

Literacy and Attitudes on Artificial Intelligence Among the Students in a Private School: Input for Institutional AI Policy

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ABSTRACT

This study assessed the level of literacy and attitudes toward artificial intelligence (AI) among the students, both overall and by sex, year level, strand, primary device used for schoolwork, and internet access at home. Additionally, it examined the relationship between literacy and attitudes toward AI. It employed a descriptive-correlational research approach. The respondents were 230 randomly stratified students in a private school. Data were collected using two adopted questionnaires: a 15-item AI literacy and a 12-item attitude toward AI. It utilized a five-point Likert scale for both constructs. In data analysis, mean, standard deviation, and Spearman's rank-order correlation were employed. The findings showed the students exhibited a high level of AI literacy across all four areas. Additionally, the students demonstrated a neutral attitude toward the positive aspect and disagreed with the negative aspect. This suggests that students recognize the benefits of artificial intelligence while generally rejecting negative notions about it. Moreover, the results revealed a significant positive correlation between AI literacy and positive attitude, and a non-significant negative correlation between AI literacy and negative attitude. The findings of this study may serve as a benchmark for crafting an artificial intelligence policy in a private school. Similarly, this may inform the AI task force's decision on which sections of the policy must be included to maintain the integrity of the assessment and the students' written work and research.

Contribution/Originality: This study provides a foundation for developing an artificial intelligence (AI) policy in a private school and assists the AI Policy Committee in identifying essential measures to maintain the integrity of assessments, safeguard academic honesty, and ensure the originality and authenticity of students' written work and research within the institution.

1. Introduction

Artificial intelligence (AI) is the ability of computer systems to think and generate information, like humans, using data processing and machine learning algorithms (Saxena et al., 2023). In fact, artificial intelligence has a transformative impact on the education landscape (Vousinas & Meleouni, 2024). This innovation becomes part of students' everyday life, as they use it to find information and generate texts to complete their assignments or activities (Romaniuk & Łukasiewicz-Wieleba, 2024). Based on the global survey conducted by the Digital Education Council (DEC), 86% of students around the world habitually utilize AI in their academic work, with 54% of them using AI every week. Not to mention that 66% of students widely used ChatGPT. However, despite high rates of AI use, 58% reported lacking sufficient AI knowledge and skills (Digital Education Council, 2024). Hence, studying AI literacy and attitudes is essential because it helps schools guide students in using this computer system wisely and ethically and prepares them to face a world in which AI is becoming part of businesses and the workforce.

Schools in the Philippines face real problems due to the rapid rise in students' use of artificial intelligence in learning and in meeting subject requirements. A recent survey conducted by Villarino (2025) found that 78.54% of Filipino students used ChatGPT in their learning. Meanwhile, they were also concerned about possible information bias, its effects on critical thinking, and its potential for cheating. In fact, the same study suggests that it is essential to establish clear institutional guidelines for AI use and to develop an AI literacy program, as Giray et al. (2024) also support. Teachers and school administrators report that students turn to AI to write essays and complete assignments. These make it more difficult for them to grade and assess actual learning outcomes (Diloy et al., 2023). Some schools struggle to distinguish real student work from AI-generated outputs. This raises concerns about academic honesty and fairness (Cutillas et al., 2024). At the same time, education authorities such as the Department of Education have called for clear rules and guidelines to ensure that students responsibly use artificial intelligence (Doria, 2024). These issues underscore the need to study students' engagement with AI so that schools can create well-informed policies that uphold academic integrity and guide responsible use of technology.

