Knowledge, Attitudes, Practices, and Perceived Impacts of Generative AI Among the First Year Students

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ABSTRACT:

This study examined the knowledge, attitudes, practices (KAP), and perceived advantages and disadvantages of Generative Artificial Intelligence (GenAI) among first-year Bachelor of Science in Business Administration (BSBA) students enrolled in the course "Mathematics in the Modern World" at Ilocos Sur Polytechnic State College. Using a quantitative descriptive-correlational research design, data were collected from 118 students through a validated survey questionnaire.

The findings revealed that students generally have a high level of knowledge and positive attitudes toward GenAI. They recognize its usefulness in simplifying complex concepts, providing quick access to information, and supporting academic tasks. Among the advantages identified, students highly valued GenAI's ability to explain difficult topics and deliver information efficiently. However, concerns were also raised, particularly regarding dependency on technology, reduced creativity, and the potential for misuse in academic dishonesty. Furthermore, the results indicated that students achieved a "Good" level of academic performance. A significant relationship was found between students' knowledge and attitudes toward GenAI and their academic performance, suggesting that a better understanding and positive perceptions contribute to improved learning outcomes. In contrast, no significant relationship was observed between GenAI usage practices and academic performance, indicating that frequent use alone does not guarantee success. Additionally, the frequency of use was significantly related to KAP, highlighting the role of exposure in shaping students' engagement with AI tools.

Overall, the study emphasizes the importance of promoting the responsible and ethical use of GenAI in education. It underscores the need to integrate AI literacy and structured instructional strategies to ensure that GenAI enhances learning without compromising critical thinking and academic integrity.

Keywords: Generative Artificial Intelligence, Knowledge-Attitude-Practice, AI in Education, Academic Performance, AI Literacy, Higher Education Students.

Introduction

Artificial intelligence (AI) refers to the ability of machines, particularly computer systems, to simulate human intelligence processes such as learning, reasoning, problem-solving, and decision-making (Chen et al., 2020). Over the past decade, AI has rapidly evolved and become integrated into various sectors, including healthcare, business, transportation, communication, and education. Due to its adaptability and efficiency, AI has the potential to transform educational systems by enhancing student learning experiences, increasing instructor productivity, and improving institutional operations (Civaner et al., 2022). As digital technologies continue to advance, educational institutions are increasingly exploring how AI can support teaching, learning, assessment, and academic management.

In education, artificial intelligence has given rise to the field of Artificial Intelligence in Education (AIED), which focuses on the development and application of intelligent systems that support learners, teachers, and institutions (Chen et al., 2020; Hwang et al., 2020; Nemorin et al., 2023). AI technologies are now commonly used in adaptive learning platforms, automated assessments, virtual tutoring systems, and AI-powered writing assistants. These technologies provide personalized learning experiences, immediate feedback, and flexible access to educational resources (Holmes & Tuomi, 2022; Zawacki-Richter et al., 2019). Foremost in developed countries and China, AI applications are increasingly implemented across all levels of education with significant implications for teaching and learning practices (Tahiru, 2021). As AI adoption continues to expand globally, educational institutions are confronted with both opportunities and concerns related to ethics, academic integrity, data privacy, and student dependency on technology.

Among the most significant developments in AI is the emergence of generative artificial intelligence (GenAI). Giannakos et al. (2024) defined Generative AI as machine-learning models capable of producing new textual, visual, or multimodal content in response to human prompts. Tools such as ChatGPT, Google Gemini, and other large language models (LLMs) have become increasingly accessible and widely used by students for generating ideas, summarizing information, explaining concepts, solving problems, and improving productivity (Giannakos et al., 2024). Within education, GenAI serves both as a learning tool for students and a teaching aid for instructors by supporting writing, self-explanation, automated feedback, and content generation (Park, 2025). Because of these capabilities, GenAI is rapidly transforming the educational landscape and changing the way students engage with academic tasks.

Despite the potential benefits of GenAI, scholars emphasize the need for clearer definitions, ethical standards, and responsible-use guidelines within educational settings (Park, 2025). Existing studies indicate that students across different disciplines possess varying levels of knowledge, attitudes, and practices regarding GenAI use (Elbaz, 2024). Many students appreciate the efficiency, accessibility, and academic support provided by these tools; however, concerns regarding academic dishonesty, misinformation, overreliance, reduced critical thinking, and ethical misuse remain prevalent. Without proper guidance, students may misinterpret AI-generated information, rely excessively on automated responses, or unintentionally violate academic integrity policies.

In business education, where analytical reasoning, communication, decision-making, and problem-solving skills are essential, GenAI has become particularly relevant (Chan et al., 2023; Abdullah et al., 2024). These tools can support business students by assisting with computations, generating examples, improving clarity of expression, and explaining complex or abstract concepts. However, excessive dependence on GenAI may negatively affect the development of foundational competencies, especially in subjects such as Mathematics in the Modern World (MMW), where conceptual understanding and reasoning are central learning outcomes.

In the Philippines, several tertiary institutions have begun acknowledging and supporting the use of AI tools in academic settings. As GenAI becomes increasingly integrated into students' academic routines, understanding how learners perceive, understand, and utilize these technologies becomes more important. First-year students, in particular, are at a critical stage of developing study habits, ethical perspectives, and technological competencies that may shape their long-term academic behavior. Although many students demonstrate enthusiasm toward digital learning tools, research suggests that their understanding of AI systems, limitations, and ethical implications remains limited.

Despite the growing body of literature on GenAI in education, there remains a noticeable gap in studies focusing specifically on business administration students, particularly those enrolled in Mathematics in the Modern World courses. Business administration students frequently engage in analytical writing, case analysis, marketing ideation, financial interpretation, and professional communication, all of which may be influenced by GenAI usage (Elbaz, 2024; Park, 2025). Understanding how BSBA first year students taking up Mathematics in the Modern World at ISPSC interact with GenAI, including the advantages and disadvantages they perceive, may help inform institutional policies, AI literacy programs, ethical guidelines, and faculty strategies that promote responsible and effective use of AI technologies.

This study is therefore undertaken to examine the levels of knowledge, attitudes, practices, and perceived impacts of GenAI among BSBA first year students enrolled in Mathematics in the Modern World at ISPSC. Furthermore, the study aligns with United Nations Sustainable Development Goal 4 on Quality Education by promoting inclusive, equitable, and technology-supported learning opportunities. The findings of this study may provide empirical evidence necessary for developing informed educational policies, learning interventions, and student support systems that balance innovation with academic integrity and responsible technology use.

Statement of the Problem

The purpose of this study is to determine the knowledge, attitudes, practices, and perceived impacts of generative artificial intelligence (GenAI) among the first year BSBA students of Ilocos Sur Polytechnic State College, Main Campus, particularly those who are taking up Mathematics in the Modern World subject.

Specifically, it aims to answer the following questions:

1. What is the profile of the respondents along the following:

a. age,

b. sex,

c. major / area of specialization,

d. frequency of GenAI use, and

e. most frequently used GenAI tool?

2. What are the levels of knowledge, attitude, and practices of BSBA students regarding the use of GenAI?

3. What is the level of performance of the students in Mathematics in the Modern World?

4.1. Is there a significant relationship between the profile of the respondents and their level of knowledge, attitudes, and practices in the use of GenAI?

4.2. Is there a significant relationship between the levels of knowledge, attitude, and practices and the level of performance of the Mathematics in the Modern World students?

5. What perceived advantages and disadvantages do BSBA students identify regarding the use of GenAI?

6. What could be developed to guide the students on how to use GenAI responsibly, ethically, and effectively?

Review of Related Literature

This study is anchored on the Knowledge–Attitude–Practice (KAP) model, which posits

that human behavior progresses through three cognitive stages: knowledge acquisition, attitude formation, and behavioral manifestation (Launiala, 2009). In the educational technology context, the KAP model helps explain how students' understanding of a technology influences their attitudes and ultimately their patterns of use. The framework assumes that adequate knowledge of GenAI (e.g., awareness of benefits and limitations) can foster positive attitudes toward responsible adoption, which in turn translates into appropriate practices (e.g., using GenAI for learning rather than shortcutting assignments).

Several KAP and related surveys conducted since 2022 show consistent patterns: high awareness and experimentation with GenAI, partial operational knowledge (how to prompt), limited conceptual understanding (limits, hallucinations, bias), generally positive attitudes toward utility, and mixed ethical concerns. For example, studies across varied contexts (large multi-university surveys and domain-specific KAP studies) report that most students use GenAI for brainstorming and drafting, fewer use it for final submissions, and many express concern about academic integrity and accuracy. These studies also report that differences in use and attitude are correlated with field of study, prior digital literacy, and frequency of use (Stöhr, C. et al., 2024.)

