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PATTERNS OF GENERATIVE AI USE AND THEIR INFLUENCE TO CRITICAL THINKING SKILLS AND ACADEMIC PERFORMANCE OF GEN Z LEARNERS

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Abstract

This study examined patterns of Generative AI use and their influence on the critical thinking skills and academic achievement of Gen Z learners using a descriptive-correlational design. Data were collected from 62 Grade 11 and 12 HUMSS students of Lyceum of Camalaniugan through a structured questionnaire and analyzed using descriptive and inferential statistics at a 0.05 significance level. Results showed that most respondents, aged 16–18 and predominantly male, frequently used smartphones and relied on moderate internet connectivity, with ChatGPT as the most commonly used AI tool for academic purposes at a moderate level of dependency. Overall, Generative AI use and its influence on critical thinking were both moderate. No significant differences in AI use were found by sex or grade level, except for age, while bandwidth significantly affected critical thinking. Academic achievement had negligible relationships with AI use, though dependency showed a significant negative relationship. Findings suggest that while Generative AI is useful, it requires guided and responsible use.

Keywords: Generative Artificial Intelligence, Critical Thinking Skills, Academic Achievement, Gen Z learners, ChatGPT

Introduction

The 21st century marks a period of rapid transformation in teaching and learning, driven by technological advancement and the rise of Generative Artificial Intelligence (GenAI). As a powerful academic tool, GenAI offers diverse opportunities for knowledge generation and support. The emergence of large language models such as Gemini, Perplexity, Copilot, and most notably ChatGPT, launched in November 2022, has gained significant attention in education. Kasneci et al. (2023) highlighted its potential to support critical thinking and problem-solving, particularly in research and academic writing. Alongside this, Generation Z learners, characterized by their technological adaptability Sutapa (2023), demonstrate flexibility in navigating digital environments.

Globally, countries continue to explore GenAI integration. Chen and Gong (2025) reported China's initiatives to promote AI learning, while Nikolinakos (2023) emphasized the European Union's ethical AI policies. However, disparities in access persist, particularly between urban and rural learners. Studies by Manguilimotan et al. (2025) and Espartinez (2025) reveal that students with stable internet and devices show better engagement,

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while limited access hinders learning. Connectivity and bandwidth significantly affect students' ability to maximize AI tools.

In the Philippines, GenAI supports skill development and digital competencies (GMA News Online, 2023). Filipino learners use AI for writing, research, and self-directed learning (Cruz and Santos, 2024). These tools enhance feedback, motivation, and learning experiences (Hartwell and Aull, 2023; Dewi et al., 2024). However, concerns on overdependence remain (Hernandez et al., 2024).

These contrasting perspectives emphasize the need to examine how learners use GenAI and how such usage influences their academic outcomes. In this context, this study focuses on Grade 11 and 12 students of Lyceum of Camalaniugan, aiming to determine the patterns of GenAI use and their influence to critical thinking skills and academic achievement of Gen Z learners.

Statement of the Problem

The study assessed the Patterns of Generative AI Use and their Influence to Critical Thinking Skills and Academic Achievement of Gen Z Learners of Lyceum of Camalaniugan for Academic Year 2025-2026. Specifically, this study sought answers to the following questions:

1. What is the profile of the Generation Z learners in terms of the following variables?
   1.1 Personal Profile
      a. Age
      b. Sex
      c. Grade/Year level
   1.2 Technological Profile
      a. Personally owned technological resources
      b. Internet provider
      c. Bandwidth
2. What is the extent of Generative AI use among the respondents in terms of?
      a. Frequency of use
      b. Purpose of use
      c. Dependency level
      d. Types of AI tools used
3. What is the level of influence of Gen AI on Gen Z's critical thinking skills along the following aspects:
      a. Learning Mechanisms
      b. Motivation toward study habits
      c. Attitude towards Learning
      d. AI-driven tools and techniques; and
      e. Ethical and practical considerations
4. What is the academic achievement of Generation Z learners?
5. Is there a significant difference on the extent of use and influence of Gen AI on Gen Z's when grouped according to their profile variables?
6. Is there a significant relationship between the following:
      a. Academic achievement with that of Gen Z's influence of Gen AI on critical thinking skills.
      b. Academic achievement with that of extent of utilization.
      c. Extent of utilization with that of Gen Z's influence of Gen AI on critical thinking.
7. What output can be proposed based on the findings of the study?

