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Converging perspectives: Assessing AI readiness and utilization in Philippine higher education

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ABSTRACT

In rapidly evolving landscape of technology, the integration of artificial intelligence (AI) has become prevalent, reshaping various facets of students' lives. This study delved into the uncharted territory of AI awareness, utilization, and perceptions among college students. The study used a convergent parallel mixed-methods design, integrating quantitative survey data with qualitative responses in order to get insights on the impact of AI in education and society. The survey found that college students familiarity on AI depends on age, academic year, and field of study. This emphasizes the need for targeted AI education to overcome knowledge inequalities, particularly among younger cohorts and in fields with little AI expertise. AI usage is usually modest for academic and personal purposes, while insights includes its uses in academic research, job administration, and language translation. The varied application of AI requires institutions to adapt their procedures, and societal impacts which are largely seen positively. This optimism is tempered by concerns about job loss, data privacy breach, technological overuse, and human decision-making. Thus, comprehensive AI education programs are needed to address and traverse these varied opinions. The results emphasized the necessity for institutions and policymakers to be proactive when artificial intelligence is transforming many companies and social systems. Students must learn AI literacy, combining knowledge and practical application, to navigate the AI-driven environment's complexity and opportunities. The endeavor requires teaching technical skills and a deep grasp of AI's social and ethical implications. Institutions can prepare students for a future where artificial intelligence is becoming more important by understanding these effects and tailoring teaching.

Keywords: Artificial intelligence, AI readiness, AI awareness, AI utilization, AI perception, AI challenges

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INTRODUCTION

The rapid progress of Artificial Intelligence (AI) technology has brought changes to aspects of society including education. As AI continues to shape the future it becomes crucial to assess how ready and willing college students in the Philippines are to adopt AI technologies (Sulasula, 2023). The Philippines has seen an increase in the use of AI across industries reflecting the country's commitment to technological advancement (Manalo, 2022). As AI becomes more integrated into life it is important to evaluate its impact on education. College students play a role as they represent the workforce and their readiness to embrace AI tools will have a significant influence on the country's technological trajectory.

One key characteristic that sets apart the higher education in the Philippines is its student population. This includes individuals from socio backgrounds, academic disciplines and cultural contexts. Such diversity can shape students perspectives and attitudes towards AI technologies, which may affect their willingness to embrace and utilize AI tools for purposes (Wang et al., 2023). Understanding these nuances is crucial, for developing strategies that promote AI literacy and adoption. Additionally, the availability and accessibility of AI resources and training in Philippine colleges may vary, further impacting students' exposure to AI technologies. While some institutions might have extensive AI programs and resources, others might have limited access to such opportunities. Identifying disparities in AI education and resources is crucial for developing inclusive and equitable AI integration policies that empower all college students (Wang et al., 2023). Given the extensive research on the adoption and use of artificial intelligence (AI) in different contexts, it is important to acknowledge that there are significant research gaps specific to Philippine college populations. Detailed research on the challenges, attitudes, and perceptions of AI readiness and use in this particular population is a relatively unexplored area (Estrellado & Miranda, 2023). Gaining knowledge of the unique context of higher education in the Philippines is crucial, as it provides a valuable perspective on the effective use of artificial intelligence (AI) technologies in education.

This study provides a comprehensive analysis and understanding of the extent to which college students in the Philippines are prepared for and engaged with artificial intelligence (AI). Using an integrative approach, this study aims to combine quantitative and qualitative data to present a comprehensive and holistic picture of college students in the areas of cognition, rehabilitation, and artificial intelligence (AI). About the use of technology in their academic work and personal endeavors. Integrating these two distinct but complementary data sets may provide a more nuanced understanding of different aspects of college students' engagement with AIs This approach could explore the topic further, and enable deeper insights into the various dimensions and complexities underpinning the complex relationship between college students and AI technologies. The results of this research have significant implications for how AI is taught and understood in Philippine institutions. Understanding how college students see and feel about AI will help policymakers and educators devise plans for preparing students with the abilities and information they need to succeed in an AI-powered environment. Institutions of higher learning may promote a culture of ethical AI usage and innovation by addressing the issues and highlighting the advantages of AI technology. With a focus on college students in the Philippines, the overall goal of this study is to add to the body of information already available on AI preparedness and use. This research provides the groundwork for cultivating a technologically proficient and AI-prepared workforce within the higher education sector of the Philippines via comprehending individuals' viewpoints and encounters. This study is based on the Technology Acceptance Model (TAM) proposed by Davis in 1989. TAM is a widely recognized theory used to understand technology adoption and explores how individuals' perceptions of a technology's usefulness and ease of use influence their intentions to adopt and utilize it. In AI readiness and utilization among college students, TAM provides valuable insights into the factors that motivate or hinder students' willingness to embrace AI technologies in both their academic pursuits and personal lives.

In the context of this study on AI readiness and utilization among college students in the Philippines, the Technology Acceptance Model (TAM) offers relevant features that help understand

students' perceptions and behaviors towards AI technologies. The key features of TAM that relate to this study are perceived usefulness, perceived ease of use, behavioral intention, factors influencing adoption, and technology adoption behavior. By incorporating these features of TAM into the study, the researcher can gain a comprehensive understanding of how college students in the Philippines perceive and interact with AI technologies. This knowledge is vital for devising effective strategies to enhance AI education, awareness, and utilization among college students, and for preparing them for a future where AI plays an increasingly prominent role in various aspects of society and the workforce.

Objectives

The main goal of this study was to assess the awareness and knowledge of AI among college students in the Philippines. Additionally, it aimed to understand their attitudes and perceptions towards AI technologies and their societal impact. The research also aimed to identify factors influencing the adoption of AI among college students and explore the integration of AI into academic curricula and co-curricular activities. Finally, the study sought to comprehend the challenges and barriers faced by students in utilizing AI for academic and personal purposes.

The following research questions were examined in this study:

1. What is the level of awareness and understanding of artificial intelligence (AI) technologies among the respondents?
2. How do respondents utilize AI technologies?
3. How do respondents perceive the impact of AI technologies on society and their future careers?
4. How does AI integration in education affect college students' views and preferences?
5. What is the extent of institutional support for AI technology use among college students, and what improvements do they recommend?
6. What are the main challenges and barriers faced by college students in utilizing AI technologies for their academic and personal purposes?

METHODS

Design

This mixed-method study utilized a convergent parallel design (Creswell, 2022), collecting both quantitative and qualitative data simultaneously. A systematic survey questionnaire gathered quantitative data on AI awareness, utilization, views, attitudes, integration in education, and institutional support. Participants' responses underwent statistical analysis. Qualitative data, obtained through open-ended inquiries in the survey, were transcribed and subjected to theme analysis. The integration of both sets of data provided a more comprehensive understanding of AI preparedness among college students in the Philippines, enhancing the overall insights into the study subject (Creswell, 2022).

Participants/Respondents

The study focused on college students from state and local colleges and universities in the Philippines, employing a voluntary online sampling technique (Hassan, 2023). This approach allows participants to choose to respond to the survey without researcher intervention, making it a non-probability sampling method based on individual interests and willingness. For this research, college students were invited to participate voluntarily through an online platform, offering them the freedom to decide on their involvement. This method is convenient for reaching a diverse and extensive participant pool in online surveys. The sample comprised 250 qualified respondents meeting specific inclusion criteria: current enrollment as full-time or part-time college students in Philippine state or local institutions, age between 17 to 24 and above, inclusive of all genders for diversity (Abrams, 2023), and completion of informed consent to voluntarily participate in the study.

Data Analysis

The data analysis of this study, which adopts a convergent parallel design with both quantitative and qualitative data, involves separate analyses of the quantitative and qualitative data, followed by an integration of the findings (Creswell & Plano Clark, 2015).

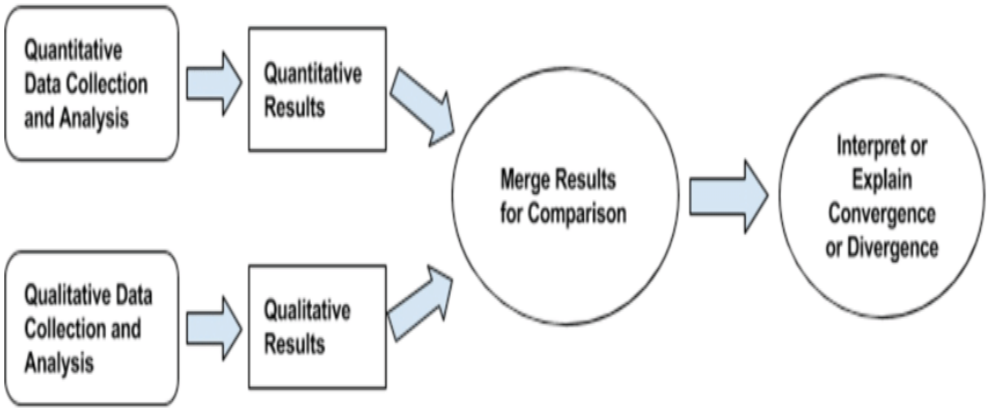

Figure 1. Diagram of the Convergent Parallel Design

The quantitative data analysis involves the calculation of summary statistics, including mean, median, mode, and standard deviation, for variables related to AI awareness, utilization, perceptions, attitudes, AI integration, and institutional support. Additionally, frequency distributions are employed for categorical variables, providing a quantitative overview of the dataset (Simplilearn, 2023). On the qualitative front, the thematic and content analysis is conducted by transcribing and coding responses from open-ended questions. This process involves identifying recurring themes and patterns related to various aspects of AI, such as its impact on the field of study, participant experiences, challenges faced, suggestions for improvement, and other relevant topics (Creswell, 2022). The subsequent step involves interpreting these themes to gain deeper insights into participants' perceptions, attitudes, and experiences concerning AI readiness and utilization. To derive a comprehensive understanding, the findings from both quantitative and qualitative analyses are integrated. This integration involves a comparison of quantitative and qualitative results to identify convergence, divergence, and complementarity. The qualitative data is further utilized for validation purposes, providing additional context or validation for the quantitative results. This triangulation of findings from different data sources enhances the overall credibility of the study. The integration process culminates in a comprehensive understanding of AI readiness, awareness, and utilization among college students in the Philippines. This synthesized insight is then discussed in the context of the research questions and objectives. Additionally, the study addresses its limitations, including potential biases, considerations of sample representativeness, and the generalizability of findings. This reflective discussion contributes to the transparency and robustness of the research findings.

Ethical Consideration

The study followed rigorous ethical considerations to ensure the well-being and rights of the participants. Before participating, college students were provided with a clear explanation of the research purpose, procedures, and potential risks, and their informed consent was obtained voluntarily (Manti & Licari, 2018). To protect their privacy, all responses were kept anonymous, and data was securely stored, accessible only to the researcher. The study aimed to minimize harm and benefit the participants and the broader college community by identifying areas for improvement in AI education and utilization. It treated all participants fairly and without discrimination, respecting the diversity of college students. Transparency was maintained throughout the study, and participants were informed of the study's objectives and findings (Khan et al., 2021). With a commitment to responsible and respectful research, the study aimed to contribute valuable insights to the understanding of AI readiness and utilization among college students in the Philippines.

RESULTS/FINDINGS AND DISCUSSION

Demographic Information. The data in Tables 1 to 4 show a diverse representation in terms of age, gender, academic year, and field of study. The relatively balanced distribution across different demographic categories enhances the generalizability of the study's findings and ensures a diverse sample of participants' perspectives on the topic under investigation (Barnes et al., 2015). Table 1 provides a breakdown of the participants' ages in the study, showing the frequencies and percentages within each age group.

Table 1. Frequencies of Age

AGE	Counts	% of Total	Cumulative %
17-18 years old	60	24.0 %	24.0 %
19-20 years old	57	22.8 %	46.8 %
21-22 years old	63	25.2 %	72.0 %
23 years old and above	70	28.0 %	100.0 %

The table reveals that the participants in the study are distributed across different age groups. The majority of respondents fall into the "23 years old and above" category, comprising 28.0% of the total participants. This indicates that a significant portion of the sample is older college students. here is a fairly even distribution among the other three age categories. Specifically, "17-18 years old" accounts for 24.0%, "19-20 years old" for 22.8%, and "21-22 years old" for 25.2% of the total participants. This suggests that the study has a diverse representation of college students from various age groups. The cumulative percentages provide a broader view of the age distribution. As you move down the age categories, the cumulative percentage represents the proportion of participants up to that point. The age distribution is essential for understanding the demographics of the study's participants. It might have implications for how students perceive and utilize AI technologies, as older students may have different experiences and needs compared to younger ones. It could also impact the generalizability of the study's findings to the broader college student population, as the distribution may not perfectly mirror the demographics of all college students. Table 2 provides an analysis of the gender distribution among the participants in the study.

Table 2. Frequencies of Gender

GENDER	Counts	% of Total	Cumulative %
Male	76	30.4 %	30.4 %
Female	84	33.6 %	64.0 %
Non-binary	90	36.0 %	100.0 %

Among the participants, there are 76 males, 84 females, and 90 non-binary individuals. These numbers represent both the counts and the percentages within each gender category. The data reveals a notable presence of gender diversity among the participants, with a somewhat balanced distribution across the three gender groups. The inclusion of various genders in this study is crucial since it facilitates a full comprehension of the topic at hand. Within the scope of this investigation, an analysis of how persons of different genders perceive and use AI technology may uncover disparities in their encounters, degrees of awareness, and attitudes towards AI. It is important to acknowledge that the gender distribution seen in this research may not be entirely representative of the gender mix found among all the respondents. Nevertheless, the inclusion of a varied range of genders in the research has significant value as it enables the capture of a more comprehensive spectrum of

opinions pertaining to AI-related subjects (Tannenbaum et al., 2016). Table 3 provides an analysis of the distribution of participants across different academic years, from 1st year to 4th year.

Table 3. Frequencies of Academic Year

ACADEMIC YEAR	Counts	% of Total	Cumulative %
1st year	60	24.0 %	24.0 %
2nd year	57	22.8 %	46.8 %
3rd year	63	25.2 %	72.0 %
4th year	70	28.0 %	100.0 %

The distribution of participants across academic years is essential for understanding how AI awareness, utilization, and perceptions may vary as students' progress through their college education. For example, senior students (4th year) might have a different perspective on AI compared to freshmen (1st year). The distribution of participants across academic years is relatively balanced, with each academic year representing a similar percentage of participants. Table 4 provides an analysis of the distribution of participants across different fields of study. The table categorizes participants into five fields of study: "BSBA" (Bachelor of Science in Business Administration), "BEED" (Bachelor in Elementary Education), "BSAB" (Bachelor of Science in Agri- Business), "BSED" (Bachelor of Secondary Education), and "BSCRIM" (Bachelor of Science in Criminology). The distribution of participants across fields of study is relatively even, with each field representing a similar percentage of participants. The relatively balanced distribution across different demographic categories in the study contributes to the generalizability of the findings.

Table 4. Frequencies of Field of Study

COURSE	Counts	% of Total	Cumulative %
BSBA	50	20.0 %	20.0 %
BEED	56	22.4 %	42.4 %
BSAB	49	19.6 %	62.0 %
BSED	45	18.0 %	80.0 %
BSCRIM	50	20.0 %	100.0 %

The inclusion of participants from different demographic categories also enhances the richness of the data collected (Tannenbaum et al., 2016). Each demographic group may have unique experiences, challenges, and perspectives, which can provide valuable insights into the overall research topic. For example, exploring the views of different age groups can shed light on how generational factors influence AI adoption while considering gender differences can reveal any disparities in AI awareness and utilization.

