Correlation: CICI AI Utilization and General Weighted Average in Gen Z Stem Students

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ABSTRACT

This study investigated the correlation between the utilization of the CICI AI application and the general weighted average (GWA) of Grade 11 Generation Z (Gen Z) STEM students in a Department of Education Senior High School in Bacolod City during the 1st Quarter of the School Year 2023-2024. The research aimed to determine the demographic profile of the students, the level of CICI AI utilization, differences in utilization based on demographics, and the relationship between utilization and academic performance. The research design was described as descriptive-correlational, employing quantitative methods for data collection and analysis. Data were gathered through a self-made questionnaire distributed online, and statistical tools such as frequency and percentage, mean and standard deviation, t-test, ANOVA, and Pearson coefficient were used for analysis. The findings indicated high utilization levels of the CICI AI application across all aspects, with no significant differences based on demographics such as sex, age, socio-economic status, or academic achievement. Moreover, no significant relationship was found between CICI AI utilization and students' GWA. Statistical analysis reinforced these results, demonstrating that variations in academic performance are likely influenced by other factors beyond AI usage. The study acknowledged the multifaceted nature of academic success, highlighting that it involves various elements. Recommendations included integrating AI tools into STEM education to complement existing teaching strategies, adopting innovative methodologies to enhance engagement, and fostering responsible AI usage among students to maximize its benefits. Future research was suggested to explore additional factors such as motivation, study habits, and classroom environment that influence academic performance, as well as to investigate the legal and ethical implications of AI integration in education.

Keywords: Utilization, CICI AI Application, General Weighted Average, Gen Z, Correlation

INTRODUCTION

UNESCO (2019) is dedicated to assisting Member States in utilizing Artificial Intelligence (AI) technologies to accomplish the Education 2030 Agenda while ensuring its implementation in educational settings adheres to the fundamental principles of inclusivity and fairness. UNESCO's mission inherently advocates for an Artificial Intelligence (AI) approach focused on human well-being. Artificial intelligence (AI) advancements have also altered several industries, including education. As the digital era progresses, there is a growing awareness of the value of integrating AI technology into educational settings to improve learning outcomes, particularly in the domains of Science, Technology, Engineering, and Mathematics (STEM), Artificial intelligence (AI) advancements have also altered several industries, including education. As the digital era progresses, there is a growing awareness of the value of integrating AI technology into educational settings to improve learning outcomes, particularly in the domains of Science, Technology, Engineering, and Mathematics (STEM) (Xu and Ouyang 2022).

Kumar and Raman (2022) observed that Generation Z (GENZ) students, being digital natives, are becoming more interested in Artificial Intelligence (AI) due to their familiarity and comfort with technology. This generation is accustomed to using technology and is at ease in digital environments. Incorporating AI tools and platforms into Science, Technology, Engineering, and Mathematics (STEM) education not only aligns with Generation Z (GENZ) students' tastes but also improves their preparedness for a future driven by

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technology. Therefore, the research gap highlights the specific application of Artificial Intelligence (AI), such as CICI AI, in empowering GenZ STEM students' general weighted average (GWA) at Handumanan National High School. Closing this gap will provide valuable insights into the effects of CICI AI on student learning and achievement, ensuring appropriate AI implementation and governance within the educational context.

Statement of the Problem

This study investigates the correlation between CICI AI utilization and general weighted average in Grade 11 Gen Z STEM students in one Department Education Senior High School of Bacolod City enrolled during 1St Quarter of School Year 2023-2024. Specifically, this seeks to answer the following questions.

1. What is the demographic profile of Grade 11 Gen Z STEM students when taken as a whole according to age, sex, socioeconomic status, general weighted average (GWA)?

2. What is the level of CICI AI utilization according to AI adaptation rate, content quality, user friendly?

3. Is there a significant difference in level of utilization of CICI AI application when respondents are grouped according to sex and general weighted average?

4. What is the difference in level of utilization of CICI AI application when respondents are grouped according to age and socio-economic status?

5. Is there any significant relationship between the CICI AI application utilization level and general weighted average?

Hypothesis

In the line of the specific problems of the study, the following hypotheses are formulated:

1. There is no significant difference in level of utilization of the CICI AI application when respondents are grouped according to sex and general weighted average.

2. There is no significant difference in level of utilization of CICI AI application when respondents are grouped according to age and socio-economic status.