1.1. Research Gaps

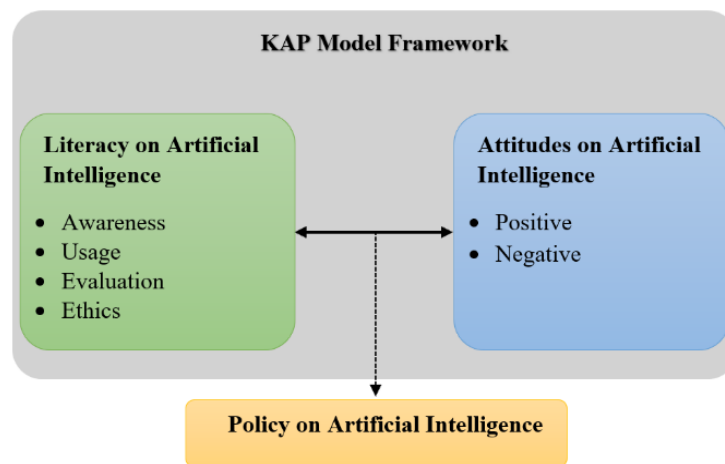
Various studies have been conducted related to the artificial intelligence of senior high school students. Kong et al. (2022) evaluated the artificial intelligence literacy of senior secondary students, focusing on the programme to examine whether the respondents could acquire machine and deep learning concepts. Additionally, Kong et al. (2024) aimed to provide concrete evidence in developing an AI Literacy Framework for senior secondary students. Tsai et al. (2022) developed cross-domain deep learning courses in artificial intelligence for vocational senior high schools and explored their impact on students' learning. Moreover, Roga et al. (2025) examined the perceived awareness, attitude, benefits, and threats of AI tools among senior high school students. Bochniarz et al. (2022) investigated how high school students perceive artificial intelligence and developed a tool to measure cynical hostility towards AI. Given all these studies, a gap remains in examining the correlation between senior high school students' literacy and attitudes toward artificial intelligence, particularly in the context of private schools, and integrating strand and grade levels as demographic variables. Hence, this study filled the gap.

1.2. Theoretical Framework

It is assumed that the level of artificial intelligence literacy among senior high school students influences their attitudes. This assumption was derived from the Knowledge, Attitude, Practice (KAP) Model, which the World Health Organization first introduced.

The KAP model explains that the knowledge a person gains affects how they feel and think (attitudes), which, in turn, guide their actions. The model argues that knowledge is the foundation that shapes attitudes before influencing behavior. In this study, students' literacy about artificial intelligence serves as the basis for their attitudes toward its use and impact. Hence, this model served as a lens in analyzing the data. Figure 1 presents the examination of the correlation between literacy and attitudes toward artificial intelligence. The literacy on artificial intelligence encompasses areas of awareness, usage, evaluation, and ethics, while the attitudes towards artificial intelligence have two areas: positive and negative. The results of this study served as data for crafting an AI policy within the institution.

Figure 1: Conceptual Model



1.3. Research Objectives

It aimed to assess the level of literacy in artificial intelligence in the areas of awareness, usage, evaluation, and ethics among senior high school students in a private school when considered as a whole and grouped by sex, year level, strand, primary device used for schoolwork, and internet access at home. Additionally, it examined respondents' attitudes toward artificial intelligence, both positive and negative, as a whole and by demographics. Lastly, it correlated literacy with attitudes toward artificial intelligence. The findings of this study may serve as a benchmark for crafting an artificial intelligence policy in a private school. Similarly, this may inform the AI task force's decision on which sections of the policy must be included to maintain the integrity of the assessment and the students' written work.

2. Methodology

It employed a descriptive-correlation research approach. The descriptive approach was used to assess the level of literacy and attitudes on artificial intelligence among senior high school students in a private school, considering them as a whole and grouping them

by sex, year level, and strand. Additionally, the correlational approach was employed to analyze the significant relationship between literacy and attitudes. The sample was determined using the Raosoft online sample size calculator, set to a 95% confidence level. The respondents were 230 randomly stratified senior high school students in a private school in Western Visayas, Philippines. They were identified using the fishbowl procedure. Table 1 presents the demographic profile of the respondents.

Table 1: Demographic Profile of the Respondents

Variable	n	%
Sex		
Male	118	51.3
Female	112	48.7
Year Level		
Grade 11	130	56.5
Grade 12	100	43.5
Academic Strand		
ABM	16	7.0
STEM	160	69.6
HUMSS	54	23.5
Primary device you use for schoolwork		
Cellphone	211	91.7
Tablet	6	2.6
Laptop	13	5.7
Internet access at home		
Always Available	170	73.9
Sometimes Available	60	26.1
Whole	230	100.0

2.1. Data Collection Procedure

In collecting the data, 27 items from a reliability-tested survey questionnaire were used. A 15-item questionnaire, adopted from Ma and Chen (2024), was used to assess artificial intelligence literacy. The questionnaire has four dimensions, namely, awareness, usage, evaluation, and ethics. To assess attitudes toward artificial intelligence, the study employed a 12-item questionnaire adapted from Stein et al. (2024). These two research articles explicitly indicated the value of the validity and reliability results of their instruments in their studies. However, this study pilot-tested the two questionnaires with 30 non-actual respondents to assess whether the items could be used in the Filipino context. The internal reliability yielded a Cronbach's alpha of 0.824. The study utilized a 5-point Likert scale for both constructs, ranging from 1 (strongly disagree) to 5 (strongly agree). The researchers personally administered the data collection using the printed copies of the questionnaire.