Prevalence of GenAI Use among Students

Recent surveys indicate widespread adoption of GenAI among university students. The Higher Education Policy Institute (HEPI, 2025) reported that over 85% of students in the United Kingdom had used GenAI tools for academic purposes. Similarly, a U.S. survey found that 86% of respondents had integrated AI tools into their study routines, primarily for summarization, drafting, and test preparation (Kelly, 2024). Such data demonstrate the rapid normalization of GenAI as a standard educational resource. In addition, Bailey et al. (2021) found that the amount of time spent on chatbot use in a second language writing class was positively associated with students' confidence in using the target language and perception of task value.

This is further supported by the study conducted by Torrato et al., 2024 that many students know about the AI tools and they are using it already alongside the paraphrasing app. Interestingly, student respondents seem to be using the tool more than the teachers. This suggests that there is a need for the teachers to learn how to use the app so that they can better engage with the students

Students' Knowledge of GenAI

Studies measuring students' knowledge of GenAI reveal a pattern of partial understanding. Learners often demonstrate operational proficiency—knowing how to use prompts effectively—but limited awareness of the underlying algorithms, biases, and ethical implications (Chan et al., 2023). Misconceptions about data privacy, source reliability, and "hallucinated" content are common (Park, 2025). These findings underscore the need for structured AI-literacy programs in higher education.

Moreover, Torrato et al. (2024) found that students appear to understand the concept of ChatGPT as an artificial intelligence capable of generating human-like responses. They noted that students recognize several key characteristics of ChatGPT: it only provides answers in English, facilitates human-like conversations, is trained on a diverse range of topics, is a commercial product rather than a free service, and offers instant feedback on pronunciation. The authors concluded that these findings reflect the characteristics of Gen Z learners.

Attitudes toward GenAI

Student attitudes toward Generative AI (GenAI) are generally positive but mixed. In a study by Dahmash et al. (2020), students with a strong understanding of AI reported lower levels of anxiety regarding it. Conversely, Jeffrey's (2020) and Kong et al., (2025) research revealed conflicting opinions among college students. Those who had a high level of knowledge about AI and believed it could personally benefit them also expressed concerns about its potential impact on human jobs.

Many students view GenAI as a valuable study partner that enhances efficiency, confidence, and engagement (Chan et al., 2023; Giannakos et al., 2024). Other studies indicate that students find AI tools such as chatbots and Plot Generators helpful for improving language acquisition. These tools assist with grammar, guide idea generation, and help students communicate effectively in the target language (Bailey et al., 2021; Sumakul et al., 2022). Additionally, the use of AI-based chatbots for learning support has been shown to improve students' academic performance, self-efficacy, attitudes toward learning, and motivation (Essel et al., 2022; Lee et al., 2022).

Most students agree that AI will significantly impact their fields and future careers (Bisdas et al., 2021) and express a desire to incorporate AI into their learning and future professional practices (Lee et al., 2022). As a result, they view the integration of AI as an essential component of university curricula (Abdelwahab et al., 2023).

However, concerns persist regarding academic integrity, overreliance on automated content, and the perceived devaluation of human creativity (Elbaz, 2024). Differences in attitude are influenced by students' prior digital literacy, socioeconomic status, and familiarity with AI systems.

Practices and Utilization Patterns

KAP studies consistently find that students use GenAI for tasks such as generating drafts, rephrasing text, summarizing readings, and preparing presentations (Kelly, 2024; Suchanek, 2025). In business disciplines, GenAI supports case-study analysis, report writing, marketing ideation, and data interpretation (Elbaz, 2024). Many learners adopt an iterative "AI-co-pilot" approach—prompting, revising, and refining outputs—while others risk academic misconduct by submitting unedited AI-generated content (Giannakos et al., 2024). Yu (2023) and Roose (2023) emphasize that for students' learning processes to be successful and meaningful, teachers must instruct them on the appropriate use of technology, particularly AI tools. Instead of banning these devices, it is more beneficial to integrate them into the educational system, allowing students to learn how to use them properly and responsibly. However, it is crucial to maintain a balance between students' autonomy and the requirements of academic integrity to ensure they utilize these resources appropriately.

Schools must adapt their teaching strategies and assessment standards to ensure that students can engage with this new technology while upholding academic integrity (Torrato et al., 2023; Torrato, 2022). Teachers can leverage various instructional techniques and strategies made possible by artificial intelligence technologies, such as ChatGPT, to provide students with engaging, effective, and meaningful learning experiences (Robledo et al., 2023; Pratim, 2023).

Some effective instructional approaches include project-based learning, experiential problem-based learning, cooperative learning, inquiry-based learning, and educational games. Through project-based learning, educators can help students enhance their design and problem-solving skills by guiding them in the use of AI technology. In experiential education, teachers can facilitate hands-on activities such as robotics, coding, and programming to deepen students' understanding of current advancements in artificial intelligence (Kocon, 2023). Inquiry-based learning encourages students to actively explore AI-related topics through research, enhancing their problem-solving skills. In cooperative learning settings, teachers can guide students in exploring the latest technologies and applications in the field (Wu, 2023).

Perceived Advantages of GenAI Use

One of the primary applications of GenAI in higher education is to enhance students' learning experiences by generating highly original output in response to user prompts. GenAI tools are also considered valuable research aids, as they can help in generating ideas, synthesizing information, and summarizing large volumes of text data. This capability assists researchers in analyzing data and composing their writing, thereby improving efficiency in the publication process (Berg, 2023; Kitamura, 2023; van Dis et

al., 2023). Additionally, GenAI presents opportunities for improving learning assessments (Crompton & Burke, 2023).

In education, ChatGPT's user-friendly and intuitive interface potentially reduces barriers to its wide adoption across educational settings and for different groups of teachers and learners (Kasneci et al., 2023), thereby overcoming many of the obstacles reported in the AIED literature. ChatGPT and similar AI applications can serve as self-study tools (Nisar & Aslam, 2023), assisting students in acquiring information, answering questions (Chen et al., 2023), facilitating group discussions, and resolving problems instantaneously (Rahman & Watanobe, 2023), thereby enriching students' learning experiences, offering personalized support, and potentially boosting academic performance (Kasneci et al., 2023). ChatGPT has also been effectively deployed in the design of educational materials and creative assessments, providing new avenues for content creation and curriculum development (Cotton, Cotton, & Shipway, 2023; Dijkstra et al., 2022).

The literature identifies several benefits of GenAI use:

1. Efficiency and productivity—students can produce drafts or summaries rapidly (HEPI, 2025).

2. Accessibility and scaffolding—AI explanations support diverse learning needs (Giannakos et al., 2024).

3. Personalized feedback—GenAI can provide immediate formative feedback and suggestions for improvement (Park, 2025).

4. Enhanced engagement—interactive prompting fosters curiosity and exploration (Chan et al., 2023).

These advantages are particularly salient in business education, where iterative report writing and scenario analysis are common tasks.

Perceived Disadvantages and Ethical Concerns

Critical issues in higher education include assessment, examination, and academic integrity (Cotton et al., 2023; Eke, 2023; Yeadon & Halliday, 2023). Advanced AI tools like ChatGPT present significant challenges, as they can closely mimic students' work, making it difficult to distinguish between original contributions and AI-generated content. This raises concerns about untraceable plagiarism and cheating, prompting a reevaluation of many established assessment methods (Farazouli et al., 2023).

Critics have noted the technical limitations of ChatGPT, which sometimes produces incorrect information or "hallucinates" (Weise & Metz, 2023), leading to concerns about reliability. Bogost (2022, p. 1) observes that "ChatGPT and the technologies that underlie it are less about persuasive writing and more about superb bullshitting." Large language models like ChatGPT depend heavily on training data sourced from the internet, resulting in outputs that can reflect existing biases present in the data. This raises concerns about the potential reinforcement of societal biases, imbalances, or prejudices prevalent in online content (Deng & Lin, 2022).

Moreover, a lack of understanding of AI capabilities and limitations among end users may lead to misuse and over-reliance on AI technologies by both teachers and learners (Kasneci et al., 2023). As AI becomes more integrated into educational systems, significant concerns related to copyright issues, data privacy, and security also arise (ibid.). On the other hand, the advantages provided by ChatGPT and other AI tools may create disparities, as some users may benefit from these technologies over non-users, thus exacerbating inequalities. Students with access to and experience with sophisticated AI tools may outpace those without them (Adiguzel et al., 2023).

