UTILIZATION OF ARTIFICIAL INTELLIGENCE ON EDUCATIONAL CLIMATE AND STUDENTS' ACADEMIC ACHIEVEMENT

Utilization of Artificial Intelligence on Educational Climate and Students' Academic Achievement

Rex J. Chanpokin,* Elpedio Y. Lomarda
For affiliations and correspondence, see the last page.

Abstract

The main objective of the study was to describe the level of artificial intelligence on learning process utilize in educational climate considering their benefits and challenges of using AI in the teaching and learning process, awareness and perception of students toward AI in education and significance of perception and effectiveness to students and teachers in AI teaching and learning; find out the students' academic achievement in Social Sciences' subject and correlate the significant relationship between the artificial intelligence on learning process utilize in educational climate and students' academic achievement. The respondents of the study were 120 students in Camiguin Polytechnic College, Balbagon, Mambajao, Camiguin Province during first semester of 2024. Random sampling was employed due to the large scope of the population to determine the students enrolled in the Social Science subject. The instrument on the level artificial intelligence on learning process utilize in educational climate was adapted from Sopera, Alaban, Briones and Magnaye (2023). For the students' academic achievement in Social Sciences' subject was adapted from the grading system of Camiguin Polytechnic State College. Descriptive analysis measures the level of artificial intelligence on learning process utilize in educational climate in terms of Awareness and Perception of Students toward AI in Education, Benefits and Challenges of Using AI in the Teaching and Learning Process, and Significance of Perception and Effectiveness to Students and Teachers in AI Teaching and Learning which is highly utilized, that is, great extent on the level responses of the students. It is essential to note the academic achievement of students in the Social Sciences subject based on a grading scale and corresponding frequency. The majority of students, described as "Excellent Superior." This indicates that over half of the students are performing at an exceptional level, demonstrating high academic achievement in Social Sciences. Correlation results indicated the significant relationships between different aspects of artificial intelligence utilization in the learning process and students' academic achievement. The variables include the benefits and challenges of using AI, awareness, and perception of students toward AI, and the significance of AI's perception and effectiveness to both students and teachers in the educational climate.

Keywords: *utilization, academic achievement, educational climate*

Introduction

Though artificial intelligence (AI) has transformed numerous areas of our life, there are still notable inconsistencies and challenges in its impacts on academic achievement, particularly among undergraduate students. As AI technologies advance, concerns have been raised surrounding how well they may enhance academic performance in terms of potential negative effects such dependability, equality concerns, and the changing role of educators. Navigating the hyperlinks between artificial intelligence (AI) and student academic progress in the digital educational environment requires a recognition of these gaps.

At the nexus of computer science, mathematics, and cognitive psychology lies the revolutionary discipline of artificial intelligence. It includes the creation of strategies and systems that are geared toward carrying out operations that traditionally call for human intelligence. AI has influenced several industries, including education, healthcare, finance, transportation, and entertainment, by allowing machines to observe and comprehend their surroundings and make judgments. The ability of it to improve productivity, creativity, and problem-solving skills keeps spurring innovation and changing how we engage using technology and the outside world. It discloses fresh possibilities that could completely change humanity's future as it looks deeper into the world of artificial intelligence.

However, we cannot ignore the possibility that, if not used meticulously, AI tools might worsen existing disparities worse. Socioeconomic variables might restrict access to AI-powered learning materials, which would widen the gap between pupils from rich and underprivileged backgrounds. Biases in the data used to train AI systems may be perpetuated by the algorithms, causing unfair results or affirming assumptions. Biased grading, recommendation engines, or resource distribution are some examples of how this can appear in educational circumstances. For AI systems to work well, they frequently need access to vast amounts of data. This creates issues with student privacy and data security in educational conditions, especially where it comes to sensitive data like behavioral or academic performance.

AI is an effort to develop automated systems that can replicate human mental and behavioral processes. The wider community generally defines AI as having the capacity of computers and other machines to think and behave like humans (Wartman & Combs, 2018). According to Timms (2016), the expectation that intelligent software will be contained into a home desktop computer may be inaccurate about the remaining setup. It could enter into our lives in an array of ways.

Artificial intelligence, according to Ng (2017), is the contemporaneous equivalent of electricity. Artificial intelligence has the potential to be a key factor in sustaining economic growth, making it an appropriate choice to be the cornerstone of the Fifth Industrial Revolution

(Golic, 2019). These figures shed new light on the benefits and global implications of artificial intelligence for schooling, which in turn shapes the labor market and economy and lays the foundations for the oncoming Industrial Revolution.

Schools are expected to adjust to the digital age and implement 21st century skills into their basic curricula, leading them to be the main institutions that might be most impacted by the development of artificial intelligence. According to Karsenti (2019), emerging technologies will become ingrained in the way we live and captivate our kids, which might force institutions to make room for them. This study focuses on how stakeholders from the domains of the field of engineering, business, education, and law view this development and how some estimate the impact of artificial intelligence on education. Consequently, the intent of this study is to find out how the use of artificial intelligence (AI) in the classroom affects the academic achievement of learners.