METHODOLOGY

The following are the methods and procedures as well as the materials utilized in processing the different data in this study.

Research Design

This study used a quantitative descriptive-correlational research design. The descriptive method identified the learners' profile, extent of Generative AI use (frequency, purpose, dependency, and tools), and its influence on critical thinking skills (learning mechanisms, motivation toward study habits, attitude towards learning, AI- driven tools and techniques, and ethical and practical considerations).

The correlational method determined the significant relationships among Generative AI use, critical thinking skills, and academic achievement, as well as differences when grouped according to profile variables.

Respondents and Sampling Technique

The respondents were 62 Grade 11 and 12 HUMSS students of Lyceum of Camalaniugan (SY 2025–2026), selected through total enumeration. They were chosen due to their active engagement with Generative AI tools.

Research Instruments

A four-part questionnaire was used: (1) profile, (2) extent of Generative AI use (adapted from Bach, 2025), (3) academic achievement in English, and (4) critical thinking skills (adapted from Mallinllin, 2024; Amilhasad, 2025) using a 4-point Likert scale.

Data Gathering Procedure

After approval and consent, data were collected through Google Forms and face-to-face surveys, then organized and analyzed.

Data Analysis

Descriptive statistics (frequency, percentage, mean) and inferential tests (Pearson r, t-test, ANOVA) were used at 0.05 significance level.

RESULTS AND DISCUSSION

Below are the discussions and results of all pertinent data relative to this study.

Profile of the Gen Z Learners

Table 1a. Distribution of the respondents in terms of their personal profile

Variables	Frequency (n=62)	Percentage
Age		
16 to 17 years old	48	77.4

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18 years old	14	22.6
	Mean= 16.81 y/o	***SD= 0.79***
Sex		
Female	22	35.5
Male	40	64.5
Grade level		
Grade 11	33	53.2
Grade 12	29	46.8

Personal

Table 1a presents the distribution of the Gen Z learners' personal profile. In terms of age, 48 out of 62 respondents (77.4%) are 16–17 years old, while 14 (22.6%) are 18 years old, indicating that most students are in the adolescent stage and fall within the typical senior high school age range in the Philippines (16–18 years old).

Regarding sex, 40 respondents (64.5%) are male and 22 (35.5%) are female, showing that the majority of participants are male at Lyceum of Camalaniugan.

As to grade level, 33 respondents (53.2%) are from Grade 11, while 29 (46.8%) are from Grade 12, indicating that most participants are Grade 11 learners.

Table 1b. Distribution of the respondents in terms of their technological profile

Variables	Frequency (n=62)	Percentage
Personally owned technological resources	*(multiple response)*	
Smartphone	61	98.4
Laptop	18	29.0
Tablet	9	14.5
Smartwatch/Wearable Device	7	11.3
Gaming Console	3	4.8
Desktop Computer	2	3.2
E-reader	1	1.6
Portable Media Player	1	1.6
External Storage Devices	1	1.6
Internet provider		
Globe Telecom	24	38.7
PLDT	13	21.0
Smart Communications	12	19.4
Converge ICT	11	17.7
DITO TeleCommunity	2	3.2
Bandwidth		
High speed/stable	26	41.9
Moderate speed/occasionally stable	28	45.2
Low speed/often unstable	6	9.7
No regular Internet/connection	2	3.2

Technological

Table 1b presents the technological profile of the respondents. Smartphones are the most owned device (61), followed by laptops (18), tablets (9), smartwatches (7), gaming consoles (3), and E-readers, portable media players, and external storage devices (3). This supports Manguilimotan et al. (2025) and Mohammadi (2020), highlighting smartphones' convenience and widespread use for learning and accessing GenAI.

For internet providers, most respondents use Globe Telecom (24, 38.7%), followed by PLDT (13, 21.0%), Smart (12, 19.4%), Converge ICT (11, 17.7%), and DITO Tele Community (2, 3.2%), confirming Manguilimotan et al. (2025) on the role of quality internet in learning.