Awareness and Understanding of Artificial Intelligence (AI) Technologies. This section delved into the degrees of awareness and comprehension of artificial intelligence (AI) technology among the respondents. The objective is to assess their self-perceived degrees of awareness, collect their interpretations of artificial intelligence (AI), and ascertain their familiarity with certain AI technologies or applications. To effectively customize educational initiatives and bridge gaps in AI awareness, it is crucial to comprehend individuals' foundational knowledge and perspectives.

Self-Assessment of AI Awareness. As the influence of Artificial Intelligence (AI) permeates diverse industries and sectors, the evaluation of AI awareness and knowledge among college students in the Philippines gains paramount importance (Estrellado & Miranda, 2023). Table 5 provides an overview of the level of awareness about AI technologies among the respondents.

Table 5. Level of Awareness about AI Technologies

	AI AWARENESS
N	250
Mean	3.04
Median	3.00
Mode	1.00
Standard deviation	1.44

Results indicate that the respondents, on average, have a moderate level of awareness about AI technologies. Approximately half of the participants have an awareness score of 3.00 or lower, and the other half have a score of 3.00 or higher. This reinforces the observation of a moderate level of awareness. However, it also highlights the presence of a subgroup with low awareness, as indicated by the mode score of 1.00. While the mean suggests a moderate overall awareness, the standard deviation suggests that awareness levels range from relatively low to relatively high among the participants. In general, the findings from Table 5 suggest that the average degree of knowledge among respondents about AI technology is modest. However, it is worth noting that the data also brings attention to the existence of a subgroup characterized by a lack of awareness, as shown by the median score of 1.00. The presence of standard deviation indicates the existence of variability in the degrees of consciousness among the individuals included in the sample, with some of them demonstrating greater levels of awareness while others display lower levels. Table 6 provides an analysis of the awareness levels of college student participants regarding AI technologies. It could be gleaned that around 79.2% of college students have a certain level of awareness of AI technology, suggesting that a considerable proportion has at least a basic comprehension. However, it is worth noting that a significant proportion of students, namely about 21.2%, have little awareness of artificial intelligence (AI). This highlights the need for educational programs and activities aimed at improving AI literacy within this particular subgroup

Table 6. Frequencies of Awareness about AI Technologies

AI AWARENESS	Counts	% of Total	Cumulative %
Fully not Aware	53	21.2 %	21.2 %
Not Aware	42	16.8 %	38.0 %
Either aware or not aware	50	20.0 %	58.0 %
Aware	53	21.2 %	79.2 %
Fully Aware	52	20.8 %	100.0 %

Table 7 presents the analysis of awareness about AI technologies among college students, categorized by age groups.

Table 7. Level of Awareness about AI Technologies by Age Group

AGE	N	Mean	Median	Mode	SD
17-18 years old	60	3.00	3.00	4.00	1.43
19-20 years old	57	2.98	3.00	1.00 [a]	1.52
21-22 years old	63	3.03	3.00	4.00	1.38
24 years old & above	70	3.11	3.00	5.00	1.46

Across all age groups, there is a trend of moderate awareness about AI technologies among the respondents. The age group of 24 and above has somewhat greater awareness, with a mean of 5.00 suggesting a significant number of highly aware pupils. The 19-20 years old group exhibits a bimodal distribution, with a substantial number of students having low awareness (mode 1.00) and others having moderate awareness. This might be due to varying exposure to AI-related information and education. The overall pattern suggests that awareness about AI technologies is not strongly age-dependent among college students. However, it does highlight the importance of addressing the diverse awareness levels within each age group, tailoring educational efforts accordingly. These findings underscore the need for educational institutions to provide comprehensive AI-related education that caters to students with varying levels of awareness, regardless of their age (Woodruff et al., 2023). Table 8 presents the analysis of awareness about AI technologies among college students, categorized by gender. Among respondents from various gender groups, there exists a discernible pattern indicating a modest level of knowledge about AI technology. This is seen by the mean awareness ratings, which are consistently around 3.00. Similar degrees of awareness are shown by both male and female students, with values of 1.00 indicating the presence of respondents with poor awareness. On the other hand, the non-binary respondents tend to have a slightly higher level of awareness, with a mode of 3.00 indicating a notable presence of students with moderate awareness.

Table 8. Level of Awareness about AI Technologies by Age Group

GENDER	N	Mean	Median	Mode	SD
Male	76	2.93	3.00	1.00	1.49
Female	84	2.94	3.00	1.00	1.48
Non-binary	90	3.21	3.00	3.00	1.35

The results of this study indicate that gender does not have a statistically significant impact on the levels of awareness about AI technology among the respondents. This highlights the need to offer inclusive and extensive AI-focused education and awareness initiatives to guarantee that every student, irrespective of gender, has the requisite information and competencies essential for a future shaped by AI (Kamalov et al., 2023). Table 9 provides insights into the awareness about AI technologies among college students, categorized by their academic year. The average awareness score for AI technology across all academic years is about 3.00, indicating a trend of modest awareness. Also, the data reveals that among the first, third, and fourth-year students, there is a notable presence of individuals with heightened awareness. However, the second-year respondents have a mode of 1.00, suggesting a comparatively lower level of awareness. Fourth-year respondents tend to have a slightly higher level of awareness than in other academic years.

Table 9. Level of Awareness about AI Technologies by Academic Year

ACADEMIC YEAR	N	Mean	Median	Mode	SD
1st year	60	3.00	3.00	4.00	1.43

ACADEMIC YEAR	N	Mean	Median	Mode	SD
2nd year	57	2.98	3.00	1.00 [a]	1.52
3rd year	63	3.03	3.00	4.00	1.38
4th year	70	3.11	3.00	5.00	1.46

The results of this study indicate that there is a positive correlation between students' degree of knowledge about AI technology and their progression through college, with fourth-year students exhibiting the greatest level of awareness. Nevertheless, it is crucial to acknowledge that even during the first stages, respondents demonstrate a modest degree of consciousness, suggesting the possibility of further growth in their understanding and proficiency in the field of artificial intelligence. Table 10 presents the level of awareness about AI technologies among college students, categorized by their field of study. The results can be seen that there are variations in the degree of AI awareness across different academic disciplines. However, considering the overall distribution of awareness scores across the surveyed students, it can be inferred that their collective understanding of AI is quite moderate. However, it is important to note that there is a certain amount of diversity within each course, where some respondents display a higher level of awareness while others show a lower level of awareness. It's important to note that there is variability in awareness levels within each field of study, as indicated by the standard deviations.

Table 10. Level of Awareness about AI Technologies by Field of Study

COURSE	N	Mean	Median	Mode	SD
BSBA	50	2.66	3.00	1.00	1.36
BEED	56	3.11	3.00	5.00	1.49
BSAB	49	2.96	3.00	1.00 [a]	1.49
BSED	45	3.11	4.00	4.00	1.37
BSCRIM	50	3.34	3.00	5.00	1.44

These findings suggest that the level of awareness about AI technologies varies among different fields of study, with students in education and criminology programs generally having higher awareness compared to students in business. The data on Awareness about AI Technologies shows a moderate degree of awareness about artificial intelligence (AI) technology. The average awareness score throughout the tables suggests that respondents, as a collective, possess a satisfactory degree of comprehension of artificial intelligence. The degree of consciousness exhibits considerable diversity, despite the presence of a modest average. Certain respondents have a heightened level of awareness, while others possess a very restricted understanding of artificial intelligence (AI). For the differences connected to age, the data reveals a significant gap in the understanding of artificial intelligence (AI) between older students (aged 24 and above) and their younger peers (aged 19-20). However, the degrees of awareness demonstrate a somewhat consistent trend throughout the bulk of age groups. The statistics also indicate that there is no statistically significant difference between genders in terms of awareness about artificial intelligence. Both male and female students exhibit similar average levels of awareness. The influence of the academic year on awareness demonstrates a progressive rise in awareness from the first year to the final year. It is worth mentioning that students in their fourth year demonstrate a relatively higher degree of proficiency in the field of artificial intelligence. The observed disparities in degrees of awareness across various academic disciplines indicate a notable variety, with some disciplines demonstrating a higher degree of awareness while others exhibit comparably lower levels. This highlights the need to tailor AI education to align with certain academic degrees (Grassini, 2023). Moreover, the results indicate a deficiency in knowledge about artificial intelligence (AI) within the student cohort, as

around 21.2% of participants had little awareness or inadequate understanding of the subject matter. This underscores the need to develop targeted educational initiatives to effectively address and mitigate the current disparity in knowledge and understanding. In summary, the aforementioned tables provide valuable information pertaining to the awareness and knowledge levels of the respondents about artificial intelligence (AI) technology. The results suggest that, on average, respondents have a reasonable degree of awareness and expertise about AI technology. Nevertheless, significant disparities in awareness exist depending on variables such as age, gender, academic level, and field of study. In order to promote AI literacy, it is imperative to customize educational initiatives to cater to the distinct requirements and degrees of awareness across diverse student cohorts, especially those with little familiarity with AI (Grassini, 2023).

Defining Artificial Intelligence (AI). Respondents' definitions of AI center around the idea of simulating human intelligence through machines, along with its association with computer science and the creation of smart computer programs. The themes identified from the data provide a comprehensive understanding of how the respondents conceptualize artificial intelligence. Presented in Table 11 are the emergent themes concerning how the respondents defined artificial intelligence.

Table 11. Thematic Analysis of the Definition of Artificial Intelligence (AI)

Emergent Themes	*Core ideas*	*Significant Statements*
Theme 1: Simulating Human Intelligence	Emulating human thought processes.	*I observed that AI applications replicate inviduals cognitive process and thinking patterns.*
	Machine learning and neural networks.	*Leveraging machine learning algorithms and neural networks has been a key aspect of my experience.*
	Natural language processing.	*My focus revolves around the incredible ability of AI to comprehend and process human language, fostering effective communication between machines and me.*
	Problem-solving and decision-making.	*I've witnessed firsthand the power of AI in analyzing complex problems and making decisions swiftly.*
	Cognitive tasks automation.	*Exploring the automation of tasks that traditionally require human intelligence has been a transformative experience.*
	Human-like reasoning.	*AI systems has been a fascinating journey, deepening my understanding of the intersection between machine and human intelligence.*
	Human-computer interaction.	*AI systems has enriched my professional experience, emphasizing the importance of a user-friendly and intuitive design in AI technologies.*
	Mimicking human intelligence.	*AI imitating various facets of human intelligence—has been a motivating force driving my engagement in AI-related projects.*
Theme 2: Branch of Computer Science	Computer-based intelligence.	*AI stands as a form of intelligence deeply rooted in computer science principles.*
	Algorithm development.	*Engaging in the creation and refinement of algorithms has been an integral part of my experience.*
	Data analysis and interpretation.	*Acknowledging AI's capability to analyze and interpret vast amounts of data for meaningful insights has transformed my approach to data-driven decision-making.*
	Automation of tasks.	*Recognizing the use of AI to automate routine and complex tasks has been a game-changer.*
	Programming and coding.	*The role of programming and coding in the*

		development and implementation of AI systems has broadened my skill set.
	Computational problem-solving.	*Exploring AI's application in solving complex problems through computational methods has been a rewarding experience.*
	Artificial neural networks.	*AI systems has provided me with insights into the intricate workings of these technologies.*
Theme 3: Creating Smart Computer Programs	Developing intelligent software.	*Actively participating in the process of creating software with the capability to learn, adapt, and make decisions has been a defining aspect of my professional journey.*
	Enhancing software capabilities.	*My experience involves using AI to improve the functionality and capabilities of existing software programs, demonstrating the transformative power of integrating AI technologies into established frameworks.*
	Human-like problem-solving.	*The experience of witnessing AI's ability to approach problem-solving in a manner similar to my own cognitive processes has reshaped my perspective on collaborative problem-solving, emphasizing the synergy between human and artificial intelligence.*
	Simulating human cognition.	*AI-driven programs has provided me with understanding of the potential applications and limitations of simulating human cognition.*
	Integrating AI into applications.	*Contributing to the integration of AI technologies into various applications has been a dynamic experience.*
	Adaptive software systems.	*My involvement in the development of adaptive software systems has highlighted the potential for AI to create flexible and responsive applications that can evolve based on user interactions and changing circumstances.*

Theme 1: Simulating Human Intelligence. The perception among the respondents is that Artificial Intelligence (AI) is a technological endeavor that seeks to emulate and mimic the cognitive processes and intellectual capabilities of human beings. This encompasses the replication of cognitive processes shown by humans, such as the ability to engage in thinking, problem-solving, and decision-making. The significance of machine learning and neural networks in attaining this emulation is acknowledged since it is understood that artificial intelligence heavily depends on learning from data. Furthermore, respondents demonstrate an understanding of AI's aptitude in natural language processing, indicating a recognition of its linguistic proficiencies.

Theme 2: Branch of Computer Science. Within this thematic context, respondents articulate the concept of artificial intelligence (AI) as a distinct domain within the field of computer science that centers on the development and use of computer-based systems capable of exhibiting intelligent behavior. It is acknowledged that artificial intelligence (AI) is significantly dependent on the advancement of algorithms, programming, and coding. This statement implies a comprehension of the technological underpinnings of artificial intelligence (AI) and its strong connection to the field of software development. Respondents also highlighted the relevance of artificial intelligence (AI) in the analysis and interpretation of data, demonstrating their recognition of its ability to derive meaningful information from vast amounts of data.

Theme 3: Creating Smart Computer Programs. In this theme, respondents describe AI as the creation of intelligent software with the ability to enhance software capabilities. They recognize AI's

role in improving software functionalities, demonstrating an awareness of its practical applications. Respondents understand that AI can facilitate human-like problem-solving, indicating that they see AI as a problem-solving tool. Moreover, they mention AI's capacity to simulate human cognition, implying an understanding of its aim to replicate human-like thinking processes. They also recognize the integration of AI into various applications, highlighting its versatility across domains. The acknowledgement of adaptive software systems suggests that students understand AI's ability to adapt and respond to changing conditions. In summary, respondents see artificial intelligence (AI) as a technological innovation that generates intelligent software, amplifies the capabilities of software, and facilitates problem-solving in a manner akin to human cognition. The individuals possess a comprehension of the capacity of this technology to replicate human cognitive processes and its versatility in many domains. The aforementioned observation highlights the multifaceted character of artificial intelligence, which encompasses both technical and practical dimensions. Furthermore, it underscores the need of including AI education that incorporates these aspects in order to provide students with a holistic comprehension of the role played by AI in contemporary society.

Familiar AI Technologies and Applications. The widespread familiarity with these AI technologies signifies that college students in the Philippines possess a basic understanding of AI applications and their potential impact across various domains. This level of awareness is crucial, as AI technologies continue to advance and integrate into different aspects of society and education (Markauskaite et al., 2022). Table 12 provides a summary of the AI-related concepts and technologies that college students are familiar with.