Lastly, the sustainability of these technologies and their energy consumption cannot be overlooked. The substantial power demands of

AI systems contribute to a significant environmental footprint (Kasneci et al., 2023). These considerations suggest that while there is excitement about the potential of ChatGPT, there is also a growing need for a critical discourse on AI and its impact on education and society. It is likely that the deployment of AI in education will affect diverse groups in various educational contexts differently, raising important questions about power, disadvantage, and marginalization (Selwyn, 2022).

There are other challenges associated with the limitations of Generative AI (GenAI), particularly concerning ethics, plagiarism, and academic integrity. Kumar (2023) analyzed AI-generated responses to academic writing prompts and found that, while the outputs were mostly original and relevant to the topics, they included inappropriate references and lacked personal perspectives that AI is generally unable to produce.

Constructing effective prompts for GenAI also presents a challenge, as it requires a certain level of linguistic skill. Moreover, excessive reliance on GenAI tools may hinder students' genuine efforts to develop their writing competencies (Warschauer et al., 2023). Additionally, GenAI-generated content can be biased, inaccurate, or harmful if the underlying dataset contains such elements (Harrer, 2023). For instance, AI-generated images may include nudity or obscenity and could be created for malicious purposes, such as deepfakes (Maerten & Soydaner, 2023).

GenAI tools cannot assess the validity of the content they produce, nor can they determine whether their outputs contain falsehoods or misinformation. Thus, their use requires human oversight (Lubowitz, 2023). Furthermore, since most plagiarism checkers struggle to detect AI-generated text, it can be challenging to ascertain whether a piece of writing is the author's original work (Peres et al., 2023). Zhai (2022) warns that the use of text-to-text generators like ChatGPT may undermine the validity of assessment practices, especially those involving written assignments. Therefore, the widespread use of GenAI poses a serious threat to academic integrity in higher education. Students might become overly reliant on AI-generated text, which could diminish their critical thinking and writing skills (Suchanek, 2025). In response, institutions should emphasize the need for ethical guidelines, the integration of AI literacy, and the redesign of transparent assessment practices.

Methodology

Research Design

This study made used of quantitative research employing descriptive, general correlational, and developmental approaches. According to Bhandari (2020), quantitative research is the process of gathering and analyzing numerical data. It can be used to discover patterns and averages, to make predictions, to test causal relationships, and to generalize results to larger populations. Pantaleon (2022) defined descriptive research design as a scientific method that involves observing and describing an existing phenomenon. In this study, the level of the BSBA students' knowledge, attitude, and practice in the use of GenAI were described. In addition, the study also determined the level of academic performance of the respondents. The researcher looked into the perceived advantages and disadvantages of using GenAI in their studies.

Population and Locale of the Study

The random sampling method was used to select the respondents of the study, who were the first year Bachelor of Science in Business Administration students who are taking up Mathematics in the Modern World of Ilocos Sur Polytechnic State College, Main Campus for the 2025–2026 school year. This method involved the inclusion of some of the members of the defined population as potential participants in the study.

However, in accordance with ethical research standards, informed consent and voluntary participation was rigorously enforced. Selected BSBA students who are taking up MMW were invited to participate in the study but only those who were willingly agreed were included in the actual data collection. Respondents were informed of the purpose of the study, the nature

of their involvement, their right to withdraw at any time without penalty, and the measures taken to protect their confidentiality and data privacy. This approach respects the autonomy of the individuals while aiming for a representation of the population as ethically possible.

Out of 247 first year BSBA students, there were 118 who served as the respondents of this study.

Research Instrument

To further develop this study, the researcher created a survey questionnaire based on the study of Robledo, 2023 and Torrato et al., 2023. This questionnaire aimed to assess the knowledge, attitudes, and practices of BSBA students regarding the use of GenAI in education. The researcher used a five-part survey questionnaire.

Part I of the research instrument is the profile of the respondents along age, gender, major/ area of specialization, frequency of GenAI use, and the most frequently used GenAI tool. Part II assessed the perceived knowledge on GenAI of the students. Part III gathered the perceived attitudes towards GenAI, Part IV determined the level of practices in using Gen AI of the students. Part V is the perceived advantages and disadvantages of GenAI.

The data-gathering instruments has been validated by three experts. The validity result calculated is 4.67, indicating that the questionnaire is suitable for conducting the study. The questionnaire also underwent pilot testing with the first year students at the College of Computing Studies, Sta. Maria campus. The computed value using the Cronbach's alpha coefficient is 0.89, which is considered reliable.

Data Gathering Procedure

The survey questionnaire served as the main instrument for data collection in this study. It was given to selected BSBA students in Mathematics in the Modern World of Ilocos Sur Polytechnic State College, Main Campus for the School Year 2025–2026 who were willing to participate. The data-gathering procedure followed an organized and ethically acceptable approach to assure accuracy, voluntary participation, and protection of participant rights.

Before data collection, the researcher acquired approval from the ISPSC Research office as well as from the REC office. Following this, a formal informed consent process was carried out. Respondents were given a permission form that covers the objective of the study, its goals, the procedures involved, potential risks and benefits, and the assurance of voluntary participation. It was also clearly mentioned that participants have the ability to refuse or withdraw from the study at any moment without any kind of penalty.

The survey were administered face-to-face, depending on the preference and availability of the respondents. Instructions for answering were clearly provided to reduce response errors. Respondents were assured that no personally identifying information were collected unless necessary, and if so, it was coded and kept confidential. All data were maintained securely, accessible only to the researcher, and were disposed of properly following the study's completion in compliance with data protection protocols.

The researcher understood that the ethical considerations have been taken into account, including:

- Respect for autonomy by promoting voluntary and informed participation.
- Confidentiality and anonymity, where possible, to protect the identity and data of participants.
- Nonviolence, assuring that no harm—physical, emotional, or psychological—will come to participants.
- Integrity and honesty, especially in reporting findings truthfully and without manipulation.

In terms of vulnerabilities and limits, self-reported data through surveys may be prone to social desirability bias, non-response bias, or misreading of questions by some respondents. The researcher took proactive initiatives to mitigate these risks by pre-testing the instrument,

conducting clarifying sessions, and making hard copies.

Through careful preparation, ethical adherence, and sensitivity to the needs and rights of the respondents, the researcher attempt to assure the credibility, reliability, and ethical soundness of the data-gathering process.

Statistical Treatment of Data

The Megastat was utilized in the statistical analysis and treatment of data to be gathered. Specifically,

Frequency Count and Percentage were used to analyze the profile of the respondents, the usage of GenAI and the perceived advantages and disadvantages.

Mean was used to analyze the perceived level of knowledge, attitudes, and practices of the BSBA students.

Normality test was used to determine if the data is distributed normally or not prior to the utilization of parametric or non-parametric statistical treatment.

Pearson Product-Moment Correlation Coefficient was used to determine the significant relationship between the profile of the respondents and their level of knowledge, attitude, and practices in the use of GenAI among the BSBA students.

Data Categorization

To determine the level of knowledge and attitude in the use of GenAI among the BSBA students, the following 5-point Likert scale will be used:

Rating	Statistical Limit	Descriptive Rating
5	4.21 – 5.00	Very High (VH)
4	3.41 – 4.20	High (H)
3	2.61 – 3.40	Fair (F)
2	1.81 – 2.60	Low (L)
1	1.00 – 1.80	Very Low (VL)

To determine the level of practice in the use of GenAI among the BSBA students, the following 5-point Likert scale will be used:

Rating	Statistical Limit	Descriptive Rating
5	4.21 – 5.00	Always (A)
4	3.41 – 4.20	Often (O)
3	2.61 – 3.40	Sometimes (S)
2	1.81 – 2.60	Rarely (R)
1	1.00 – 1.80	Never (N)

Range of Scores	Descriptive Rating
1.00 – 1.25	Excellent
1.50 – 1.75	Very Good
2.00 – 2.25	Good
2.50 – 2.75	Fair
3.00	Passing
4.00	Conditional
5.00	Failure

Ethical Considerations

This portion provides specifications on the observation of ethical consideration, along with the following:

Conflict of Interest. The researcher is required to reveal any potential conflicts of interest that could compromise the study's integrity. This encompasses financial interests, personal relationships, or affiliations that may affect the research results. The researcher must ensure that her conclusions and interpretations are only derived from the obtained data, free from unrelated influences or personal biases.

Participants/Respondents. Participation in the study must be completely voluntary, free from pressure or improper influence on the BSBA students. Participants must be apprised of their ability to withdraw from the study at any moment without facing unfavourable consequences.