Regarding bandwidth, 26 (41.9%) experience high-speed/stable, 28 (45.2%) moderate/occasionally stable, 6 (9.7%) low/often unstable, and 2 (3.2%) no regular connection, indicating that internet reliability affects learning outcomes (Espartinez, 2025; Sibug et al., 2024).

Extent of Generative AI Use among the Gen Z Learners

Table 2a. Extent of generative AI use among the respondents in terms of frequency and type of AI used

Variables	Frequency (n=62)	Percentage
Frequency of AI use		
Rarely (less than once a month)	11	17.7
Once a month	12	19.4
Several times a month	16	25.8
Weekly	13	21.0
Several times a week	7	11.3
Once a day	3	4.8
Type of AI used	*(multiple response)*	
Chat GPT	58	93.5
Google Gemini	15	24.2
Claude AI	3	4.8
Meta AI	5	8.1

Frequency and Type of AI Used

Table 2a shows the frequency and type of AI used by Gen Z learners. Most use GenAI several times a month (16, 25.8%), while daily use is lowest (3, 4.8%), indicating generally low frequency, consistent with Hernandez et al. (2024), who noted that learners use GenAI as needed with teacher guidance.

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Regarding types of AI, ChatGPT is the most used (58, 93.5%), followed by Google Gemini (15, 24.2%), Meta AI (5, 8.1%), and Claude AI (3, 4.8%), showing that students primarily rely on ChatGPT as a learning resource.

Table 2b. Extent of generative AI use among the respondents in terms of purpose of use

Statements	Weighted Mean	Descriptive Value
1. Gen AI supports my learning and education (e.g., assignments, projects, brainstorming).	2.84	Moderate extent
2. Gen AI improves my grammar, writing, and text editing.	2.85	Moderate extent
3. Gen AI translates words or texts that I do not understand and serves as language support.	2.98	Moderate extent
4. Gen AI provides information relevant to my learning tasks.	3.02	Moderate extent
5. Gen AI addresses my personal worries, such as health-related or therapeutic concerns.	2.61	Moderate extent
6. Gen AI answers simple or factual questions (e.g., "What time is it?" "What is the capital of Italy?").	2.58	Moderate extent
7. Gen AI serves as a form of entertainment or casual interaction, such as chatting.	2.60	Moderate extent
8. Gen AI offers creative recommendations for everyday life (e.g., food, books, movies, lessons, poetry, music).	2.77	Moderate extent
Dimension Mean	**2.78**	**Moderate extent**

Purpose of use

Table 2b presents the purpose of GenAI use, with an overall mean of 2.78, described as "moderate extent." The highest mean (3.02) shows that learners use GenAI to access information relevant to their tasks, indicating its purposeful role in learning, supported by Kasneci et al. (2023), who noted that GenAI meets individual learner needs. The lowest mean (2.58) reflects its use for simple or factual questions, suggesting that learners rely on prior knowledge to complete tasks. This aligns with Hartwell and Aull (2023), emphasizing self-evaluation in balancing diverse learning experiences.

Table 2c. Extent of generative AI use among the respondents in terms of dependency level

Statements	Weighted Mean	Descriptive Value
1. I rely on Gen AI to access a wide range of information.	2.89	Moderate extent
2. I feel unable to complete certain tasks without using Gen AI.	2.60	Moderate extent
3. I prefer using Gen AI because it allows me to find information more efficiently.	2.82	Moderate extent
4. I use Gen AI to complete tasks more quickly and improve my productivity.	2.76	Moderate extent
5. I use Gen AI because it meets my expected level of service and information quality.	2.85	Moderate extent
Dimension Mean	**2.78**	**Moderate extent**

Dependency level

Table 2c presents the dependency level of Gen Z learners on GenAI, with an overall mean of 2.78, described as "moderate extent." The highest mean (2.89) shows that learners rely on GenAI to access a wide range of information, indicating its role as a supporting tool for expanding knowledge. The lowest mean (2.60) reflects that learners do not feel entirely unable to complete tasks without GenAI, suggesting that they integrate their own ideas rather than relying solely on AI. This aligns with Zaphir (2024), who noted that GenAI can enhance skills and educational outcomes, while learners are encouraged to maintain independent thinking. Overall, the results indicate that Gen Z learners maintain a moderate level of dependency on GenAI while regulating their learning autonomy.

