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AI-DUCATION: Awareness and Competencies of Senior High School Students in the Use of Generative Artificial Intelligence as Basis for a Support System Program

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ABSTRACT

The rapid integration of generative artificial intelligence (AI) in education has reshaped students' academic work and created a need to examine their awareness, competencies, and responsible use of AI tools. This study determined the level of awareness and competencies of Grade 12 senior high school students in using generative AI and used the findings as basis for a student support system program. A descriptive-correlational research design was employed among 365 Grade 12 students from Arellano University - Andres Bonifacio Campus during Academic Year 2025-2026. Data were gathered through a validated closed-ended survey questionnaire and analyzed using frequency, percentage, weighted mean, standard deviation, Spearman rank-order correlation, and point-biserial correlation. Findings revealed that students had high awareness of generative AI (M = 4.03) and high competency in its use (M = 3.78), with strongest results in ethical considerations, functions and capabilities, and critical thinking/output evaluation. However, students highly encountered misleading or inaccurate AI-generated information (M = 3.64) and moderately encountered challenges related to insufficient AI knowledge, digital literacy gaps, and over-reliance. Correlation results showed that family income, internet access, and frequency of AI use were more influential than sex or device access, while overall AI awareness had a strong significant relationship with overall AI competency ($r_s = .707$, $p < .001$). Based on these findings, the AI-CARES SHS Program was proposed to strengthen AI literacy, ethical use, prompt engineering, critical evaluation, and equitable AI support for learners.

Keywords: *artificial intelligence, AI-CARES Program, AI awareness, AI competencies, generative AI, senior high school students*

INTRODUCTION

Artificial intelligence has rapidly changed how learners' access, process, and produce information. Generative AI tools such as ChatGPT, Google Gemini, Grammarly, and related platforms are increasingly used by students for academic writing, research assistance, content development, and problem-solving. These tools provide opportunities for personalized learning and efficient academic support, but they also raise concerns on misinformation, academic integrity, plagiarism, data privacy, and over-reliance (Dwivedi et al., 2023; UNESCO, 2023).

In basic education, the growing availability of AI requires schools to develop learners who are not only users of technology but also critical, ethical, and competent digital citizens. International frameworks emphasize that AI literacy should include understanding how AI works, recognizing its limits, evaluating outputs, and using AI responsibly (Long & Magerko, 2020; Miao & Holmes, 2023; UNESCO, 2021). In the Philippines, digital

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transformation initiatives and policy discussions on AI integration highlight the need for structured guidance so learners can maximize the benefits of AI while avoiding misuse and academic dishonesty.

Although senior high school students are already exposed to AI tools, the extent of their awareness and competencies remains an important empirical concern. Many students learn about AI through informal channels such as social media, peer groups, or self-discovery, which may not provide sufficient knowledge for responsible and effective academic use. This study therefore assessed the awareness, competencies, problems encountered, and related profile variables of senior high school students in using generative AI as basis for a school-based support system program.

Literature Review

Generative Artificial Intelligence in Education

Generative AI refers to AI systems capable of producing text, images, audio, video, code, and other outputs based on patterns learned from large datasets (Goodfellow et al., 2016; Brown et al., 2020). In education, such tools can support brainstorming, writing, summarization, translation, coding assistance, feedback, and personalized learning. Studies note that generative AI can improve academic productivity and learning support when used appropriately, yet it can also introduce risks such as hallucinated information, biased outputs, and uncritical dependence (Farrelly & Baker, 2023; Kasneci et al., 2023; UNESCO, 2023).

AI Awareness, Competency, and Digital Literacy

AI awareness involves knowledge of AI concepts, types of tools, functions, academic applications, and ethical implications. Competency, on the other hand, refers to the ability to use AI effectively through technical operation, prompt engineering, critical evaluation, and academic application. Literature suggests that awareness is a foundation for competency because learners must first understand the purpose, limits, and ethical implications of AI before they can use it responsibly and effectively (Kelly et al., 2023; Zhang & Tian, 2024; Annapureddy et al., 2024).

This study is anchored on the Digital Literacy Framework, the Technology Acceptance Model, and Social Cognitive Theory. The Digital Literacy Framework supports the assessment of students' ability to use digital tools critically and ethically. The Technology Acceptance Model explains how perceived usefulness and ease of use may influence students' engagement with AI. Social Cognitive Theory emphasizes self-efficacy, suggesting that students' confidence and exposure to AI can influence their ability to use AI tools successfully (Bandura, 1986; Davis, 1989; European Commission, 2019).