Privacy and Confidentiality. The researcher must adopt strategies to safeguard the privacy of participants. This entails anonymizing data and guaranteeing that personal identifiers are not associated with the responses. Researcher must implement confidentiality agreements to protect the information supplied by participants,

guaranteeing access solely to authorized individuals engaged in the study.

Informed Consent. Respondents must be provided with clear and thorough information regarding the study's objectives, methodologies, potential hazards, and advantages prior to consenting to participate. Written informed permission must be acquired, guaranteeing that respondents comprehend their rights and the nature of their participation in the research.

Benefits. The study intends promote self-awareness and digital responsibility in the use of emerging AI tools, encouraging critical evaluation and ethical application of technology in academic tasks. The findings will inform faculty on how students actually use GenAI, enabling them to design AI-integrated learning strategies that balance efficiency with academic integrity. Results can also guide the inclusion of AI literacy modules or policies that standardize responsible GenAI use in the CBME programs.

Community Considerations. The researcher should explore the broader consequences of the study on the educational community and guarantee that the research contributes positively to the area of education. Engaging with key stakeholders, such as faculty members and educational administrators, can assist match the study's aims with community needs and expectations.

Risks and Remedies. The researchers should do a thorough assessment of any potential risks related with participation in the study, including emotional distress or discomfort related to statistical concepts. If participants experience worries or stress connected to the study, the researchers should provide access to support services, such as counselling or academic assistance, to help offset these risks. In the event that a participant experiences harm as a result of their involvement in the study, the researchers should have a plan in place to address and correct the issue, including offering appropriate assistance and services.

Results and Discussion

The succeeding discussions include the presentation, interpretation, and analysis of significant findings regarding the levels of knowledge, attitudes, and practices (KAP) of BSBA students toward Generative Artificial Intelligence (GenAI), their performance in Mathematics in the Modern World (MMW), and the relationship between these variables.

Profile of the Respondents

The table below shows the profile of the respondents along age, sex, area of specialization, frequency of GenAI use, and the most frequently used GenAI tool.

Table 1. Profile of the Respondents

Age	**Frequency**	**Percentage**
17 – 18	76	64.4
19 – 20	35	29.7
21 - 22	4	4
23 - 24	3	3
Total	**118**	**100%**
Sex		
Male	33	28
Female	85	72
Total	**118**	**100**
Area of Specialization		
Financial Management	67	56.8
Human Resource	51	43.2
Total	**118**	**100**
Frequency of GenAI use		
Daily	10	8.5
Weekly	19	16.1
Occasionally	39	33.1
Rarely	42	35.6
Never	8	6.8
Total	**118**	**100**
Most Frequently Used GenAI Tool		
ChatGPT	23	19.5
Gemini	16	13.6

Grammarly	26	22
Quillbot	90	76.3

The findings show that the majority of respondents were aged 17–18 years old or 64.4%, followed by 19–20 years old or 29.7%. This indicates that most participants belong to late adolescence or early adulthood, a developmental stage characterized by increased technological adaptability and digital engagement (Torrato, et al., 2024). Capgemini (2023) revealed that younger generations, particularly millennials and Generation Z, demonstrate higher levels of engagement with GenAI tools compared to older cohorts. These groups are more likely to integrate AI tools into daily activities such as academic work, communication, and problem-solving tasks. Similarly, findings from PricewaterCoopers (2025) indicate that younger users exhibit stronger emotional and cognitive responses to AI, including both enthusiasm and anxiety, suggesting deeper interaction with the technology. Supporting these findings, Bughin, Jacques et al. (2021) found that younger individuals are more likely to adopt AI technologies due to greater digital literacy and openness to innovation. These findings suggest that age influences not only adoption rates but also the intensity and purpose of GenAI use.

In terms of sex, 85 or 72% were females, while 33 or 28% were males. A study published in Frontiers Media (2025) found that female respondents in educational settings reported higher perceived usefulness and engagement with AI tools. This suggests that women may be more receptive to integrating AI into structured environments such as education. In contrast, broader population-based studies indicate that men are generally more likely to adopt GenAI tools and use them more frequently than women (Borg, Kerri et al. 2022). Further research attributes this disparity to differences in risk perception, with women expressing greater concern regarding privacy, ethical implications, and job displacement (Zhang, Yong & Müller, Tobias 2026). These findings suggest that gender differences in GenAI use are context-dependent and influenced by psychological and social factors rather than purely technical ability.

Regarding area of specialization, 67 or 56.8% are Financial Management students, slightly outnumbered Human Resource students, 51 or 43.2%. In higher education, students in technology-oriented and research-intensive disciplines tend to exhibit higher levels of adoption. A study in Frontiers in Education (2025) found that students in specialized programs such as medical informatics demonstrate increased usage as they progress academically. Dwivedi, Yogesh K. et al. (2023) highlighted that professionals in knowledge-intensive fields are more likely to integrate AI tools into their workflows, particularly for writing, data analysis, and decision-making tasks. Similarly, Van Dis, Eva A. M. et al. (2023) reported that generative AI is increasingly used in academic research for drafting and ideation, though concerns about reliability persist. These studies indicate that specialization plays a crucial role in shaping how GenAI tools are utilized. It affects both the frequency and purpose of GenAI use, with higher adoption in fields requiring cognitive and analytical tasks.

With respect to GenAI usage, most students used GenAI rarely with 42 or 35.6% and only10 or 8.5% reported daily use. The predominance of rare usage suggests that while students are aware of GenAI tools, they are not yet fully integrated into daily academic routines. The Pw Global Workforce Survey (2025) reported that while more than half of respondents have used GenAI tools, only a minority engage with them daily. This suggests that although access to AI is expanding,habitual use is still developing. Kasneci, Enkelejda et al. (2023) supports this finding, indicating that students and professionals often use AI tools intermittently, primarily when assistance is needed for specific tasks such as writing or coding. The study emphasizes that frequency of use is closely tied to perceived usefulness and task relevance. Thus, GenAI usage is transitioning from occasional experimentation to more regular integration, though daily reliance remains limited.

The most frequently used GenAI tools among respondents among the listed tools is the QuillBot, with 90 or 76.3% users, followed by Grammarly, ChatGPT, and Gemini with 16 users (13.6%) only. These results indicate a strong preference for AI-powered writing and paraphrasing tools, particularly QuillBot, which significantly surpasses other tools in usage. This trend suggests that respondents primarily use GenAI for writing support, paraphrasing, and language enhancement, rather than for more complex tasks such as problem-solving or content generation. The high usage of QuillBot and Grammarly indicates that users prioritize tools that directly assist in improving written outputs, especially in academic contexts where paraphrasing and grammar checking are essential. Meanwhile, the relatively lower use of ChatGPT and Gemini may imply that respondents are either less familiar with conversational AI tools or use them less frequently for academic writing compared to specialized tools. These findings are supported by Dwivedi et al. (2023), who highlighted that generative AI is widely used for content creation, editing, and academic writing support, with students favoring tools that simplify writing tasks.

Similarly, Kasneci et al. (2023) found that learners often rely on AI tools for drafting and refining written work, particularly when they need assistance with language accuracy and structure. This aligns with the high usage of Grammarly and QuillBot observed in the data.

Moreover, Van Dis et al. (2023) noted that while conversational AI tools like ChatGPT are rapidly gaining popularity, their use is often broader and more exploratory, including idea generation and explanation of concepts, rather than focused writing correction. This may explain why ChatGPT, despite being widely recognized, ranks lower than specialized tools in this dataset. Additionally, Statista (2024–2025) indicate that while chatbot tools are widely known, writing enhancement tools tend to be used more consistently on a day-to-day basis, particularly in academic and professional settings.

The dominance of QuillBot in this study may also reflect ease of use, accessibility, and specific functionality, especially in paraphrasing—an essential skill in academic writing. This is further supported by findings from Cotton, Debby et al. (2023) and Zhai (2022), who emphasized that students tend to adopt AI tools that directly address immediate academic needs, such as rewriting and summarizing texts. Similarly, Tlili, Ahmed et al. (2023) found that early AI engagement among university students commonly centers on language editing and idea generation.

Finally, the data reveal that respondents favor function-specific GenAI tools over general-purpose AI platforms. This preference underscores the practical and task-oriented nature of GenAI use, particularly in academic environments. The findings are consistent with recent studies mentioned earlier, which show that while advanced AI tools are emerging, users tend to rely more heavily on applications that provide direct, efficient, and reliable support for writing tasks.

Levels of Knowledge, Attitude, and Practices of BSBA students regarding the use of GenAI

The table below presents the level of knowledge of respondents regarding Generative AI, showing an overall mean of 3.43 described as High. This indicates that respondents generally possess a strong understanding of the basic concepts, functions, and applications of GenAI, although some misconceptions remain. The findings suggest that while learners are already familiar with the capabilities of the tools, their understanding is still developing, particularly in terms of limitations and technical foundations.

