

Empowering Students for Responsible AI Use: Redesigning Assessments for the Digital Era

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Publication history: Received: April 29, 2026; Revised: May 13, 2026; Accepted: May 16, 2026

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Abstract

This study examined the relationship between Senior High School students' AI literacy and usage and their perspectives on responsible and AI-integrated assessment in a public secondary school in Leyte, Philippines. Anchored on the concepts of AI literacy, ethical AI use, and AI-integrated assessment, the study employed a quantitative descriptive-correlational research design. A researcher-made questionnaire was used to gather data from 181 Senior High School students selected through stratified systematic sampling from a population of 342 students. The instrument measured students' awareness, attitudes, and actual behaviors regarding AI use, as well as their perspectives on ethical AI practices and assessment redesign. Descriptive statistics, including frequency, percentage, mean, and standard deviation, were used to analyze the data, while Pearson Product-Moment Correlation Coefficient determined the relationship between variables. The findings revealed that students demonstrated high awareness and usage of AI tools, particularly for writing assistance and content generation, while showing moderate attitudes toward AI integration and moderate understanding of ethical considerations and institutional policies. Students also exhibited moderate perspectives regarding responsible and AI-integrated assessment, especially in terms of academic integrity and assessment redesign. Furthermore, the study identified a strong positive relationship between students' AI literacy and usage and their perspectives on responsible and AI-integrated assessment, indicating that increased AI literacy is associated with more favorable perceptions of ethical AI integration in education. The study concluded that although students are highly exposed to AI technologies, there remains a gap between awareness and actual ethical practice, emphasizing the need for stronger AI ethics education, clearer institutional guidelines, and responsible assessment practices. The study supports Sustainable Development Goal 4 (Quality Education) by promoting responsible technology integration, digital literacy, and ethical learning practices in education. It also aligns with Sustainable Development Goal 9 (Industry, Innovation and Infrastructure) through its focus on educational innovation and AI integration. The findings contribute to educational and institutional sustainability by supporting the development of ethical AI policies, responsible assessment practices, and improved learner preparedness in digitally evolving academic environments.

Keywords: Academic Integrity, AI Literacy, AI-Integrated Assessment, Artificial Intelligence, Educational Technology, Responsible AI Use, Senior High School Students

1. Introduction

Artificial intelligence (AI) technologies have increasingly transformed educational practices, particularly in learning processes, academic tasks, and assessment systems among Senior High School (SHS) students. AI-powered tools such as generative text applications, automated problem solvers, and intelligent learning platforms provide opportunities for personalized learning and academic support while also raising concerns regarding academic integrity, ethical use, and the effectiveness of existing assessment methods (Kasneci et al., 2023). In the Philippine educational context, the Department of Education (DepEd) promotes digital transformation, digital literacy, critical thinking, and responsible technology use through initiatives such as the Digital Rise Program and the MATATAG Agenda (DepEd, 2022; DepEd, 2023). However, despite the growing accessibility of AI technologies, limited empirical studies have examined how SHS students understand, perceive, and utilize AI tools within academic and assessment contexts.

1.1 Background of the Study

The rapid integration of AI technologies into education has significantly influenced how students complete academic tasks and engage with assessments. SHS students now have access to AI-driven tools that support writing, problem-solving, and learning activities, creating both educational opportunities and ethical challenges (Kasneci et al., 2023). Within the Philippine basic education system, DepEd initiatives emphasize digital literacy, critical thinking, and values formation to prepare learners for responsible technology use (DepEd, 2022; DepEd, 2023). As SHS learners are expected to demonstrate independent learning and higher-order thinking skills, AI usage directly affects the achievement of learning competencies and assessment outcomes. Despite policy directions supporting responsible technology integration, there remains insufficient empirical evidence regarding students' AI awareness, attitudes, and actual practices in academic settings.

Existing observations suggest that students' use of AI tools often develops faster than formal guidance on ethical and responsible application, particularly in school-based assessments (Barrot et al., 2021). This creates a need to examine how SHS students utilize AI technologies and how these practices influence their perspectives on responsible and AI-integrated assessment.