Research Gap

Existing studies confirm that AI use in education is increasing, but there remains limited evidence on how senior high school students understand, use, evaluate, and struggle with generative AI in academic contexts. This study addresses this gap by examining both awareness and competencies, determining their relationships with profile variables, and proposing a school-based support system program grounded in empirical findings.

METHODS

Research Design

The study employed a descriptive-correlational research design. The descriptive component described students' socio-demographic profile, awareness, competencies, and problems encountered in using generative AI. The correlational component examined significant relationships among profile variables, awareness, and competencies without manipulating any variables.

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Respondents and Sampling

The respondents were 365 Grade 12 senior high school students enrolled at Arellano University - Andres Bonifacio Campus in the City of Pasig during Academic Year 2025-2026. Proportionate stratified random sampling was used to ensure representation from HUMSS, STEM, GAS, ABM, Tour Guiding, Cookery, MRAC, Home Economics, and ICT strands. The total population was 4,228 students, and the sample was determined using a 95% confidence level and 5% margin of error.

Research Instrument and Data Gathering

A modified structured closed-ended questionnaire was used. The instrument covered: (1) socio-demographic profile; (2) level of awareness in terms of concept and definition of generative AI, types of tools, functions and capabilities, and ethical considerations; (3) level of competencies in terms of technical and operational skills, prompt engineering, critical thinking/output evaluation, and academic application; and (4) problems encountered in terms of misleading information, insufficient AI knowledge, digital literacy gap, and excessive reliance. The instrument underwent content validation by experts in computer studies, international accreditation, and sustainability. Permission was secured from the school, respondents were oriented on the purpose of the study, and completed questionnaires were checked, organized, and encoded for analysis.

Statistical Treatment and Ethics

Frequency and percentage described the respondents' profile. Weighted mean and standard deviation measured the levels of awareness, competencies, and problems encountered. Spearman rank-order correlation and point-biserial correlation tested relationships among the variables at the 0.05 level of significance. Ethical safeguards included informed consent, confidentiality, privacy protection, non-deception, respect for persons, secure data handling, and truthful reporting of findings.

