ISSN (online): 2094-9030

Studies in Technology and Education

Volume 5, Issue 4, 2026 | https://www.azalpub.com/index.php/ste

RESEARCH ARTICLE

OPEN ACCESS

October-December 2026

Article Info

Received: 08-02-2026

Accepted: 09-20-2026

Published: 10-31-2026

Effects of Generative Artificial Intelligence (GAI) Utilization In Social Science Education: Guidelines For Developing a Reference Primer

ARJAY S. CABUYADAO
Academic Instructor
Northeastern College
Villasis, Santiago City

MARIO P. TAMANA, EdD
Assistant Professor-II
Isabela State University- Main Campus
San Fabian, Echague, Isabela

Abstract

This descriptive-correlational research explored the effects of the utilization of Generative Artificial Intelligence (GAI) in social science education as a basis for the development of guidelines for a reference primer for social science educators. It aimed to present the respondent's profile in terms of age, sex, year/level taught, and used AI tools; determine the contribution of GAI to lesson planning, teaching, and learning assessment; and identify the significant differences in the use of GAI grouped according to profiles. The study utilized a descriptive-correlational design, which answered by 30 social science educators. The data were analyzed using frequency, percentage, mean, t-test, and F-test. The results showed that most of the respondents were aged 21-30 years with 6-10 years of teaching experience. The tools used were common and facilitated content creation, presentation, and assessment tasks. The results showed that GAI significantly improved the efficiency of lesson preparation, student engagement during teaching, and timely and diverse assessment approaches. Significant differences in the use of GAI were found across the selected demographic and professional variables. The study concludes that GAI has a positive impact on teaching effectiveness when provided with systematic support like the recommendation to develop a GAI reference primer like Panangipablaak SocsAI, as well as ensuring continuous teacher training in the effective integration of AI in teaching.

Keywords: Generative Artificial Intelligence (GAI), social science, lesson planning, delivery of instruction, and learning assessment

*Corresponding author: ARJAY S. CABUYADAO

Introduction

The achievement of Quality Education under the 4th Sustainable Development Goal has been affected as shown in the reports of the Department of Education and Commission on Higher Education regarding the issues of creativity, data privacy, and the use of Generative AI in education (Basic Education Information System, 2024). The data show that there are still institutions that are worried about the effect of AI on the critical thinking of the students. Moreover, the Second Congressional Commission on Education (EDCOM II) found that teachers are still dealing with heavy tasks, including auxiliary tasks, which encouraged the use of AI to assist teachers (EDCOM II, 2024). However, Google search and Quizlet are examples of AI that are commonly used to assist teachers and students. Studies show that AI assists teachers to personalize the learning experience of the students, resulting in increased student engagement and achievement (Sasikala & Ravichandran, 2024). However, there are ethical issues that arise as shown in the study of Thomas Hagendorff (2020). This study will look into the teachers' profiles and the GAI contribution to teaching to develop an intervention tool to guide its use.

Statement of the Problem

Specifically, the study sought to answer the following questions:

1. What is the profile of the respondents in terms of:
    - 1.1 Age;
    - 1.2 Sex
    - 1.3 Year/Level Taught; and
    - 1.6 Type of AI Tools/Applications Used
2. How did the use of GAI contribute to the following:
    - 2.1 Lesson Planning
    - 2.2 Delivery of Instruction
    - 2.3 Learning Assessment
3. Is there a significant difference in the use of GAI when respondents are grouped according to their profiles?
4. What intervention tool may be proposed to support the use of GAI in teaching social science?

RELATED LITERATURE

Several studies have supported the findings of the current study in terms of the integration of Artificial Intelligence and Generative Artificial Intelligence in teaching. For instance, Wayne Holmes and colleagues (2021) have noted that young educators are more likely to integrate AI tools in teaching because they are more familiar with technology and innovation. Similarly, Ifenthaler and Mah (2020) have noted that young educators are more likely to integrate digital technology in teaching because they are more familiar with technology and innovation.

Regarding the integration of AI in teaching, Mollick (2023) has noted that tools like ChatGPT help educators in generating content, refining content, and obtaining immediate feedback in generating content. Similarly, Selwyn (2022) has noted that AI tools help educators in reducing workload because they help in organizing resources and content.

Regarding classroom engagement, tools like AI have been noted to improve student engagement (Cukurova, 2023). Similarly, Dillenbourg (2021) has noted that AI tools help in developing collaborative learning and critical thinking in classroom discussions.

Regarding assessment, tools like AI have been noted to help educators in monitoring students (Gašević, 2020). Luckin (2018) has noted that training and attending seminars improve educators' confidence in integrating AI tools in teaching.

Related Studies

Some studies have supported the arguments about the use of Generative Artificial Intelligence (GAI) in instruction. For example, Zhai (2023) found that generative artificial intelligence tools such as ChatGPT help in lesson planning by creating learning materials, improving lesson content through instant feedback, and providing varied perspectives that help in promoting critical thinking among students. Similarly, Holmes et al. (2021) argued that artificial intelligence technologies help in improving instruction by creating interactive learning activities and personalized learning activities that address the different needs of students. Park and Kwon (2023), and Liu et al. (2021) have supported this by explaining that young instructors are likely to be receptive to using artificial intelligence tools in instruction and assessment.

On the other hand, Li et al. (2021) found that "younger teachers reported higher levels of satisfaction when using AI for personalized instruction and student engagement, while experienced teachers tended to perceive the importance of AI in reducing their workload." In terms of the application of AI in the classroom, Tsai and Chai (2020) found that "AI can assist teachers in monitoring learner participation, adapting their strategies, and providing feedback in real-time." In addition, Holmes et al. (2022) emphasized that "AI-assisted assessment tools can analyze student performance data, pinpoint knowledge gaps, and offer timely feedback to improve formative assessment strategies." All of these studies indicate the increasing importance of AI in improving lesson planning, instruction, and assessment in the classroom.