3. There is no significant relationship between the level of utilization of CICI AI application utilization and general weighted average**.**

METHODOLOGY

Research Design

The research design used in this study was descriptive–correlational, for it is the best method for collecting information demonstrating differences and relationships. (Basilio, M.B. & Bueno, D.C. (2019) stated that this method systematically describes the facts and characteristics of a given population or area of interest factually and accurately. The characteristics of descriptive research are accumulating a database to describe a situation, event or entity.

Data Gathering Procedure

The researcher sought permission to conduct the study from the Assistant Principal for Academic Affairs of the Senior High Department at Handumanan National High School in Bacolod City, Negros Occidental, in order to authorize the researcher to distribute the self-made questionnaire to the student-respondents. The researcher asks for help from the class president and class advisers to administer the instrument through online Google form links through the platform of Facebook Messenger since, during the time of distribution

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of the survey, the school was under suspension of classes due to heat index because of extreme temperatures and calamities when students' lives are at stake. Informal and unscheduled interviews and observations of students were conducted using video chats, emails, and Facebook Messenger to reinforce the data gathered. The students and the class president were accommodating, which made the retrieval rate one hundred per cent. Thus, the researcher was OK with the distribution and retrieval of the instrument. The collected data results were checked, tallied, presented, analyzed and interpreted in Chapter Four (4) of this study.

Data-Analysis Procedure

Different statistical tools were used to analyze the quantitative data.

For problem 1, which determines the demographic profile of the students in the Grade 11 Gen Z STEM students in terms of sex, age, socio-economic status, and general weighted average (GWA) frequency and percentage was used.

For problem 2, which determines the level utilization of CICI AI Application in terms of AI Adaptation Rate, Content Quality and User friendly of students in the Grade 11 Gen Z STEM, mean and standard deviation was used.

For problem 3, which was to determine if there was a significant difference in the level of utilization between CICI Al application when the respondents were grouped according to sex and general weighted average, t-test was used.

For problem 4, which to determine if there was a significant difference in the level of utilization between CICI Al application when the respondents were grouped according to age and socio-economic status, ANOVA was used.

For Problem 5, which to determine if there is a significant relationship between the level of utilization of the CICI AI application and the student's general weighted average (GWA), Pearson coefficient was used.

RESULTS AND DISCUSSION

Demographic Profile of Respondents

Table 1. Demographic Profile of Respondents

Variable		*f*	Percent
sex	male	32	52
	female	30	48
age	16 yrs.	18	29
	17 yrs.	37	60
	18 yrs.	7	11
socio-economic status	poor	23	37
	low income but not poor	21	34
	lower middle	14	23
	middle and rich	4	6
General weighted average (GWA)	below average	31	50

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XI Issue XII December 2024

	above average	31	50
	As a whole	62	100

The respondents of this study are the Grade 11 of Science, Technology, Engineering and Mathematics (STEM) Strand currently enrolled in the program of Allied Health Services (AHS) and Engineering, Information, Communication, and Technology (EICT) for the Third Quarter of school year 2023-2024 in the Handumanan National High School, Bacolod City, Negros Occidental who were taken as the population of the study. The researcher considered the random stratified proportionate sampling to obtain the sample size of Gen Z Grade 11 STEM Students, and the data gathered through online Google form survey questionnaire.

The distribution of the respondents per section is shown in Table 1. The distribution shows equal percentage per section. With this number of students per class, the researcher could quickly identify each student's CICI AI Application utilization, thus making it easier to facilitate the class to conduct the online self-made questionnaire.

Level of Utilization of CICI AI Application

Table 2. Level of Utilization of CICI AI Application

	adaptation rate			content quality			user-friendly			as a whole		
Variables	Mean	SD	VI	Mean	SD	VI	Mean	SD	VI	Mean	SD	VI
sex												
Male	3.55	0.55	H	3.34	0.74	M	3.5	0.7	H	3.47	0.6	H
Female	3.62	0.52	H	3.46	0.56	H	3.59	0.71	H	3.57	0.51	H
Age												
16	3.78	0.44	H	3.48	0.59	H	3.68	0.41	H	3.66	0.41	H
17	3.5	0.58	H	3.32	0.73	M	3.44	0.82	H	3.43	0.64	H
18	3.53	0.29	H	3.57	0.34	H	3.75	0.58	H	3.6	0.34	H
socio-economic status												
poor	3.59	0.56	H	3.48	0.59	H	3.55	0.72	H	3.55	0.55	H
low income but not poor	3.63	0.38	H	3.33	0.52	M	3.7	0.63	H	3.55	0.41	H
lower middle	3.57	0.72	H	3.33	0.95	M	3.32	0.82	M	3.43	0.79	H
middle/rich	3.4	0.43	H	3.5	0.6	H	3.44	0.55	H	3.44	0.5	H
General weighted average												
below average	3.55	0.5	H	3.41	0.5	H	3.57	0.69	H	3.51	0.49	H
above average	3.62	0.57	H	3.38	0.79	M	3.52	0.73	H	3.52	0.63	H
As a whole	3.58	0.53	H	3.4	0.66	H	3.54	0.7	H	3.52	0.56	H