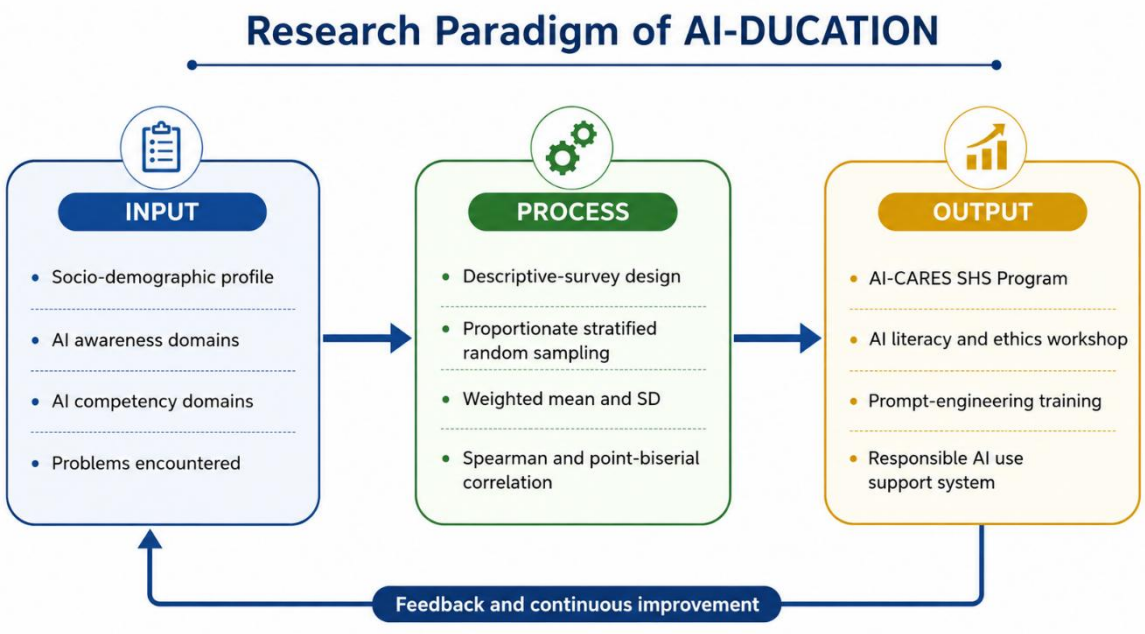

Figure 1. *Research Paradigm of AI-DUCATION*

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RESULTS AND DISCUSSION

Socio-demographic Profile

Table 1. *Socio-demographic profile of the respondents.*

Profile Variable	Dominant Category / Result
Age	15-18 years old: 320 (87.7%)
Sex	Female: 233 (63.8%); Male: 132 (36.2%)
Academic Track	STEM: 101 (27.7%); HUMSS: 88 (24.1%); ABM: 57 (15.6%); ICT: 44 (12.1%)
Monthly Family Income	PHP 9,100-18,200: 128 (35.1%); PHP 18,200-36,400: 99 (27.1%); below PHP 9,100: 71 (19.5%)
Internet Access	Home Wi-Fi: 314 (86.0%); mobile data: 49 (13.4%)
Use Of Ai	Yes: 345 (94.5%); No: 20 (5.5%)
Frequency Of Ai Use	Rarely: 188 (51.5%); sometimes: 133 (36.4%)
Common Ai Tools	ChatGPT: 225 (61.6%); Google Gemini: 58 (15.9%); Grammarly: 43 (11.8%)
Primary Purpose	Academic tasks: 212 (58.1%); research: 74 (20.3%)

The respondents were mostly female Grade 12 students aged 15-18. Most came from STEM, HUMSS, ABM, and ICT strands and belonged largely to low- to lower-middle-income households. Despite this, most had home Wi-Fi access and almost all had already used AI tools. The use of ChatGPT, Google Gemini, and Grammarly shows that text-based and academic support tools dominate students' AI exposure. However, most students used AI only rarely or sometimes, indicating that AI is present in academic routines but not yet fully structured or consistently integrated into learning.

Level of Awareness in the Use of Generative AI

Table 2. Summary of students' level of awareness in the use of generative AI

Domain	Mean	Description
Concept And Definition of Generative Ai	3.94	High Awareness
Types Of Generative Ai Tools	3.95	High Awareness
Functions And Capabilities of Generative Ai	4.11	High Awareness
Ethical Considerations and Responsible Use	4.11	High Awareness
Overall Mean	4.03	High Awareness

Students demonstrated high awareness of generative AI. The highest means were observed in functions/capabilities and ethical considerations, suggesting that learners recognize AI's usefulness in answering questions, summarizing information, supporting academic tasks, and requiring responsible verification. However, awareness of more technical applications such as coding, data analysis, and advanced tool functions was relatively weaker, showing that students view AI mainly as a creative and academic support system rather than as a technical computational system.

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Level of Competencies in the Use of Generative AI

Table 3. *Summary of students' level of competencies in the use of generative AI*

Domain	Mean	Description
Technical and operational skills	3.70	High Competency
Prompt engineering skills	3.79	High Competency
Critical thinking and output evaluation	3.93	High Competency
Academic application skills	3.68	High Competency
Overall mean	3.78	High Competency

The students also demonstrated high competency, with critical thinking and output evaluation receiving the highest mean. This suggests that many learners can verify AI outputs, identify unsupported claims, and decide whether AI-generated content is suitable for academic use. Prompt engineering and technical skills were also high, but academic application had the lowest mean, indicating that students remain less confident in advanced academic writing, statistical interpretation, and complex technical applications. These findings support the need for structured training that moves students from basic use toward deeper academic and ethical application.

Problems Encountered in Using Generative AI

Table 4. *Summary of problems encountered by students in using generative AI*

Problem Domain	Mean	Description
Improper or misleading information	3.64	High Encountered
Insufficient knowledge of AI tools	3.23	Moderate Encountered
Gap in digital literacy	3.30	Moderate Encountered
Excessive reliance on AI	3.08	Moderate Encountered
Overall mean	3.31	Moderate Encountered

The most serious problem was improper or misleading information. Students expressed concern that AI-generated content may be inaccurate, lack reliable sources, or lead them to include wrong information in academic outputs. Moderate challenges were also found in students' knowledge of AI tools, digital literacy, and excessive reliance. These results indicate that although students are already users of AI, they still need guidance in fact-checking, evaluating sources, understanding AI limitations, and using AI as a support tool rather than as a substitute for independent learning.