METHODOLOGY

The descriptive-correlational method was utilized to determine the usage experiences of GAI for Social Science education by the Thirty (30) Social Science instructors teaching subjects under CHED Memorandum Order No. 20, s. 2013. The respondents were selected through purposive sampling as recommended by the panel of experts.

The Instrument of the Study

The researcher utilized a self-made survey questionnaire with a 4-point Likert scale, which was validated by three experts, resulting in a Cronbach's Alpha Value of 0.832 indicating a good internal consistency. The questionnaire underwent pre- test, and later distributed for actualization.

Statistical Tools

The profiles were tabulated using frequency count and percentage, while the contribution of AI during lesson planning, delivery of instruction, and learning assessment was dealt with mean. The difference in the use of GAI when respondents were grouped according to their profiles and it was calculated through Independent Sample T-test and F-test.

FINDINGS

Table 1: Profile of the Respondents

e		
21-30 years old	13	43.30
31-40 years old	4	13.30
41-50 years old	8	26.70
51-60 years old	5	16.70
Sex		
Male	17	56.70
Female	13	43.30
Year/ Level Taught		
First Year	12	40.00
Second Year	10	33.30
Third Year	8	26.70
AI in Lesson Planning		
ChatGPT	12	40.00
Gemini	10	33.30
Perplexity	8	26.70
AI in the Delivery of Instruction		
CANVA	18	60.00
Slides AI	12	40.00
AI in Learning Assessment		
Kahoot!	13	43.30
Quiziz	11	36.70
Quizilize	6	20.00

From the Table 1, It can be found that most users of Generative Artificial Intelligence in Social Science education among the 30 users are aged 21-30 years or 43.30%. On the talk of sex, male dominates in usage by more than 56.70%. However, First Year instructors who use AI tools for their students at 40% favorability are aware of AI.

ChatGPT is being used by 40% of social scientists in lesson planning, with support from Canva in the delivery of

lessons, 60%. In evaluating, Kahoot! is more applicable than 43.30% perceptive support.

This can be concluded that the trend of AI-usage is relevant to social science education.

Table 2: Respondents' Level of Perception on the Use of **Generative Artificial Intelligence**

STATEMENTS	Mean	Qualitative Description
Lesson Planning		
1. AI aligns my curriculum with education trends and standards effectively.	3.43	Strongly Agree
2. AI enables me to rapidly compile varied resources such as articles, videos, and interactive resources.	3.73	Strongly Agree
3. AI enables me to rapidly produce lesson plans from learning objectives with minimal effort.	3.73	Strongly Agree
4. AI designs tests that precisely measure student knowledge and development.	3.40	Strongly Agree
5. AI simulates interactive, engaging historical and social learning experiences.	3.53	Strongly Agree
6. AI blends different perspectives, promoting critical thinking in my social science lessons.	3.73	Strongly Agree
7. AI ensures accessibility of my content to different needs, enhancing learning for all my students.	3.60	Strongly Agree
8. AI allows instant feedback on lesson content, which enables me to refine it before class.	3.80	Strongly Agree
9. AI is time-saving when preparing lessons, allowing me to organize my teaching strategies.	3.73	Strongly Agree
10. AI brings me closer to other instructors to collaborate and share resources in social science teaching.	3.30	Strongly Agree
Mean	***3.60***	***Strongly Agree***
Delivery of Instruction		
1. I utilize AI to track performance data and align instruction strategies.	2.83	Agree
2. I utilize AI to design interactive lessons that keep students actively engaged in lessons.	3.73	Strongly Agree
3. I utilize AI helps me adjust teaching strategies in real-life based on student performance.	3.00	Agree
4. AI recommends reflective discussion and seeking feedback from various students.	3.27	Strongly Agree
5. AI-supported tools allow me to observe student engagement better and maintain a positive classroom atmosphere.	3.17	Agree
6. AI-enabled personalized learning pathways in designing customized instructional plans aligned with students' abilities.	3.17	Agree
7. I utilize AI platforms to collaborate with students in group projects with diverse perspectives.	3.13	Agree
8. AI test helps me with instant feedback on the knowledge of students to take actions timely.	3.20	Agree
9. AI helps me to include videos and podcasts, rendering lessons more insightful and interactive.	3.57	Strongly Agree
10. AI offers customized activities that suit my students' diverse learning needs and styles.	3.70	Strongly Agree
Mean	***3.28***	***Strongly Agree***
Learning Assessment		
1. AI offers extensive feedback on students' performance and helps identify their strengths and weaknesses.	3.00	Agree
2. I employ AI for analyzing data in my class and identifying trends in learning results efficiently.	3.13	Agree
3. I employ AI to track performance data and align instruction strategies.	3.00	Agree
4. AI helps me observe learner participation and encourage positive classroom conduct.	3.13	Agree
5. AI assists me in customizing assessments that accurately capture student's knowledge.	3.73	Strongly Agree
6. AI makes grading easy, and it saves me time, allowing me to concentrate more on teaching.	3.13	Agree
7. AI provides instantaneous progress feedback, enabling me to offer prompt assistance to students.	3.43	Strongly Agree
8. I leverage AI to analyze class performance and judge my teaching techniques effectively.	3.17	Agree

9. AI monitors engagement, enabling me to discern student engagement with lessons and participation rates.	3.03	Agree
10. AI evaluates students not just based on tests but on collaboration, participation, and project completion.	3.27	Strongly Agree
Mean	*3.20*	*Agree*
Grand Mean	*3.36*	*Strongly Agree*

The Table 2 accumulated the levels of perception concerning the use of Generative Artificial Intelligence in the instruction of social science subjects, including lesson planning, teaching, and evaluation.