1.2 Themes and Insights from Related Literature

AI literacy has been identified as a multidimensional construct encompassing awareness of AI tools, attitudes toward AI use, and actual behavior in applying AI during academic tasks (Ng et al., 2021). Studies indicate that while students are generally capable of using AI tools functionally, many lack deeper understanding of their limitations and ethical implications (Long & Magerko, 2020). Research also suggests that positive attitudes toward AI are associated with greater acceptance and usage among digitally immersed learners (Teo et al., 2022). However, favorable attitudes toward AI do not necessarily translate into responsible academic behavior. Studies on academic integrity reveal that students' beliefs about technology, coupled with academic pressures, may encourage questionable academic practices when institutional guidelines are unclear or inconsistently implemented (Bernardo & Isip, 2018). Furthermore, AI tools are increasingly utilized for writing tasks, exam preparation, and problem-solving without explicit instructions regarding acceptable use (Kasneci et al., 2023). Research on responsible AI integration emphasizes ethical principles such as honesty, accountability, and transparency, which align with DepEd's core values of Maka-Diyos, Maka-tao, Makakalikasan, at Makabansa (DepEd, 2023). Studies further indicate that students are more likely to follow academic integrity standards when ethical expectations surrounding AI use are clearly communicated (Akgun & Greenhow, 2022). Likewise, learners show greater acceptance of AI integration when assessments are redesigned to prioritize critical thinking, reflection, and process-oriented outputs rather than purely product-based tasks (Bearman et al., 2022).

1.3 Local, National, and Global Context

Globally, AI technologies have become increasingly integrated into educational systems, reshaping instructional delivery, assessment methods, and student learning experiences (Kasneci et al., 2023). International studies demonstrate growing concerns regarding ethical AI use, academic integrity, and the need to redesign assessments to maintain validity and reliability in AI-supported learning environments. Nationally, the Philippine educational system continues to strengthen digital transformation initiatives through DepEd programs such as the Digital Rise Program and the MATATAG Agenda (DepEd, 2022; DepEd, 2023). These initiatives emphasize digital literacy, responsible technology use, and critical thinking skills among learners. However, local studies remain largely focused on general digital literacy, teacher readiness, and higher education contexts, leaving limited evidence regarding SHS students' AI literacy and assessment-related perspectives (Barrot et al., 2021). At the local school level, observable variations in students' AI awareness, usage behaviors, and responses to assessment requirements suggest the need for systematic investigation. Unregulated AI use may affect the accurate measurement of competencies in authentic and performance-based assessments commonly implemented in SHS education.

1.4 Theoretical or Conceptual Basis

The study is anchored on the concept of AI literacy as a measurable construct involving awareness, attitudes, and actual behavior related to AI use in academic settings (Ng et al., 2021). Awareness pertains to students' knowledge of AI tools and their functions in learning and assessment, while attitudes refer to beliefs and perceptions regarding AI integration in education. Actual behavior reflects how students apply AI technologies in practice. The study also draws from principles of responsible AI use in education, which emphasize honesty, accountability, transparency, and ethical engagement with technology (Akgun & Greenhow, 2022). Additionally, concepts related to assessment redesign support the integration of AI through process-oriented and critical-thinking-based assessment practices that preserve assessment validity and integrity (Bearman et al., 2022). These frameworks collectively support the examination of the relationship between students' AI literacy and their perspectives on responsible and AI-integrated assessment.

1.5 Research Gaps and Rationale

Despite increasing discussions regarding AI integration in education, there is limited quantitative research focusing on SHS students within the Philippine context. Existing studies predominantly examine digital literacy, teacher readiness, or higher education populations, resulting in insufficient empirical data on SHS learners who are transitioning between basic and tertiary education. Moreover, few studies have investigated the relationship between students' AI literacy and their perspectives on responsible and AI-integrated assessment. The lack of localized empirical evidence limits the development of policies and assessment frameworks aligned with responsible AI integration in Philippine basic education. Therefore, this study seeks to address these gaps by quantitatively examining students' demographic profile, AI literacy and usage, perspectives on responsible and AI-integrated assessment, and the significant relationship between these variables.