Table 2. Students' Level of Knowledge on the Use of GenAI

Indicators	Mean	DR
1. Generative AI uses artificial intelligence to generate human-like responses.	3.89	H
2. Generative AI can only provide answers in English.	2.72	F

3. Generative AI responses are 100% accurate.	2.89	F
4. Generative AI is designed to provide human-like conversations.	3.22	F
5. Generative AI is trained on a diverse range of topics.	3.56	H
6. Generative AI is a commercial product and is not available for free.	2.56	L
7. Generative AI can only provide text-based responses.	2.94	F
8. Generative AI responses are generated by a pre-programmed algorithm.	3.22	F
9. Generative AI can check and grade student assignments.	3.06	F
10. Generative AI can help teachers with lesson planning.	4.00	H
11. Generative AI can be used to assist students with their coursework.	4.11	H
12. Generative AI can be integrated with virtual learning environments.	3.61	H
13. Generative AI can create essays and articles about a specific topic.	3.94	H
14. Generative AI can provide additional teaching resources and learning materials for students.	4.00	H
15. Generative AI can provide instant feedback on pronunciation.	3.67	H
OVERALL	**3.43**	**H**

A closer examination of the indicators reveals that respondents demonstrate high awareness of the core functions of GenAI. Items such as "GenAI can assist students with coursework" (4.11), "can help teachers with lesson planning" (4.00), and "can provide additional teaching resources" (4.00) received high ratings. This indicates that respondents clearly recognize the educational value of GenAI as a support tool for both teaching and learning. Similarly, high scores on items related to essay generation (3.94), human-like responses (3.89), and integration with virtual learning environments (3.61) suggest that respondents understand the practical and functional capabilities of GenAI systems. These findings align with recent research by Yogesh K. Dwivedi et al. (2023), which emphasizes that generative AI is widely perceived as a transformative tool in education, particularly in content generation, instructional support, and personalized learning.

However, several indicators fall within the fair (F) and low (L) categories, highlighting persistent misconceptions about GenAI. For instance, respondents moderately agreed with incorrect statements such as "GenAI responses are 100% accurate" (2.89) and "GenAI can only provide answers in English" (2.72). These results indicate a lack of full understanding of the limitations, multilingual capabilities, and probabilistic nature of AI systems. Additionally, the belief that GenAI is purely pre-programmed (3.22) reflects confusion about how modern AI models function, particularly large language models that rely on machine learning rather than fixed programming. These misconceptions are supported by recent literature. Kasneci et al. (2023) found that while students are increasingly familiar with AI tools, many overestimate their accuracy and reliability, often assuming outputs are always correct. Similarly, Van Dis et al. (2023) emphasized that users frequently misunderstand how generative AI works, particularly its tendency to produce plausible but sometimes incorrect or biased information.

Another notable finding is the low rating (2.56) for the statement that GenAI is not available for free, suggesting that respondents are aware of the accessibility of AI tools, many of which offer free versions. This reflects increased exposure and actual usage of AI platforms. Meanwhile, the fair rating for the ability of GenAI to grade assignments (3.06) indicates some uncertainty about its role in formal assessment, which is consistent with ongoing debates in education regarding the reliability and ethical implications of AI-assisted grading.

Overall, the data indicate that respondents have a strong foundational knowledge of Generative AI, particularly in its applications in education. The high level of awareness suggests that respondents are learning about GenAI not only through formal instruction but also through direct engagement with these tools. However, gaps remain in their understanding of its limitations, accuracy, and underlying mechanisms. These findings suggest the need for enhanced AI literacy programs, focusing not only on how to use GenAI tools but also on how they work and their potential risks. Strengthening this knowledge will enable students to use GenAI more effectively, responsibly, and critically in academic settings.

Table 3. Students' Level of Attitude on the Use of GenAI

Indicators	Mean	DR
1. I find GenAI helpful in answering questions.	3.39	F
2. I trust the responses provided by GenAI .	2.94	F
3. I find GenAI responses to be accurate.	3.06	F
4. I find GenAI to be a useful tool for learning.	3.83	H
5. I believe GenAI has the potential to revolutionize the way we access information.	3.44	H
6. I am concerned about the ethical implications of using Generative AI.	3.89	H
7. I believe that using Generative AI to complete academic assignments is unethical.	3.50	H
8. I believe that students and teachers should be allowed to use GenAI in the classroom.	3.11	F
9. I believe that using GenAI for academic purposes should be discouraged.	2.94	F
10. I believe that GenAI should be banned in all schools and academic institutions.	2.61	F
11. I believe that the use of GenAI for academic purposes undermines the learning process.	3.06	F
12. I think that the use of GenAI for academic purposes should be monitored and regulated.	3.72	H
13. I think people who use GenAI for academic purposes are cheating.	2.94	F
14. I think that school educators should educate students on the dangers of relying on GenAI for academic purposes.	3.83	H
15. I think GenAI is useful when used correctly and monitored accordingly.	4.00	H
OVERALL	**3.35**	**H**

Table 3 presents the level of attitude of BSBA students toward the use of Generative AI, with an overall mean of 3.35 described as High This indicates that students generally hold a positive yet cautious attitude toward GenAI. While they recognize its usefulness and transformative potential, they also express concerns regarding ethical implications and the need for proper regulation. This balanced perspective suggests that students are not blindly accepting AI technologies but are instead approaching them with critical awareness and responsibility.

A closer analysis shows that students strongly agree that GenAI is a valuable learning tool, as reflected in high ratings for its usefulness (3.83) and its potential to revolutionize access to information (3.44). The highest-rated item, "GenAI is useful when used correctly and monitored accordingly" (4.00), reinforces the idea that students support responsible and guided use rather than unrestricted adoption. This aligns with findings from Dwivedi et al. (2023), who emphasized that users perceive generative AI as highly beneficial for education, particularly in enhancing access to knowledge and supporting learning processes.

At the same time, the data reveal moderate levels of trust and perceived accuracy, with indicators such as trust (2.94) and accuracy (3.06) rated only as fair. This suggests that while students use GenAI tools, they remain somewhat skeptical about the reliability of its outputs. Such skepticism is consistent with recent research by Kasneci et al. (2023), which found that students often use AI tools cautiously, recognizing that responses may not always be accurate and require verification.

Ethical concerns are also prominent in the findings. Students agree that there are ethical implications in using GenAI (3.89) and that using it to complete academic assignments may be unethical (3.50). Additionally, they strongly support the idea that AI use should be monitored and regulated (3.72) and that educators should guide students on its proper use (3.83). These results reflect a growing awareness of issues such as academic integrity, overreliance, and misuse. Van Dis et al. (2023) similarly highlighted the need for ethical frameworks and institutional guidelines to ensure responsible AI use in education.

Interestingly, students do not support extreme restrictions. They disagree with statements suggesting that GenAI should be banned (2.61), discouraged (2.94), or that its use automatically undermines learning (3.06). They also do not strongly view AI use as cheating (2.94). This indicates that students adopt a pragmatic stance, recognizing both the benefits and limitations of GenAI. Rather than rejecting the technology, they advocate for balanced integration with proper oversight. This perspective is supported by global education reports such as OECD (2023), which emphasize that students generally favor the integration of AI in learning environments when accompanied by clear policies and ethical guidance.

In summary, BSBA students demonstrate a generally positive but critically aware attitude toward Generative AI. They acknowledge its usefulness and transformative potential while expressing concerns about ethics, accuracy, and proper use. Their preference for regulated and guided implementation rather than prohibition highlights the need for institutions to develop clear policies and integrate AI literacy into the curriculum. These findings underscore the importance of fostering responsible AI use to maximize its benefits while minimizing potential risks in academic settings.

Table 4. Students' Level of Practices on the Use of GenAI

Indicators	Mean	DR
1. I can use GenAI for remote or online education.	3.44	O
2. I usually review and revise the outputs of GenAI before using or submitting them.	3.56	O
3. I use third-party paraphrasing tools to avoid plagiarism detection.	3.33	S
4. I use GenAI to learn or teach a foreign language.	3.56	O
5. I use GenAI to get an initial idea about specific topics.	3.89	O
6. I use GenAI more often than Google Search.	2.83	S
7. I use GenAI to confirm my ideas or arguments.	3.44	O
8. I use GenAI to explain complicated concepts or topics.	3.72	O
9. I use GenAI for educational purposes only.	3.44	O
10. I use GenAI to make my work easier and faster.	3.28	S
OVERALL	**3.45**	**O**

The table presents the level of practices of BSBA students regarding the use of Generative AI, with an overall mean of 3.45 (Often). This indicates that students frequently utilize GenAI tools in their academic activities, suggesting that such technologies have become an integral part of their learning processes. The findings reflect a shift toward technology-assisted learning, where students actively incorporate AI tools into various academic tasks.