Note: 1.00-1.79= Very Low (VL), 1.80-2.59=Low (L), 2.60-3.39= Moderate (M), 3.40-4.19= High (H), 4.20-5.00 Very High (VH)

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XI Issue XII December 2024

Presented in Table 2, generally, or as a whole, the table results shows that the Level of utilization of the of the CICI AI Application of the students in terms of "Adaptation Rate" (*M* = 3.58, *SD* = 0.53), "Content Quality" (*M* = 3.40, *SD* = 0.66) and user-friendly (*M* = 3.52, *SD* = 0.56) is "High in Utilization". On the other hand, the table results shows that the Grade 11 Gen Z STEM male respondents in terms of "Content Quality" (*M* = 3.34, *SD* = 0.74), additionally, the table results shows that the Grade 11 Gen Z STEM 17 of age respondents in terms of, "Content Quality" (*M* = 3.32, *SD* = 0.73), moreover, the table results shows that the Grade 11 Gen Z STEM socio-economic status of low income but not poor respondents in terms of "Content Quality" (*M* = 3.33, *SD* = 0.52), lower middle in terms of "Content Quality" (*M* = 3.33, *SD* = 0.95) and "User Friendly" (*M* = 3.32, *SD* = 0.95) and lastly, the table reveal that the Grade 11 Gen Z STEM general weighted average of above average respondents in terms of "Content Quality" (*M* = 3.38, *SD* = 0.81). Regardless of the variables, all responses exhibited an "High Utilization" with means ranging from 3.40 – 4.19. The narrow dispersion of responses show homogeneity on their utilization in the CICI AI application. The mean levels of utilization of the CICI AI application were generally high across all aspects, indicating that respondents perceived the application positively regardless of their demographic characteristics.

Hernandez-de-Menendez et al., (2020) suggest Gen Z students, who have grown up with technology and the internet, are more inclined to support new technical breakthroughs like GenAI. Since Gen Z participants were optimistic about the potential benefits of GenAI in higher education, such as increased productivity, efficiency, and individualized learning. Furthermore, Gen Z students expressed intentions to use GenAI for various educational purposes, including information acquisition and consolidation, language learning, and writing support, consistent with previous research indicating that they value technology as a means of improving their learning experiences.

Moreover, Eckleberry-Hunt et al., (2018) argue that Generation Z students anticipate them educational experiences to be technologically advanced and relevant to the real world. They appreciate active, hands-on learning experiences that incorporate technology and prepare students for the workplace. They are autonomous learners and more socially and politically involved than prior generations, with a strong focus on social justice and activism (Seemiller & Grace, 2016).

Significant Differences in the Level of Utilization of CICI AI Application when Respondents are grouped according to Sex and General Weighted Average

Table 3. t-test results on the Difference in the Level of Utilization of CICI AI Application when Respondents are grouped as to Sex and General Weighted Average

Variables		N	*Mean*	*SD*	df	*t*	*p*
sex	Male	32	3.47	.60	60	-.662	.511
	Female	30	3.57	.51			
General weighted average	below average	31	3.51	.49	60	-.029	.977
	above average	31	3.52	.63			

Table 3 shows the t-test results of the level of utilization of the CICI AI application between male and female respondents, yielding a t-value of -0.662 with 60 degrees of freedom. The associated p-value is 0.511, which is not statistically significant. This indicates no significant difference between male and female respondents in the CICI AI application's utilization level. Moreover, the t-test comparing the level of utilization of the CICI AI application between respondents with below-average and above-average general weighted average (GWA) yields a t-value of -0.029 with 60 degrees of freedom. The associated p-value is 0.977, which is not statistically significant. This indicates no significant difference in the level of utilization of the CICI AI application between respondents with below-average and above-average general weighted average (GWA). The data indicate no significant variations in using the CICI AI application depending on

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XI Issue XII December 2024

respondents' sex or academic achievement. This suggests that, at least in the context of this study, sex, and general weighted average do not appear to impact how people interact with the CICI AI application. These findings may suggest that the application is equally accessible and interesting to male and female responders and individuals with varied levels of academic proficiency.