1.6 Alignment with Relevant Sustainable Development Goals (SDGs)

The study aligns with SDG 4 – Quality Education by promoting responsible and effective integration of AI technologies in learning and assessment. Examining students' AI literacy and ethical AI use supports the development of critical thinking, digital literacy, and responsible learning practices essential to quality education. The study also relates to SDG 9 – Industry, Innovation and Infrastructure through its focus on technological innovation in educational systems and assessment practices. By investigating AI integration in SHS education, the research contributes to the responsible adoption of emerging technologies in academic institutions. Additionally, the study supports SDG 16 – Peace, Justice, and Strong Institutions by emphasizing academic integrity, ethical technology use, accountability, and transparent assessment practices within educational institutions.

1.7 Importance of the Study to Multidisciplinary Sustainability

The study contributes to educational sustainability by supporting the development of responsible AI integration strategies that enhance learning quality and assessment validity. Findings may assist educators and policymakers in designing assessment practices that maintain academic integrity while adapting to technological advancements. The research also contributes to technological sustainability by encouraging ethical and informed use of AI tools among SHS students. Promoting AI literacy can help learners develop responsible digital behaviors and critical awareness of AI limitations and implications. Furthermore, the study supports institutional and socio-economic sustainability by providing empirical evidence that may guide DepEd-aligned policies, learner development programs, and assessment frameworks. These contributions can strengthen institutional readiness for AI integration while ensuring that educational practices remain ethical, equitable, and aligned with national educational goals.

2. Material and methods

2.1 Research Design

The study employed a quantitative descriptive-correlational research design. The descriptive aspect was used to determine and describe students' awareness, attitudes, behaviors, and perceptions regarding AI literacy and AI-integrated assessment. The correlational aspect examined the degree and direction of the relationship between students' AI literacy and usage and their perspectives on responsible and AI-integrated assessment. This design is appropriate for studies that aim to describe variables and identify relationships without manipulating them (Creswell & Creswell, 2018).

2.2 Locale of the Study

The study was conducted in a public secondary school in the province of Leyte that offers integrated Junior High School and Senior High School programs. The research setting provided an appropriate environment for examining students' AI literacy, usage behaviors, and perspectives on responsible AI-integrated assessment within the Senior High School context.

2.3 Respondents of the Study

The respondents of the study were officially enrolled Senior High School students during the conduct of the research. The study included students from different academic strands and sections to ensure broader representation of SHS learners. Demographic information gathered from the respondents included sex, age, academic strand, and frequently used AI tools.

2.4 Sample and Sampling Procedure

From a total population of 342 Senior High School students, a sample size of 181 respondents was determined using Cochran's formula with a 95% confidence level and a 5% margin of error. Cochran's formula is commonly used in survey research to ensure adequate sample representation (Cochran, 1977). The study employed stratified systematic sampling to achieve proportional representation across the nine SHS sections. This sampling technique minimized sampling bias and enhanced the representativeness of the sample (Fraenkel et al., 2019).

2.5 Research Instrument

The primary data-gathering instrument was a researcher-made questionnaire designed to measure the variables of the study. The instrument consisted of three parts. The first part collected demographic information such as sex, age, academic strand, and commonly used AI tools. The second part measured students' AI literacy and usage in terms of awareness of AI tools and their role in assessment, attitudes toward AI in learning, and actual behavior in AI use. The third part assessed students' perspectives on responsible and AI-integrated assessment, specifically focusing on ethical use and assessment design. Parts II and III utilized a 5-point Likert scale ranging from strongly disagree to strongly agree, which is widely used in educational research to measure attitudes and perceptions (Likert, 1932). To establish content validity, the questionnaire was reviewed by three experts in educational technology or educational assessment to evaluate the relevance, clarity, and alignment of the items with the objectives of the study. Expert validation ensured that the instrument appropriately represented the constructs being measured (DeVellis, 2017). A pilot test involving at least 30 respondents was conducted to determine the reliability of the instrument. Internal consistency was measured using Cronbach's Alpha, with a coefficient of 0.70 or higher considered acceptable, indicating reliable measurement of the constructs (Nunnally & Bernstein, 1994).