Level of Influence of Generative AI on the Critical Thinking Skills of Gen Z Learners

Table 3a. Weighted means and level of influence of generative AI on the critical thinking skills of Gen Z learners in terms of learning mechanisms

Statements	Weighted Mean	Descriptive Value
1. Gen AI focuses on the learning tasks I need to work on.	2.85	Moderate
2. Gen AI makes my school tasks, assignments, and research easier to complete.	3.11	Moderate
3. Gen AI helps me track my learning progress.	2.87	Moderate
4. Gen AI gives feedback that guides me in my learning.	2.92	Moderate
5. Gen AI adjusts learning	2.95	Moderate

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activities based on my needs.		
Dimension Mean	**2.94**	**Moderate**

Learning Mechanisms

The influence of Generative AI on Gen Z learners' critical thinking skills in terms of learning mechanisms, with an overall mean of 2.94, described as "moderate" is seen below. The highest mean (3.11) indicates that GenAI makes school tasks, assignments, and research easier, supporting Amilhasad (2024), who noted that GenAI facilitates smooth transitions between activities and helps learners apply new knowledge to real-world situations.

The lowest mean (2.85) reflects that GenAI focuses on the learning tasks learners need to work on, suggesting that it moderately supports learners in managing directives and developing their own ideas. Other aspects, such as tracking learning progress (2.87), providing feedback (2.92), and adjusting activities based on needs (2.95), also fall in the "moderate" range.

Overall, GenAI moderately enhances learning mechanisms, promoting innovation and productive interaction with the learning process, while supporting progressive educational outcomes.

Table 3b. Weighted means and level of influence of generative AI on the critical thinking skills of Gen Z learners in terms of motivation toward study habits

Statements	Weighted Mean	Descriptive Value
1. Gen AI increases my motivation to learn.	2.94	Moderate
2. Gen AI helps me develop better study habits.	3.06	Moderate
3. Gen AI motivates me to improve my grades.	2.92	Moderate
4. Gen AI encourages me to express my ideas and think critically.	2.94	Moderate
5. Gen AI boosts my enthusiasm in completing learning tasks.	2.92	Moderate
Dimension Mean	**2.96**	**Moderate**

Motivation toward Study Habits

Table 3b presents the influence of Generative AI on Gen Z learners' critical thinking skills in terms of motivation toward study habits, with an overall mean of 2.96, described as "moderate." The highest mean (3.06) shows that GenAI helps learners develop better study habits, supporting Chiu & Moorhouse et al. (2023), who emphasized motivation as essential in learning, particularly when using AI tools.

Statements on GenAI motivating learners to improve grades (2.92) and boosting enthusiasm in completing tasks (2.92) also fall under "moderate," suggesting that GenAI supports engagement and task completion, enhancing accessibility and knowledge, as noted by Al Mulhim (2024).

Overall, GenAI moderately fosters enjoyment, confidence, and motivation in study habits, though its influence on curiosity, interest, and attention remains limited.

Table 3c. Weighted means and level of influence of generative AI on the critical thinking skills of Gen Z learners in terms of attitude towards Learning

Statements	Weighted Mean	Descriptive Value
1. Gen AI improves my attitude and performance in class	2.71	Moderate
2. Gen AI increases my engagement in learning activities.	2.84	Moderate
3. Gen AI helps me understand my answers in assessments and tasks.	3.05	Moderate
4. Gen AI encourages consistent learning behavior and a desire to do better.	2.89	Moderate
5. Gen AI notices when I struggle and provides support.	2.76	Moderate
6. Gen AI helps me adapt and improve my attitude in different learning activities.	2.80	Moderate
Dimension Mean	**2.84**	**Moderate**

Attitude towards Learning

Table 3c presents the influence of Generative AI on Gen Z learners' attitude toward learning, with weighted means ranging from 2.71 to 3.05 and an overall mean of 2.84, all described as "moderate." The highest mean (3.05) shows that GenAI helps learners understand their answers in assessments and tasks, indicating its moderate usefulness in supporting educational progress.