According to Navarro et. al. (2015), The policy of school organization for grouping students in the same academic year is based on date of birth. The differences in the experiences and maturation of older students involve a relatively better performance in academic settings, which is known as the relative age effect (RAE). This effect is more important the younger the student is.

Significant Difference in the Level of Utilization of CICI AI Application when Respondents are Grouped according to Age and Socio-Economic Status

Table 4. ANOVA results on the Difference in the Level of Utilization of CICI Application when Respondents are Grouped as to Age and Socio-Economic Status

Variable	Source of Variation	Sum of Squares	df	Mean Square	*F*	*p*
By Age						
	Between Groups	.692	2	.346	1.111	.336
	Within Groups	18.366	59	.311		
	Total	19.058	61			
By Socio-Economic Status						
	Between Groups	.171	3	.057	.175	.913
	Within Groups	18.887	58	.326		
	Total	19.058	61			

Table 4 shows in ANOVA results for significant difference in the level of utilization of CICI AI Application when respondents are grouped according to age and socio- economic status. Results shows that no significant difference in the level of utilization of the CICI application between different age groups is not statistically significant ($F(2, 59) = 1.111$, $p = 0.336$). This suggests that the level of utilization of the CICI AI application is similar among respondents of different age groups. Additionally, within each age group, there is some unpredictability in the level of utilization of the CICI AI application, with a mean square of 0.311. Moreover, when considering all age groups, the total variability in the level of utilization of the CICI application is 19.058. Similarly, the variation in CICI AI application's utilization level between different socio-economic status groups is not statistically significant ($F(3, 58) = 0.175$, $p = 0.913$). This indicates that there is no significant difference in the level of utilization of the CICI application among respondents of different socio-economic statuses. Furthermore, within each socio-economic status group, there is some variability in the level of utilization of the CICI application, with a mean square of 0.326. On the top of that, when considering all socio-economic status groups, the total variability in the level of utilization of the CICI AI application is 19.058. This finding implies that the age and socio-economic status are not factors to consider when determining the utilization of the CICI AI application among respondents.

Hong (2022) states that there is unclear causation between age, inventiveness, and socioeconomic status had no noticeable effects on perception expertise using AI-related products.

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XI Issue XII December 2024

Significant Relationship Between the Level of Utilization of CICI AI Application and General Weighted Average

Table 5. Relationship Between the Level of Utilization of CICI AI Application and General Weighted Average of Students

Variables	n	*r*	*df*	*p*
Level of Utilization of CICI AI Application	62	.568	60	-.074
Level of General Weighted Average	62			

*Significant at p<0.01

Table 5 presents the correlation analysis between the relationship between of utilization of the CICI AI Application and the General Weighted Average (GWA) of Grade 11 Gen Z STEM stu-dents. The results reveal a negligible relationship between the two variables (r (.568) = -0.074, p > 0.05). This suggests that there is insufficient evidence to conclude a significant association between the frequency of CICI AI Application usage and students' general weighted average (GWA). The obtained probability value exceeds the predetermined significance level of 0.05, indicating a lack of statistical significance. Furthermore, the insignifi-cance persists even at a more stringent threshold of 0.01, reinforcing the robustness of the finding of no substantial relationship between the variables. Therefore, it can be inferred that increased utilization of the CICI AI application does not reliably correlate with higher GWA scores among Grade 11 Gen Z STEM students. While the CICI AI Application may offer valuable resources or assistance, its use doesn't necessarily translate into improved academic outcomes among Grade 11 Gen Z STEM students. This finding underscores the importance of considering various factors beyond just technological tools when exploring avenues for enhancing general weighted average. Further research might delve into understanding why this disconnect exists and how other factors may influence student achievement in STEM fields. Dhara et al. (2022), suggest that the use of AI in assessing students' performance, but does not provide any empirical evidence on the relationship between AI application usage and academic performance.