2.6 Data Gathering Procedure

Prior to data collection, permission was obtained from the school administration, and informed consent was secured from the respondents. The questionnaire was administered through a survey method, allowing respondents sufficient time to complete the instrument. All collected responses were treated with confidentiality and were used exclusively for research purposes.

2.7 Data Analysis Techniques

Descriptive and inferential statistical techniques were employed in analyzing the data. Frequency and percentage were used to describe the demographic profile of the respondents. Mean and standard deviation were utilized to determine the levels of students' AI literacy and usage and their perspectives on responsible and AI-integrated assessment. The interpretation of mean scores followed the established scale intervals. Mean scores ranging from 4.21 to 5.00 indicated very high awareness, attitude, or practice; 3.41 to 4.20 indicated high awareness, attitude, or practice; 2.61 to 3.40 indicated moderate awareness, attitude, or practice; 1.81 to 2.60 indicated low awareness, attitude, or practice; and 1.00 to 1.80 indicated very low awareness, attitude, or practice. To determine the relationship between students' AI literacy and usage and their perspectives on responsible and AI-integrated assessment, the Pearson Product-Moment Correlation Coefficient (Pearson r) was used. Pearson r is appropriate for measuring the strength and direction of relationships between continuous variables derived from Likert-scale composite scores (Pallant, 2020). Statistical significance was tested at the 0.05 level of significance.

3. Results and Discussion

3.1 Demographic Profile of the Respondents

3.1.1 Sex Distribution of Respondents

The findings showed a nearly balanced distribution of respondents by sex, with 51% male students, 47% female students, and 2% preferring not to disclose their sex. This indicates that the study included relatively equal representation of male and female respondents. The balanced gender distribution suggests that the sample adequately represents both male and female students in examining AI literacy and usage. The small percentage of respondents who chose not to disclose their sex may reflect increasing privacy concerns among students, consistent with findings by Kelley et al. (2021). Previous studies also suggest that gender differences may not significantly influence technology engagement, as both males and females are actively involved in digital technology use (Binns & Hargittai, 2020). However, Teo et al. (2022) noted that slight variations in AI usage patterns between genders may still exist and warrant further investigation.

3.1.2 Age Distribution of Respondents

The results revealed that 47% of the respondents were 16 years old, another 47% were 17 years old, and 6% were 18 years old. The majority of respondents therefore belonged to the 16–17-year-old age group. The age distribution aligns with the typical age range of Senior High School students. The smaller proportion of 18-year-old respondents may indicate lower retention or enrollment among older students, similar to trends identified by Cabrera et al. (2020). Since students within this age group are at a formative stage of cognitive and social development, their engagement with AI technologies and assessment practices may be influenced by developmental factors related to learning and decision-making (Schunk & DiBenedetto, 2020).

3.1.3 Distribution of Respondents by SHS Strand

Most respondents belonged to the STEM strand, comprising 55% of the sample, followed by TVL students at 30% and GAS students at 15%. This indicates that STEM students represented the largest group of participants. The dominance of STEM students reflects common enrollment trends in Senior High School where science and technology-related strands are often preferred because of their perceived alignment with future academic and career opportunities (Tiu & Cheng, 2021). The considerable representation of TVL students also reflects increasing interest in vocational and practical skills training (Bautista et al., 2020). Meanwhile, the smaller proportion of GAS students may indicate stronger student preference for specialized and career-oriented academic tracks (Bautista & Francisco, 2019). These strand preferences may influence students' exposure to and perceptions of AI tools in education.