2.2. Data Analysis

In data analysis, descriptive and correlational statistics were employed in Statistical Package for the Social Science (SPSS) software. The mean and standard deviation were used to assess literacy levels and attitudes toward AI among senior high school students. Meanwhile, the test of normality was performed using the Shapiro-Wilk test to determine if the data on literacy levels and attitudes were normally distributed. It showed that all variables significantly deviated from normality: awareness ($W=0.967$, $p=0.000$), usage ($W=0.965$, $p=0.000$), evaluation ($W=0.974$, $p=0.000$), ethics ($W=0.949$,

$p=0.000$), positive attitude ($W=0.988$, $p=0.045$), and negative attitude ($W=0.954$, $p=0.000$). Since all p -values were less than 0.05, the assumption of normality was violated. Hence, a nonparametric test was employed in the subsequent analyses to assess the relationships among the variables. Hence, Spearman's rank was used to examine the correlation between artificial intelligence literacy and students' attitudes toward artificial intelligence.

2.3. Ethical Considerations

The entire process of this study followed the Philippine Health Research Ethics Board (PHREB) and the institution's ethical guidelines. The school administrators' approval was sought to conduct the study. In addition, the senior high school students were oriented to the study's goals and purpose and reminded of their voluntary participation. Moreover, they were guaranteed complete confidentiality of their data. The materials that contained raw information accessed from them were stored in password-protected files and disposed of by manual shredding after the publication.

3. Results and Discussions

3.1. Level of Artificial Intelligence Literacy Among the Senior High School Students

Table 2 presents the levels of literacy in artificial intelligence—awareness, usage, evaluation, and ethics — among senior high school students. Overall, the students demonstrated a high level of AI literacy across all four areas—awareness ($M=3.91$, $SD=0.61$), usage ($M=3.77$, $SD=0.66$), evaluation ($M=3.77$, $SD=0.60$), and ethics ($M=4.03$, $SD=0.68$).

In terms of awareness, both male ($M=3.85$, $SD=0.67$) and female ($M=3.97$, $SD=0.54$) students demonstrated a high level, with female students reporting slightly higher awareness. Grade 12 students ($M=4.04$, $SD=0.62$) showed greater awareness than Grade 11 students ($M=3.81$, $SD=0.59$). Across academic strands, STEM students ($M=3.96$, $SD=0.59$) exhibited the highest awareness, followed by ABM ($M=3.84$, $SD=0.58$) and HUMSS ($M=3.79$, $SD=0.68$) students. Respondents using laptops ($M=4.17$, $SD=0.62$) also showed greater awareness than those using tablets ($M=3.96$, $SD=0.71$) or cellphones ($M=3.89$, $SD=0.61$). Students with always available internet access ($M=3.93$, $SD=0.62$) reported slightly higher awareness than those with intermittent access ($M=3.85$, $SD=0.58$).

In terms of usage, all groups reported high levels, with Grade 12 students ($M=3.97$, $SD=0.60$) reporting higher usage than Grade 11 students ($M=3.61$, $SD=0.67$). Laptop users ($M=4.00$, $SD=0.49$) demonstrated the highest usage compared to cellphone ($M=3.76$, $SD=0.67$) and tablet ($M=3.61$, $SD=0.68$) users. Similarly, students with always available internet access ($M=3.82$, $SD=0.65$) reported higher usage than those with intermittent access ($M=3.63$, $SD=0.68$).

In terms of evaluation, the students exhibited a high level overall, with females ($M=3.87$, $SD=0.60$) scoring higher than males ($M=3.68$, $SD=0.59$). Grade 12 students ($M=3.92$, $SD=0.59$) also rated higher than Grade 11 students ($M=3.66$, $SD=0.59$). Laptop users ($M=4.21$, $SD=0.53$) showed a very high level of evaluation skills, while cellphone ($M=3.74$, $SD=0.60$) and tablet users ($M=4.08$, $SD=0.56$) maintained high levels. Those

with always available internet access ($M=3.80$, $SD=0.61$) also performed slightly better than those with limited access ($M=3.70$, $SD=0.57$).

