*Strongly Disagree*	*Very Low*

Table 5 presents the level of Artificial Intelligence (AI) usage among BSED Mathematics second-year students in terms of attitude. The overall weighted mean was 3.69, which fell under the descriptive rating of "agree" and was interpreted as high. This indicated a generally positive attitude of students toward the use of AI tools in their academic activities. Among the indicators, the highest mean value (3.86) corresponded to the statement "I like the idea of using AI tools," suggesting strong acceptance and openness toward AI integration. On the other hand, the lowest mean value (3.41) was for the statement "I feel there is nothing wrong with using AI tools usage," interpreted as moderate, indicating some level of hesitation or concern regarding AI usage.

The findings revealed that students generally had a favorable disposition toward AI. This indicated a gap between positive perception and ethical confidence, where students appreciated the benefits of AI but remained cautious about issues such as academic integrity, overreliance, or misuse. The variation in responses highlighted the importance of addressing both the practical and ethical dimensions of AI integration in education.

The findings implied that BSED Mathematics second-year students generally possessed a high level of attitude toward the use of Artificial Intelligence (AI) tools in their academic activities. The high overall weighted mean of 3.69 indicated that students positively viewed AI tools and were receptive to their integration in learning. The high ratings obtained by most indicators suggested that students liked the idea of using AI tools, had positive impressions about them, and felt good about their use in education. On the other hand, the moderate interpretation obtained by the statement regarding there being nothing wrong with AI tool usage suggested that some students showed a lower level of agreement on this particular statement compared to the others. Nevertheless, the overall findings still reflected that students generally demonstrated favorable attitudes toward AI usage.

The findings of the study were supported by Luckin et al. (2016) stated that Artificial Intelligence technologies enhanced learning experiences and promoted positive student perceptions toward technology integration in education. Similarly, Zawacki-Richter et al. (2019) found that students generally showed favorable attitudes toward the use of AI applications in educational settings, especially when the tools were perceived as useful and beneficial in learning. In addition, Scherer et al. (2019) emphasized that positive attitudes toward technology significantly influenced students' willingness to adopt and use digital learning tools. Likewise, Kasneci et al. (2023) highlighted that students viewed AI technologies positively because these tools supported learning tasks, improved accessibility to information, and increased engagement in academic activities. Furthermore, OECD (2021) stressed that positive attitudes toward digital technologies contributed to greater student engagement, participation, and acceptance of technologysupported learning environments.

3.6 The Level of Artificial Intelligence Usage of BSED Math Second Year Students in Terms of AI Tools Usage

Table 6. Artificial Intelligence Usage of BSED Math Second Year Students in

Terms of AI Tools Usage

Statements	Mean	Qualitative Interpretation
I explore and experiment with new AI tools as they become available.	3.65	High
I am constantly exploring new AI tools and incorporating them in completing various task.	3.62	High
I use AI tools on a daily basis to complete my works or tasks.	3.59	High
I rely on AI tools to help me complete a variety of tasks.	3.54	High
I invest a significant amount of time and effort in learning and using AI tools.	3.49	Moderate
Weighted Mean	3.58	High

Legend:

Range	*Descriptive Rating*	*Qualitative Interpretation*
4.50-5.00	*Strongly Agree*	*Very High*
3.50-4.49	*Agree*	*High*
2.50-3.49	*Neutral*	*Moderate*
1.50-2.49	*Disagree*	*Low*
1.00-1.49	*Strongly Disagree*	*Very Low*

Table 6 presents the level of Artificial Intelligence (AI) usage among BSED Mathematics second-year students in terms of AI tools usage. The overall weighted mean was 3.58, which fell under the descriptive rating of “agree” and was interpreted as high, indicating that students frequently used AI tools such as ChatGPT, Google Gemini, Grammarly, and Photomath in completing their academic tasks. Among the indicators, the highest mean value (3.65) corresponded to the statement “I explore and experiment with new AI tools as they become available,” suggesting that students were open to innovation and actively engaged with emerging technologies. In contrast, the lowest mean value (3.49) corresponded to “I invest a significant amount of time and effort in learning and using AI tools,” interpreted as moderate, indicating limited depth of engagement in mastering these tools.

The findings showed that students were active users of AI tools and demonstrated openness to exploring new technologies. However, the lower score in time and effort investment suggested a gap between frequency of use and depth of learning. This meant that while students regularly used AI for academic tasks, they did not fully engage in understanding how these tools worked or how to maximize their capabilities. The results highlighted a tendency toward convenience-driven usage, where AI was used primarily for efficiency rather than for developing deeper conceptual understanding and technical competence.