Table 12. Familiar AI Technologies and Applications

AI – related Concepts	*Occurrences*
1. Gaming Application	*170*
2. Chatbots	*140*
3. Natural Language Processing	*78*
4. AI – powered VAs	*78*
5. Speech Recognition	*64*
6. Machine Learning	*50*
7. Computer Vision	*49*
8. Recommendation Systems	*40*

The results shown in Table 11 demonstrate a significant degree of acquaintance with diverse artificial intelligence technology and applications among the respondents. Machine learning, natural language processing, and voice recognition are fundamental ideas in the field of artificial intelligence that are well-recognized by a substantial number of students. Moreover, students possess an awareness of the pragmatic ramifications of artificial intelligence (AI) in several domains such as computer vision, chatbots, recommendation systems, and AI-driven virtual assistants. The widespread popularity of gaming apps driven by artificial intelligence (AI) indicates that respondents possess not just knowledge of AI's presence but also an understanding of its significant influence on their recreational pursuits (Anderson & Rainei, 2018). The heightened level of consciousness might perhaps be attributed to the incorporation of artificial intelligence (AI)-powered functionalities into contemporary video games.

Utilization of AI Technologies. This section delves into the practical application of artificial intelligence (AI) in the lives of the respondents. It explores how frequently they engage with AI technologies for both academic and personal reasons. Additionally, it seeks to uncover the motivations driving their utilization of AI in these two spheres. By addressing these questions, this study gained valuable insights into the extent to which AI has become integrated into the daily routines of students, shedding light on its role in academia and personal life.

AI Utilization for Academic and Personal Purposes. Table 13 provides insights into the extent of AI utilization among the respondents for both academic and personal purposes.

Table 13. Extent of AI Utilization for Academic and Personal Purposes

	AI Utilization Academic	AI Utilization Personal
N	250	250
Mean	2.45	2.56
Median	2.00	3.00
Mode	3.00	4.00
Standard deviation	1.11	1.16

The results indicate that, on average, respondents use AI technology to a modest degree for both academic and personal objectives. Nevertheless, significant distinctions exist between the two aforementioned groups. The frequency of AI use among students is higher for personal purposes, but its utilization for academic purposes is comparatively lower. This implies that individuals have incorporated AI into their daily lives, maybe for purposes such as entertainment, information retrieval, or communication. However, the integration of AI into academic settings is not as widespread. The standard deviations in AI use among students reveal that individual preferences and demands are crucial factors in influencing the level of integration of AI into their daily activities. The mean values, particularly within the "Occasionally" and "Rarely" categories, indicate a diverse range of AI use patterns among the students assessed. The consequences of these results are significant for educational institutions, government and non-government sectors, as they emphasize the need to take into account the many ways in which students engage with artificial intelligence systems. Adapting educational methodologies to cater to the diverse degrees of AI integration might augment the holistic learning encounter and equip students for an age characterized by the growing ubiquity of AI technology (Dwivedi et al., 2023). Table 14 presents the extent of AI utilization for academic and personal purposes among college students, stratified by age groups. Interesting trends in AI use among respondents of various ages are shown by the investigation. In general, individuals who are 24 years of age and older have a higher frequency of using artificial intelligence (AI) for academic purposes compared to their younger peers. This phenomenon might perhaps be attributed to a heightened level of exposure and experience with technological advancements and artificial intelligence systems that have been established throughout the span of their lifespan.

Table 14. Extent of AI Utilization for Academic and Personal Purposes by Age

	AGE	N	Mean	Median	Mode	SD
AI Utilization Academic	17-18 years old	60	2.38	2.50	1.00	1.17
	19-20 years old	57	2.40	2.00	2.00	1.10
	21-22 years old	63	2.40	2.00	2.00	1.01
	24 years old & above	70	2.60	3.00	4.00	1.16
AI Utilization Personal	17-18 years old	60	2.62	3.00	4.00	1.21
	19-20 years old	57	2.58	3.00	2.00	1.05
	21-22 years old	63	2.71	3.00	4.00	1.16
	24 years old & above	70	2.37	2.00	1.00	1.19

Moreover, data shows that individuals between the age range of 21-22 exhibit the highest median and mean values, suggesting a greater propensity for using artificial intelligence (AI) for personal purposes. Adolescent individuals within the age brackets of 17-18 and 19-20 years also

engage with artificial intelligence (AI) for personal use but with discernible disparities in the extent of use. These results indicate that age affects how students use AI technology (Pacheco-Mendoza et al., 2023). In order to optimize the integration of AI in academic and personal settings, it is essential to tailor educational efforts and support systems to cater to the varying use patterns across different age groups. This customization may significantly boost the efficacy of AI implementation. Table 15 presents the extent of AI utilization for academic and personal purposes among college students, categorized by gender. The findings suggest that there exist only slight disparities in the use patterns of artificial intelligence (AI) for academic and personal objectives among male, female, and non-binary respondents. Although there are fluctuations in the mean scores, these differences are not significant. It is worth mentioning that there are variations in the mean values for the application of artificial intelligence (AI) when comparing academic and personal contexts. This implies that although some respondents exhibit a higher frequency of using AI for academic purposes, they may have a lower frequency of employing it for personal endeavors, and vice versa.

Table 15. Extent of AI Utilization for Academic and Personal Purposes by Gender

	GENDER	N	Mean	Median	Mode	SD
AI Utilization Academic	Male	76	2.62	3.00	4.00	1.13
	Female	84	2.54	3.00	3.00	1.16
	Non-binary	90	2.23	2.00	2.00	1.02
AI Utilization Personal	Male	76	2.59	3.00	4.00	1.19
	Female	84	2.56	3.00	4.00	1.15
	Non-binary	90	2.54	3.00	4.00	1.14

In the present research, it is observed that gender, as a standalone factor, does not demonstrate a substantial influence on the adoption of artificial intelligence (AI) among college students. Additional variables, such as financial capability, academic discipline, and personal inclinations, could have more influence on the adoption patterns of artificial intelligence (Kamalov et al., 2023). In order to effectively address the unique requirements of students, it is important to take into account many elements while designing AI-related educational interventions and assistance. Table 16 presents the extent of AI utilization for both academic and personal purposes across different age groups.

Table 16. Extent of AI Utilization for Academic and Personal Purposes by Age

	AGE	N	Mean	Median	Mode	SD
AI Utilization Academic	17-18 years old	60	2.38	2.50	1.00	1.17
	19-20 years old	57	2.40	2.00	2.00	1.10
	21-22 years old	63	2.40	2.00	2.00	1.01
	24 years old & above	70	2.60	3.00	4.00	1.16
AI Utilization Personal	17-18 years old	60	2.62	3.00	4.00	1.21
	19-20 years old	57	2.58	3.00	2.00	1.05
	21-22 years old	63	2.71	3.00	4.00	1.16
	24 years old & above	70	2.37	2.00	1.00	1.19

The data shows that, in general, students tend to use AI more for personal purposes than for academic purposes. Older students (24 years old and above) appear to use AI more frequently for academic purposes than their younger counterparts, while younger students (17-18 years old) use AI

more frequently for personal purposes. The variation in utilization patterns among different age groups highlights the importance of considering age-related factors in designing AI education and support programs. These findings suggest that age may play a role in students' AI utilization patterns for personal purposes, while its influence on academic AI utilization appears to be more consistent across age groups (Woodruff et al., 2023). Further investigation into the reasons behind these age-related differences in AI utilization could provide valuable insights for educators and institutions seeking to enhance AI literacy among students of different age groups. Table 17 presents the extent of AI utilization for academic and personal purposes among college students from different fields of study. The data demonstrates that there are differences in the ways artificial intelligence is used across various academic disciplines.

Table 17. Extent of AI Utilization for Academic and Personal Purposes by Field of Study

	COURSE	N	Mean	Median	Mode	SD
AI Utilization Academic	BSBA	50	2.40	2.00	3.00	1.03
	BEED	56	2.45	2.00	1.00	1.16
	BSAB	49	2.51	3.00	3.00	1.06
	BSED	45	2.51	2.00	2.00 [a]	1.18
	BSCRIM	50	2.40	3.00	1.00 [a]	1.14
AI Utilization Personal	BSBA	50	2.44	2.00	1.00	1.21
	BEED	56	2.63	3.00	3.00	1.10
	BSAB	49	2.31	2.00	1.00	1.18
	BSED	45	2.62	3.00	4.00	1.15
	BSCRIM	50	2.82	3.00	4.00	1.12

It is observed that BSCRIM students exhibit the most extensive use of artificial intelligence (AI) for both academic and personal objectives, while BEED and BSBA students tend to demonstrate comparatively lesser usage in both domains. BSED students have a greater propensity for using resources for personal objectives in contrast to academic objectives. These variations may be influenced by the nature of the academic programs and the specific AI-related requirements or opportunities within each field. These findings suggest that the field of study may influence students' AI utilization patterns, with students from different fields of study demonstrating different levels of AI adoption for both academic and personal purposes. However, it is essential to recognize that the overall differences in mean scores are relatively small, and the majority of students in all fields of study still report using AI technologies occasionally or rarely for both academic and personal purposes.

Reasons for Using AI Technologies. Presented in Table 18 is the thematic analysis of the use of Artificial Intelligence (AI) technologies revealing five emergent themes that reflect the diverse ways in which participants utilize AI in their academic and personal lives.

Table 18. Thematic Analysis of the Use of Artificial Intelligence (AI) Technologies

Emergent Themes	*Core ideas*	*Significant Statements*
Theme 1: Academic Research and Data Analysis	AI as a tool for research.	*I've experienced the transformative role of AI as a tool for academic research.*
	AI for data analysis.	*In my research work, AI has become a crucial companion for data analysis, offering*

		precision and speed that significantly enhances the insights derived from complex datasets.
	Enhancing research efficiency.	*Through AI, my research processes have become more efficient, allowing me to focus on the creative aspects of analysis and interpretation.*
	Improved accuracy and precision.	*AI's contribution to research is evident in the improved accuracy and precision it brings to data analysis.*
	Interdisciplinary applications.	*My experiences highlight AI's interdisciplinary applications, bridging gaps between various fields and fostering collaborative research endeavors.*
	Empowering innovative research.	*AI empowers me to delve into innovative research avenues, providing tools that expand the possibilities of what can be explored and achieved in my academic pursuits.*
Theme 2: Task Management and Organization	AI-enabled task scheduling.	*Utilizing AI for task scheduling has significantly streamlined my daily routines.*
	Personal productivity enhancement.	*AI contributes to my personal productivity by offering insights and strategies that enhance efficiency and effectiveness in task completion.*
	Efficient workflow management.	*My experience with AI involves efficient workflow management, ensuring tasks are organized and executed in a manner that optimizes both time and resources.*
	Smart to-do lists.	*AI-powered smart to-do lists have become an integral part of my daily life.*
	Personalized recommendations.	*AI's ability to provide personalized recommendations has improved my decision-making processes.*
	Time optimization strategies.	*Through AI, I've developed effective time optimization strategies, allowing me to allocate time where it matters most and maximize productivity.*
	Virtual assistants for task support.	*AI has provided valuable support in managing tasks, offering timely reminders and assistance as needed.*
Theme 3: Fun and Entertainment	Gaming and virtual reality.	*My engagement with AI in gaming and virtual reality showcases the immersive and dynamic experiences that AI technologies bring to entertainment.*
	AI-powered chatbots.	*Interacting with AI-powered chatbots has added a unique and personalized dimension to my online communication experiences.*
	AI-generated art and creativity.	*AI's role in generating art and fostering creativity has personally enriched my experiences.*
	Personalized content recommendations.	*AI-driven personalized content recommendations have tailored my entertainment experiences.*
	Voice assistants for entertainment.	*The integration of AI-driven voice assistants has transformed how I interact with entertainment systems.*

	AI-driven social media features.	*AI's influence on social media features has enhanced my online interactions, introducing personalized content and features that align with my interests.*
	AI in interactive storytelling.	*Experiencing AI in interactive storytelling has added a layer of engagement and immersion to narratives.*
	AI-driven recommender systems.	*AI-driven recommender systems have personalized my content consumption, ensuring that recommendations align with my preferences and interests.*
Theme 4: Study-Related Suggestions	AI-based study resources.	*My academic journey has been enriched by AI-based study resources, providing adaptive and personalized learning materials.*
	AI-driven time management.	*AI's role in time management has enhanced my study routines, offering strategies to optimize study schedules based on personal habits and preferences.*
	Intelligent tutoring systems.	*Interacting with intelligent tutoring systems powered by AI has provided personalized and adaptive support in my learning journey.*
	AI-backed writing assistance.	*AI-backed writing assistance tools have played a key role in refining my writing skills, offering suggestions and improvements that align with my writing style.*
	Smart note-taking and organization.	*AI-powered smart note-taking and organizational tools have streamlined my study materials, making information retrieval more efficient.*
	AI-driven study reminders.	*AI-driven study reminders have become a valuable asset, ensuring that I stay on track with my study goals and deadlines.*
	Personalized learning paths.	*AI allowed me to tailor my academic journey based on my learning preferences and pace.*
	AI-guided research.	*AI has been a valuable asset, providing insights and recommendations that enhance the depth and quality of my academic investigations.*
Theme 5: Language Translation and Understanding Foreign Content	Automated language translation.	*Its language translation has significantly facilitated my communication across languages*
	Enhanced multilingual communication.	*AI has broadened my ability to connect with individuals from diverse linguistic backgrounds.*
	Language learning support.	*It has personally enriched my language acquisition experiences, providing adaptive and personalized learning materials.*
	Cultural exchange and understanding.	*AI's role in overcoming language barriers has fostered cultural exchange and understanding.*
	AI-driven text analysis.	*It has become a valuable tool in my linguistic endeavors.*
	Overcoming language barriers in travel.	*It enhanced my exploration and experiences in foreign countries.*
	AI language assistants.	*Utilizing AI language assistants has become*

		an integral part of my language-related activities, providing instant support and guidance.

Theme 1: Academic Research and Data Analysis. Participants emphasized the role of AI as a valuable tool for academic research and data analysis. AI technologies are harnessed to enhance research efficiency, improve accuracy and precision in data analysis, and empower innovative interdisciplinary research. AI's ability to process vast amounts of data and provide insights aids researchers in making data-driven decisions and advancing their scholarly pursuits.

Theme 2: Task Management and Organization. AI plays a significant role in helping participants manage tasks and stay organized. AI-enabled task scheduling, efficient workflow management, and smart to-do lists contribute to personal productivity enhancement. The incorporation of AI-driven virtual assistants and personalized recommendations assists individuals in optimizing their time and tasks.

Theme 3: Fun and Entertainment. Beyond its academic utility, AI provides entertainment and recreational value. Participants enjoy AI-powered gaming experiences, virtual reality, and interactive storytelling. AI-generated art and creativity, along with personalized content recommendations, contribute to the enjoyment of leisure activities. AI-driven chatbots and voice assistants also add to the fun and engaging experiences.

Theme 4: Study-Related Suggestions. AI technologies offer valuable support in academic study-related tasks. Participants utilize AI-based study resources, intelligent tutoring systems, and AI-backed writing assistance to enhance their learning experience. Smart note-taking, organization tools, and study reminders contribute to efficient study habits. Personalized learning paths guided by AI facilitate tailored learning experiences.