In terms of ethics, all groups demonstrated a high level, with laptop users ($M=4.40$, $SD=0.64$) achieving a very high level. Female students ($M=4.10$, $SD=0.64$) exhibited stronger ethical awareness than male students ($M=3.97$, $SD=0.71$). Grade 12 students ($M=4.12$, $SD=0.62$) had slightly higher ethical literacy than Grade 11 students ($M=3.97$, $SD=0.71$). Among strands, STEM students ($M=4.07$, $SD=0.67$) ranked highest, followed by ABM ($M=4.09$, $SD=0.67$) and HUMSS ($M=3.90$, $SD=0.70$). Students with always available internet access ($M=4.05$, $SD=0.67$) also outperformed those with intermittent access ($M=3.98$, $SD=0.70$).

The findings suggest that senior high school students have a high level of artificial intelligence literacy in all areas. These indicate that the students are knowledgeable about AI concepts, can assess its functions effectively, can evaluate its purpose, and understand the ethical issues surrounding its use. This could be because students are regularly exposed to AI applications in their daily activities, such as using them in their learning and generating texts for their studies. This finding is supported by Toker Gokce et al. (20205) and Wu and Zhang (2025), who found that frequent use of digital platforms improves students' literacy of AI. Similarly, this finding can be attributed to the free, widespread availability and growing number of accessible AI platforms. This attribution is consistent with the studies by Zhang et al. (2025) and Su and Yang (2024), which found that the availability of AI increases literacy on this platform. This could also be because the students have developed critical thinking skills through their academic subjects that integrate AI lessons, such as Research and ICT, which enhance their ability to evaluate and use AI ethically. This finding is supported by Kong et al. (2023) and Usher and Barak (2024), who found that courses that include the responsible use of AI among students improve their critical thinking skills. The findings imply that the school should encourage AI-related discussions across subjects to further deepen students' understanding of its responsible and ethical application.

Table 2: Level of Artificial Intelligence Literacy among the Senior High School Students

Variable	Awareness			Usage			Evaluation			Ethics		
	M	SD	Int	M	SD	Int	M	SD	Int	M	SD	Int
Sex												
Male	3.85	0.67	H	3.78	0.69	H	3.68	0.59	H	3.97	0.71	H
Female	3.97	0.54	H	3.76	0.64	H	3.87	0.60	H	4.10	0.64	H
Year Level												
Grade 11	3.81	0.59	H	3.61	0.67	H	3.66	0.59	H	3.97	0.71	H
Grade 12	4.04	0.62	H	3.97	0.60	H	3.92	0.59	H	4.12	0.62	H
Academic Strand												
ABM	3.84	0.58	H	3.75	0.56	H	3.73	0.62	H	4.09	0.67	H
STEM	3.96	0.59	H	3.77	0.67	H	3.79	0.57	H	4.07	0.67	H
HUMSS	3.79	0.68	H	3.77	0.69	H	3.73	0.68	H	3.90	0.70	H
Primary device use for schoolwork												
Cellphone	3.89	0.61	H	3.76	0.67	H	3.74	0.60	H	4.01	0.67	H
Tablet	3.96	0.71	H	3.61	0.68	H	4.08	0.56	H	4.21	0.80	H
Laptop	4.17	0.62	H	4.00	0.49	H	4.21	0.53	VH	4.40	0.64	VH
Internet access at home												
Always Available	3.93	0.62	H	3.82	0.65	H	3.80	0.61	H	4.05	0.67	H

Sometimes Available	3.85	0.58	H	3.63	0.68	H	3.70	0.57	H	3.98	0.70	H
Whole	3.91	0.61	High	3.77	0.66	High	3.77	0.60	High	4.03	0.68	High

3.2. Attitudes Toward Artificial Intelligence Among the Senior High School Students

Table 3 presents the attitudes toward artificial intelligence, both positive and negative, among senior high school students. As a whole, the students exhibited a neutral attitude toward the positive aspect ($M=3.07$, $SD=0.63$) and disagreed with the negative aspect ($M=2.38$, $SD=0.39$). This suggests that students recognize the benefits of artificial intelligence while generally rejecting negative notions about it.

In terms of positive attitude, both male ($M=3.20$, $SD=0.62$) and female ($M=2.93$, $SD=0.61$) students showed a neutral response, with males expressing a slightly more favorable attitude toward AI. Grade 12 students ($M=3.30$, $SD=0.64$) demonstrated a higher positive attitude than Grade 11 students ($M=2.89$, $SD=0.56$). Across academic strands, STEM ($M=3.07$, $SD=0.64$) and HUMSS ($M=3.07$, $SD=0.61$) students shared the same level of neutrality, while ABM students ($M=3.05$, $SD=0.65$) reported a similar trend. When grouped according to primary device used for schoolwork, tablet users ($M=3.11$, $SD=0.56$) had the highest positive attitude, followed by cellphone users ($M=3.09$, $SD=0.62$), while laptop users ($M=2.79$, $SD=0.79$) showed the lowest. Regarding internet access, students with always-available internet ($M=3.10$, $SD=0.64$) expressed a slightly more positive attitude than those with sometimes-available internet ($M=2.98$, $SD=0.61$).