In developing the lesson, the respondents, in most cases, "strongly agreed" that AI, in essence, helps in the provision of instant feedback concerning the content of the lesson, thus allowing them to improve it prior to teaching. Furthermore, AI combines various ideas, thus encouraging critical thinking in teaching social science lessons at the same time helping them save some valuable time in developing their teaching strategies, which came to a point of 3.73.

In teaching, the testifiers, in most cases, "strongly agreed" that AI assists in developing interactive lessons that keep the students actively engaged in the lesson, with a mean of 3.73, followed by the perception that the advancement helps in developing learning activities that can be tailored to meet the various learning needs and styles of students, proved by a mean of 3.70. AI assisted them in the incorporation of videos and podcasts, thus making the lessons more insightful.

After the preparation and actualization, assessing students through AI-assisted tools were also brought. For them, AI customized assessments that accurately capture student's knowledge consisting to 3.73 mean. The intelligence provided instantaneous progress feedback, enabling to offer prompt assistance to learners, 3.43 mean exalted it. This also evaluates students not just based on tests but on collaboration, participation, and project completion (3.27 mean).

Overall, this can be concluded that the phases of learning specifically during planning, instruction, and assessment, Artificial Intelligence is effectively helpful to the social science teachers.

One study that verifies the results of the current research is the study conducted by Zhai, X. (2023), which focused on the uses of generative AI tools such as ChatGPT in teaching and learning. The study revealed that generative AI is of great benefit to teachers in planning their lessons, as it helps in the creation of learning materials, improves the content through immediate feedback, and provides various perspectives that encourage critical thinking. The study also indicated that generative AI improves teaching and learning by creating interactive and personalized learning activities that meet the needs of learners. In assessment, the study highlighted the ability of AI to offer immediate feedback, personalize assessment activities, and facilitate alternative assessments that go beyond testing.

Table 3.1. Difference in the Use of GAI when Respondents are Grouped According to Age

	Group Means				
STATEMENTS	21-30	41-50	51-60	f-value	p-value
Lesson Planning 1. AI aligns my curriculum with education trends and standards effectively.	3.38^{cd}	4.00^{bcd}	3.00^{a}	12.08*	0.00
2. AI enables me to rapidly compile varied resources such as articles, videos, and interactive resources.	3.69^{bc}	4.00^{ab}	4.00^{b}	9.69*	0.00
3. AI enables me to rapidly produce lesson plans from learning objectives with minimal effort.	3.69^{bc}	4.00^{ab}	4.00^{c}	9.69*	0.00
4. AI designs tests that precisely measure student knowledge and development.	3.31^{c}	4.00^{abd}	3.00^{c}	13.86*	0.00
5. AI simulates interactive, engaging historical and social learning experiences.	3.31^{cd}	4.00^{ab}	4.00^{ab}	14.38*	0.00
6. AI blends different perspectives, promoting critical thinking in my social science lessons.	4.00^{bc}	3.50^{abd}	4.00^{cd}	16.75*	0.00
7. AI ensures accessibility of my content to different needs, enhancing learning for all my students.	3.69^{b}	3.50	4.00^{c}	4.41*	0.01
8. AI brings me closer to other instructors to collaborate and share resources in social science	3.31^{bd}	3.50^{c}	4.00^{ab}	17.13*	0.00

teaching.					
Delivery of Instruction 1. I utilize AI to track performance data and align instruction strategies.	2.31[cd]	4.00[ab d]	3.00[a bc]	54.44*	0.00
2. I utilize AI to design interactive lessons that keep students actively engaged in lessons.	3.69[bc]	4.00[ab]	4.00[c]	9.69*	0.00
3. I utilize AI helps me adjust teaching strategies in real-life based on student performance.	2.69[c]	3.50[a]	3.00	5.87*	0.00
4. AI recommends reflective discussion and seeking feedback from various students.	3.00[cd]	3.50[abd]	4.00[abc]	18.63*	0.00
5. AI-supported tools allow me to observe student engagement better and maintain a positive classroom atmosphere	3.00[bc d]	3.50[abd]	4.00[abc]	44.05*	0.00
6. AI-enabled personalized learning pathways in designing customized instructional plans aligned with students' abilities.	3.38[b]	3.50[b]	3.00[b]	12.10*	0.00
7. I utilize AI platforms to collaborate with students in group projects with diverse perspectives.	3.31[b]	3.50[b]	3.00[b]	12.17*	0.00
8. AI test helps me with instant feedback on the knowledge of students to take actions timely.	3.00[b]	4.00[abc]	3.00[bc]	67.60*	0.00
9. AI helps me to include videos and podcasts, rendering lessons more insightful and interactive.	3.62[b]	3.50	4.00[b]	3.90*	0.02
Learning Assessment 1. AI offers extensive feedback on students' performance and helps identify their strengths and weaknesses.	3.00[bc]	3.50[abc]	3.00[c d]	26.00*	0.00
2. I employ AI for analyzing data in my class and identifying trends in learning results efficiently.	3.00[c]	3.50[abd]	3.00[c]	6.35*	0.00
3. I employ AI to track performance data and align instruction strategies.	3.00[bc]	3.50[abd]	3.00[bc]	26.00*	0.00
4. AI helps me observe learner participation and encourage positive classroom conduct.	3.31[b]	3.50[b]	3.00[b]	12.17*	0.00
5. AI assists me in customizing assessments that accurately capture students' knowledge.	3.77[b]	4.00[b]	3.80[b]	7.69*	0.00
6. AI makes grading easy, and it saves me time, allowing me to concentrate more on teaching.	3.31[b]	3.50[b]	3.00[b]	12.17*	0.00
7. AI provides instantaneous progress feedback, enabling me to offer prompt assistance to students.	3.31[bcd]	4.00[ab]	4.00[ab]	39.42*	0.00
8. I leverage AI to analyze class performance and judge my teaching techniques effectively.	3.00[c]	4.00[ab d]	3.00[c]	4.09*	0.01
9. AI monitors engagement, enabling me to discern student engagement with lessons and participation rates.	2.62[bc d]	4.00[ab]	4.00[ab]	51.79*	0.00
10. AI evaluates students not just based on tests but on collaboration, participation, and project completion.	3.62[bd]	3.50[b]	3.00[a b]	15.00*	0.00