Theme 5: Language Translation and Understanding Foreign Content. AI is harnessed to overcome language barriers and facilitate cross-cultural communication. Automated language translation and enhanced multilingual communication enable seamless interactions across different languages. AI language assistants and language learning support contribute to language proficiency improvement and cultural exchange. Overall, the emergent themes illustrate the wide-ranging impact of AI technologies on participants' lives. AI is not only aiding academic research and data analysis but also significantly contributing to personal productivity, entertainment, study support, and language-related activities. The findings underscore the versatility of AI applications and their potential to enrich various aspects of individuals' daily experiences and activities. The prevalence of AI technologies in these diverse domains reflects their growing importance in contemporary society and their potential to shape the future of human interactions and pursuits.

Perceptions and Attitudes towards AI. This section delves into the perspectives and emotions of college students in relation to artificial intelligence (AI). The study explores individuals' perspectives on the future social influence of artificial intelligence (AI), their assessments of the possible advantages of AI in their academic and professional endeavors, and any apprehensions they may have about AI technology. Table 19 presents insights into how respondents perceive the future impact of AI on society. The mean perception score is 2.12, indicating that, on average, students have a moderately positive outlook on AI's societal impact. However, the median score of 2.00 and the mode of 3.00 suggest a slightly more neutral to uncertain sentiment among respondents. The standard deviation of 0.822 suggests a notable level of agreement among the students' judgments. The findings indicate that a significant proportion of participants share a similar perspective, with some expressing a favorable view (mode at 3.00), while others exhibit a more cautious or unsure stance.

Table 19. Perception of the Impact of AI towards the Society in the Future

	AI Impact Society
N	250
Mean	2.12
Median	2.00
Mode	3.00
Standard deviation	0.822

Within a wider framework, this indicates that while many respondents recognize the potential advantages of artificial intelligence (AI), they may also possess misgivings or questions about its social ramifications. The aforementioned attitudes possess the potential to have a substantial impact on student's level of engagement with AI technologies, as well as their inclination to advocate for the responsible development and use of such technology. Therefore, it is essential for educational institutions and efforts about artificial intelligence (AI) to acknowledge and tackle these preconceptions, while offering unbiased information. This approach will facilitate the development of well-informed dialogues about the societal implications of AI (Woodruff et al., 2023). Table 20 presents data regarding college students' perceptions of the impact of AI on society in the future, stratified by age group. The average scores across all age groups exhibit a range of 2.03 to 2.19, suggesting that respondents, irrespective of their age, possess somewhat favorable attitudes about the influence of artificial intelligence on society. Based on the obtained results, it may be inferred that, on average, students have a generally favorable or at least neutral perception of the impact of artificial intelligence (AI) on society in the future (Grassini, 2023). The median scores for each age cohort exhibit a constant value of 2.00. This finding suggests that the median answer reflects a somewhat favorable opinion of the social influence of AI. The observed uniformity in median scores indicates a prevailing inclination among respondents to have a positive perception of artificial intelligence. The standard deviations (SD) for the age categories vary between 0.799 and 0.861. The observed standard deviation values, which are quite low, indicate a notable level of agreement among individuals within each age group about their perspectives on the societal implications of artificial intelligence. Put differently, individuals belonging to the same age cohort have a tendency to hold comparable perspectives.

Table 20. Perception of the Impact of AI towards the Society in the Future by Age

	AGE	N	Mean	Median	SD
AI Impact Society	17-18 years old	60	2.15	2.00	0.799
	19-20 years old	57	2.19	2	0.833
	21-22 years old	63	2.03	2	0.861
	24 years old & above	70	2.11	2.00	0.808

Although there may be minor differences across different age groups, none of them has markedly unfavorable views. The findings of the survey suggest that respondents irrespective of their age, have a mostly positive perspective on the social impact of artificial intelligence. In general, the presented table illustrates that age as a singular factor does not have a significant influence on college students' perceptions of the societal effect of artificial intelligence. Conversely, a collective sense of optimism about the future social role of artificial intelligence seems to be prevalent among these students. The level of optimism expressed by individuals may be shaped by a range of variables, such as the depictions of artificial intelligence (AI) in the media, the educational encounters individuals have had with AI, and the larger society discussions around AI (Grassini, 2023). Comprehending different perspectives is imperative for educators and policymakers in their

efforts to equip pupils for a future where AI assumes a more prominent position. Furthermore, it emphasizes the need to cultivate well-informed and equitable dialogues about the social ramifications of artificial intelligence technology (Anderson & Rainei, 2018). Table 21 provides insights into respondents' perceptions of the impact of AI on society in the future, categorized by gender. Individuals of all genders have mostly favorable attitudes about the societal implications of artificial intelligence (AI).

Table 21. Perception of the Impact of AI towards the Society in the Future by Gender

	GENDER	N	Mean	Median	SD
AI Impact Society	Male	76	2.24	2.00	0.814
	Female	84	2.08	2.00	0.839
	Non-binary	90	2.06	2.00	0.812

The average scores for male, female, and non-binary individuals exhibit a range of 2.06 to 2.24, indicating a relatively favorable perception among respondents about the future influence of AI on society. The median scores for all gender groups exhibit a constant value of 2.00. This finding suggests that the median answer of the participants reflects a relatively favorable perspective of the social influence of artificial intelligence. The observed uniformity in median scores indicates a shared inclination among respondents of different genders to have a positive perception of artificial intelligence. The standard deviations (SD) of the gender groups exhibit comparatively low values, with a range of 0.812 to 0.839. The observed low standard deviation values suggest that there exists a certain level of consensus among each gender group about their respective perspectives on the societal implications of artificial intelligence. Put simply, individuals who identify within the same gender group have a tendency to hold comparable perspectives. The mean scores varied somewhat but not significantly across the gender groups. On average, male students exhibit somewhat more favorable opinions in comparison to their female and non-binary counterparts. However, it is important to note that these differences are rather insignificant. In general, the presented table indicates that gender in isolation does not seem to have any influence on college students' perceptions of the future societal effect of artificial intelligence (AI) . Respondents of both genders have a generally favorable perspective, with little divergence within each respective group. This implies that variables outside gender, such as educational attainment, familiarity with AI technology, and cultural factors, might have more effect on students' perspectives about the social implications of AI (Dwivedi et al., 2023). Gaining insight into these beliefs has significant value for educators and policymakers in order to appropriately customize AI education and awareness programs. Additionally, it underscores the need to cultivate a well-rounded and knowledgeable comprehension of the possible societal impacts of artificial intelligence among students of all backgrounds (Woodruff et al., 2023). Table 22 presents data on how respondents from different academic years perceive the impact of AI on society in the future.

Table 22. Impact of AI towards the Society in the Future by Academic Year

	ACADEMIC YEAR	N	Mean	Median	SD
AI Impact Society	1st year	60	2.15	2.00	0.799
	2nd year	57	2.19	2	0.833
	3rd year	63	2.03	2	0.861
	4th year	70	2.11	2.00	0.808

While there are slight variations in mean scores between academic years, these differences are relatively small. For instance, 2nd-year students have the highest mean score of 2.19, indicating a slightly more positive perception, while 3rd-year students have the lowest mean score of 2.03,

indicating a slightly less positive perception. However, these differences are not substantial. Across all academic years, the median perception of AI's impact on society is 2.00. This indicates that the central tendency for all groups is a moderately positive perception. Respondents in their 1st, 2nd, 3rd, and 4th years of study share a common belief that AI will have a somewhat positive influence on society. The standard deviations (SD) for each academic year group are relatively low, ranging from 0.799 to 0.861. These low SD values suggest that within each academic year category, there is a degree of consensus on how students perceive AI's societal impact. This means that students within the same academic year tend to have similar views on this matter. Unlike some studies that might reveal a linear trend in perception as students progress through their academic years, this data does not show a consistent pattern of increasing or decreasing positivity. Instead, perceptions remain moderately positive across all years. In summary, this table indicates that the academic year alone does not appear to be a strong determinant of how college students perceive AI's impact on society in the future (Woodruff et al., 2023). Students across various academic years share moderately positive views, with limited variability within each year group. This suggests that other factors, such as exposure to AI-related courses or experiences, might have a more significant influence on shaping students' perceptions of AI's societal impact. Understanding these perceptions is important for educational institutions to design AI-related curricula and initiatives that align with students' expectations and concerns (Anderson & Rainei, 2018). It also highlights the need for ongoing education about AI's potential implications for society as students progress through their academic journeys (Grassini, 2023). Table 23 presents data on how students from different fields of study perceive the impact of AI on society in the future. The data indicates that there are variations in the perception of the impact of AI on society among college students from different fields of study. Students majoring in BSCRIM show a relatively stronger belief in AI's potential impact compared to students from other fields, as indicated by their higher mean perception score. However, the majority of students in all fields of study hold a neutral or uncertain stance on AI's societal implications, as indicated by the median score of 2.00 in each group. The relatively low standard deviation values within each field of study suggest that there is a moderate level of agreement in their perceptions, with responses closely clustered around the mean.

Table 23. Perception of the Impact of AI towards the Society in the Future by Field of Study

	COURSE	N	Mean	Median	SD
AI Impact Society	BSBA	50	2.02	2.00	0.845
	BEED	56	2.07	2.00	0.806
	BSAB	49	2.08	2.00	0.838
	BSED	45	2.18	2.00	0.834
	BSCRIM	50	2.26	2.00	0.803

These findings provide insights into the differences in beliefs among students from different fields of study regarding the potential impact of AI technologies on society. However, it is essential to note that the differences in mean scores are relatively small, indicating that overall, the perception of AI's impact on society is relatively consistent across different fields of study. Students from all fields show a degree of uncertainty or neutrality regarding AI's impact on society, with no field showing a significantly divergent belief pattern. The data suggests that AI's potential impact on society is a topic that evokes uncertainty and diverse perspectives among college students regardless of their field of study (Gauthier et al., 2022).

Perceived Benefits of AI in Academic Journey and Future Career. The perspectives and attitudes of college students about artificial intelligence (AI) are explored in this section. The focus of the inquiry is to ascertain individuals' perspectives on the societal implications

of artificial intelligence (AI), examine their opinions on the possible advantages of AI technologies in their educational pursuits and future professional paths, and identify any apprehensions they may have about AI. It is to get a deeper understanding of the perspectives and strategies used by these students in navigating the dynamic landscape of artificial intelligence, using a combination of open-ended inquiries and quantitative assessments (Grassini, 2023). Table 24 presents the results of the thematic analysis of the perceived benefits of AI technologies. The qualitative analysis of participants' responses has led to the identification of five emergent themes, each representing a set of core ideas related to the potential benefits of AI.

Table 24. Thematic Analysis of the Perceived Benefits of AI Technologies

Emergent Themes	*Core ideas*	*Significant Statements*
Theme 1: Educational Accessibility and Personalized Learning	AI-driven educational access.	*My experience with AI underscores its pivotal role in driving educational accessibility.*
	Adaptive learning and feedback.	*I've witnessed how tailored educational experiences can enhance comprehension and retention.*
	Support for special educational needs.	*My encounters with AI highlight its capacity to offer tailored support for special educational needs.*
	Lifelong learning and upskilling.	*Embracing AI for lifelong learning has been transformative, enabling continuous upskilling and adaptation.*
	Language learning and translation.	*My language learning journey has been enriched by AI, experiencing its effectiveness in language translation.*
	Fostering a growth mindset.	*AI is evident in my learning experiences, encouraging a positive attitude toward challenges and continuous improvement.*
Theme 2: Streamlining Business Processes and Efficiency	Automation of repetitive tasks.	*Automation of repetitive tasks has significantly streamlined my work processes.*
	Workflow optimization.	*My professional journey with AI involves the optimization of workflows.*
	Enhanced customer service.	*Experiencing the impact of AI on customer service has heightened the quality and responsiveness of interactions.*
	Predictive maintenance and resource allocation.	*AI has proven crucial in ensuring optimal performance and resource utilization in my professional endeavors.*
	Streamlined supply chain management.	*AI's influence on supply chain management has brought about streamlined processes.*
Theme 3: Revolutionizing Healthcare with Advanced Diagnostics	AI in medical imaging.	*AI's impact on medical imaging has highlighted its role in revolutionizing diagnostic processes.*
	Data analysis for precision medicine.	*AI in healthcare emphasize its role in data analysis for precision medicine, paving the way for personalized and targeted treatment plans.*
	Enhanced diagnostic accuracy.	*The contribution of AI to healthcare is evident in its enhancement of diagnostic accuracy, providing clinicians with valuable insights for informed decision-making.*
	Early disease	*It enables proactive healthcare*

	detection.	*interventions and improving patient outcomes.*
Theme 4: Driving Innovation and Creative Problem-Solving	AI as a catalyst for innovation.	*AI's role as a catalyst for innovation, sparking novel ideas and solutions that may not have been apparent through traditional approaches.*
	Automation and process optimization.	*AI's influence on automation and process optimization has brought efficiency to creative problem-solving.*
	Unleashing human creativity.	*AI highlight its ability to unleash human creativity, providing tools and insights that complement and amplify human imaginative capacities.*
	Novel approaches to challenges.	*AI has empowered me to explore novel approaches to challenges, fostering a dynamic and adaptive problem-solving mindset.*
	Personalization and customer experience.	*The integration of AI has personalized customer experiences.*
	Disruptive innovations.	*My encounters with AI-driven innovations have been transformative, introducing disruptive solutions that challenge conventional norms.*
Theme 5: Addressing Environmental Issues with Data Analysis and Prediction	Environmental data analysis.	*AI provides valuable insights for understanding and addressing complex environmental issues.*
	Predictive modeling for sustainability.	*AI-driven predictive modeling emphasizes its crucial role in promoting sustainability, guiding decision-makers toward environmentally conscious practices.*
	Climate change mitigation	*AI contribute to climate change mitigation efforts highlights its potential to address one of the most critical challenges facing our planet.*
	Natural disaster management.	*It has proven invaluable, improving our ability to predict, respond to, and recover from environmental disasters.*
	Smart environmental monitoring.	*AI-driven smart environmental monitoring showcase its effectiveness in real-time tracking and management of environmental factors.*
	Sustainable resource management.	*It influenced my perception of responsible resource utilization, encouraging environmentally friendly practices.*
	Eco-friendly innovations.	*It showcased its potential to inspire and support sustainable solutions that benefit both society and the environment.*
	Citizen engagement and education.	*AI's contribution to citizen engagement and education has played a significant role in raising awareness and fostering a collective commitment to environmental stewardship.*

Theme 1: Educational Accessibility and Personalized Learning. This theme revolves around the perceived benefits of AI in education. Participants believe that AI can improve educational accessibility by providing broader access to educational resources. Adaptive learning and personalized feedback are seen as valuable features that cater to individual learning needs, promoting more effective learning experiences. AI's potential to support special educational needs is

also recognized, ensuring inclusivity in the educational process. Additionally, participants acknowledge AI's role in facilitating lifelong learning and upskilling opportunities, as well as aiding in language learning and translation efforts. AI is seen as a tool that fosters a growth mindset, encouraging continuous learning and personal development.

Theme 2: Streamlining Business Processes and Efficiency. The second theme highlights the belief that AI can streamline business processes and enhance overall efficiency in various industries. Participants recognize AI's potential in automating repetitive tasks, reducing human effort and minimizing errors. Workflow optimization and data analysis are identified as key areas where AI can provide valuable insights to improve decision-making and resource allocation. Enhanced customer service is also seen as a benefit, as AI-driven applications can cater to customer needs and preferences more effectively. Moreover, AI's predictive capabilities are expected to contribute to predictive maintenance and resource allocation, further improving business efficiency. Streamlined supply chain management and accelerated innovation are additional benefits participants associate with AI adoption in businesses.