In terms of negative attitude, both male ($M=2.32$, $SD=0.37$) and female ($M=2.45$, $SD=0.40$) students disagreed with the negative statements, with males showing slightly lower disagreement scores, indicating fewer negative perceptions. Grade 12 students ($M=2.36$, $SD=0.42$) and Grade 11 students ($M=2.41$, $SD=0.37$) both disagreed with the negative aspects, showing a shared rejection of unfavorable views toward AI. Across academic strands, all groups disagreed with the negative aspects—ABM students ($M=2.53$, $SD=0.28$) displayed the strongest disagreement, followed by HUMSS ($M=2.40$, $SD=0.38$) and STEM ($M=2.36$, $SD=0.40$) students. In terms of primary device used, tablet users ($M=2.17$, $SD=0.57$) showed the lowest negative attitude, indicating fewer negative views about AI, while laptop users ($M=2.50$, $SD=0.26$) showed slightly more reservations. Respondents with always available internet access ($M=2.40$, $SD=0.38$) disagreed slightly more with negative statements compared to those with sometimes available access ($M=2.34$, $SD=0.42$).

The findings suggest that the senior high school students exhibited a neutral attitude toward the positive aspects of artificial intelligence. These mean that students recognize both the potential benefits and possible drawbacks of artificial intelligence. The finding shows a cautious optimism rather than full acceptance. This could be because students are aware that while AI can make life easier and solve problems, it also raises concerns about bias, wrong information, and ethical issues. This finding is supported by Villarino (2025) and Flores et al. (2025), who found that students often balance curiosity about AI with fear of its negative effects. Meanwhile, this finding can be attributed to their limited understanding of how AI systems work, leading to uncertainty about trusting the capacity of AI as supported by Afroogh et al. (2024) and Tomsett et al. (2020). This could also be because of the influence of online information and media portrayals that

highlight both the promises and dangers of AI (Roe & Perkinsv, 2023; Villarino, 2025; Bo et al., 2025). The findings imply that the school may strengthen its AI awareness programs by explaining the responsible usage and limitations of AI. The school should also organize discussions and projects that help students develop informed and responsible attitudes toward AI as future users and innovators.

In terms of negative attitude, the findings suggest that the senior high school students disagreed with the negative aspects of artificial intelligence. These mean that the students are not afraid of AI and tend to view it as a helpful tool rather than a problem. This could be because students are already familiar with AI through standard technologies such as search engines, digital assistants, and recommendation systems that make daily tasks easier. This finding is supported by the study by Cardon and Marshall (2024) and Zhan et al. (2024), which found that frequent interaction with AI-based platforms reduces fear and increases comfort with the system. This finding can be attributed to the positive learning environment in the school where AI is integrated into classroom activities, allowing students to see AI as a partner in learning (Marrone et al., 2025). This could also be because students perceive AI as an important part of the future that can improve education, health, and social systems rather than threaten them. This finding is supported by the study by Kim and Kim (2024) and Hollands and Breazeal (2024), which showed that exposure to discussions about the benefits of AI builds students' confidence and optimism about its use. The findings imply that the school should continue promoting meaningful and responsible use of AI in teaching and learning. The school should also design awareness campaigns that highlight how AI can support human progress while addressing possible misconceptions and fears about its risks.

Table 3: Attitudes Toward Artificial Intelligence Among the Senior High School Students

Variable	Positive			Negative		
	M	SD	Int	M	SD	Int
Sex						
Male	3.20	0.62	Neutral	2.32	0.37	Disagree
Female	2.93	0.61	Neutral	2.45	0.40	Disagree
Year Level						
Grade 11	2.89	0.56	Neutral	2.41	0.37	Disagree
Grade 12	3.30	0.64	Neutral	2.36	0.42	Disagree
Academic Strand						
ABM	3.05	0.65	Neutral	2.53	0.28	Disagree
STEM	3.07	0.64	Neutral	2.36	0.40	Disagree
HUMSS	3.07	0.61	Neutral	2.40	0.38	Disagree
Primary device you use for school work						
Cellphone	3.09	0.62	Neutral	2.38	0.39	Disagree
Tablet	3.11	0.56	Neutral	2.17	0.57	Disagree
Laptop	2.79	0.79	Neutral	2.50	0.26	Disagree
Internet access at home						
Always Available	3.10	0.64	Neutral	2.40	0.38	Disagree
Sometimes Available	2.98	0.61	Neutral	2.34	0.42	Disagree
Whole	3.07	0.63	Neutral	2.38	0.39	Disagree