The lowest mean (2.71) reflects that GenAI improves attitude and performance in class, suggesting that learners rely on their own preparation and understanding rather than solely on AI.

Overall, GenAI exerts a moderate influence on learners' attitudes, supporting Adali and Bilgili (2025), who noted that while GenAI can enrich the learning journey, it cannot fully shape a learner's attitude or performance.

Table 3d. Weighted means and level of influence of generative AI on the critical thinking skills of Gen Z learners in terms of AI-driven tools and techniques

Statements	Weighted Mean	Descriptive Value
1. AI helps me understand complex words and concepts in my lessons.	3.15	Moderate
2. AI gives feedback on my assignments that helps me identify my weaknesses.	3.05	Moderate

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3.	AI improves my writing skills.	2.73	Moderate
4.	AI enhances my grammatical accuracy.	3.06	Moderate
5.	AI encourages me to think critically by prompting questions.	2.85	Moderate
6.	AI helps me pay more attention to details in texts.	2.95	Moderate
Dimension Mean		**2.97**	**Moderate**

AI-driven Tools and Techniques

Table 3d presents the influence of Generative AI on Gen Z learners' critical thinking skills in terms of AI-driven tools and techniques, with an overall mean of 2.97, described as "moderate." The highest means indicate that GenAI helps learners understand complex concepts (3.15), enhances grammatical accuracy (3.06), and provides feedback on assignments (3.05), supporting skill development at a standard level. The lowest mean (2.73) reflects limited improvement in writing skills, showing that critical thinking gains are moderate and not consistently deep.

Overall, all items fall under "moderate," suggesting that while GenAI aids learners, its impact is limited without supervision, aligning with Qawqzeh (2024), who emphasized responsible use to balance benefits and support cognitive and critical thinking development.

Table 3e. Weighted means and level of influence of generative AI on the critical thinking skills of Gen Z learners in terms of ethical and practical considerations

Statements	Weighted Mean	Descriptive Value
1. I am concerned that Gen AI may make me rely too much on it and reduce independent thinking.	3.16	Moderate
2. I believe Gen AI should support, not replace, human feedback in learning.	3.21	Moderate
3. I worry that using Gen AI in assignments may affect my privacy and data security.	3.16	Moderate
4. I notice that Gen AI tools can show biases that affect my learning experience.	3.02	Moderate
5. I feel confident in distinguishing Gen AI-assisted insights from my own thinking.	3.03	Moderate
6. I find Gen AI feedback objective and reliable in improving my work.	3.00	Moderate
7. I believe relying too much on Gen AI may reduce my ability to evaluate information independently.	3.19	Moderate
Dimension Mean	**3.11**	**Moderate**

Ethical and Practical Considerations

Table 3e presents the ethical and practical considerations of Gen Z learners regarding GenAI, with an overall mean of 3.11, described as "moderate." The highest mean (3.21) shows that learners believe GenAI should support, not replace, human feedback, while the lowest mean (3.00) reflects moderate confidence in GenAI's objectivity and reliability.

These results highlight that Gen Z learners exercise critical thinking, applying knowledge and skills responsibly in real-life situations. This aligns with Tredinnick & Laybats (2023), who emphasized that appropriate use of resources like GenAI enhances learning outcomes, providing accessible, cost-effective, and diversified educational benefits while maintaining quality performance.

Table 3f. Overall mean and level of influence of generative AI on the critical thinking skills of Gen Z learners

Dimension	Mean	Descriptive Value
1. Learning mechanisms	2.94	Moderate
2. Motivation toward study habits	2.96	Moderate
3. Attitude towards learning	2.84	Moderate
4. AI-driven tools and techniques	2.97	Moderate
5. Ethical and practical considerations	3.11	Moderate
Overall Mean	**2.96**	**Moderate**

Summary of Level of Influence of Generative AI

Table 3f emphasizes the overall influence of Generative AI on the critical thinking skills of Gen Z learners, with all five dimensions rated as "moderate" and an overall mean of 2.96. This indicates that GenAI's impact on critical thinking is present but not strong.