3.1.4 Frequently Used AI Tools

The findings showed that Cici was the most frequently used AI tool among respondents, with 24 students reporting its use. Grammarly was used by three respondents, while MetaAi, Google, Perplexity, Gemini, Agnes, and other tools were reported by only one or two respondents. The strong preference for Cici suggests that students may perceive it as more accessible, practical, or useful for academic tasks compared to other AI applications. This finding supports previous studies indicating that students often prefer AI tools that are easy to use and directly applicable to writing and content generation tasks (Jaiswal et al., 2020). The limited use of other AI tools may indicate lower awareness, limited training, or reduced perceived usefulness in academic contexts (Yuan & Zhang, 2021). The findings imply that students tend to favor AI tools that support writing assistance and idea generation.

3.2 Level of Students' AI Literacy and Usage

3.2.1 Awareness of AI Tools and Their Role in Assessment

The results showed an overall mean score of 3.50, interpreted as high awareness. Students demonstrated strong awareness of AI tools that support academic tasks and recognized the benefits of AI in learning and assessment. However, moderate awareness was observed regarding the technical functioning of AI tools such as ChatGPT, Grammarly, or Copilot, as well as institutional policies governing AI use in coursework. The findings indicate that students are generally aware of AI applications in education but possess limited technical understanding of how these technologies operate. This aligns with studies showing that learners often understand the usefulness of AI tools without fully comprehending their underlying mechanisms (Guszcza et al., 2020). The moderate awareness of institutional AI policies also suggests insufficient dissemination of ethical guidelines and academic regulations related to AI use, consistent with findings by Binns & Hargittai (2020). These results highlight the importance of strengthening AI literacy education and institutional communication regarding responsible AI use.

3.2.2 Attitudes and Perceptions toward AI in Learning

The respondents demonstrated a moderate attitude toward AI in learning, with an overall mean score of 3.24. Students generally agreed that AI tools could enhance learning and academic performance and believed that AI use should be encouraged when properly cited and disclosed. However, moderate levels of comfort and concern regarding fairness and academic honesty were also observed. The findings suggest that students recognize both the benefits and risks associated with AI integration in education. The positive perception toward ethical AI use aligns with previous studies emphasizing students' openness to AI when supported by clear ethical guidelines (Binns & Hargittai, 2020). However, students' moderate comfort levels may reflect uncertainty regarding proper AI usage and concerns related to academic integrity (Tschang et al., 2021). Concerns about fairness and honesty also support findings by Smith et al. (2021), which noted apprehensions about AI contributing to cheating and unfair academic advantages.

3.2.3 Actual AI Usage Practices of Students

The results revealed a high level of AI usage practice, with an overall mean score of 3.47. Students frequently used AI tools to generate ideas for essays and projects and to improve grammar, spelling, and clarity in written outputs. Moderate practice was observed in using AI for problem-solving and discussing ethical AI use with instructors or peers. The findings indicate that students actively utilize AI tools primarily for writing support and content improvement, reflecting current trends in AI-assisted academic work (Guszcza et al., 2020). The lower engagement in discussions about ethical AI use suggests a lack of sufficient guidance and dialogue regarding responsible AI practices, consistent with the observations of Jaiswal et al. (2020). These results emphasize the need for educational institutions to integrate AI ethics education into classroom discussions and learning activities to promote responsible AI engagement among students (Binns & Hargittai, 2020).

3.3 Students' Perspectives on Responsible and AI-Integrated Assessment

3.3.1 Ethical Use and Responsible AI Practices

The findings showed an overall mean score of 3.38, interpreted as moderate practice. Students demonstrated awareness of ethical boundaries in AI use and agreed that responsible AI use should be included in academic integrity education. However, lower scores were observed regarding avoiding the use of AI for generating entire assignments or essays. The results suggest that while students recognize the importance of ethical AI practices, actual responsible behavior remains inconsistent. Similar findings by Jaiswal et al. (2020) indicate growing student awareness regarding AI ethics in education. However, the lower adherence to avoiding excessive AI dependence reflects the gap between ethical understanding and actual practice, especially under academic pressure (Binns & Hargittai, 2020). These findings highlight the need for stronger institutional policies and more comprehensive AI ethics instruction within academic settings.