The Table 3.1 Age-related differences in Artificial Intelligence (AI) utilization during lesson planning showed significant variation (f = 4.41–17.13). Respondents aged 41–50 noted that AI aligns curriculum with current standards, while those aged 41–60 highlighted its ability to compile resources and generate lesson plans efficiently. Teachers aged 51–60 emphasized accessibility and collaboration. Respondents aged 21–30 and 51–60 agreed that AI promotes critical thinking. During instructional delivery (f = 2.18–67.60), AI supported performance tracking, customized activities, and interactive lessons. Across ages 21–60, AI also enhanced assessment through feedback, data analysis, and monitoring engagement (f = 4.9–51.79).

These findings align with Park and Kwon (2023b), Liu et al. (2021), Li et al. (2021), and Holmes et al. (2022).

3.2 Difference in the Use of GAI when Respondents are Grouped According to Sex

STATEMENTS	Female	
	t-value	p-value
Lesson Planning		
1. AI enables me to rapidly compile varied resources such as articles, videos, and interactive resources.	3.28*	0.00
2. AI blends different perspectives, promoting critical thinking in my social science lessons.	3.28*	0.00
3. AI brings me closer to other instructors to **3.2 Difference in the Use of GAI when Respondents are Grouped According to Sex** collaborate and share resources in social science teaching.	10.14*	0.00
Delivery of Instruction		
1. I utilize AI to design interactive lessons that keep students actively engaged in lessons.	3.28*	0.00
2. AI recommends reflective discussion and seeking feedback from various students.	5.97*	0.00
3. AI-supported tools allow me to observe student engagement better and maintain a positive classroom atmosphere.	5.51*	0.00
4. I utilize AI platforms to collaborate with students in group projects with diverse perspectives.	4.93*	0.00
5. AI helps me to include videos and podcasts, rendering lessons more insightful and interactive.	6.28*	0.00
Learning Assessment		
1. I employ AI for analyzing data in my class and identifying trends in learning results efficiently.	2.65*	0.01
2. I employ AI to track performance data and align instruction strategies.	3.23*	0.00
3. AI helps me observe learner participation and encourage positive classroom conduct.	4.93*	0.00
4. AI provides instantaneous progress feedback, enabling me to offer prompt assistance to students.	5.07*	0.00
5. AI monitors engagement, enabling me to discern student engagement with lessons and participation rates.	3.74*	0.00
6. AI evaluates students not just based on tests but on collaboration, participation, and project completion.	2.65*	0.01

From the table 3.2, it was evident that the study had significant findings regarding sex differences in AI utilization across teaching phases. In the lesson planning phase, for instance, the calculated values for t ranged between 3.28 and 10.14, leading to the rejection of the null hypothesis, as female instructors strongly agreed that AI helps in the compilation of resources, critical thinking, and collaboration among teachers. In the instructional delivery phase, where the calculated values for t ranged between 3.28 and 6.28, female instructors were seen to emphasize the importance of AI in designing interactive lessons, promoting critical thinking, encouraging reflective discussions, and monitoring student engagement and the use of multimedia resources. In the assessment phase, where the calculated values for t ranged between 2.65 and 5.07, female instructors were seen to emphasize the importance of AI in analyzing data, tracking performances, developing customized assessments, and offering instant feedback.

The findings were contradictory to those obtained by Viberg et al. (2023), Merelo et al. (2022), and Iddrisu et al. (2023), who found minimal or no gender differences in AI usage and perception.

Table 3.3 **Difference in the Use of GAI when Respondents are Grouped According to Year/Level Taught**

	Group Means			
STATEMENTS	2nd year	3rd year	f-value	t-value
Lesson Planning				

2. AI enables me to rapidly compile varied resources such as articles, videos, and interactive resources.	4.00[a]	4.00[a]	16.20*	0.00
3. AI enables me to rapidly produce lesson plans from learning objectives with minimal effort.	3.80	4.00	3.71*	0.03
5. AI simulates interactive, engaging historical and social learning experiences.	3.60	3.88[a]	3.23*	0.05
7. AI ensures accessibility of my content to different needs, enhancing learning for all my students.	3.40[c]	4.00[ab]	4.50*	0.02
10. AI brings me closer to other instructors to collaborate and share	3.40[a]	3.88[a]	8.09*	0.00
Delivery of Instruction				
1. I utilize AI to track performance data and align instruction strategies.	3.20[a]	3.13[a]	4.48*	0.02
2. I utilize AI to design interactive lessons that keep students actively engaged in lessons.	4.00[a]	4.00[a]	16.20*	0.00
4. AI recommends reflective discussion and seeking feedback from various students.	3.20[c]	3.88[ab]	20.86*	0.00
5. AI-supported tools allow me to observe student engagement better and maintain a positive classroom atmosphere	3.20[a]	3.88[a]	18.44*	0.00
8. AI test helps me with instant feedback on the knowledge of students to take actions timely.	3.60[a]	3.25	7.84*	0.00
Learning Assessment				
1. AI offers extensive feedback on students' performance and helps identify their strengths and weaknesses.	3.40[a]	3.00	7.81*	0.00
3. I employ AI to track performance data and align instruction strategies.	3.20[a]	3.25[a]	5.22*	0.01
7. AI provides instantaneous progress feedback, enabling me to offer prompt assistance to students.	3.80[a]	3.88[a]	11.98*	0.00
9. AI monitors engagement, enabling me to discern student engagement with lessons and participation rates.	3.40[a]	3.75[a]	8.96*	0.00