3.3. Correlation Between Literacy and Attitude Toward Artificial Intelligence

Table 4 presents the relationship between literacy and attitudes toward artificial intelligence. The results revealed a significant positive correlation between AI literacy

and a positive attitude [$r_s(228)=0.257$, $p=0.000$] and a non-significant negative correlation between AI literacy and a negative attitude [$r_s(228)=-0.080$, $p=0.230$]. These findings indicate that students with higher levels of artificial intelligence literacy tend to have more positive attitudes toward artificial intelligence.

The findings suggest a significant positive relationship between literacy and attitude toward artificial intelligence among senior high school students. These mean that students who are more knowledgeable in using AI are more likely to view it favorably and appreciate its benefits. This could be because understanding how AI works helps reduce the fear and uncertainty of using it. Likewise, it allows the students to focus on its usefulness and potential to improve life. This finding is supported by studies by Hwang and Nam (2020), Theis et al. (2023), and Baroni et al. (2022), which found that greater AI knowledge is linked to greater acceptance of AI applications. This finding can be attributed to the confidence students gain when they can evaluate and use AI responsibly, which strengthens their trust in technology. This finding is consistent with the study by Sajja et al. (2025), which found that technological competence fosters positive perceptions of emerging innovations. The findings imply that the school may continue to promote AI literacy as a foundation for building positive attitudes toward technology. The school should also create opportunities for students to apply AI knowledge in real-world activities to deepen their appreciation and responsible use of artificial intelligence.

Table 4: Correlation Between Literacy and Attitudes Toward Artificial Intelligence

Variable	r_s	df	p
Artificial Intelligence Literacy x Positive	0.257*	228	0.000
Artificial Intelligence Literacy x Negative	-0.080	228	0.230

The findings of this study confirm the assumptions of the (KAP) Model, which holds that knowledge or literacy influences attitude and, later on, shapes behavior. The significant positive relationship between artificial intelligence literacy and a positive attitude supports the idea that students with greater knowledge and understanding of AI are more likely to develop favorable perceptions of it. This suggests that literacy serves as a key factor in shaping how students think and feel about the role of AI in their daily lives and education. The non-significant negative correlation between AI literacy and negative attitude further strengthens the model's claim that adequate knowledge reduces fear and misconceptions. Thus, consistent with the KAP Model, the results indicate that enhancing students' literacy on AI can lead to more positive attitudes and responsible engagement with technology.

4. Conclusion

It shows that a greater understanding of artificial intelligence helps students develop a more positive and open attitude toward it. Students who use laptops and have strong internet access showed stronger skills in evaluating and using AI responsibly. Since students with higher AI literacy tend to view it more positively, this study highlights how knowledge builds confidence and trust in using these computer systems. The findings indicate that senior high school students disagree with the negative perceptions of artificial intelligence. This underscores that they are not afraid of the technology but rather see it as a beneficial tool. Hence, these findings served as a guide for creating an AI policy at the school where this study was conducted that supports the integrity of

academic work and promotes the responsible use of technology. The policy, crafted based on the results of this study, was endorsed for approval by the school administrators and will be introduced to the students.

4.1. Limitations of the Findings

The findings of this study should be understood within certain limitations. The data were gathered only from senior high school students at one private school, limiting the ability to generalize the results to other schools or regions. Although the instruments used were reliable and pilot-tested in the Filipino context, the study relied only on quantitative data. It did not include interviews or observations that could provide deeper explanations of the results. The study also focused on selected demographic variables, such as sex, year level, strand, and device used, so other possible factors, such as socioeconomic background or prior exposure to AI, were not examined. Future research may include a larger number of schools, use interviews or focus group discussions, and explore other factors that may influence students' literacy and attitudes toward artificial intelligence.

Ethics Approval and Consent to Participate

The researchers adhered to the ethical guidelines set by the Philippine Health Research Ethics Board (PHREB) and the institution's own ethical standards. All procedures involving human participants were conducted in accordance with these established ethical guidelines. Furthermore, informed consent and parental assent were obtained from all participants in compliance with the principles outlined in the Declaration of Helsinki.

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Conflict of Interest

The researchers declare no conflicts of interest.

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