A closer look at the indicators shows that students most often use GenAI for idea

generation (3.89) and explaining complex concepts (3.72). These high ratings suggest that learners rely on AI as a cognitive support tool, particularly in understanding difficult topics and initiating academic work. Similarly, frequent use for remote or online education (3.44), confirming ideas (3.44), and educational purposes (3.44) indicates that GenAI plays a supportive role in independent and flexible learning environments. These findings align with research by Kasneci et al. (2023), which highlights that students commonly use AI tools for explanation, brainstorming, and learning support, particularly in self-directed contexts.

Another important practice is that students often review and revise AI-generated outputs before submission (3.56). This suggests a level of critical engagement and awareness, indicating that students do not rely entirely on AI outputs but instead evaluate and refine them. This behavior reflects the development of Metacognition, where learners monitor and regulate their use of technology. Van Dis et al. (2023) similarly emphasized the importance of human oversight when using generative AI, as outputs may contain inaccuracies or biases.

However, some practices raise academic integrity concerns. The use of third-party paraphrasing tools (3.33) suggests that students sometimes rely on AI to modify content in ways that may bypass plagiarism detection systems. This reflects a potential misuse of GenAI and highlights the need for clearer guidelines on ethical use. Supporting this, Dwivedi et al. (2023) noted that while GenAI enhances productivity, it also introduces challenges related to academic honesty and responsible usage.

The data also show that students sometimes use GenAI more than traditional search engines (2.83), indicating that AI is becoming a preferred source of information, though it has not completely replaced conventional tools. This suggests a transitional phase where students are integrating AI into their existing study habits rather than fully depending on it. Additionally, the use of GenAI to make work easier and faster (3.28) reflects its role in improving efficiency and productivity, which is one of the key advantages of AI technologies in education.

In summary, the data indicate that BSBA students often use Generative AI in meaningful and practical ways, particularly for learning support, idea generation, and improving efficiency. At the same time, the findings reveal the need for guided use, ethical standards, and institutional policies to address potential misuse. These results are consistent with recent studies mentioned above, which show that while GenAI is becoming an essential academic tool, its effective use depends on students' ability to apply it critically, responsibly, and purposefully.

Table 5. Level of Performance of the Students in Mathematics in the Modern World

Range of Scores	f	Descriptive Rating
1.00 – 1.25	8	Excellent
1.50 – 1.75	40	Very Good
2.00 – 2.25	44	Good
2.50 – 2.75	20	Fair
3.00	6	Passing

The table presents the level of performance of students in Mathematics in the Modern World. The data show that the largest proportion of students falls under the Good category (2.00–2.25) with 44 respondents, followed closely by those in the Very Good category (1.50–1.75) with 40 respondents. A smaller number achieved Excellent (1.00–1.25) with 8 students, while 20 students were classified as Fair (2.50–2.75) and only 6 students were at the Passing level (3.00). Overall, the distribution indicates that most students are performing at a moderate to above-average level, with relatively few at the extremes of very high or very low performance.

This pattern suggests that while the majority of learners have achieved satisfactory understanding of the subject, there is still a limited proportion reaching the highest level of mastery. The clustering of students in the Good and Very Good ranges implies that students possess adequate conceptual understanding and problem-solving skills, but may still struggle with higher-

order thinking tasks required for excellence. At the same time, the presence of students in the Fair and Passing categories indicates that a segment of learners may be experiencing difficulties in grasping fundamental mathematical concepts, which could be attributed to gaps in prior knowledge, learning strategies, or engagement.

Research shows that many students tend to perform within the average range due to challenges in developing deep conceptual understanding rather than procedural knowledge. Kasneci et al. (2023) emphasized that students often require more support in higher-order thinking and problem-solving, particularly in subjects like mathematics where conceptual clarity is essential. Similarly, Boaler (2022) and Zhao & Watterston (2025) highlighted that traditional teaching approaches often result in surface-level understanding, leading to average performance rather than excellence. According to Dwivedi et al. (2023), integrating interactive and student-centered approaches, including the use of digital tools, can enhance comprehension and improve learning outcomes. This supports the observation that while many students perform at a Good level, there is potential to elevate performance through more engaging and innovative teaching strategies.

Additionally, global assessments and recent educational reports indicate that mathematics performance often follows a similar distribution, with a concentration of students in mid-level proficiency and fewer achieving advanced levels. This trend underscores the need for instructional interventions that target both high achievers and struggling learners. The integration of technology has also been shown to support learning by providing immediate feedback, explanations, and personalized assistance, which can help improve both understanding and performance when used appropriately (Kasneci et al., 2023). Likewise, Zawacki-Richter, Olaf et al. (2023) found that AI-enhanced educational environments positively influence student engagement and academic performance, especially in problem-solving disciplines.

Table 6. Relationship between profile and the level of knowledge, attitudes, and practices of students

Profile	Level of Knowledge, Attitudes, and Practices on the Use of AI		
	Knowledge	Attitude	Practice
Age	-.059	-.063	-.088
Sex	-.005	.061	-.017
Area of Specialization	-.025	-.073	-.070
Frequency of AI usage	-.223*	-.210*	-.379**
GenAI used	.027	.010	.080

* significant at 0.05 level, ** significant at 0.01 level

The table presents the relationship between students' profile variables on age, sex, area of specialization, frequency of AI usage, and type of GenAI used, and their levels of knowledge, attitude, and practices (KAP) toward Generative AI. The results generally show weak and non-significant relationships for most profile variables, except for frequency of AI usage, which demonstrates a significant negative correlation with knowledge (r = -0.223*), attitude (r = -0.210*), and especially practice (r = -0.379**).

First, the variables age, sex, and area of specialization show very weak correlations with all three domains (knowledge, attitude, and practice), and none are statistically significant. This implies that these demographic factors do not significantly influence students' understanding, perceptions, or use of GenAI. In other words, students tend to have similar levels of knowledge and attitudes toward AI regardless of their age group, gender, or academic specialization. Demographic characteristics often have limited influence on AI-related knowledge

and attitudes, especially among relatively homogeneous groups such as university students. Hasan et al. (2024) found that while some demographic variables show minor variations, they are generally not strong predictors of AI knowledge and practices compared to experiential factors .

In contrast, frequency of AI usage shows a statistically significant relationship with all three variables, particularly with practice (r = -0.379, significant at 0.01 level). Interestingly, the relationship is negative, suggesting that as frequency of AI usage increases, the levels of knowledge, attitude, and practice slightly decrease. One possible explanation is that frequent users may rely on AI tools more for convenience rather than developing a deeper understanding, leading to superficial knowledge or overdependence. Another explanation is that increased exposure may make users more aware of AI's limitations, thereby reducing overly positive attitudes. Suryadi et al. (2025) found that AI knowledge does not directly increase usage intention but instead moderates how attitudes influence behavior. This suggests that frequent use alone is insufficient; quality of understanding and critical engagement are more important factors. Additionally, research highlights that excessive reliance on AI tools may reduce independent cognitive engagement, potentially affecting learning practices.

Furthermore, the type of GenAI used shows negligible and non-significant correlations with knowledge, attitude, and practice. This indicates that whether students use different AI tools does not significantly affect their level of understanding or behavior. This may imply that user behavior is more influenced by how often and how critically tools are used rather than which specific tools are used.

Overall, the results suggest that exposure and usage patterns play a more critical role than static demographic factors in shaping students' engagement with GenAI. However, the negative correlations highlight the need for guided and informed use of AI, rather than mere frequent usage.

In conclusion, the findings indicate that students' profiles do not significantly influence their knowledge, attitudes, and practices regarding GenAI, while frequency of use is a significant but negatively associated factor. Exposure and usage patterns play a more critical role than static demographic factors in shaping students' engagement with GenAI. This underscores the importance of promoting AI literacy, critical thinking, and responsible use, ensuring that increased exposure to AI leads to deeper understanding rather than passive dependence.