Theme 3: Revolutionizing Healthcare with Advanced Diagnostics. The third theme centers on the potential impact of AI on healthcare. Participants believe that AI can revolutionize healthcare by offering advanced diagnostic capabilities. AI's application in medical imaging is recognized as a transformative technology that can aid in more accurate diagnoses. Data analysis for precision medicine is seen as a promising area where AI can contribute to personalized healthcare solutions. Enhanced diagnostic accuracy and early disease detection are other perceived benefits of AI adoption in the healthcare sector. AI's role in remote patient care is also acknowledged, providing opportunities for more accessible and efficient healthcare services.

Theme 4: Driving Innovation and Creative Problem-Solving. The fourth theme highlights the role of AI as a catalyst for driving innovation and enabling creative problem-solving. Participants recognize AI's potential in automating processes and optimizing workflows, freeing up human resources for more creative and strategic tasks. AI is perceived as a tool that can unleash human creativity by handling mundane and repetitive tasks, allowing individuals to focus on more innovative endeavors. The theme also emphasizes AI's potential to foster novel approaches to challenges, supporting the development of personalized customer experiences and disruptive innovations.

Theme 5: Addressing Environmental Issues with Data Analysis and Prediction. The final theme emphasizes the belief that AI can play a crucial role in addressing environmental issues. Participants recognize AI's potential in analyzing large environmental datasets, providing valuable insights that inform environmental research and sustainability efforts. AI's predictive modeling capabilities are seen as valuable for sustainable planning and decision-making. Climate change mitigation, biodiversity conservation, natural disaster management, and sustainable resource management are some of the environmental benefits associated with AI adoption. Additionally, participants recognize AI's potential in driving eco-friendly innovations and engaging citizens through environmental education. The thematic analysis of participants' perceptions of the potential benefits of AI technologies reveals a diverse range of applications and benefits across various domains, including education, business, healthcare, innovation, and environmental sustainability. The emergent themes and core ideas highlight the multifaceted impact of AI, providing valuable insights into how AI technologies are perceived to transform and enhance different aspects of society and human endeavors.

Concerns About AI Technologies. The following part explores the worries and apprehensions that are held by respondents in relation to AI technology. The platform provides an avenue for them to articulate their concerns, doubts, and anxieties pertaining to the influence of artificial intelligence on their educational trajectory, prospective professional paths, and broader societal implications. Comprehending these worries is crucial for formulating strategies and regulations that effectively tackle the apprehensions and cultivate a better-informed and optimistic perspective on artificial

intelligence technology among college students. Table 25 reflect various aspects of concern, highlighting both the potential risks and the need for responsible AI implementation.

Table 25. Thematic Analysis of the Concerns About AI Technologies

Emergent Themes	*Core ideas*	*Significant Statements*
Theme 1: Job Displacement and Unemployment	Fear of job automation.	*Personally, the fear of job automation has been a palpable concern, raising questions about the stability of certain professions in the face of advancing AI technologies.*
	Impact on the job market.	*AI will certainly impacts the job market.*
	Need for workforce transitions.	*Acquiring new skills to stay relevant in an AI-driven job market.*
	Economic and social concerns.	*Concerns about the economic and social implications of widespread job displacement have added a layer of uncertainty and apprehension to my perspectives on AI.*
	Redefining work roles.	*I am thinking of shifting dynamics of professional responsibilities and the skills that will be crucial in the future.*
Theme 2: Ethical Concerns about Data Privacy and AI Bias	Data privacy risks.	*AI has heightened my awareness of the importance of safeguarding personal information in an increasingly connected world.*
	Responsible data use.	*My experiences emphasize the need for responsible data use, emphasizing ethical considerations in handling sensitive information through AI applications.*
	AI Bias and fairness.	*AI bias has underscored the importance of fairness in AI algorithms, challenging the notion of unbiased decision-making through machine learning.*
	Transparency and explainability.	*My encounters with AI have emphasized the necessity for transparency and explainability, ensuring that the decision-making processes of AI systems are understandable and accountable.*
	Accountability and regulation.	*AI technologies has become evident in my experiences, highlighting the importance of ethical governance.*
	Ethical AI development.	*There is a need for a responsible and conscientious approach to AI technologies.*
Theme 3: Over-reliance on Technology and Reduced Human Interaction	Decreased human interaction.	*There is potential societal consequences of reduced face-to-face connections.*
	Social skills erosion.	*Particularly in face-to-face interactions, has been a personal concern, highlighting the importance of balancing technology use with interpersonal skills development.*
	Impact on mental health.	*Prioritize meaningful connections and well-being over digital engagement.*
	Digital dependency awareness.	*Establish healthier boundaries with technology, ensuring that it enhances rather than hinders my overall well-being.*
	Technology-mediated	*There should be authenticity and depth of*

	communication.	*interpersonal connections in a digitally connected world.*
	Nurturing human relationships.	*In nurturing human relationships amid technological advancements has become a guiding principle in navigating the digital age.*
	Social implications.	*People will tend to over-reliance on technology have prompted contemplation on the broader societal shifts and the need for a balanced integration of technology and human connection.*
Theme 4: Preservation of Human Decision-Making in Critical Scenarios	Human accountability.	*Retaining a human touch in decision-making processes should still be present.*
	Ethical considerations.	*Relying solely on AI in critical scenarios has reinforced the need for a thoughtful and values-driven approach to decision-making.*
	Contextual understanding.	*It affects how human perceives.*
	Emotional intelligence.	*AIs are less emphatic.*
	Unforeseen situations.	*The adaptability and improvisation are inherent in human decision-making, which may be challenging for AI to replicate.*
	Safety and security.	*The considerations of safety and security in critical scenarios emphasize the need for human oversight and intervention.*
	Human judgment and intuition.	*Certain aspects of decision-making are deeply rooted in human experience and understanding.*
	Human-centered approach.	*Prioritizing human values and ethical considerations in the development might diminish.*
	Continuous learning and improvement.	*Continuous learning and improvement in human decision-making processes reinforces the idea that experience and learning contribute to enhanced judgment in complex and evolving situations.*

Theme 1: Job Displacement and Unemployment. Participants express fears related to job automation and its potential impact on the job market. The core ideas emphasize concerns about workforce transitions, economic implications, and the need to redefine work roles in the face of increasing automation. These concerns revolve around the possibility of AI technologies replacing human jobs, leading to unemployment and potential socioeconomic challenges.

Theme 2: Ethical Concerns about Data Privacy and AI Bias. This theme focuses on ethical issues related to AI technologies. Participants highlight risks related to data privacy, responsible data use, and the potential biases in AI algorithms. The core ideas underscore the importance of transparency, explainability, accountability, and ethical AI development. Participants are concerned about ensuring fairness and avoiding harmful consequences arising from biased AI decision-making.

Theme 3: Over-reliance on Technology and Reduced Human Interaction. Concerns regarding the over-reliance on AI and technology are central to this theme. Participants express worries about decreased human interaction, erosion of social skills, and the potential impact on mental health due to excessive reliance on technology. The core ideas emphasize the need to be aware of digital dependency and to foster meaningful human relationships, mitigating the possible social implications of technology-mediated communication.

Theme 4: Preservation of Human Decision-Making in Critical Scenarios. This theme revolves around the preservation of human decision-making, particularly in critical scenarios. Participants highlight the significance of human accountability, ethical considerations, and contextual understanding in decision-making processes where AI may lack adaptability. The core ideas underscore the importance of emotional intelligence, safety, and security in critical scenarios, advocating for a human-centered approach to AI integration. The thematic analysis demonstrates a comprehensive range of concerns related to AI technologies. Participants express a mix of caution and optimism, indicating that while AI has significant potential to transform various domains, it also raises valid ethical, social, and economic challenges. Addressing these concerns is essential to ensure responsible and beneficial AI integration in society. The emergent themes provide valuable insights for policymakers, researchers, and developers to develop ethical AI frameworks and responsible AI practices that address these concerns and foster an inclusive and sustainable AI future.

AI Integration in Education. Table 26 provides data on the extent of AI integration in the curriculum based on the responses of 250 participants. Based on the data, it can be gleaned that the participants perceive a moderate level of AI integration in their curriculum. The mean and median scores both indicate that, on average, the participants report a moderate frequency of AI integration. However, the high standard deviation suggests that there is significant variability in the responses, with some participants perceiving a higher level of AI integration and others perceiving a lower level.

Table 26. The Extent of AI Integration in the Curriculum

	N	Mean	Median	SD
AI Integration Frequency	250	2.43	2.00	1.14

The variation in perceptions may be influenced by several factors, such as the specific educational institution, the field of study, the level of AI expertise among instructors, and the availability of AI-related resources and technologies. Institutions that have actively embraced AI technologies in their curriculum or have dedicated AI-related courses may have higher perceived levels of AI integration (Southworth et al., 2023). This highlights the importance of continuous efforts to incorporate AI education into various academic disciplines to equip students with the necessary skills and knowledge to thrive in an AI-driven world (Kamalov et al., 2023). Table 27 presents the extent of AI integration in the curriculum, categorized by different age groups. It is essential to consider that the perceived extent of AI integration in the curriculum may be influenced by various factors, including the specific courses offered, the instructors' expertise in AI, and the availability of AI-related resources. The higher perceived level of AI integration among participants aged 21-22 may be attributed to their exposure to more advanced or specialized AI courses in their academic journey. The data indicate that participants aged 21-22 years old have the highest mean and median scores for AI integration frequency, suggesting that they perceive a higher level of AI integration in their curriculum compared to the other age groups. On the other hand, participants aged 19-20 years old have the lowest mean score, indicating a slightly lower perceived level of AI integration.

Table 27. The Extent of AI Integration in the Curriculum when Group by Age

	AGE	N	Mean	Median	SD
AI Integration Frequency	17-18 years old	60	2.43	2.00	1.16
	19-20 years old	57	2.35	2.00	1.14
	21-22 years old	63	2.54	3.00	1.08

	AGE	N	Mean	Median	SD
	24 years old & above	70	2.40	2.00	1.18

The data indicates that individuals of various age groups hold diverse views on AI integration. This emphasizes the ongoing need to ensure that AI education and resources are equally available to all age groups. It's important that students, no matter their background or academic stage, can access knowledge and skills related to AI. Furthermore, by addressing concerns and understanding different perspectives on AI integration, educational institutions can help students of all ages develop a comprehensive understanding of AI concepts and applications. Table 28 presents the extent of AI integration in the curriculum, categorized by different genders. The data indicates that participants who identify as Female have the highest mean score for AI integration frequency (2.51), suggesting that they perceive a slightly higher level of AI integration in their curriculum compared to the other gender groups. However, it is important to note that the mean score differences between the Male and other gender groups are relatively small, with both having a mean score of 2.39.

Table 28. The Extent of AI Integration in the Curriculum when Group by Gender

	GENDER	N	Mean	Median	SD
AI Integration Frequency	Male	76	2.39	2.00	1.16
	Female	84	2.51	2.00	1.17
	Other	90	2.39	2.00	1.10

It is crucial to recognize that the perceived extent of AI integration in the curriculum may be influenced by factors such as individual interests, educational backgrounds, and prior exposure to AI concepts. The relatively similar mean and median scores among all gender groups indicate that, on average, the participants perceive AI integration to be at a similar level in their curriculum. The data highlights the variation in perceptions of AI integration among different gender groups. It underscores the importance of creating an inclusive and supportive learning environment that encourages the exploration of AI concepts for all genders. Additionally, addressing any potential gender disparities in AI integration perceptions can contribute to fostering a diverse and equitable learning experience for all students. Educational institutions should aim to provide equal opportunities for learning and engagement with AI-related content, ensuring that all students can benefit from AI education and development regardless of their gender identity (Gauthier et al., 2022). Table 29 presents the extent of AI integration in the curriculum, grouped by different academic years. The data indicates that students in the 3rd year have the highest mean score for AI integration frequency (2.54), followed closely by 1st-year students (2.43). Students in the 2nd year and 4th year have slightly lower mean scores (2.35 and 2.40, respectively).

Table 29: The Extent of AI Integration in the Curriculum when Group by Academic Year

	ACADEMIC YEAR	N	Mean	Median	SD
AI Integration Frequency	1st year	60	2.43	2.00	1.16
	2nd year	57	2.35	2.00	1.14
	3rd year	63	2.54	3.00	1.08
	4th year	70	2.40	2.00	1.18

The higher mean score for 3rd-year students suggests that they perceive a relatively higher level of AI integration in their curriculum compared to students in other academic years. The lower

mean scores for 2nd-year and 4th-year students may indicate that they perceive AI integration to be slightly less frequent in their curriculum. However, it is essential to note that the differences in mean scores between the academic years are relatively small. The median scores show that 3rd-year students have the highest median score (3.00), indicating that they perceive AI integration to be more frequent, with some students using AI technologies "Often" in their academic journey. In contrast, 1st-year and 4th-year students have a median score of 2.00, suggesting that AI integration is mostly "Occasional" for these students. 2nd-year students also have a median score of 2.00, indicating that AI integration is similarly occasional for this group. The data shows that students from different academic years have varying opinions about how much AI is included in their studies. It seems that 3rd-year students feel there's more AI in their curriculum compared to others. Still, when we look at everyone's views, it suggests that, in general, AI is seen as moderately integrated and occasionally included across all academic years. It's important for schools to keep encouraging the use of AI in the curriculum and make sure all students from different academic years have chances to learn about AI effectively. Table 30 presents the extent of AI integration in the curriculum, grouped by different fields of study. The BSED (Bachelor of Science in Education) has the highest mean score for AI integration frequency (2.71), followed closely by BEED (Bachelor of Elementary Education) with a mean score of 2.43. BSCRIM (Bachelor of Science in Criminology) has the lowest mean score of 2.44.

Table 30. The Extent of AI Integration in the Curriculum when Group by Field of Study

	COURSE	N	Mean	Median	SD
AI Integration Frequency	BSBA	50	2.22	2.00	1.07
	BEED	56	2.43	2.00	1.11
	BSAB	49	2.39	2.00	1.19
	BSED	45	2.71	3.00	1.10
	BSCRIM	50	2.44	2.00	1.20

BSED also has the highest median score (3.00), indicating that students in this field perceive AI integration to be more frequent, with some students using AI technologies "Often" in their curriculum. All other fields of study have a median score of 2.00, suggesting that AI integration is mostly "Occasional" for students in these fields. Overall, the data in Table 30 suggests that students from different fields of study perceive the extent of AI integration in their curriculum at a similar moderate level. However, there are slight variations in perception across the fields of study, with BSED students perceiving a higher level of AI integration compared to students in other fields. The findings emphasize the importance of considering the specific needs and requirements of different fields of study while integrating AI technologies into the curriculum to cater to students' diverse educational backgrounds and future career paths (Pacheco-Mendoza et al., 2023).