Among the dimensions, ethical and practical considerations scored highest (3.11), supporting Tredinnick & Laybats (2023) that learners use GenAI responsibly, mindful of regulations, laws, and professional practice. AI-driven tools and techniques (2.97) and motivation toward study habits (2.96) show moderate influence, reflecting how Gen Z expresses ideas and develops skills through GenAI, in line with Zhang et al. (2023). Learning mechanisms scored 2.94, while attitude toward learning was lowest at 2.84, suggesting that personal emotions and feelings have only a slight influence.

Overall, GenAI serves as a beneficial but limited tool for enhancing critical thinking skils. While ethical use informs learners, its ability to significantly change behavior or strengthen reasoning remains moderate, consistent with Illarionova (2021).

Academic Achievement of Gen Z Learners

Table 4. Distribution of the Gen Z learners in terms of their academic achievement

Variables	Frequency (n=62)	Percentage
Did not meet expectations (74 or below)	0	-

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Poor (75 to 79)	2	3.2
Fair (80 to 84)	15	24.2
Satisfactory (85 to 89)	23	37.1
Very satisfactory (90 to 94)	20	32.3
Excellent (95 or above)	2	3.2
Mean= 87.00 (Satisfactory)	***SD= 4.27***	

Table 4 presents the academic achievement of Gen Z learners, with an overall mean of 87.00 (SD = 4.27), rated as "satisfactory." Grades are based on the first semester English report card. Among 62 students, 2 (3.2%) were rated "excellent," 20 (32.3%) "very satisfactory," 15 (24.2%) "fair," 2 (3.2%) "poor," and none "did not meet expectations."

As Herrera (2020) notes, the learners' mean age of 17.20 reflects a developmental stage where they explore major life changes and develop skills, including multiple intelligences. The Department of Education (DepEd Order No. 8, s. 2018) ensures that Grade 11 and 12 students have opportunities for remediation if they struggle to meet curriculum competencies. This approach provides coherent learning experiences that support both personal academic growth and professional development.

Difference in the Extent of Utilization of Generative AI among the Gen Z Learners by Profile

Table 5a. Comparison statistics in the extent of utilization of Generative AI among the Gen Z learners when grouped by profile

Grouping Variables	F- or t-value	Probability	Inference
Extent of utilization of generative AI			
Age	3.659	0.032	Significant
Sex	0.155	0.695	Not significant
Grade level	2.108	0.152	Not significant
Technological resources owned	1.093	0.375	Not significant
Internet provider	0.209	0.933	Not significant
Bandwidth	0.426	0.735	Not significant

**tested at 0.05 level of significance*

Table 5a presents the comparison of Gen Z learners' extent of Gen AI utilization across personal and technological profiles at a 0.05 significance level.

The results show a significant difference for age (F/t = 3.659, p = 0.032), indicating that learners' age directly influences their use of Gen AI in learning. In contrast, sex, and grade level show no significant difference, suggesting that learners engage with AI regardless of these factors. This aligns with Zhang et al. (2023), highlighting AI's role in personalized learning, and reflects awareness of both benefits and risks of AI use at this stage (Tredinnick & Laybats, 2023).

No significant differences were found for technological profile variables, including resources owned, internet provider, and bandwidth, indicating that learners use Gen AI regardless of these factors. This contrasts with Manguilimotan et al. (2025) and Espartinez, A.S. (2025), but aligns with Lopez and Abadiano (2023) regarding Filipino learners' access to digital resources.

Overall, the study shows that age significantly affects the extent of Gen AI use, with learners relying on AI in English class to support personal learning goals and adapt to modern digital learning tools.