Table 7. Relationship between the levels of knowledge, attitude, and practices and the level of performance of the Mathematics in the Modern World students

MMW Performance	Level of Knowledge, Attitudes, and Practices on the Use of AI			
	Knowledge	Attitude	Practice	Overall
	.183*	.188*	.168	.203*

* significant at 0.05 level

The table presents the relationship between students' Mathematics in the Modern World (MMW) performance and their levels of knowledge, attitude, and practices (KAP) regarding Generative AI. The results show positive correlations across all three variables: knowledge (r = .183*), attitude (r = .188*), and practice (r = .168). However, only the relationships with knowledge and attitude are statistically significant at the 0.05 level, while the relationship with practice is positive but not significant.

The significant positive relationship between MMW performance and knowledge of GenAI suggests that students who perform better in mathematics tend to have higher levels of understanding about AI tools and their functions. This may be attributed to the fact that

mathematically proficient students often possess stronger analytical and logical thinking skills, which are essential in understanding how AI systems operate. Similarly, the significant correlation between MMW performance and attitude indicates that higher-performing students tend to develop more positive and informed perceptions of GenAI, recognizing its value as a learning tool rather than misusing or distrusting it.

These findings is supported by Roquero, et al., (2025) who found out that AI utilization is linked to students' academic performance in mathematics, particularly when mediated by positive learning attitudes. This suggests that students who have better academic performance are more likely to engage with AI in meaningful and productive ways. Furthermore, research indicates that students with stronger academic foundations tend to exhibit more favorable attitudes toward AI-enhanced learning environments, as they are better able to integrate these tools into their study processes.

On the other hand, the positive but non-significant relationship between MMW performance and practice implies that while better-performing students may slightly use GenAI more effectively, actual usage behavior is not strongly determined by academic performance alone. This suggests that both high- and low-performing students are using AI tools at relatively similar levels, possibly due to the widespread accessibility of tools like ChatGPT. This finding is consistent with a study by Bancoro (2024), which found no significant relationship between AI usage and academic performance, despite students demonstrating generally high academic achievement.

The results highlight that while academic performance is linked to how well students understand and perceive AI, it does not necessarily determine how frequently or extensively they use it. This could mean that the effectiveness of AI in education depends more on how it is used rather than how often it is used. Different patterns of AI use can either enhance or hinder learning outcomes, depending on whether students engage critically or rely passively on the technology.

In summary, the data indicate that students' mathematics performance is significantly related to their knowledge and attitudes toward GenAI, but not strongly related to their actual practices. This suggests that academic ability enhances understanding and perception of AI, but does not necessarily influence usage frequency. The findings underscore the importance of guiding all students—regardless of performance level—in the effective and responsible use of AI, ensuring that technology supports learning rather than replacing it. Kasneci et al. (2023) concluded that AI systems can enhance conceptual understanding when integrated as scaffolding mechanisms. Additionally, Zawacki-Richter, Olaf et al. (2023) found that AI-supported learning environments contribute to improved academic engagement and performance. As noted by Debby et al. (2023), the focus should shift from banning AI to regulating and guiding its responsible integration. Similarly, Holmes et al. (2022) emphasize systemic governance and AI literacy development as foundational to maximizing educational benefits.

The succeeding tables reveal both the perceived advantages and disadvantages of Generative Artificial Intelligence (GenAI) among students, highlighting its dual role as a supportive yet potentially problematic educational tool.

Table 8. Perceived Advantages of using GenAI

Advantages	Frequency	Percentage
Produces human-like responses	19	16.1
Answers specific questions fast	49	41.5
Powerful research bot	16	13.6
Sums up information into smaller bite-sized pieces	24	20.3

Gives information fast	56	47.5
Easy to understand	41	34.7
Explains or gives a general idea about a certain topic that is hard to understand for the student	77	65.3
Help with coding	9	7.6
Condense information from large pieces of texts	8	6.8
Helps identify errors in texts/codes	25	21.2
Reduces the time to seek out answers	28	23.7
Can generate answers instantly and quickly	41	34.7
Convenient, informative, and easily accessible	38	32.2

Table 8 presents students' perceived advantages of GenAI, highlighting key areas where the technology supports learning. The highest frequency, 77 or 65.3%, was "Explains or gives a general idea about a certain topic that is hard to understand", followed by "Gives information fast" with a frequency of 56 or 47.5%. These findings suggest that students primarily value GenAI for its ability to simplify complex concepts and provide immediate access to information, thereby enhancing comprehension and learning efficiency. Alali et al., (2024) emphasized that GenAI supports personalized and adaptive learning, allowing students better to understand difficult topics through simplified explanations and real-time feedback. Furthermore, GenAI tools have been shown to improve academic experiences by enabling faster access to relevant information and assisting with knowledge construction (Maxwell et al., 2025).

In contrast, the lowest frequency was "Condense information from large pieces of texts" (8 or 6.8%), followed by "Help with coding" (9 or 7.6%). This suggests that while GenAI is capable of performing more advanced or specialized tasks, such as summarization and coding assistance, these features are less recognized or less utilized by students. This may be due to limited exposure or lack of awareness of the full capabilities of GenAI tools. However, existing literature indicates that GenAI can effectively support tasks such as content generation, summarization, and programming assistance, contributing to productivity and task efficiency in academic settings (Zafar et al., 2024).

Overall, the findings suggest that students primarily appreciate GenAI for its immediate, accessible, and explanatory functions, rather than its more technical or advanced applications. This underscores the importance of enhancing students' awareness and training on the broader functionalities of GenAI to maximize its educational benefits.

Table 9. Perceived Disadvantages of using GenAI

Disadvantages	Frequency	Percentage
Can sometimes lead to inaccurate answers	69	58.5
Might make students lazy and dependent on it	75	63.6
Gives the answers right away	14	11.9
Responses are not always credible	54	45.8
Can be used for malicious intent	19	16.1
Can be used for cheating, plagiarism	54	45.8
GenAI can't access some of the other information, and can give inaccurate answers	35	29.7
Lacks academic integrity making some educators think that it promotes plagiarism and cheating	49	41.5
It can be unethical and undermine the learning process	34	28.8

If GenAI is used, it will lead to students having a lack of creativity and ability to articulate ideas as they will rely on it for answers, thoughts, and knowledge	66	55.9

The table presents various perceived disadvantages of GenAI among students, highlighting both major and minor concerns. Among the listed disadvantages, the highest frequency was "Might make students lazy and dependent on it" (75 or 63.6%), followed closely by "lack of creativity and ability to articulate ideas" (66 or 55.9%). These findings suggest that the most pressing concern among respondents is the potential of GenAI to reduce students' cognitive engagement and independent learning. This is supported by Fan et al. (2024), which indicates that excessive reliance on AI tools can lead to dependency and reduced critical thinking, often referred to as "metacognitive laziness." This could mean that students who rely heavily on AI-generated outputs may experience diminished creativity and weaker problem-solving skills, as the technology bypasses deeper learning processes.

On the other hand, the lowest frequency was observed in "Gives the answers right away" (14 or 11.9%), indicating that immediacy of responses is perceived as a less significant disadvantage compared to broader cognitive and ethical concerns. This suggests that while instant answers may be recognized, students are more concerned about the long-term effects of reliance on AI rather than its immediate convenience.

Additionally, notable concerns were raised regarding accuracy, credibility, and academic integrity, including issues such as unreliable responses and the potential for cheating and plagiarism. These concerns are supported by studies emphasizing that GenAI systems can produce inaccurate or misleading information and pose challenges to academic honesty (Cotton et al., 2023; Tlili et al., 2023). Such limitations highlight the need for critical evaluation and responsible use of AI-generated content.

Overall, the findings suggest that while GenAI offers significant benefits in enhancing learning efficiency and understanding, it also presents risks related to dependency, reduced creativity, and ethical misuse. This underscores the importance of integrating AI literacy, ethical guidelines, and proper instructional support in educational settings to ensure that GenAI is used as a tool to enhance, rather than replace, meaningful learning.

Guide on how to use GenAI responsibly, ethically, and effectively

The study's findings support the development of a Students' Guide on the Responsible, Ethical, and Effective Use of Generative AI. While students show good knowledge and attitudes towards GenAI, their practices vary and include misconceptions and ethical concerns. This suggests a need for structured guidance to ensure meaningful learning with these technologies.

Students often use GenAI for academic tasks like idea generation but sometimes engage in questionable practices, such as over-relying on paraphrasing tools. The study found that the frequency of use does not equate to effective or ethical application, reinforcing that effectiveness relies on critical engagement and responsible practices, as noted by Kasneci et al. (2023). Additionally, there's a correlation between students' math performance and their understanding of GenAI, indicating that higher-performing students engage with these tools more meaningfully. However, all students need support in using AI effectively, regardless of their academic performance, echoing Dwivedi et al. (2023).