*Legend: *-significant, [ns]-not significant D-Disagree, A-Agree, SA-Strongly Agree*

The table 3.3 showed differences in the use of AI depending on the year or level of teaching. During lesson planning, differences were observed with f-values ranging from 3.23 to 16.20, which resulted in the partial rejection of the null hypothesis. Third-year social science teachers affirmed that AI enables them to quickly prepare lesson plans from objectives, deliver interesting historical and social learning experiences, make learning accessible to different students, and facilitate cooperation between teachers in sharing teaching resources. Additionally, the study showed that second-year teachers can benefit from the use of AI in gathering different learning resources, including articles, videos, and other materials. This study is linked to the study of Acquah et al. (2024) that showed that social influence was a significant predictor of preservice teachers' intention to use AI in lesson planning.

During instructional delivery, stronger differences were observed (f = 4.48–20.86), rejecting the null hypothesis. Second-year instructors perceived AI as a tool for tracking student performance, recommending teaching strategies, customizing instructional plans according to students' abilities, and providing feedback on teaching practices. This finding aligns with Sanusi et al. (2023), who reported that teachers' attitudes, confidence, and perceived societal benefits influence their intention to use AI in teaching.

In terms of assessment, the third-year instructors focused on the capacity of AI to offer detailed feedback, provide performance data, monitor engagement, and offer timely support to students. Holmes et al. (2022) also pointed out that AI-based systems in assessment offer performance analytics to the teacher, who can then make adjustments to the instruction based on the information.

3.4. Difference in the Use of GAI when Respondents are Grouped According to Type of AI tools/applications Used in Lesson Planning

	Group Means				
STATEMENTS	ChatGPT	Gemini	Perplexity	f-value	p-value
Lesson Planning					
1. AI aligns my curriculum with education trends and standards effectively.	3.50^{c}	3.70^{c}	3.00^{ab}	6.00*	0.00
4. AI designs tests that precisely measure student knowledge and development.	3.83^{bc}	3.20^{a}	3.00^{a}	16.25*	0.00
5. AI simulates interactive, engaging historical and social learning experiences.	3.83	3.20	3.63	5.84*	0.00
Delivery of Instruction					
1. I utilize AI to track performance data and align instruction strategies.	3.33^{bc}	2.40^{a}	2.63^{a}	4.72*	0.01
3. I utilize AI helps me adjust teaching strategies in real-life based on student performance.	3.33^{bc}	2.80^{a}	2.75^{a}	5.22*	0.01
4. AI recommends reflective discussion and seeking feedback from various students.	3.33	3.00^{c}	3.63^{b}	5.22*	0.01
10. AI offers customized activities that suit my students' diverse learning needs and styles.	4.00^{bc}	3.50^{a}	3.50^{a}	5.40*	0.01
Learning Assessment					
2. I employ AI for analyzing data in my class and identifying trends in learning results efficiently.	3.33^{bc}	3.00^{a}	3.00^{a}	4.05*	0.02
6. AI makes grading easy, and it saves me time, allowing me to concentrate more on teaching.	3.50^{bc}	2.90^{a}	2.88^{a}	4.14*	0.02
9. AI monitors engagement, enabling me to discern student engagement with lessons and participation rates.	3.33^{b}	2.60^{ac}	3.50^{b}	3.48*	0.04

*Legend: *-significant, ^{ns}-not significant D-Disagree, A-Agree, SA-Strongly Agree*

The table 3.4 displayed that tools used in lesson planning, instruction, and assessment were compared as shown. ChatGPT was seen to assist in the preparation of tests that could assess the knowledge of the students and provide interesting learning experiences in social science. It was also seen to have a p-value that was not statistically significant. On the other hand, Gemini was seen to have slight variations in results (t = 3.70) but was not significant. It was also seen to have compatibility with educational standards. In instruction, ChatGPT was seen to assist in the monitoring of performances and strategies, while Gemini was seen to promote discussions. In assessment, ChatGPT was seen to make grading easy and reduce time consumption. Perplexity was seen to have more significance in the monitoring of the engagement of the students.

The findings confirm the study by Pettersson et al. (2024) in showing ChatGPT's increasing influence in teaching.