3.3.2 Perceptions on AI-Integrated Assessment Design

Students demonstrated moderate perceptions regarding AI-integrated assessment design, with an overall mean score of 3.38. The respondents strongly agreed that teachers should clearly explain acceptable forms of AI use and that assessment tasks promoting critical thinking could reduce dependence on AI tools. Students also viewed AI as a potential learning partner rather than a threat to academic integrity. However, moderate agreement was observed regarding the need to redesign assessments for AI integration. The findings indicate that students generally support responsible AI integration in assessments when accompanied by transparency, guidance, and critical-thinking-based tasks. The importance placed on clear institutional guidelines aligns with previous research emphasizing effective communication in promoting ethical AI engagement (Jaiswal et al., 2020). Students' perception of AI as a learning partner also supports studies showing that learners are open to AI-assisted education when ethical safeguards are present (Tschang et al., 2021). Nevertheless, the moderate support for assessment redesign suggests uncertainty regarding how AI can be ethically integrated into assessment systems, highlighting the need for institutional training and assessment reforms (Binns & Hargittai, 2020).

3.4 Relationship Between AI Literacy and Perspectives on Responsible AI-Integrated Assessment

The results revealed a strong positive correlation between students' AI literacy and usage and their perspectives on responsible and AI-integrated assessment, with a Pearson's r -value of 0.789 and a statistically significant p -value of less than 0.001. Students demonstrated a high level of AI literacy and usage, while their perspectives toward responsible AI-integrated assessment were moderately positive. The strong positive relationship indicates that students with higher levels of AI literacy and usage are more likely to develop favorable perceptions regarding responsible AI integration in assessments. This finding supports earlier studies suggesting that increased digital literacy and AI awareness contribute to more positive attitudes toward AI integration in education (Guszcza et al., 2020). However, the moderate perception scores also imply that students still have concerns regarding ethical issues and possible misuse of AI tools. These findings reinforce the need for educational institutions to strengthen AI literacy programs while simultaneously addressing ethical considerations and academic integrity through structured policies and instructional support (Binns & Hargittai, 2020).

4. Conclusion and Recommendations

The study found that Senior High School students generally demonstrate high awareness and usage of AI tools, particularly for academic tasks such as writing improvement and content generation, while showing moderate understanding of ethical implications and institutional policies regarding AI use. Students also exhibited moderate attitudes toward AI integration in learning and assessment, especially concerning issues of academic integrity and responsible usage. The findings further revealed a strong positive relationship between students' AI literacy and their perspectives on responsible and AI-integrated assessment, indicating that greater AI literacy is associated with more favorable perceptions of AI use in education. However, the study also identified a gap between students' awareness and their actual ethical practices, emphasizing the need for clearer institutional guidelines and strengthened AI ethics education to support responsible AI integration within the Philippine Senior High School system.

Educational institutions should strengthen AI literacy and ethics education among Senior High School students by providing clearer institutional policies, guidance, and discussions regarding responsible AI use in academic tasks and assessments. Teachers and school administrators may also enhance assessment practices by promoting critical thinking, transparency, and ethical AI engagement to ensure that students use AI tools responsibly while maintaining academic integrity. Furthermore, schools may consider integrating structured AI-related learning activities and orientations to improve students' understanding of appropriate AI applications in educational contexts.

The study was limited to Senior High School students from one public secondary school in the province of Leyte, which may restrict the generalizability of the findings to other schools or educational settings. The study also relied on self-reported responses gathered through a survey questionnaire, which may be influenced by respondents' honesty, perceptions, and personal biases. In addition, the research focused only on students' AI literacy, usage, and perspectives on responsible and AI-integrated assessment without examining other possible factors that may influence students' attitudes and practices regarding AI use in education.

Compliance with ethical standards

The authors declare no conflict of interest, and this study received no external funding. The researchers express gratitude to the Senior High School student-respondents and the public secondary school in Leyte for their participation and cooperation in the conduct of the study. Participation was voluntary, informed consent was obtained prior to data collection, and non-invasive survey questionnaires were used to gather data. All responses were treated with strict confidentiality, and no identifying information of the participants was disclosed.

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