These results implied that although AI tools were widely used and accepted by students, frequent usage alone did not ensure meaningful learning. Students may have developed surface-level understanding if they relied heavily on AI without critical thinking and reflection. Therefore, it was essential to promote purposeful and guided use of AI, encouraging students to analyze outputs, question results, and integrate AI into effective study strategies. For BSED Mathematics students, this was especially important as future educators, since their current practices would influence how they taught and modeled responsible technology use in the classroom.

These findings were supported by several studies which emphasized students’ positive attitudes and acceptance toward the use of AI tools in education. Holmes et al. (2019) highlighted that students generally viewed AI tools as valuable and relevant in supporting learning activities. Similarly, Zawacki-Richter et al. (2019) found that learners showed favorable perceptions and increasing acceptance of AI technologies in educational settings. In addition, Kasneci et al. (2023) noted that students widely recognized and utilized AI tools in academic tasks, reflecting growing familiarity and openness toward AI integration. Scherer et al. (2019) also emphasized that positive attitudes toward technology influenced students’ willingness to engage with digital tools. Furthermore, OECD (2021) reported that students’ active use of digital technologies reflected higher levels of acceptance and adaptability in technology-supported learning environments. Likewise, Chatterjee and Bhattacharjee (2020) stressed that awareness and familiarity with AI tools contributed to students' positive attitudes toward their use in education.

3.7 The Level of Study Habits of BSED Math Second Year Students in Terms of Note Taking

Table 7. Artificial Study Habits of BSED Math Second Year Students in Terms of Note Taking

Statements	Mean	Qualitative Interpretation
I used to listen attentively while taking down notes in the class.	3.78	High
I always pay attention in the class in order to take any important notes.	3.78	High
I have developed skills for effective note taking during every lesson.	3.76	High
I always take down note to preserve new knowledge.	3.57	High
Most times, I use symbols to express what my teacher say in the class.	3.46	Moderate
Weighted Mean	3.67	High

Legend:

Range	*Descriptive Rating*	*Qualitative Interpretation*
4.50-5.00	*Strongly Agree*	*Very High*
3.50-4.49	*Agree*	*High*
2.50-3.49	*Neutral*	*Moderate*
1.50-2.49	*Disagree*	*Low*
1.00-1.49	*Strongly Disagree*	*Very Low*

Table 7 presents the level of study habits of BSED Mathematics second-year students in terms of note-taking. The overall mean of 3.67, with a descriptive rating of "agree" and interpreted as high, indicated that the respondents demonstrated good note-taking habits in their academic activities. This suggested that students consistently engaged in behaviors that supported active learning, such as listening attentively, identifying key information, and recording essential concepts during class discussions. Among the indicators, the highest mean (3.78) corresponded to the statement "I used to listen attentively while taking down notes in the class," indicating that students remained attentive and cognitively engaged while taking notes. On the other hand, the lowest mean (3.46) corresponded to "Most times, I use symbols to express what my teacher says in the class," which was interpreted as moderate, suggesting less frequent use of shorthand or symbolic notetaking strategies.

The findings showed that students had established fundamental notetaking habits that supported their learning, particularly through attentiveness and active participation during lectures. However, the lower score in the use of symbols or shorthand indicated a gap in more advanced and efficient notetaking techniques. This suggested that while students were engaged and consistent in taking notes, they did not maximize strategies that improved speed, organization, and clarity. The results highlighted a distinction between basic note-taking practices and strategic note-taking skills, where the latter could further enhance academic performance.

These results implied that students possessed solid foundational skills in note-taking, which contributed positively to their comprehension and retention of lessons, especially in mathematics where step-by-step processes are essential. However, there was still room for improvement in adopting more efficient methods such as abbreviations, symbols, and structured formats. Strengthening these strategies could help students better manage information, especially in fast-paced learning environments. Enhancing note-taking skills could also promote deeper understanding, better organization of ideas, and improved long-term recall.

These findings were supported by several studies. Mueller and Oppenheimer (2016) found that students who practiced note-taking demonstrated active engagement during learning activities. Similarly, Witherby and Tauber (2019) emphasized that note-taking was a widely practiced study habit that supported students in organizing and processing information. In addition, Fiorella and Mayer (2016) highlighted that note-taking encouraged learners to actively interact with lesson content during discussions and lectures. Morehead et al. (2019) also reported that students commonly used note-taking strategies as part of their regular study routines.

Furthermore, Bui et al. (2021) noted that organized note-taking methods reflected students' consistent study practices in academic settings. Likewise, OECD (2021) stated that active study habits such as note-taking remained important components of students' learning practices in modern education.