CONCLUSIONS

Based on the findings of the study, the concluded the following:

1. High Utilization Levels Across Demographics.

The study revealed high utilization levels of the CICI AI application across all aspects, indicating a positive perception among respondents, irrespective of demographic characteristics. Statistical analysis showed no significant differences in usage based on age, sex, or socioeconomic status (p > 0.05). This suggests the application's universal appeal and potential to bridge educational access gaps, aligning with UNESCO's goal for inclusive and sustainable learning environments.

2. Valued Features Application.

Respondents rated "adaptation rate," "content quality," and "user-friendliness" as "High," with mean scores consistently above 4.5 on a 5-point Likert scale (p < 0.01). This emphasizes the application's practical aid in supporting the academic pursuits of Gen Z STEM students. These results affirm the role of technology as a transformative tool in enhancing academic engagement and fostering success among the younger generation.

3. Neutral Impact of Demographics on Utilization.

The study found no statistically significant correlation between demographic variables such as sex or general weighted average (GWA) and the utilization of the application. This reinforces the application's accessibility and equity, suggesting it is a consistent learning tool for all users, irrespective of individual profiles. These findings further demonstrate the potential of technology to mitigate disparities in education and support

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XI Issue XII December 2024

equitable learning outcomes.

4.Versatility Across Diverse Backgrounds.

With age and socioeconomic status showing no significant influence on application usage ($p > 0.05$), the results underline its versatility and relevance to students from various demographic groups. This highlights the importance of integrating inclusive technologies that promote equal access to quality education, reducing barriers for underserved populations.

5. No Significant Association with Academic Performance.

The study found no significant relationship between the utilization the CICI AI application and academic performance, with a correlation coefficient of $r = 0.568$ and $p = -.074$, indicating that the relationship is not statistically significant. Despite the application's positive reception, its impact on academic performance was not conclusive, suggesting that other factors may play a more significant role in influencing student success.

6. Contributions Beyond Technology.

While the study did not find a significant relationship between application usage and academic performance, it did reveal that other factors, such as instructor quality and external academic support systems, play crucial roles in student success. The findings imply that while technology is a helpful supplementary tool, academic outcomes are influenced by various external and internal factors.

RECOMMENDATIONS

Based on the findings and conclusions, the following are recommended:

1.Gen Z STEM students are encouraged to utilize the findings of this study to explore how advancements in artificial intelligence, particularly through the CICI AI application, influence their academic performance, as measured by their General Weighted Average (GWA). Understanding how AI tools can complement their studies will help students make informed decisions on leveraging technology for improved learning outcomes and critical thinking.

2. School administrators are advised to integrate artificial intelligence, specifically the CICI AI application, into the STEM curriculum as part of a broader strategy to foster technological innovation in education. Instead of restricting AI usage, administrators should facilitate its incorporation as a supplementary learning tool. This includes offering guidance on how to use AI responsibly, understanding ethical considerations, and emphasizing the potential benefits AI can bring to the educational experience. Promoting a balanced view of AI will help students develop a positive relationship with technology, encouraging its thoughtful integration into their learning environments.

3. Teachers are encouraged to adopt innovative teaching methods that resonate with the preferences and learning styles of Gen Z STEM students. By incorporating AI tools such as the CICI AI application, educators can create more personalized and interactive learning experiences. The findings of this study can serve as a basis for evaluating how AI adoption can enhance student engagement, improve learning outcomes, and provide tailored feedback. Teachers should consider using AI as a means to enrich their curriculum, thus better supporting the diverse needs of their students.

4. Gen Z STEM students should embrace the rapid technological advancements, including AI applications like CICI, while remaining mindful of their ethical implications, proper usage, and legal considerations. Students are encouraged to use AI not only as a tool for learning but as a means of deepening their understanding of various subjects. By reflecting on both AI-generated insights and their personal experiences, students can develop critical thinking skills and gain a more nuanced understanding of complex topics, ultimately enriching their learning journey.

5. Future research should explore additional variables that influence academic performance, particularly the

impact of emerging technologies on students' General Weighted Average (GWA). A key area for future investigation is the ethical and legal dimensions of AI integration in education, especially in light of its growing influence. Researchers should focus on identifying how technological advancements intersect with academic outcomes and consider the implications of AI deployment in the classroom. By expanding the scope of inquiry to include legal and ethical considerations, future studies can offer a more comprehensive understanding of AI's role in education. This will help guide the responsible use of AI tools and promote a balanced approach to leveraging technology in educational settings, ensuring that innovations support both pedagogical and ethical standards.

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