3.5 Difference in the Use of GAI when Respondents are Grouped According to Type of AI tools/applications Used in the Delivery of Instruction

Group Means				
STATEMENTS	Canva	Slides AI	t- value	p-value
Lesson Planning				
1. AI aligns my curriculum with education trends and standards effectively.	3.28	3.67	2.20*	0.03
4. AI designs tests that precisely measure student knowledge and development.	3.22	3.67	2.62*	0.01
5. AI simulates interactive, engaging historical and social learning experiences.	3.39	3.83	2.58*	0.01
6. AI blends different perspectives, promoting critical thinking in my social science lessons.	3.89	3.50	2.52*	0.01
Delivery of Instruction				
1. I utilize AI to track performance data and align instruction strategies.	2.39	3.50	4.69*	0.00
3. I utilize AI helps me adjust teaching strategies in real-life based on student performance.	2.78	3.33	3.28*	0.00
8. AI test helps me with instant feedback on the knowledge of students to take actions timely.	2.94	3.58	3.74*	0.00
Learning Assessment				
2. I employ AI for analyzing data in my class and identifying trends in learning results efficiently.	3.11	3.17	2.89 *	0.00
8. I leverage AI to analyze class performance and judge my teaching techniques effectively.	3.00	3.42	2.24*	0.03
9. AI monitors engagement, enabling me to discern student engagement with lessons and participation rates.	2.78	3.67	3.17*	0.00

*Legend: *-significant, ^{ns}-not significant D-Disagree, A-Agree, SA-Strongly Agree*

The table 3.5 identified the AI tools used in different phases of teaching, and Slides AI was found to be significant in lesson planning by providing differences in aligning with the curriculum and assessing students' prior knowledge, though it was not significant at a statistical level. Moreover, Canva was found to provide multiple perspectives that could help in promoting critical thinking in social science classes. This study is in line with Fabro et al. (2024), who found that tools such as Google Docs, QuillBot, and Grammarly are used in creating content and editing, and are very popular among students and educators in collaborative writing.

In terms of instructional delivery, Slides AI was found to be significant in tracking performance and linking it with real-life situations and providing learning resources in social science classes, though it was not significant at a high level. Moreover, in assessing performance, Slides AI was found to be significant in analyzing performance data and monitoring students' engagement and participation.

From this study, it may be concluded that institutions may encourage using Slides AI in lesson planning, instructional delivery, and assessment. Similarly, Bond et al. (2020) found that multimedia and presentation tools may help in promoting interactive learning among students.

3.6 Difference in the Use of GAI when Respondents are Grouped According to Type of AI Tools/Applications Used in Assessment

	Group Means				
STATEMENTS	Kahoot!	Quizizz	Quizalize	f-value	p-value
Lesson Planning					
3. AI enables me to rapidly produce lesson plans from learning objectives with minimal effort.	3.38^{bc}	4.00^{a}	4.00^{a}	12.24*	0.00
4. AI designs tests that precisely measure student knowledge and development.	3.00^{bc}	3.73^{a}	3.67^{a}	14.15*	0.00
5. AI simulates interactive, engaging historical and social learning experiences.	3.00^{bc}	3.91^{a}	4.00^{a}	97.38*	0.00
6. AI blends different perspectives, promoting critical thinking in my social science lessons.	3.69	4.00^{c}	3.33^{b}	5.80*	0.00

7. AI ensures accessibility of my content to different needs, enhancing learning for all my students.	3.38[b]	4.00[ac]	3.33[b]	8.54*	0.00
Delivery of Instruction					
1. I utilize AI to track performance data and align instruction strategies.	2.00[bc]	3.36[a]	3.67[a]	56.68*	0.00
3. I utilize AI helps me adjust teaching strategies in real-life based on student performance.	2.69[b]	3.36[a]	3.00	6.82*	0.00
4. AI recommends reflective discussion and seeking feedback from various students.	3.00[b]	3.64[a]	3.33	6.08*	0.00
5. AI-supported tools allow me to observe student engagement better and maintain a positive classroom atmosphere	2.69[bc]	3.64[a]	3.33[a]	11.20*	0.00
8. AI test helps me with instant feedback on the knowledge of students to take actions timely.	2.85[bc]	3.36[a]	3.67[a]	7.82*	0.00
10. AI offers customized activities that suit my students' diverse learning needs and styles.	3.38[bc]	4.00[a]	3.83[a]	8.25*	0.00
Learning Assessment					
1. AI offers extensive feedback on students' performance and helps identify their strengths and weaknesses.	2.69[c]	3.00[c]	3.67[ab]	12.82*	0.00
3. I employ AI to track performance data and align instruction strategies.	2.69[b]	3.36[a]	3.00	6.82*	0.00
6. AI makes grading easy, and it saves me time, allowing me to concentrate more on teaching.	2.69[b]	3.73[ac]	3.00[b]	17.76*	0.00
10. AI evaluates students not just based on tests but on collaboration, participation, and project completion.	3.00[b]	3.73[ac]	3.00[b]	4.88*	0.01

*Legend: *-significant, [ns]-not significant D-Disagree, A-Agree, SA-Strongly Agree*

From the table 3.6, it is evident that there were significant differences in the application of AI tools for assessments across the phases of teaching. During the planning phase, it was evident that the AI tool, Quizizz, was frequently applied (f = 5.80-97.38) since it aided in the creation of lesson plans, developing tests for measuring students' knowledge, promoting critical thinking, and developing accessible content for students, although the p-value revealed low significance. During the delivery phase, it aided in adjusting strategies according to student performance, promoting critical thinking, and enhancing engagement through encouraging students to participate in reflective conversations. During the assessment phase, it aided in analyzing students' information and making it easier for the teacher to interpret grades while promoting collaborative learning. The findings were consistent with Braiki et al. (2020) regarding AI application in education and Darajati et al. (2023) regarding AI regulations in educational systems.

Guidelines for Developing the Panangipablaak SocsAI Reference Primer

1. Structured AI Integration in Lesson Planning

- Use AI to generate CHED-aligned learning objectives and structured lesson outlines.
- Develop localized case studies (e.g., Philippine governance, ASEAN issues, civic topics).
- Create higher-order thinking questions related to national and global concerns.
- Adjust reading levels and translations in English or Filipino.