3.8 The Level of Study Habits of BSED Math Second Year Students in Terms of Use of Library

Table 8. Artificial Study Habits of BSED Math Second Year Students in Terms of Use of Library

Statements	Mean	Qualitative Interpretation
My school library gives me access to variety of resources.	3.03	Moderate
I make use of the library to expand the scope of my study.	2.92	Moderate
I have devoted interest in library resources utilization.	2.81	Moderate
I study in the Library every day.	2.35	Low
I used to do my assignment in the school library.	2.32	Low
Weighted Mean	2.69	Moderate

Legend:

Range	*Descriptive Rating*	*Qualitative Interpretation*
4.50-5.00	*Strongly Agree*	*Very High*
3.50-4.49	*Agree*	*High*
2.50-3.49	*Neutral*	*Moderate*
1.50-2.49	*Disagree*	*Low*
1.00-1.49	*Strongly Disagree*	*Very Low*

Table 8 presents the level of study habits of BSED Mathematics secondyear students in terms of use of the library. The overall mean of 2.69, interpreted as "neutral" and moderate, indicated that the respondents demonstrated a limited level of engagement with library resources. This suggested that while students occasionally utilized the library, it was not a primary or consistent part of their study routine. The highest mean score (3.03) corresponded to the statement "My school library gives me access to a variety of resources," which was still interpreted as neutral, indicating that although resources were available, they were not maximized by students. On the other hand, the lowest mean scores (2.35 and 2.32) revealed that students rarely studied or completed assignments in the library, highlighting minimal reliance on physical library spaces.

The findings indicated that students were aware of the availability of library resources but showed low engagement in actually using them. This suggested a shift in study habits, where students preferred more convenient and accessible sources such as digital platforms rather than traditional library environments. The low scores in studying and completing tasks in the library reflected a decline in the use of physical academic spaces. The results highlighted a contrast between resource availability and actual utilization, implying that access alone did not guarantee usage.

These results implied that students' learning preferences were increasingly shifting toward digital and technology-driven resources. While this transition offered convenience and speed, it may have limited students' exposure to curated and credible academic materials typically found in libraries. Reduced library use may also have affected the development of research skills, critical thinking, and information literacy. Therefore, there was a need to encourage students to balance digital convenience with the use of reliable academic resources provided by libraries. Enhancing library services, integrating digital systems, and promoting research-based activities could help increase student engagement with library resources.

These findings were supported by several studies. Head et al. (2020) found that students increasingly relied on online sources due to their accessibility and speed, often overlooking traditional library services. Nicholas et al. (2017) observed a decline in physical library usage, as digital resources had become the primary medium for academic research. Aharony (2018) also noted that students preferred digital information sources over physical libraries due to convenience and ease of use. Furthermore, Lund and Agbaji (2018) reported that while libraries remained important, their role was evolving as students shifted toward electronic resources. OECD (2021) emphasized that digital access had transformed how students gathered information, often reducing dependence on traditional learning spaces. Additionally, Tenopir et al. (2019) highlighted that although digital resources were widely used, libraries still played a crucial role in developing information literacy and research skills, reinforcing the need to promote their continued use.

3.9 The Level of Study Habits of BSED Math Second Year Students in Terms of Time Allocation to Study

Table 9. Artificial Study Habits of BSED Math Second Year Students in Terms of Time Allocation to Study

Statements	Mean	Qualitative Interpretation
I have a private study time table.	3.73	High
I schedule my time to cover all subjects	3.57	High
I devote extra-time to thoroughly learn a certain subject like mathematics.	3.57	High
I set up time for other social activities so that they won't interfere with my studies.	3.54	High
I use clock alarm to alert me for night reading.	3.38	Moderate
Weighted Mean	3.56	High

Legend:

Range	*Descriptive Rating*	*Qualitative Interpretation*
4.50-5.00	*Strongly Agree*	*Very High*
3.50-4.49	*Agree*	*High*
2.50-3.49	*Neutral*	*Moderate*
1.50-2.49	*Disagree*	*Low*
1.00-1.49	*Strongly Disagree*	*Very Low*

Table 9 presents the level of study habits of BSED Mathematics second-year students in terms of time allocation to study. The overall mean was 3.56, with a descriptive rating of "agree" and a qualitative interpretation of high, indicating that the respondents managed their study time well and showed positive study habits, especially in planning and organizing their time. Among the indicators, the highest mean value (3.73) corresponded to the statement "I have a private study timetable," indicating that most students practiced structured planning through personal scheduling, reflecting strong self-discipline and organization. On the other hand, the lowest mean value (3.38) corresponded to "I use a clock alarm to alert me for night reading," indicating that while students generally managed their study time well, they were less consistent in using external tools such as alarms to support structured study routines.