Difference in the Level of Influence of Generative AI on the Critical Thinking Skills of the Gen Z Learners by Profile

Table 5b. Comparison statistics in the level of influence of Generative AI on the critical thinking skills of the Gen Z learners when grouped by profile

Grouping Variables	F- or t-value	Probability	Inference
Level of influence of generative AI on the critical thinking skills			
Age	1.267	0.289	Not significant
Sex	0.004	0.948	Not significant
Grade level	1.384	0.244	Not significant
Technological resources owned	1.973	0.097	Not significant
Internet provider	1.679	0.167	Not significant
Bandwidth	2.819	0.047	Significant

**tested at 0.05 level of significance*

Table 5b presents the comparison of the influence of Generative AI on Gen Z learners' critical thinking skills across profile variables. The results show no significant difference for age (F/t = 1.267, p = 0.289), sex (F/t = 0.004, p = 0.948), grade level (F/t = 1.384, p = 0.244), technological resources owned (F/t = 1.973, p = 0.097), or internet provider (F/t = 1.679, p = 0.167), as all probabilities exceed 0.05.

However, bandwidth shows a significant difference (F/t = 2.819, p = 0.047), indicating that internet speed and stability directly influence learners' ability to access and use GenAI for independent study and critical thinking development.

Overall, among profile variables, only bandwidth significantly affects the influence of Generative AI on critical thinking skills, supporting Espartinez, A.S. (2025), who highlighted the importance of internet quality in enhancing learners' critical thinking through AI tools.

Relationship between the Extent of Utilization of Generative AI and its

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Level of Influence on the Critical Thinking Skills of the Gen Z Learners

Table 6a. Correlation statistics between the extent of utilization of Generative AI and its level of influence on the critical thinking skills of the Gen Z learners

Variables	r-value	Probability	Inference
Extent of utilization of generative AI	0.426	0.001	Significant
Level of influence to critical thinking skills			

**tested at 0.05 level of significance*

Table 6a shows the relationship between Generative AI utilization and its influence on Gen Z learners' critical thinking skills. A moderate positive correlation (r = 0.426, p = 0.001) indicates that increased use of GenAI enhances critical thinking skills. This suggests that frequency, purpose, and responsible use of AI tools positively contribute to learning, supporting Chan and Hu, and Fabro et al. (2024).

While GenAI aids motivation, study habits, attitudes, and learning strategies, it may shift learners from independent thinkers to co-processors, as noted by Bai, Lu, and Su (2023). It also motivates learners toward academic goals (Mallinlin, 2024; Al Muhim, 2024; Logobardi et al., 2021; Cataga et al., 2025), but ethical use is essential, as critical thinking must remain independent (Valerio, 2024; Cataga et al., 2025).

Overall, Generative AI is a valuable support tool, with its impact dependent on learners' use, ethical awareness, and alignment with personal learning goals.

Relationship between the Academic Achievement of the Gen Z Learners and the

Extent of Utilization of Generative AI

Table 6b. Correlation statistics between academic achievement and the extent of utilization of Generative AI among the Gen Z learners

Variables	r-value	Probability	Inference
Academic Achievement			
Extent of utilization of generative AI			
Frequency of use	0.190	0.139	Not significant
Type of AI used	-0.143	0.268	Not significant
Purpose of use	-0.196	0.126	Not significant
Dependency level	-0.316	0.012	Significant

**tested at 0.05 level of significance*

Table 6b presents the relationship between Gen Z learners' academic achievement in English (First Semester, SY 2025–2026) and aspects of Generative AI use: frequency, types, purpose, and dependency level.

The results show negligible positive or negative relationships for frequency of use (r = 0.190, p = 0.139), types of AI used (r = -0.143, p = 0.268), and purpose of use (r = -0.196, p = 0.126), all non-significant. This indicates that regular use, the kind of AI, or its purpose does not directly affect academic performance, supporting Abusahyon (2024), Georgetown University Library (2025), and Jashmed et al. (2024), who noted that AI primarily aids task-specific learning rather than performance outcomes.

In contrast, dependency level shows a significant but weak negative relationship (r = -0.316, p = 0.012), suggesting that higher reliance on AI may slightly reduce academic achievement, aligning with Wecks et al. (2024) and Al-Emran et al. (2025) on the risks of overdependence limiting active thinking.

Overall, learners use Generative AI mainly as a support tool and maintain control over their learning, though excessive dependency may modestly impact academic outcomes.