Relationships Between Profile Variables, Awareness, and Competencies

Table 5. *Summary of major correlation findings*

Relationship Tested	Key Result	Interpretation
Profile variables and AI awareness	Age showed weak negative relationships with some awareness domains; monthly family income, internet access type, AI use, and frequency of use showed significant relationships.	Access and use-related factors were more influential than sex or device access.
Profile variables and AI competencies	Monthly family income was significantly related to prompt engineering, critical thinking/output	Repeated exposure and resource access support competency development.

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	evaluation, and overall competency; frequency of AI use was significantly related to all competency domains.	
AI awareness and AI competencies	Overall awareness was strongly and significantly related to overall competency ($r_s = .707$, $p < .001$).	Higher awareness is associated with stronger AI skills and better academic application.

The correlation results show that AI awareness and competencies are shaped more by access, frequency of use, and socioeconomic factors than by sex or simple device access. The strongest finding is the significant positive relationship between overall awareness and overall competencies. This means that learners who understand generative AI concepts, tools, functions, and ethical responsibilities are more likely to demonstrate technical, evaluative, prompt-engineering, and academic application skills. This finding reinforces the need for AI literacy programs that develop both conceptual understanding and hands-on competence.

Proposed AI-CARES SHS Support System Program

Based on the findings, the study proposed the AI-CARES SHS Program, or AI Competency Advancement, Responsible Engagement, and Support for Senior High School Learners. The program is designed to enhance students' responsible and competent use of generative AI through literacy workshops, hands-on training, critical thinking activities, policy development, classroom integration, and continuous support.

Table 6. *Core components of the AI-CARES SHS Program*

Key Area	Strategies / Activities	Expected Output
AI literacy and ethics	Conduct AI literacy and ethics workshops for students.	Improved understanding of ethical and responsible AI use.
Practical AI skills	Conduct hands-on training on writing, research, creative tasks, and prompt engineering.	Students can complete academic tasks using AI appropriately.
Critical evaluation	Hold seminars on AI bias, misinformation, verification, and fact-checking.	Improved critical thinking and output evaluation.
School policy	Develop and disseminate an AI Use Policy Handbook.	Clear school guidelines for responsible AI use.
Classroom integration	Integrate AI tools into supervised classroom activities and assignments.	More purposeful and curriculum-aligned AI use.
Support and mentoring	Establish an AI support desk, help channel, peer mentoring, and AI clubs.	Continuous assistance and equitable support for learners.

CONCLUSION

The study concludes that Grade 12 students at Arellano University - Andres Bonifacio Campus are already highly aware of and highly competent in using generative AI. Students are especially aware of AI's functions, capabilities, ethical considerations, and responsible use, and they are most competent in critical thinking and output evaluation. However, their awareness and competencies remain stronger in general academic and evaluative uses than in advanced technical tasks such as coding, data analysis, and complex academic writing.

The study further concludes that students encounter important challenges in using generative AI, especially inaccurate or misleading information. Moderate issues related to digital literacy, insufficient AI knowledge, and over-reliance also indicate that AI exposure alone does not guarantee responsible or proficient use. Correlation findings confirm that access-related factors and frequency of AI use influence awareness and competencies, while

overall AI awareness is strongly related to overall AI competency. Thus, developing AI awareness is essential to strengthening students' practical, ethical, and academic use of generative AI.

Recommendation

Schools should integrate structured AI literacy lessons into senior high school learning activities. These lessons should cover generative AI concepts, functions, limitations, ethical use, plagiarism, proper acknowledgement of AI assistance, data privacy, prompt engineering, and fact-checking. The curriculum should go beyond basic use and guide students in evaluating AI-generated outputs critically.

Teachers should design learning activities that require students to use AI responsibly while still demonstrating independent thinking. AI-based assignments should include reflection, verification of sources, revision of AI outputs, and explanation of how AI assistance was used. This approach can reduce over-reliance and strengthen critical thinking.

School administrators should adopt the proposed AI-CARES SHS Program as a support system for learners. The program should include student workshops, teacher training, AI use policies, digital support channels, peer mentoring, and continuous monitoring. Priority should be given to equitable access so that students from lower-income backgrounds receive adequate connectivity, resources, and training.

Future researchers may conduct longitudinal, comparative, or mixed-methods studies to examine how AI awareness and competencies develop over time. Further research may also compare schools, grade levels, academic tracks, and the effect of formal AI literacy interventions on academic performance, responsible AI use, and digital citizenship.

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