Guideline: All AI-generated materials must be reviewed for accuracy, cultural relevance, and contextual appropriateness before classroom use.

2. AI-Supported Instructional Delivery

- Utilize AI for debate prompts, historical simulations, and civic education presentations.
- Integrate multimedia slides and adaptive explanations for diverse learners.

Level Emphasis:

- First Year: Engagement and foundational civic understanding.

- Second Year: Personalized instruction and feedback systems.
- Third Year: Research support, policy analysis, and accessibility adjustments.

3. AI-Enhanced Assessment Practices

- Implement AI-assisted quizzes, rubric-based grading, and performance monitoring.
- Provide personalized feedback on essays and policy papers.
- Policy: Final grading decisions remain the responsibility of the instructor.

4. Professional Development Strategies

Age-based support:

- Younger teachers: pedagogy and AI ethics.
- Senior teachers: technical efficiency workshops.
- Experience-based training:
- Early-career: engagement strategies.
- Mid-career: instructional innovation.
- Veteran: mentorship roles.

Conduct regular AI seminars and certification programs.

5. Implementation Plan

- Needs Assessment – Month 1
- AI Training Workshops – Month 2
- Mentorship and Collaboration – Month 3
- Monitoring and Classroom Observation – Month 4
- Evaluation and Policy Adjustment – Month 5

6. Monitoring and Evaluation

- Use surveys, classroom observations, AI usage logs, engagement indicators, and assessment data to measure effectiveness.

7. Sustainability Measures

- Integrate AI training into faculty development programs.
- Establish an AI teaching resource repository.
- Provide recognition or incentives for innovative AI use.
- Include AI competency indicators in faculty evaluation systems.

CONCLUSIONS

In conclusion, the above results demonstrate that GAI has a positive and significant impact on social science education, enhancing efficiency, engagement, personalization, and assessment. Variations in results based on demographic and professional factors suggest that experience, training, and needs shape the use of AI by instructors. The findings suggest the need for continuous, practical, and motivational professional development programs to tap the educational potential of GAI.

RECOMMENDATIONS

The following are proposed and beneficial based on the results of the study:

1. Social Science experts may develop a reference primer that will assist social science teachers in using GAI for planning, teaching, and testing. The primer should include basic concepts, examples, and applications of GAI in the classroom, with a reminder to verify the accuracy of the AI output.
2. Instructors may utilize GAI as an aid while using their professional judgment. They should critically analyze the AI output and verify if it matches the curriculum and needs of the students. They should also exchange best practices with other teachers.
3. Higher Education Institutions may provide continuous training and seminars to teachers to improve their capacity to incorporate GAI into teaching. The use of the reference primer in teacher training programs is also recommended.
4. Policy makers may develop guidelines for the ethical use of AI, data privacy, and academic integrity to ensure that GAI is used correctly in education.

5. Future Researchers may explore the long-term effects of GAI on students' learning outcomes and other subjects as well.

ACKNOWLEDGEMENT

The researcher would like to express his deep and sincere gratitude to Dr. Mario P. Tamana, Dr. Nilda O. Babaran, Dr. Jane O. Cariaga for their expertise and support. To my mother Juliet S. Cabuyadao, my father Arsenio D. Cabuyadao for being my greatest source of inspiration and to God Almighty for the wisdom and knowledge.

Guidelines for Developing the Panangipablaak SocsAI Reference Primer

1. Structured AI Integration in Lesson Planning

- Use AI to generate CHED-aligned learning objectives and structured lesson outlines.
- Develop localized case studies (e.g., Philippine governance, ASEAN issues, civic topics).
- Create higher-order thinking questions related to national and global concerns.
- Adjust reading levels and translations in English or Filipino.

Guideline: All AI-generated materials must be reviewed for accuracy, cultural relevance, and contextual appropriateness before classroom use.

2. AI-Supported Instructional Delivery

- Utilize AI for debate prompts, historical simulations, and civic education presentations.
- Integrate multimedia slides and adaptive explanations for diverse learners.

Level Emphasis:

- First Year: Engagement and foundational civic understanding.
- Second Year: Personalized instruction and feedback systems.
- Third Year: Research support, policy analysis, and accessibility adjustments.

3. AI-Enhanced Assessment Practices

- Implement AI-assisted quizzes, rubric-based grading, and performance monitoring.
- Provide personalized feedback on essays and policy papers.
- Policy: Final grading decisions remain the responsibility of the instructor.

4. Professional Development Strategies

Age-based support:

- Younger teachers: pedagogy and AI ethics.
- Senior teachers: technical efficiency workshops.
- Experience-based training:
- Early-career: engagement strategies.
- Mid-career: instructional innovation.
- Veteran: mentorship roles.

Conduct regular AI seminars and certification programs.

5. Implementation Plan

- Needs Assessment – Month 1
- AI Training Workshops – Month 2
- Mentorship and Collaboration – Month 3
- Monitoring and Classroom Observation – Month 4
- Evaluation and Policy Adjustment – Month 5

6. Monitoring and Evaluation

- Use surveys, classroom observations, AI usage logs, engagement indicators, and assessment data to measure effectiveness.

7. Sustainability Measures

- Integrate AI training into faculty development programs.
- Establish an AI teaching resource repository.
- Provide recognition or incentives for innovative AI use.
- Include AI competency indicators in faculty evaluation systems.