Formal Education or Training on AI Technologies. Table 30 provides data on the occurrence of formal education or training on AI technologies during college studies. On average, participants have a score close to "1" on the scale, indicating that they are more likely to respond "Yes" to having received formal education or training on AI technologies during their college studies. However, the median score is "2," suggesting that the majority of participants actually responded "No" to having received formal education or training on AI technologies. The difference between the mean and median scores indicates that the data is skewed to the right, with a larger number of participants responding "No" to have received formal education or training on AI technologies. The lower mean score could be influenced by a smaller number of participants who responded "Yes" and had higher scores. The data suggests that while some participants have received formal education or training on AI technologies during their college studies (as indicated by the lower mean score), the majority of participants have not (as indicated by the higher median score).

Table 30. The Occurrence Received Formal Education or Training on AI Technologies

	N	Mean	Median	SD
AI Education Received	250	1.52	2.00	0.501

The findings highlight the need to address the gap in AI education and training among college students and emphasize the importance of incorporating AI-related courses and training programs to equip students with relevant skills and knowledge for the future job market. Further analysis and investigation into the reasons behind the lower occurrence of AI education among college students may be necessary to inform educational institutions' strategies and policies (Rodway & Schepman, 2023). Table 31 provides data on the occurrence of receiving formal education or training on AI technologies, categorized by different age groups.

Table 31. The Occurrence Received Formal Education or Training on AI Technologies by Age

	AGE	N	Mean	Median	SD
AI Education Received	17-18 years old	60	1.50	1.50	0.504
	19-20 years old	57	1.54	2.00	0.503
	21-22 years old	63	1.46	1.00	0.502
	24 years old & above	70	1.56	2.00	0.500

The data suggests that AI education or training is relatively prevalent among college students, with younger age groups (17-18 and 19-20) showing higher levels of AI education. However, the data also indicates that there is room for improvement in providing AI education to participants aged 21-22 and above. Educational institutions and policymakers could use these findings to identify and address any gaps in AI education opportunities, ensuring that all college students have the necessary knowledge and skills to adapt to the growing role of AI in various fields. Table 32 presents data on the occurrence of receiving formal education or training on AI technologies, categorized by different gender groups. The data offers insights into the occurrence of formal education or training on AI technologies among participants from different gender groups. The mean scores, being very close to each other, indicate that, on average, participants from all gender groups have similar levels of AI education or training during their college studies.

Table 32. The Occurrence Received Formal Education or Training on AI Technologies by Gender

	GENDER	N	Mean	Median	SD
AI Education Received	Male	76	1.50	1.50	0.503
	Female	84	1.51	2.00	0.503
	Non-binary	90	1.53	2.00	0.502

The data indicates that AI education or training is relatively prevalent among college students, with male participants showing slightly higher levels of AI education compared to female and non-binary participants. However, the differences in mean and median scores are relatively small, suggesting that overall, there is a similar trend of AI education across different gender groups. Table 33 presents data on the occurrence of receiving formal education or training on AI technologies, categorized by different academic years. The data offers insights into the occurrence of formal education or training on AI technologies among participants from different academic years.

The mean scores, being relatively close to each other, indicate that, on average, participants from all academic years have similar levels of AI education or training during their college studies.

Table 33: The Occurrence Received Formal Education or Training on AI Technologies by Academic Year

	ACADEMIC YEAR	N	Mean	Median	SD
AI Education Received	1st year	60	1.50	1.50	0.504
	2nd year	57	1.54	2.00	0.503
	3rd year	63	1.46	1.00	0.502
	4th year	70	1.56	2.00	0.500

The data suggests that AI education or training is relatively prevalent among college students, with second and fourth-year students showing slightly higher levels of AI education compared to first and third-year students. However, the differences in mean and median scores are relatively small, suggesting that overall, there is a similar trend of AI education across different academic years. Table 34 presents data on the occurrence of receiving formal education or training on AI technologies, categorized by different fields of study. The data provides insights into the occurrence of formal education or training on AI technologies among participants from different fields of study. The mean scores suggest that, on average, participants from all fields of study have similar levels of AI education or training during their college studies.

Table 34: The Occurrence Received Formal Education or Training on AI Technologies by Field of Study

	COURSE	N	Mean	Median	SD
AI Education Received	BSBA	50	1.48	1.00	0.505
	BEED	56	1.48	1.00	0.504
	BSAB	49	1.49	1.00	0.505
	BSED	45	1.51	2.00	0.506
	BSCRIM	50	1.62	2.00	0.490

The data suggests that AI education or training is relatively prevalent among BSED and BSCRIM students, with a larger proportion of participants from these fields having received AI education. However, BSBA, BEED, and BSAB fields of study show lower levels of AI education. These findings can help educational institutions identify fields of study where AI education or training may need to be strengthened or expanded (Southworth et al., 2023). Furthermore, the data can aid in developing targeted initiatives to ensure that students from all fields of study have equal access to AI education and training, fostering a well-rounded and inclusive AI curriculum in college studies.

Integration of AI Education Into the Curricula. AI has the potential to shape the future of work and its impact across a variety of industries, so understanding the concept of whether AI education will continue to be incorporated into college courses is critical. Table 35 provides insights into respondents' perspectives on integrating AI education into college curricula.

Table 35: Integration of AI Education Within College Curricula

	N	Mean	Median	SD
AI Education Opinion	250	1.95	2.00	0.832

The average opinion score is 1.95, indicating a relatively moderate trend toward integrating AI education into college courses. A score of 2.00 confirms this trend of moderate agreement among respondents. The standard deviation of 0.832 indicates a moderate variability in the attitudes of the sample, indicating that although there is a general tendency to favor AI-education integration, there is some variation in agreement scores among the respondents. Table 36 shows that most of the respondents have a moderately positive attitude towards the integration of AI education in the college curriculum. While there is agreement that AI should be integrated into education to some extent, the extent of agreement varies among individuals, resulting in noted differences.

Table 36: Integration of AI Education Within College Curricula by Age

	AGE	N	Mean	Median	SD
AI Education Opinion	17-18 years old	60	2.00	2.00	0.844
	19-20 years old	57	1.95	2.00	0.833
	21-22 years old	63	2.03	2.00	0.803
	24 years old & above	70	1.83	2.00	0.851

The average scores for all age groups ranged from 1.83 to 2.03, indicating a generally positive attitude towards the integration of AI education into college courses. The mean scores always corresponded to a median value of 2.00, which shows that the majority of respondents in each age group lean towards positive opinions. The standard deviations in age groups ranged from 0.803 to 0.851. This suggests that there are different cognitive differences in each age group. In other words, while some age groups exhibit consistent attitudes (low status), others display more diverse perspectives (high status). Younger respondents (17-18 years and 19-20 years) have more positive attitudes towards AI education integration, which is reflected in their higher opinion scores This indicates that these age groups see significant benefits to be delivered AI as part of their college education. In contrast, older age groups (ages 21-22 and 24 years & older) have slightly lower mean opinion scores, indicating slightly more reserved attitudes. However, the mean score of 2.00 in all age groups indicates that the majority of respondents in each group still have a positive attitude towards the integration of AI education. Table 37 shows the mean opinion scores for each gender group range from 1.93 to 1.99, reflecting generally positive views on the integration of AI education into college curricula. These scores suggest that respondents from all gender groups tend to have favorable opinions on this matter. Consistent with the mean scores, the median opinion scores are uniformly 2.00 across all gender groups. This indicates that a majority of respondents in each group express a positive stance toward incorporating AI education into their college curricula.

Table 37: Integration of AI Education Within College Curricula by Gender

	GENDER	N	Mean	Median	SD
AI Education Opinion	Male	76	1.99	2.00	0.841
	Female	84	1.93	2.00	0.818
	Non- binary	90	1.93	2.00	0.845

The standard deviations range from 0.818 to 0.845, indicating some degree of variability in opinions within each gender category. However, these values are relatively moderate, suggesting a

certain level of consensus within each group. Male respondents have the highest mean opinion score of 1.99, implying a relatively stronger endorsement of AI education integration. Female and non-binary respondents follow closely with mean opinion scores of 1.93 each, indicating slightly more reserved yet still favorable attitudes. The consistent median score of 2.00 suggests that, regardless of gender, most respondents hold a positive opinion on the inclusion of AI education in college curricula. The data in Table 38 confirm the positive attitude towards AI-education integration among respondents in both gender groups. Although there are slight differences in opinion scores, the overall consensus reflected in higher scores and slightly deviated values indicates that respondents from different genders generally endorse the concept namely in addition to integrating AI teaching into their curriculum.

Table 38: Perceptions of Respondents Regarding the Integration of AI Education Within College Curricula by Academic Year

	ACADEMIC YEAR	N	Mean	Median	SD
AI Education Opinion	1st year	60	2.00	2.00	0.844
	2nd year	57	1.95	2.00	0.833
	3rd year	63	2.03	2.00	0.803
	4th year	70	1.83	2.00	0.851

Across the four academic years examined, it is evident that there is a consistently positive attitude toward the integration of AI education. The mean scores range from approximately 1.83 to 2.03, indicating that students generally view the incorporation of AI education into their curricula favorably. This suggests a recognition of the importance of AI knowledge and skills for their academic and future career prospects (Gauthier et al., 2022). The median scores, often aligning closely with the mean scores, further emphasize the prevailing positive sentiment among students across all academic years. This consistency suggests a strong overall trend of optimism regarding AI education. When considering the standard deviations, it becomes clear that while there is a generally positive stance, there are slight variations in attitudes among students within each academic year. These deviations reflect the diversity of opinions even within relatively homogeneous groups. However, these variations are relatively modest, indicating a certain level of consensus among students within the same academic year. Table 39 underscores that students' positive perceptions of integrating AI education remain steady throughout their college years. This could be attributed to the growing awareness of AI's significance across various industries and the recognition of its potential impact on future careers. The relatively minor fluctuations in attitudes suggest that institutions may find a consistent interest in AI education across academic years.

Table 39: Perceptions of Respondents Regarding the Integration of AI Education Within College Curricula by Field of Study

	COURSE	N	Mean	Median	SD
AI Education Opinion	BSBA	50	2.06	2.00	0.913
	BEED	56	2.07	2.00	0.806
	BSAB	49	1.67	1.00	0.774
	BSED	45	2.07	2.00	0.751
	BSCRIM	50	1.86	2.00	0.857

The mean scores reflect the overall attitudes of students in different fields toward AI education. Notably, fields like BEED and BSED share relatively higher mean scores of around 2.07,

indicating a generally positive perception of AI education within these education-focused disciplines. Moreover, BSBA and BSCRIM on the other hand, show slightly lower mean scores of around 2.06 and 1.86, respectively. The median scores provide further insight into the central tendency of opinions within each field. In most cases, the median is aligned with the mean, indicating that students generally exhibit consistent attitudes toward AI education. However, for BSAB, the median score is notably lower at 1.00, potentially suggesting a more diverse range of opinions within this field. The standard deviations highlight the extent of variation in perceptions within each field of study. Larger standard deviations, such as those in BSAB and BSCRIM, indicate more diverse opinions among students in these fields. This suggests that AI education's perceived importance and relevance might differ significantly among students studying agribusiness and criminology. This reveals that perceptions of AI education vary among different fields of study. While education-related fields generally exhibit positive attitudes, fields like business administration and criminology show somewhat mixed sentiments. The variations may be attributed to the perceived relevance of AI education within specific disciplines and how students envision integrating AI concepts into their future careers (Gauthier et al., 2022).

Challenges and Barriers in AI Utilization. This section explores the various hurdles and obstacles that college students face when traversing the realm of artificial intelligence technology. The analysis of the answers provided to three open-ended inquiries provides insights into the influence of artificial intelligence (AI) on students' academic disciplines and future employment opportunities. It also delves into their individual encounters and difficulties encountered when utilizing AI for both academic and personal purposes. Additionally, the respondents offer valuable recommendations for improving the preparedness and utilization of AI among college students in the Philippines. These observations offer a broad perspective on the obstacles and possibilities associated with AI teaching and application in the academic realm and beyond.

Perceived Impact of AI on Fields of Study and Career Prospects. The thematic analysis of college students' perceptions regarding the impact of AI technologies on their fields of study and career prospects reveals several core themes. Presented in Table 40 encompasses a wide range of expectations and opportunities associated with AI.

Table 40. Thematic Analysis of the Perceived Impact of AI on Fields of Study and Career Prospects

Emergent Themes	*Core ideas*	*Significant Statements*
Theme 1: Automation of Routine Tasks	Task simplification.	*Through AI, I've experienced the simplification of routine tasks, allowing for a more streamlined and efficient workflow.*
	Efficiency enhancement.	*AI's role in automating routine tasks has significantly enhanced efficiency in my studies.*
	Resource optimization.	*It has highlighted the importance of leveraging technology to allocate resources effectively and sustainably.*
	Error reduction.	*AI has improved the overall quality and accuracy of outputs, minimizing the risk of human errors.*
	Cost savings.	*My experiences with AI automation underscore its potential for cost savings, making processes more economical while maintaining or enhancing performance.*
	Time management.	*The integration of AI in routine tasks has positively influenced time management.*
	Scalability.	*AI's role in automating tasks will demonstrate scalability, enabling*

		organizations to handle increased workloads without a proportional increase in resources.
Theme 2: Enhanced Data Analysis and Insights	Data processing speed.	*AI's capability for rapid data processing will significantly enhance my ability to derive insights promptly, enabling timely decision-making.*
	Pattern recognition.	*AI can reveal valuable trends and correlations that might be challenging for humans to discern.*
	Predictive analytics.	*AI's contribution to predictive analytics has provided foresight into future trends and outcomes, aiding in strategic planning and decision-making.*
	Personalization.	*AI's ability to personalize insights based on individual preferences and needs has transformed how I approach and interpret data.*
	Data visualization.	*AI enhanced my understanding of complex datasets*
	Anomaly detection.	*AI's capability to detect anomalies in data has been instrumental in identifying potential issues or opportunities.*
	Real-time insights	*AI-driven data analysis has empowered me to make informed decisions promptly, contributing to agility in my work.*
Theme 3: Interactive Learning Tools and Student Engagement	Gamification	*The incorporation of gamification in education through AI has made learning more engaging and enjoyable.*
	Adaptive content.	*AI caters to my individual pace and learning style.*
	Personalized feedback.	*AI-driven learning tools has been invaluable, providing insights tailored to my strengths and areas for improvement.*
	Virtual learning assistants.	*AI become valuable companions in my education, offering support and guidance as I navigate through various learning activities.*
	Interactive simulations.	*Engaging with AI-powered interactive simulations has enhanced my understanding of complex concepts.*
	Natural Language Processing (NLP).	*AI has improved communication and interaction, making the learning process more intuitive and effective.*
	Peer collaboration.	*AI's facilitation of peer collaboration in educational settings has enriched my learning experience.*
	Accessibility features.	*AI's incorporation of accessibility features in learning tools has contributed to a more inclusive and accommodating educational environment.*
Theme 4: Personalized Learning	Adaptive content.	*It tailors educational materials to my individual needs and pace.*
	Learning paths.	*Experiencing personalized learning paths*

		through AI has allowed me to navigate my educational journey.
	Skill gap identification.	*It guided me toward targeted areas for improvement, enhancing the overall effectiveness of my education.*
	Real-time feedback.	*Real-time feedback from AI-driven learning tools has provided instant insights into my performance.*
	Personalized study plans.	*AI's role in crafting personalized study plans has optimized my learning process.*
	Individualized support.	*It offers assistance and resources tailored to my unique needs.*
	Learning style adaptation.	*AI's adaptation to my learning style has made education more enjoyable and effective.*
	Progress tracking.	*It provided a clear overview of my academic journey, allowing for reflection and goal-setting based on tangible milestones.*
Theme 5: Optimization of Supply Chain and Logistics	Demand forecasting.	*AI helps significantly improved experiences in supply chain management, enabling more accurate predictions and proactive planning.*
	Inventory management.	*AI's influence on inventory management has optimized resource allocation.*
	Route optimization.	*AI has streamlined logistical processes.*
	Resource allocation.	*It improved my understanding of how to optimize resources for maximum efficiency.*
	Supplier management.	*AI enhances communication and collaboration, fostering stronger partnerships*
	Risk assessment.	*It improved my ability to anticipate and mitigate potential challenges.*
	Quality control.	*AI's involvement in quality control processes has increased my confidence in the reliability and consistency of products I could venture.*
	Cost reduction.	*It could potentially led to cost reduction.*
Theme 6: Improved Crime Analysis and Security Measures	Predictive policing.	*AI could improve the effectiveness of law enforcement, allowing for proactive crime prevention strategies.*
	Video surveillance and facial recognition.	*AI's role in video surveillance and facial recognition has enhanced security measures.*
	Cybersecurity.	*The impact of AI in cybersecurity measures has improved my confidence in online safety.*
	Emergency response optimization.	*AI could possibly enhance the efficiency and coordination of emergency services.*
	Crime trend analysis.	*AI's contribution to crime trend analysis has improved my understanding of patterns and behaviors.*
	Evidence analysis.	*It could streamline the investigative processes.*

Theme 1: Automation of Routine Tasks. The participants in the study acknowledge the potential of artificial intelligence (AI) to streamline activities, improve productivity, optimize resource allocation, minimize errors, reduce expenses, effectively manage time, and offer scalability. This implies that individuals expect artificial intelligence (AI) to automate monotonous and time-intensive components of their prospective professions, enabling them to concentrate on more valuable responsibilities.