The proposed guide also aims to bridge the gap between students' knowledge and their practices, promoting the ethical use of GenAI as a learning aid while upholding academic integrity. It includes practical guidelines for responsible use, such as reviewing AI outputs and integrating AI with traditional learning, which supports the development of metacognition. Finally, the guide aligns with higher education goals and CHED standards, encouraging critical thinking, ethical

reasoning, and digital literacy. It can serve as a valuable resource for both students and instructors in fostering responsible AI use in education.

Students' Guide to a Responsible, Ethical, and Effective Use of Generative AI

Rationale

The students' guide has been created to address the increasing presence of generative artificial intelligence in education and to help students use it thoughtfully rather than passively. It acknowledges that while many students are already familiar with AI tools and use them frequently, this familiarity does not automatically lead to responsible or effective usage. The guide emphasizes that AI is not inherently beneficial; its value depends on how critically and ethically it is applied.

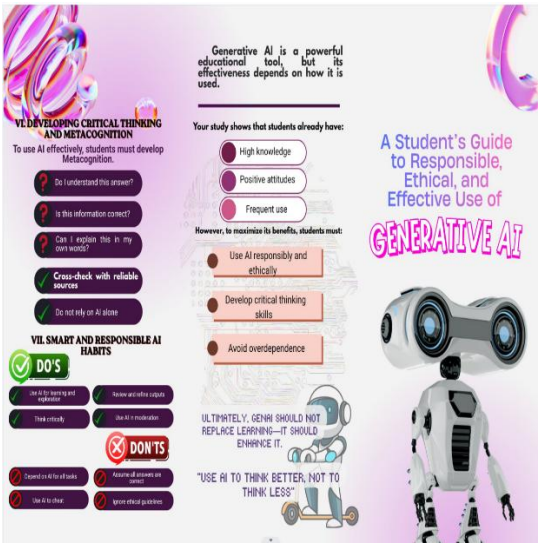
By addressing common misconceptions—such as the belief that AI is completely accurate or can fully replace human thinking—the material aims to correct overconfidence and prevent misuse. It also reinforces the notion that learning should remain an active, human-driven process, with AI serving as a support rather than a substitute.

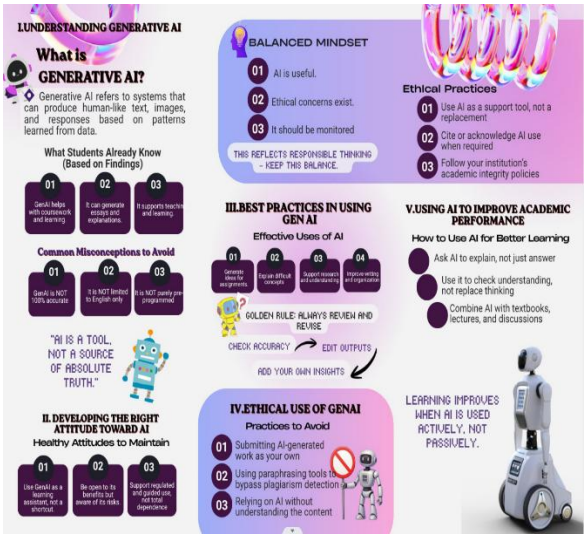
The following material is an educational infographic designed as a student-friendly guide to the responsible, ethical, and effective use of generative AI in learning. It presents key concepts in a clear and visually engaging format, including what generative AI is, common misconceptions, best practices, and ethical considerations. The guide combines practical tips with reflective prompts to encourage students to think critically about their use of AI tools in academic work. It serves as a quick-reference resource that motivates learners to use AI as a supportive tool while maintaining independent thinking and academic integrity.

Objectives

The material aims to:

1. Promote the responsible and ethical use of generative AI in academic work by encouraging students to follow academic integrity policies, avoid misuse, and recognize AI as a supportive tool rather than a replacement for their own efforts.
2. Strengthen students' critical thinking and metacognitive skills by guiding them to question AI-generated responses, verify the accuracy of information, and reflect on their understanding before accepting outputs.
3. Encourage effective use of AI to enhance learning by helping students utilize AI to explain difficult concepts, support research, improve writing, and deepen understanding.
4. Develop a balanced mindset toward AI technologies by helping students appreciate the benefits of AI while remaining aware of its limitations, ethical concerns, and potential inaccuracies.
5. Prevent overdependence on AI tools by reminding students to combine AI assistance with textbooks, lectures, discussions, and personal analysis to maintain active learning.
6. Correct common misconceptions about generative AI by clarifying that AI is not always accurate, is not purely programmed, and should not be treated as an absolute source of truth.
7. Foster independent and meaningful learning habits by encouraging students to use AI to enhance their learning processes, ensuring that technology supports rather than replaces genuine understanding.





Conclusions

After analyzing the data, the following statements were concluded :

1. The respondents are generally young first-year BSBA students with varied specializations. Most reported frequent use of GenAI tools, with a preference for widely accessible platforms, indicating that AI technology is already integrated into their academic routines.

2. Students exhibit a high level of knowledge and positive attitudes toward GenAI, recognizing its usefulness in learning. However, their practices reflect moderate and cautious use, suggesting a need for better guidance in maximizing its potential responsibly.

3. Students achieved a "Good" level of academic performance, indicating satisfactory understanding of the subject despite the integration of GenAI tools in their learning process.

4. There is a significant relationship between certain profile variables (particularly frequency of use) and students' KAP, implying that increased exposure to GenAI enhances their knowledge, attitudes, and engagement with the technology. Furthermore, a significant relationship exists between knowledge and attitudes and academic performance, while practices show no significant relationship, indicating that understanding and perception of GenAI are more influential than mere usage frequency.

5. Students perceive GenAI as highly beneficial which contribute to improved comprehension and learning efficiency, making GenAI a valuable academic support tool. On the other hand, the study reveals that the major disadvantages include student dependency, reduced creativity, and potential academic dishonesty. These concerns highlight the risk of overreliance on GenAI, which may negatively affect critical thinking and independent learning.

6. The study reveals that the major disadvantages include student dependency, reduced creativity, and potential academic dishonesty. These concerns highlight the risk of overreliance on GenAI, which may negatively affect critical thinking and independent learning.

Recommendations

1. Institutions should monitor and assess students' exposure to GenAI tools and ensure equitable access to reliable platforms that support academic learning while also promoting activities that strengthen students' critical thinking, problem-solving, and analytical skills.

2. Schools should strengthen AI literacy programs to enhance students' knowledge and encourage responsible, critical, and effective use of GenAI. These programs should emphasize

evaluating AI-generated information, recognizing biases and inaccuracies, and applying independent judgment in academic tasks.

3. Educators should continuously monitor student performance and integrate teaching strategies that balance traditional learning with AI-supported approaches. Classroom activities should encourage students to analyze, interpret, and validate AI-generated outputs rather than accepting them without reflection.

4. Teachers should encourage guided and purposeful use of GenAI, ensuring that increased exposure leads to meaningful learning and improved understanding. Instructional approaches should focus on developing critical thinking, creativity, decision-making, and independent learning skills, rather than relying solely on AI-generated outputs. Students should also be encouraged to justify their answers, explain their reasoning processes, and engage in reflective learning activities.

5. Institutions should establish clear policies and ethical guidelines addressing issues such as plagiarism, overdependence, misuse of GenAI, and the potential decline of students' independent thinking and problem-solving abilities.

6. A comprehensive GenAI usage guide or instructional module should be developed and implemented to help students use AI tools responsibly, ethically, and effectively in their academic work. The module should also include activities and strategies that cultivate critical thinking, information evaluation, logical reasoning, and responsible decision-making when using AI-generated content.

Limitations and Recommendations of the Study

This study is limited on BSBA students enrolled in the Mathematics in the Modern World subject, which restricts the generalizability of the findings to other programs or institutions, and by its reliance on self-reported data that may be affected by bias or inaccuracies in assessing students' knowledge, attitudes, practices, and use of GenAI tools; furthermore, only selected profile variables such as age, sex, specialization, frequency of use, and most-used GenAI tool were considered, excluding other possible influencing factors like digital literacy and prior academic performance, while the cross-sectional design prevents establishing causal relationships and the rapidly evolving nature of GenAI technologies may affect the relevance of identified tools; thus, it is recommended that students be guided to use GenAI responsibly, ethically, and critically, instructors integrate clear policies and design assessments that promote deeper understanding, and institutions develop comprehensive guidelines and training programs on GenAI use, while future researchers are encouraged to include broader populations, additional variables, and longitudinal or qualitative approaches, and to develop a structured guide that supports students in the effective, ethical, and responsible use of GenAI in their academic work.

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