CONCLUSIONS

In conclusion, the above results demonstrate that GAI has a positive and significant impact on social science education, enhancing efficiency, engagement, personalization, and assessment. Variations in results based on demographic and professional factors suggest that experience, training, and needs shape the use of AI by instructors. The findings suggest the need for continuous, practical, and motivational professional development programs to tap the educational potential of GAI.

RECOMMENDATIONS

The following are proposed and beneficial based on the results of the study:
1. Social Science experts may develop a reference primer that will assist social science teachers in using GAI for planning, teaching, and testing. The primer should include basic concepts, examples, and applications of GAI in the classroom, with a reminder to verify the accuracy of the AI output.
2. Instructors may utilize GAI as an aid while using their professional judgment. They should critically analyze the AI output and verify if it matches the curriculum and needs of the students. They should also exchange best practices with other teachers.
3. Higher Education Institutions may provide continuous training and seminars to teachers to improve their capacity to incorporate GAI into teaching. The use of the reference primer in teacher training programs is also recommended.
4. Policy makers may develop guidelines for the ethical use of AI, data privacy, and academic integrity to ensure that GAI is used correctly in education.
5. Future Researchers may explore the long-term effects of GAI on students' learning outcomes and other subjects as well.

ACKNOWLEDGEMENT

The researcher would like to express his deep and sincere gratitude to Dr. Mario P. Tamana, Dr. Nilda O. Babaran, Dr. Jane O. Cariaga for their expertise and support. To my mother Juliet S. Cabuyadao, my father Arsenio D. Cabuyadao for being my greatest source of inspiration and to God Almighty for the wisdom and knowledge.

REFERENCES

Acquah, B. Y. S., Arthur, F., Salifu, I., Quayson, E., & Nortey, S. A. (2024). Preservice teachers' behavioural intention to use artificial intelligence in lesson planning: A dual-staged PLS-SEM-ANN approach. Computers and Education Artificial Intelligence, 7, 100307. https://doi.org/10.1016/j.caeai.2024.100307

Bond, M., Bedenlier, S., Marín, V. I., & Händel, M. (2020). Emergency remote teaching in higher education: Mapping the first global online semester. International Journal of Educational Technology in Higher Education, 17(44), 1–24. https://doi.org/10.1186/s41239-020-00282-x

Braiki, B. A., Harous, S., Zaki, N., & Alnajjar, F. (2020). Artificial intelligence in education and assessment methods. *Bulletin of Electrical Engineering and Informatics*, *9*(5), 1998–2007. https://doi.org/10.11591/eei.v9i5.1984

Cukurova, M., Miao, X., & Brooker, R. (2023). Adoption of Artificial Intelligence in Schools: Unveiling Factors Influencing Teachers Engagement. arXiv preprint arXiv:2304.00903. https://arxiv.org/abs/2304.00903

Darajati, M. R., Reswari, R. A., & Yenny, O. (2023). The adaptation of artificial intelligence (AI) in social science education: opportunities and threats. https://doi.org/10.33369/jbengkoelenjust.v13i2.30001

Fabro, R. B., Rivera, J., Sambrano, L., Alcozer, N., Agustin, M., & Dinoy, L. J. (2024). Perceptions and extent of utilization of generative artificial intelligence (AI) among Filipino students. *International Journal of Education and Research*, *12*(7), 97–110. https://ijern.com/journal/2024/July-2024/09.pdf

Holmes, W., Bialik, M., & Fadel, C. (2019). Artificial intelligence in education: Promises and implications for teaching and learning. Center for Curriculum Redesign.

Holmes, W., & Tuomi, I. (2022). State of the art and practice in AI in education. European Journal of Education, 57(4), 542–570. https://doi.org/10.1111/ejed.12533

Iddrisu, H. M., Iddrisu, S. A., & Aminu, B. (2025). Gender differences in the adoption, usage, and perceived effectiveness of AI writing tools. *International Journal of Educational Innovation and Research*, *4*(1), 110–111. https://doi.org/10.31949/ijeir.v4i1.11717

Ifenthaler, D., & Yau, J. Y. (2018). Utilising learning analytics for study success in higher education. *ASCILITE Publications*, 406–411. https://doi.org/10.14742/apubs.2018.1958

Liu, Y., Zhang, H., & Chen, Y. (2021). Teacher readiness for artificial intelligence in education: Perspectives and practices. Computers and Education: Artificial Intelligence, 2, 100023. https://doi.org/10.1016/j.caeai.2021.100023

Merelo, J. J., Merelo-Molina, C., García-Sánchez, F., & Gómez-Mascaraque, J. (2022). Messaging and Chatbots in Education: Analysis of the perception of university teachers.. https://arxiv.org/abs/2201.10289

Park, W., & Kwon, H. (2023b). Implementing artificial intelligence education for middle school technology education in Republic of Korea. *International Journal of Technology and Design Education*, *34*(1), 109–135. https://doi.org/10.1007/s10798-023-09812-2

Pettersson, J., Hult, E., Eriksson, T., & Adewumi, O. (2024). Generative AI and teachers - for us or against us? A case study. *Linköping Electronic Conference Proceedings*, *208*, 37–43. https://doi.org/10.3384/ecp208005

Sanusi, I.T., Ayanwale, M.A. & Chiu, T.K.F. Investigating the moderating effects of social good and confidence on teachers' intention to prepare school students for artificial intelligence education. *Educ Inf Technol* **29**, 273–295 (2024). https://doi.org/10.1007/s10639-023-12250-1

Selwyn, N. (2019). Should robots replace teachers? AI and the future of education. Polity Press. Should robots replace teachers? AI and the Future of Education - Monash University

Zhai, X. (2023). ChatGPT for next generation science learning. Journal of Science Education and Technology, 32(1)

ISSN (online): 2094-9030