Theme 2: Enhanced Data Analysis and Insights. The participants anticipate that artificial intelligence (AI) will exhibit the ability to swiftly process data, identify recurring trends, do predictive analysis, tailor experiences to individual users, provide data in a visual format, identify irregularities, and offer immediate insights. These expectations underscore the significance of artificial intelligence (AI) in leveraging data to enhance decision-making and generate valuable insights in several domains.

Theme 3: Interactive Learning Tools and Student Engagement. Participants highlighted a vision for incorporating artificial intelligence (AI) into education through many means such as gamification, adaptive content, personalized feedback, virtual learning assistants, interactive simulations, natural language processing (NLP), peer collaboration, and accessibility features. The aforementioned concepts demonstrate a strong inclination towards the pursuit of enhanced and personalized educational encounters, which are made possible through the utilization of artificial intelligence.

Theme 4: Personalized Learning. Artificial intelligence (AI), according to the participants, is widely recognized for its potential to provide adaptive material delivery, personalized learning trajectories, identification of skill gaps, provision of real-time feedback, creation of personalized study plans, provision of individualized support, adaptability to different learning styles, and tracking of learning progress. These expectations highlight the capacity of artificial intelligence (AI) to accommodate the individualized learning requirements and progress of pupils.

Theme 5: Optimization of Supply Chain and Logistics. This theme pertains to the anticipated outcomes that encompass several aspects such as demand forecasting facilitated by artificial intelligence, efficient inventory management, optimized route planning, effective resource allocation, streamlined supplier management, comprehensive risk assessment, rigorous quality control measures, and overall cost reduction. These findings demonstrate the students' expectation that artificial intelligence will enhance supply chain and logistics operations to improve efficiency and reduce costs.

Theme 6: Improved Crime Analysis and Security Measures. A few respondents highlighted the potential of AI in crime analysis and enhancing security measures. AI-powered systems can analyze crime patterns, detect anomalies, and improve overall security in various settings efforts. These expectations suggest that AI will play a crucial role in enhancing security and law enforcement efforts. Based on the aforementioned themes, it is evident that participants acknowledge the substantial influence of artificial intelligence technology on their respective academic disciplines or prospective professional trajectories. The responses generally exhibit a favorable outlook, as artificial intelligence (AI) is perceived as a beneficial instrument for enhancing efficiency, learning processes, decision-making capabilities, and safety measures.

AI Technology Experiences. In this section, respondents share their first-hand experiences and challenges encountered while utilizing AI technologies for both academic and personal purposes. This open-ended exploration delves into the practical aspects of AI adoption, shedding light on real-life encounters and hurdles faced by college students in the Philippines.

Table 41. Thematic Analysis of the Experiences in Using AI Technologies

Emergent Themes	*Core ideas*	*Significant Statements*
Theme 1: Improved Data Analysis	Enhanced data processing speed.	*Utilizing AI for data analysis has notably enhanced the speed at which I can process large datasets.*
	Advanced pattern recognition.	*It significantly improved my ability to identify intricate trends and correlations within complex datasets.*
	Predictive analytics.	*I can use AI in my various statistic assignment in forecasting.*
	Personalization.	*It has tailored insights to my specific needs, ensuring that the information presented is relevant and applicable to my objectives.*
	Data visualization.	*AI transformed how I interpret information.*
	Real-time insights.	*Experiencing real-time insights through AI-driven data analysis has equipped me with timely information.*
Theme 2: AI Language Translation Tools	Cross-linguistic communication.	*AI language translation tools have facilitated seamless cross-linguistic communication.*
	Real-time translation.	*My experiences with AI language translation tools highlight their ability to provide real-time translation*
	Text and speech translation.	*Both text and speech translation has offered versatility*
	Multilingual content creation.	*AI language translation tools have supported multilingual content creation.*
	Language learning.	*It became a valuable tool for language learning.*
	Business and global expansion.	*AI language translation can facilitate global expansion by enabling effective communication across language barriers.*
.Theme 3: AI-Powered Virtual Assistants	Task automation.	*AI-powered virtual assistants have automated routine tasks.*
	Voice recognition.	*The incorporation of voice recognition in AI virtual assistants has improved interaction efficiency.*
	Information retrieval.	*AI virtual assistants excel in retrieving relevant information swiftly.*
	Smart home control.	*AI virtual assistants have seamlessly integrated into my daily life, offering convenient control over smart home devices.*
	Integration with apps and services.	*AI have seamlessly integrated with various apps and services, streamlining my access to information and functionalities across platforms.*
	Continuous learning.	*AI virtual assistants continuously adapt and learn from interactions, evolving to better understand my preferences and*

		needs.
Theme 4: Challenges in Finding Reliable AI Resources	Information overload.	*The challenge of information overload in AI resources has prompted me to develop effective strategies for filtering and prioritizing information based on relevance and quality.*
	Quality control.	*The quality of AI resources remains a persistent challenge*
	Lack of standardization.	*The absence of standardized practices in AI resources poses challenges in navigating and comparing information.*
	Accessibility barriers.	*Overcoming accessibility barriers to AI resources is an ongoing challenge.*
	Outdated content.	*The dynamic nature of AI technologies necessitates constant vigilance against outdated content.*
	Need for critical evaluation.	*The need for critical evaluation of AI resources has become crucial, emphasizing the importance of discernment and skepticism in assessing the reliability of information.*
	Diverse learning styles.	*Recognizing diverse learning styles as a challenge has prompted me to seek out AI resources that cater to different preferences and modes of understanding.*
	Limited interactive learning.	*The limitation of interactive learning in some AI resources has motivated me to actively seek out platforms and materials that facilitate hands-on engagement.*
	Overcoming technical barriers.	*Technical barriers in accessing AI resources requires adaptability and troubleshooting skills, reinforcing the importance of technical literacy in navigating digital platforms.*
	Collaboration gaps.	*Identifying and bridging collaboration gaps in AI resources is an ongoing effort.*
Theme 5: AI-Driven Recommendation Systems	Personalized content delivery.	*AI-driven recommendation systems have transformed my content consumption experience.*
	Content relevance.	*AI recommendations has shaped my expectations.*
	Enhanced engagement.	*It has highlighted the impact of personalized content on my overall satisfaction and enjoyment.*
	Diverse learning resources.	*It broadened my exposure to diverse learning resources.*
	Adaptive learning paths.	*AI has influenced my educational experiences, offering a more dynamic and customized approach.*
	Ethical considerations.	*It prompted me to reflect on the responsible use of algorithms in shaping*

		user experiences.
	Data privacy.	*AI has heightened my awareness, leading me to prioritize platforms that prioritize user data protection.*
	Customizable preferences.	*The ability to customize preferences in AI-driven recommendations has empowered me to curate my digital experiences.*

Theme 1: Improved Data Analysis. Several participants indicated that the utilization of artificial intelligence (AI) in the realm of data analysis has resulted in enhanced precision of their study outcomes. Participants recognize that artificial intelligence (AI) technologies facilitate accelerated data processing, sophisticated pattern identification, predictive analytics, tailored content delivery, data visualization, and instantaneous insights. These qualities enhance the efficacy of decision-making, research, and learning processes.

Theme 2: AI Language Translation Tools. A number of participants reported that artificial intelligence (AI) language translation technologies were beneficial in facilitating comprehension of foreign research or facilitating communication in other languages. AI-powered language translation systems are of great value in facilitating cross-linguistic communication by providing real-time translation capabilities for both written and spoken languages. These tools serve to enhance the process of creating material in many languages, facilitate language acquisition, and provide assistance for business growth and international expansion efforts. AI language translation is often seen as a means of fostering connectivity and facilitating communication between diverse cultures and global marketplaces.

Theme 3: AI-Powered Virtual Assistants. The participants expressed that AI-powered virtual assistants facilitate the process of retrieving information and managing scheduling duties. AI-powered virtual assistants have gained attention for their capacity to automate various chores, offer voice recognition capabilities, retrieve information, and manage smart home systems. The incorporation of diverse applications and services augments efficiency and convenience. The ongoing process of learning and the ability to adjust render these helpers important in a multitude of domains.

Theme 4: Challenges in Finding Reliable AI Resources. A common challenge faced by respondents was the difficulty in finding reliable AI resources that are relevant to their field of study or personal needs. Participants have challenges related to the overwhelming amount of information available, the necessity for ensuring high standards of quality, the absence of uniformity in artificial intelligence (AI) material, and obstacles to achieving widespread accessibility. To surmount these obstacles, it is often necessary to engage in critical assessment, adapt to a range of learning preferences, tackle technological limitations, and foster student collaboration.

Theme 5: AI-Driven Recommendation Systems. Participants found AI-driven recommendation systems to be beneficial in their personal lives. AI-powered recommendation systems provide individualized content delivery, hence enhancing the relevancy of the information and promoting increased user engagement. Students value the availability of a wide range of educational materials and the opportunity to engage in personalized learning trajectories. Nevertheless, it is crucial to prioritize ethical issues and address data privacy problems. The provision of configurable options enables users to successfully personalize their learning experiences, while empowering them in the process. In general, the prevailing themes indicate that artificial intelligence (AI) technologies have predominantly yielded positive outcomes, notably in the domains of data analysis and language translation. Nevertheless, there are certain issues that arise in relation to the availability and relevancy of resources, highlighting the need for improvement in these areas. It is crucial to acknowledge that the provided replies may constitute a restricted sample, and performing a more extensive qualitative analysis would be beneficial in corroborating and enhancing the found

themes. However, these themes offer significant insights into the experiences and obstacles encountered by humans when utilizing AI technologies for academic or personal objectives.

Options for Improving AI Preparedness. This section delves into the insightful recommendations and significant insights offered by participants regarding strategies to improve AI readiness among their peers. Table 42 presents a comprehensive thematic analysis of the various strategies available for enhancing the level of preparation in artificial intelligence (AI) among college students.

Table 42. Thematic Analysis of the *Options for Improving AI Preparedness*

Emergent Themes	*Core ideas*	*Significant Statements*
Theme 1: Increase Availability of AI-related Courses	Diverse course offerings.	*My experience suggests that increasing the availability of AI-related courses involves offering a diverse range of topics.*
	Interdisciplinary approach.	*AI courses has enriched my learning by connecting AI concepts with insights from other fields.*
	Specialization tracks.	*It allowed me to tailor my learning journey, focusing on specific areas that align with my interests and career goals.*
	Hands-on practicality.	*Courses that prioritize hands-on practical experiences have significantly enhanced my understanding of AI.*
	Accessible formats.	*Online or blended learning, has made it convenient for me to engage with the material while accommodating my schedule and learning preferences.*
	Incorporation into core curriculum.	*Integrating AI courses into the core curriculum of academic programs has underscored the importance of AI education.*
	Continuous updates.	*Continuous updates to reflect the latest advancements have kept my learning relevant*
Theme 2: Collaborate with Industry Experts	Guest lectures and workshops.	*Engaging with industry experts through guest lectures and workshops has provided valuable insights and practical perspectives.*
	Internship programs.	*Participating in AI internship programs facilitated by industry experts has offered hands-on experience.*
	Mentorship programs.	*Industry experts have played a pivotal role in my professional development, offering guidance, advice, and a deeper understanding of the practical nuances of the AI field.*
	Industry advisory boards.	*It has ensured that AI education remains aligned with industry needs.*
	Access to industry resources.	*Having access to industry resources, such as datasets, case studies, and practical examples, has augmented my understanding of how AI is implemented in various sectors.*
	Job placement assistance.	*AI education programs that provide job placement assistance can support students transition from academia to the workforce.*
Theme 3: Promote AI Awareness	AI awareness workshops.	*Participating in AI awareness workshops has broadened my understanding of the societal*

through Workshops and Events		*impact of AI.*
	Hackathons and competitions.	*Involvement in AI hackathons and competitions has honed my problem-solving skills and creativity.*
	AI awareness campaigns.	*AI awareness campaigns have heightened my understanding of the technology's potential.*
	AI career fairs.	*AI career fairs have provided opportunities for networking and exploring potential career paths.*
	Interdisciplinary ai events.	*AI events have facilitated collaboration across different fields, encouraging diverse perspectives and showcasing the interdisciplinary nature of AI applications.*
	Community outreach.	*Engaging in community outreach initiatives related to AI has allowed me to contribute to the broader community, sharing knowledge and fostering a positive perception of AI.*
Theme 4: Establish AI Labs with Advanced Technologies	State-of-the-art infrastructure.	*Access to state-of-the-art infrastructure in AI labs can enhance my learning experiences.*
	Diverse AI software.	*Availability of diverse AI software in labs will allow me to gain proficiency in different tools.*
	Access to datasets.	*Access to diverse datasets in AI labs can be instrumental in developing practical skills.*
	AI development environments.	*AI labs equipped with development environments can provide a conducive space for coding, experimentation, and collaborative projects, fostering a dynamic learning environment.*
	Expert guidance.	*Guidance from experts in AI labs will be invaluable, providing mentorship, support, and insights that have significantly contributed to my understanding of complex AI concepts.*
	Open lab hours.	*Open lab hours in AI facilities can allow flexibility in accessing resources.*
	Interdisciplinary collaboration.	*Collaboration have exposed me to diverse perspectives*
	AI lab accessibility.	*Ensuring accessibility to AI labs for all students can democratized the learning experience*
	Innovation spaces	*The incorporation of innovation spaces within AI labs can nurture creativity.*
Theme 5: Provide AI Research Grants	Financial support.	*AI research grants will provide crucial financial support for my research endeavors.*
	Research focus areas.	*The definition of specific research focus areas within AI grants has guided my research efforts.*
	Competitive selection.	*The competitive selection process for AI research grants has motivated me to refine and present compelling research proposals.*
	Publication incentives.	*Incentives for publication associated with AI research grants have encouraged me to disseminate findings, contributing to the wider academic community and showcasing the impact of the research.*
	Real-world impact.	*Emphasis on the real-world impact of research supported by AI grants has inspired me to focus on projects with practical applications.*
	Innovation and	*AI research grants that promote innovation and*

	entrepreneurship.	*entrepreneurship have instilled an entrepreneurial mindset.*
	Regular evaluations.	*Regular evaluations associated with AI research grants will provide constructive feedback.*
	Long-term sustainability.	*Fostering long-term sustainability in AI research projects through grants has encouraged me to consider the broader implications and longevity of my contributions to the field.*

Theme 1: Increase Availability of AI-related Courses. The key idea of this theme lies in the recognition of the significance of expanding the range of AI courses available in order to cater to the diverse requirements and preferences of students. This emphasizes the importance of core courses, specialized pathways, and experiential learning opportunities. The integration of AI subjects into the fundamental curriculum guarantees that all students, irrespective of their chosen field of study, acquire fundamental knowledge in the field of AI. Moreover, the necessity to consistently revise course content exemplifies the ever-evolving characteristics of artificial intelligence. This would enable students to gain knowledge and skills in AI, making them more prepared for AI-related careers and opportunities.