Relationship between the Academic Achievement of the Gen Z Learners and the

Level of Influence of Generative AI on their Critical Thinking Skills

Table 6c. Correlation statistics between academic achievement and the level of influence of Generative AI on the critical thinking skills of the Gen Z learners

Variables	r-value	Probability	Inference
Academic Achievement			
Level of influence of generative AI on the critical thinking skills			
Learning mechanisms	-0.309	0.015	Significant
Motivation toward study habits	-0.105	0.418	Not significant
Attitude towards learning	-0.280	0.027	Significant
AI-driven tools and techniques	-0.136	0.292	Not significant
Ethical and practical considerations	-0.121	0.350	Not significant

**tested at 0.05 level of significance*

Table 6c shows the relationship between Gen Z learners' academic achievement and the influence of Generative AI on their critical thinking skills across five aspects: learning mechanisms, motivation toward study habits, attitude toward learning, AI-driven tools and techniques, and ethical/practical considerations.

The results reveal a weak negative relationship with learning mechanisms (r = -0.309, p = 0.015) and attitude toward learning (r = -0.280, p = 0.027), indicating a significant impact. This suggests

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that while GenAI supports task completion, learning adjustments, and essay writing, overreliance may slightly reduce critical thinking engagement, negatively affecting academic performance. These findings align with Bai, Liu, and Su (2023) and Qawqzeh (2024), who emphasized that AI's benefits depend on learners' active engagement and self-regulation.

In contrast, motivation toward study habits, AI-driven tools and techniques, and ethical/practical considerations show negligible negative relationships (r = -0.105, -0.136, -0.121) with p-values above 0.05, indicating no significant effect on academic achievement. This supports Adali and Bilgili (2025) and Cataga et al. (2025), who noted that AI enhances engagement but has limited impact on measurable performance without effective study habits and ethical use.

Overall, Generative AI moderately influences certain aspects of learning and attitude, while other factors remain largely insignificant, highlighting the need for balanced, responsible, and goal-oriented AI use in education.

Conclusion

The study revealed that Generation Z learners at Lyceum of Camalaniugan have varied personal and technological profiles, with most being 16–17 years old, male, and in Grades 11 and 12, primarily using smartphones with Globe Telecom and moderate to high bandwidth. The extent of Generative AI use was found to be of moderate extent, with learners using AI tools several times a month mainly for learning-related purposes and showing moderate dependency, while its influence on critical thinking skills was moderate across learning mechanisms, motivation toward, study habits, attitude towards learning, AI-driven tools and techniques, and ethical and practical considerations. The findings suggest that while Generative AI serves as a beneficial tool, it does not strongly enhance critical thinking skills. The learners' academic achievement was satisfactory, and analysis showed that age significantly affected the extent of Gen AI use, while bandwidth significantly influenced its effect on critical thinking skills; other profile variables showed no significant differences. Correlation analysis revealed moderate positive relationships between extent of Gen AI use and critical thinking skills influence, and between both extent of use and influence with academic achievement, indicating that higher utilization and responsible application of Gen AI tools are linked to improved learning outcomes. Based on these findings, the SAIL Program (School-wide AI Integrity and Literacy Program) is proposed to guide learners in ethical, purposeful, and effective AI use, promoting enhanced critical thinking skills and supporting academic achievement.

Recommendations

This study examined patterns of Generative AI use and their influence on the critical thinking skills and academic achievement of Gen Z learners using a descriptive-correlational design. Data were collected from 62 Grade 11 and Grade 12 HUMSS students of Lyceum of Camalaniugan through a structured questionnaire and analyzed using descriptive and inferential statistics at a 0.05 level of significance. Results revealed that most respondents, aged 16–18 and predominantly male, frequently used smartphones with moderate internet connectivity, and commonly utilized ChatGPT for academic purposes with a moderate level of dependency. Overall, both the extent of Generative AI use and its influence on critical thinking were found to be moderate. No significant differences in AI utilization were observed when grouped by sex and grade level, except for age, while bandwidth significantly influenced critical thinking skills. Academic achievement showed negligible relationships with AI use, although dependency level had a significant negative relationship. These findings suggest that while Generative AI is beneficial, its use must be guided and responsible.

Declaration of no conflict of interest

The author declares that she has no financial, personal, or professional relationships that could influence the research or its findings. The author personally bears the costs associated with the publication of this study, and no external funding or sponsorship was received that could create a conflict of interest.

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