The findings suggested that students demonstrated good basic time management skills, particularly in planning and organizing their study schedules. However, the lower use of supporting tools such as alarms indicated a reliance on personal discipline rather than structured external aids. This showed a gap between planned study behavior and strategic timemanagement techniques, where students organized their time but did not always maximize available tools to enhance consistency, especially during night study sessions.

These results implied that students had a positive foundation in managing their study time, which was essential for academic success. However, strengthening the use of time-management tools such as planners, calendars, and reminder systems could further improve their academic efficiency. Developing both self-discipline and the use of supportive strategies could help students become more consistent, focused, and productive in their studies. For BSED Mathematics students, improving time allocation habits was particularly important due to the subject's demand for regular practice and problem-solving.

These findings were supported by several studies. Panadero (2017) emphasized that self-regulated learning, including time management, was strongly associated with academic success. Dignath and Büttner (2018) found that students who effectively planned and regulated their study time achieved better academic performance. Zimmerman (2016) highlighted that selfregulated learners were more successful because they actively managed their time, goals, and learning strategies. Broadbent and Poon (2019) reported that time management was a significant predictor of academic achievement in online and blended learning environments. Jansen et al. (2019) also found that students with better time management skills showed higher persistence and engagement in academic tasks. Additionally, OECD (2021) emphasized that effective study habits, including time allocation, were essential for developing lifelong learning skills in modern education systems.

3.10 The Level of Mathematics Achievement of BSED Math Second Year Students

Table 10. Mathematics Achievement of BSED Math Second Year Student

Valid	Frequency	Percent	Qualitative Interpretation
1.00	0	0%	Excellent
1.25 - 1.50	8	21.62%	Very Good
1.75 - 2.00	29	78.38%	Good
2.25	0	0%	Average
2.50	0	0%	Fair
2.75	0	0%	Poor
3.00	0	0%	Passing
4.00 – 5.00	0	0%	Failed
Total	37	100%	
Overall Mean: 1.71			Good

Legend:

Range	*Descriptive Rating*	*Qualitative Interpretation*
4.50-5.00	*Strongly Agree*	*Very High*
3.50-4.49	*Agree*	*High*
2.50-3.49	*Neutral*	*Moderate*
1.50-2.49	*Disagree*	*Low*
1.00-1.49	*Strongly Disagree*	*Very Low*

Table 10 presents the level of mathematics achievement of BSED Math second year students. Out of 37 respondents, 29 students or 78.38% obtained grades ranging from 1.75–2.00, which is qualitatively interpreted as Good. Meanwhile, 8 students or 21.62% obtained grades ranging from 1.25– 1.50, interpreted as Very Good. No student obtained grades interpreted as Excellent, Average, Fair, Poor, Passing, or Failed. The table further shows that the respondents obtained an overall mean of 1.71, with a qualitative interpretation of Good.

The findings reveal that the majority of the respondents achieved grades within the "Good" category, indicating that most students possess satisfactory knowledge, understanding, and performance in mathematics subjects. The presence of students under the "Very Good" category further suggests that several respondents demonstrated above-average mathematical competence and academic preparedness. Moreover, the absence of failing and poor grades indicates that the respondents were able to meet the academic requirements of their mathematics courses. The overall mean of 1.71 confirms that the academic performance of the respondents was generally favorable and reflects consistent engagement in learning activities, effective study practices, and adequate mastery of mathematical concepts.

The results imply that BSED Math second year students generally demonstrate a commendable level of mathematics achievement. This may indicate that the students are academically capable of understanding and applying mathematical concepts necessary for their program. Since the respondents are future mathematics educators, the findings suggest that they possess sufficient mathematical foundation and competency needed in teaching mathematics effectively. Furthermore, the good level of achievement may also be associated with factors such as positive study habits, regular class participation, academic motivation, and the utilization of learning resources that contribute to improved academic performance.

These findings were supported by several studies. According to Organisation for Economic Co-operation and Development through the 2018 Programme for International Student Assessment (PISA), students who demonstrate consistent engagement in learning activities and effective study behaviors tend to achieve better academic outcomes in mathematics. Likewise, Department of Education (2020) emphasized that students' academic achievement improves when learners are actively involved in meaningful learning experiences and are provided with adequate educational support. Furthermore, a study by Commission on Higher Education (2021) highlighted that mathematics education students who develop strong academic discipline and positive learning attitudes are more likely to attain satisfactory academic performance. Similarly, the study of Kim and Park (2019) found that students with effective study routines and higher academic motivation tend to perform better in mathematics courses. In addition, the findings of Bernardo et al. (2022) revealed that Filipino college students who maintain productive learning strategies and active classroom participation generally obtain good academic achievement in mathematics-related subjects.

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