Theme 2: Collaborate with Industry Experts. The necessity of collaborating with industry specialists serves as a crucial link between academics and the practical implementation of artificial intelligence (AI) in real-world scenarios. The institution suggestively facilitates experiential learning by offering opportunities such as guest lectures, internships, and mentorship programs. The presence of industry advisory boards and the provision of industry resources serve to facilitate the exposure of students to contemporary trends and technologies. The provision of job placement aid serves to enhance the linkage between students and employment prospects within the field of artificial intelligence. Such collaborations would provide students with real-world experience and exposure to AI applications in various industries.

Theme 3: Promote AI Awareness through Workshops and Events. The promotion of AI awareness is of utmost importance in order to ignite student enthusiasm and foster active engagement. The significance of workshops, hackathons, and awareness campaigns as efficacious mechanisms for presenting AI concepts is emphasized by this theme. AI-focused career fairs offer students an opportunity to investigate potential employment opportunities. Interdisciplinary activities foster an environment conducive to collaboration, while community outreach initiatives serve to expand the advantages of artificial intelligence education beyond the confines of the academic institution. These events would help students understand the potential of AI and its impact on various fields.

Theme 4: Establish AI Labs with Advanced Technologies. AI laboratories function as central locations for experiential learning and scholarly investigation. This subject underscores the importance of modern infrastructure, a wide range of artificial intelligence applications, and the availability of various datasets. Artificial intelligence (AI) development environments, coupled with expert mentoring, facilitate student experimentation. The provision of open lab hours contributes to increased accessibility, as it allows for greater availability and utilization of laboratory facilities. Additionally, the establishment of multidisciplinary collaboration and innovation spaces promotes the cultivation of creativity and the development of problem-solving skills. Access to cutting-edge tools and resources would enhance students' learning and experimentation with AI.

Theme 5: Provide AI Research Grants. Research grants provide students with opportunities to engage in AI research and innovation. The institution provides financial assistance, delineates areas of research concentration, and upholds a rigorous selection procedure. The provision of incentives for the dissemination of research findings, coupled with an emphasis on practical applicability, guarantees that student research makes a valuable contribution to the respective

academic discipline. The enduring viability of funding programs contributes to the ongoing advancement of AI research endeavors. In general, the identified themes indicate that enhancing AI preparedness among college students in the Philippines necessitates the implementation of a comprehensive strategy. The process include the augmentation of academic offerings, establishment of business alliances, and cultivation of a culture that promotes awareness and innovation in the field of artificial intelligence, achieved through the facilitation of workshops and provision of research opportunities. By incorporating these recommendations, educational institutions can enhance their ability to equip students for the forthcoming era dominated by artificial intelligence, thereby guaranteeing their active engagement in the development and use of AI. Nevertheless, it is crucial to acknowledge that the provided replies may only reflect a restricted sample. To ensure the credibility and enhance the identified themes, it would be beneficial to carry out a more extensive qualitative study. However, these themes offer useful insights regarding recommendations for enhancing AI preparedness and utilization among college students in the Philippines.

Integration of Findings

The integration of the quantitative and qualitative research results from this study, which combined provide a perspective and thorough knowledge of AI awareness, usage, perceptions and attitudes, integration into the curricula and support use among the respondents, is the crucial task set out to do in this part. The process of integration plays a fundamental role in deriving significant results, interpreting the consequences, and recognizing the constraints of our study (Guetterman et al., 2015). By conducting a systematic study, our objective is to elucidate the convergence, divergence, and complementarity of these results, synthesizing the many strands of data to provide a comprehensive understanding of the impact of artificial intelligence on the students under investigation. This comprehensive viewpoint will not just enhance the comprehension of AI adoption but also provide direction for forthcoming educational activities and policies in a more AI-centric society.

Awareness and Understanding of Artificial Intelligence (AI) Technologies. The integration of both quantitative and qualitative data provided a comprehensive assessment of respondents' awareness and understanding of Artificial Intelligence (AI) technologies. Convergence between the average AI awareness score of 3.04 in quantitative data and qualitative insights highlighted a common understanding among students regarding AI's role in simulating human intellect, encompassing machine learning and natural language processing. Complementarity emerged as qualitative findings identified familiar AI technologies like chatbots and recommendation systems, aligning with the modest degree of awareness indicated in the quantitative results. However, a divergence surfaced, revealing a need for targeted educational programs for students with limited awareness, emphasizing the importance of tailored instruction.

The validation process further strengthened the study, as qualitative evidence supported quantitative metrics. Definitions provided by respondents aligned with the awareness score, demonstrating a reasonable level of knowledge. Qualitative data also illuminated age-based and academic year influences on awareness, reinforcing the quantitative findings. The study highlighted the need for customized AI instruction based on academic specialties, as supported by both data sets. A comprehensive understanding of AI awareness unfolded through the integration of data. Notable differences within subgroups showcased varied levels of awareness, with a considerable number possessing knowledge while others exhibited gaps. Students perceived AI as replicating human intellect, showcasing familiarity with technologies like chatbots. Awareness patterns varied with age, academic year, and field of study, reinforcing the call for tailored education in AI. *Utilization of AI Technologies*. In comparing the quantitative and qualitative aspects of participants' engagement with Artificial Intelligence (AI) technology, several key observations emerge. Firstly, there is convergence, as evidenced by the moderate extent of AI usage for both academic and personal purposes among participants, as indicated by the quantitative data. This convergence is substantiated by qualitative results, illustrating that respondents utilize AI for academic research, data analysis (Theme 1), and recreational activities (Theme 3). The amalgamation of quantitative

and qualitative insights suggests that respondents effectively integrate AI into various facets of their academic and personal endeavors (Mishra et al., 2023). Furthermore, there is complementarity between qualitative and quantitative findings, particularly in Themes 2, 4, and 5. The qualitative data enriches the understanding by providing richer context. For example, it explains how AI supports task management and organization (Theme 2), aligning with the higher personal AI utilization indicated in the quantitative findings. Additionally, qualitative insights reveal specific applications of AI in academic contexts, such as intelligent tutoring systems and personalized learning paths (Theme 4), adding depth to the quantitative understanding of academic AI utilization (Mahesh, 2023). However, a notable divergence is observed as the quantitative analysis indicates that the utilization of AI for personal objectives surpasses its use for academic goals. Qualitative data, however, provides additional insights into the varied manners in which respondents utilize AI for both academic and personal purposes, emphasizing the multifaceted nature of AI use beyond a simple academic vs. personal categorization (Rohde et al., 2023).

The qualitative findings play a crucial role in validating and offering a more comprehensive comprehension of the reasons and conditions underlying the use of AI. This validation is evident in the confirmation that students employ AI for academic research and data analysis, aligning with the quantitative results indicating the application of AI in academic contexts. The integration of quantitative and qualitative data leads to a comprehensive understanding of AI technology's use among respondents. This observation highlights the broad scope of AI application, extending beyond a single area and permeating various facets of an individual's life, including academia, work organization, leisure pursuits, educational assistance, and linguistic engagements. In could be gleaned that there is a strong emphasis on the imperative for educational institutions to adjust and accommodate the diverse ways in which students interact with AI. This may involve customizing instructional approaches and support systems to accommodate the diverse use patterns observed across distinct age cohorts and academic disciplines. Additionally, the results underscore the need to acknowledge that AI is not universally applicable but fulfills distinct objectives for individual students (Nguyen et al., 2022). However, it is essential to recognize the limitations of the study. While the results offer intriguing insights into AI usage among respondents, their generalizability to other student populations or settings may be limited. The study did not delve into the precise AI technologies or platforms used by students, leaving room for potential investigation in future research endeavors. *Perceptions and Attitudes towards AI*. The examination of students' perspectives on the social implications of artificial intelligence (AI) reveals understanding through both quantitative and qualitative data. The convergence of findings showcases a predominantly optimistic outlook, emphasizing the positive impact of AI across various domains (Yujun et al., 2022). Complementing this, qualitative insights enrich the narrative by acknowledging students' favorable perceptions alongside legitimate concerns, highlighting the need for approaches in AI education and policy. While the quantitative data suggests an overall positive sentiment, qualitative analysis delves deeper into specific concerns, such as job displacement and ethical considerations (Laupichler et al., 2022), adding layers to the understanding. The validation process confirms positive quantitative findings, supporting the idea that students harbor both positive and negative views toward AI. This integrated approach provides context, offering a comprehensive understanding of students' attitudes shaped by factors like media, education, and societal influences. This combined insight emphasizes the diverse nature of students' perspectives, acknowledging both excitement for AI's potential benefits and legitimate apprehensions about its social influence. In the discussion, the importance of recognizing and addressing this diversity is emphasized, urging educational institutions and policymakers to design AI education programs that consider varied viewpoints. These programs should facilitate informed and fair discussions, preparing students for an AI-driven future. *AI Integration in Education*. In the comparison of quantitative and qualitative data regarding the integration of artificial intelligence (AI) in education, convergence and divergence reveal valuable insights. The mean and median scores of 2.43 and 2.00, respectively, indicate a moderate level of AI integration, aligning with qualitative themes like "Automation of Routine Tasks" and "Enhanced Data Analysis and Insights" (Schimpf et al., 2020). However, the identification of qualitative themes such as "Personalized Learning" and "Interactive Learning Tools and Student Engagement" unveils diverse expectations beyond quantitative

measures, emphasizing the intricate perspectives students hold on AI's impact on education (Neumann et al., 2023). Validation occurs as qualitative themes like "Interactive Learning Tools" and "Personalized Learning" align with the modest level of AI integration found in quantitative data. The qualitative insights provide context, explaining why students perceive AI integration as moderate. The anticipation of AI automating tasks and enhancing data analysis contributes depth to the quantitative scores, offering a more nuanced understanding of the factors shaping these perceptions. The comprehensive understanding derived from both quantitative and qualitative data portrays a reasonable perception of AI integration in education. Qualitative data enriches this perspective, shedding light on students' expectations and recognizing the significance of AI in tailored learning, interactive tools, and data analysis. Together, these sources present a holistic view of students' anticipations and the potential benefits of AI in education.

CONCLUSION

The integration of both quantitative and qualitative data has provided a view and comprehensive understanding of various facets related to artificial intelligence (AI) among the respondents. The findings reveal a moderate level of awareness and understanding of AI technology, with variations influenced by factors such as age, academic development, and field of study. The analysis indicates a modest level of engagement with AI technologies, employed by respondents for both academic and personal purposes, with qualitative data illuminating AI's contributions to work management, research, and entertainment. Respondents hold a predominantly favorable yet cautious perspective on AI, with qualitative insights highlighting diverse viewpoints and concerns, including job displacement and data privacy issues. The balanced perspective on AI integration in education, as reflected in both quantitative and qualitative data, underscores high expectations for automation, improved data analytics, and tailored learning experiences. The findings also suggest a modest perception of institutional support for AI technology usage among students, calling for increased emphasis on AI-related courses and collaboration with industry specialists. Lastly, the integration of both data types enhances our understanding of challenges and barriers faced by respondents, providing valuable insights for addressing these issues and fostering a more effective integration of AI into various aspects of students' lives.

IMPLICATION

The study's implications for education stakeholders highlight the importance of personalized AI education programs to accommodate varying levels of student knowledge. Adaptive educational assistance tailored to individual patterns of AI utilization is crucial, emphasizing the need for a balanced AI education that addresses diverse perspectives. Integrating AI into academic courses, broadening the curriculum, and collaborating with industry specialists are essential for optimizing education. Providing supportive resources, navigating challenges, and fostering inclusivity in AI education contribute to a comprehensive strategy. These implications guide the development of effective AI education programs, meeting the evolving needs of students in the realm of artificial intelligence. A complex perspective of AI awareness, use, perceptions, integration in education, institutional support, obstacles, and convergence in students' opinions is provided by the integration of quantitative and qualitative results. The aforementioned observations highlight the significance of tailored artificial intelligence (AI) instruction, adaptable support systems, well-rounded deliberations on the impact of AI, improved integration of AI in educational settings, enlarged AI curriculum, and supplementary resources aimed at equipping students for a future heavily influenced by AI.

RECOMMENDATION

The combined results allow for several suggestions to be made to improve AI education and use among college students namely:

1. *Tailored Artificial Intelligence Education:* Construct personalized educational programs in the field of artificial intelligence to accommodate students with diverse degrees of familiarity with AI. It is recommended that targeted educational programs be developed

to cater to students in the early stages of their academic journey, particularly those pursuing disciplines with little exposure to artificial intelligence (AI) concepts.

2. *Adaptive Support Systems:* Modify institutional support systems to take into account the many ways that students use AI. It is important to acknowledge that artificial intelligence (AI) fulfils specific objectives for each person and provides the appropriate resources appropriately.
3. Promoting Equitable AI Education: Establish AI education initiatives that cultivate inclusive dialogues concerning the social impacts of AI, including both its prospective advantages and obstacles. Promote the cultivation of critical thinking skills and the integration of ethical issues into courses pertaining to artificial intelligence.
4. *Improved AI Integration in Education:* Make investments to incorporate AI technology into courses. The objective is to create individualized learning experiences and interactive tools using artificial intelligence (AI) technology in order to improve the overall quality of education.
5. *Expanded AI Curriculum:* Include more AI-related classes and curricula, giving students access to a broad variety of AI knowledge and abilities. Engage in collaborative efforts with professionals from the industry to provide pragmatic perspectives and tangible implementations of artificial intelligence.
6. Supportive Resources: Make resources and advice available to aid students in overcoming difficulties in locating trustworthy AI materials. This paper aims to discuss the prevailing problems around data privacy and security in the context of using artificial intelligence (AI) technology.
7. *Inclusive AI Education:* Ensure that AI education programs are inclusive, taking into account the various student viewpoints and use patterns. It is important to recognize and evaluate both the favorable and unfavorable dimensions of artificial intelligence (AI) technology.

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