Research Questions

The study aimed to investigate the relationship between artificial intelligence (AI) in the classroom and the academic achievement of students in the first semester of 2024 at Camiguin Polytechnic College in Balbagon, Mambajao, Camiguin Province. Specifically, it sought to answer the following questions:

1. In terms of the benefits and challenges of integrating artificial intelligence (AI) into the instructional process, student awareness and perception of AI in education, and the necessity of understanding and efficacy for both students and teachers in AI teaching and learning, how much of an impact does AI application make on the academic environment?
2. What degree of academic success do the students have in the social sciences?
3. Is there a connection between students' academic success and the degree of artificial intelligence use in the classroom?

Methodology

Research Design

The research design used in the study was descriptive-correlational. Quantitative analysis was done on the collected data. Students' academic achievement in the Social Sciences and the significant relationship between the level of artificial intelligence use on educational climate and students' academic achievement were determined by using a descriptive method to describe the level of use of AI on educational climate, taking into account the advantages and difficulties of using AI in the teaching and learning process, students' awareness and perception of AI in education, and the importance of perception and effectiveness for students and teachers in AI teaching and learning.

Respondents

The respondents of the study were 120 students in Camiguin Polytechnic College, Balbagon, Mambajao, Camiguin Province during primary semester of 2024. Random sampling was utilized due to the large scope of the populations to determine the students participating in the Social Science subject. Table 1 shows the distribution of respondents that is being supplied below. Table 1 Presents Distribution of Respondents of the Study

Table 1. *Distribution of Respondents of the Study*

Social Sciences Subject	Actual Class Size	Sample Size
Rizal Life, Works and Writings	26	15
Peace Education	21	15
Indigenous Creative Crafts	23	13
Sociology	20	14
Indigenous Peoples Studies	18	12
Teaching Social Studies in Primary Grades/Secondary Grades	24	14
World/Philippine History	22	12
Economics	19	10
Taxation	25	15
Total	198	120

The present study used a simple random sampling technique. The researcher wants to choose a sample from a bigger population using this statistical study method. This method of sampling is based on the randomness principle and is among the simplest. The sample is guaranteed to be representative of the population because of its unpredictability, which means that its features closely resemble those of the whole population.

The population is huge in scope, so this strategy works effectively. Despite its basic simplicity, simple random sampling may not always be feasible, particularly when dealing with large or distributed populations.

Nonetheless, simple random sampling is straightforward to comprehend and use. It is unbiased because it guarantees that every component in the population has an equal chance of being selected. When carried out correctly, it eventually produces representative samples that are appropriate for making population-wide generalizations.

Instrument

This study will assess the association between students' academic performance and the degree of artificial intelligence use in the classroom. Every variable is represented by a unique instrument. The primary instrument used in this study to collect the necessary data and information was a questionnaire. The survey questionnaire for the use of artificial intelligence (AI) in the educational environment was modified from the study "Artificial Intelligence (AI) on Learning Process" by Sopera, Alaban, Briones, and Magnaye (2023).

Benefits and drawbacks of integrating AI into the teaching and learning process, student awareness and perception of AI in education, and the importance of perception and efficacy for both teachers and students in AI teaching and learning are some of these variables.

Procedure

To conduct the survey questionnaire, a formal request for data collection was obtained from the president of Camiguin Polytechnic State College. It is administered and collected by the researcher herself. The researcher promptly checked, totaled, tabulated, presented, and analyzed the data to be gathered as part of the main text of this study after the research questionnaires were collected.

Data Analysis

To address the particular issues raised by the study, the following statistical techniques were used:

Problems 1 and 2: The degree of artificial intelligence application on the curriculum and academic performance of students was assessed using descriptive statistics such the mean, standard deviation, and percentage.

Problem 3: The factors relating to the degree of artificial intelligence use on the educational climate and students' academic achievement were established using Pearson Product Moment Correlation (Pearson r).

Ethical Considerations

The students who take part in this study must have their privacy and anonymity protected. Students who are reassured that their identities and personal information will remain private may be more likely to engage honestly and freely. These ethical issues need to be addressed:

Obtain the informed consent of every student who is taking part in the study by outlining the goal of the research, the procedure for gathering data, and the intended use of their information.

During the analysis and reporting process, students were requested to exclude or substitute any personally identifiable information from the data. In order to safeguard their identity, participants may be assigned pseudonyms.

Protect the obtained data by keeping it in a secure location, encrypting it when needed, and granting only authorized persons access. This is to prevent unintentional data disclosure to unauthorized parties. Ethical Review: To make sure that the research design and data handling protocols adhere to ethical norms and guidelines, ethical permission was requested from an institutional review board (IRB) or ethics committee.

Results and Discussion

This section contains the presentation, evaluation, and interpretation of the data collected from the respondents. The order of the presentation can be determined by the order of specific problems in the problem statement.

It addresses the scope of artificial intelligence use in the classroom, analyzing both the benefits and drawbacks; students' attitudes and perceptions of AI in the classroom; the significance of perception and efficacy for students as well as educators in the use of AI in teaching and learning; the academic performance of students in the social sciences; and the significant association between the level of AI use in the classroom and students' academic achievement.Tables 2, 3, 4, and 5 illustrate the extent of artificial intelligence use in the educational environment. They also consider the benefits and challenges of incorporating AI into the teaching and learning process, student awareness and perception of AI in education, and the significance of perception and efficacy for both teachers and students in these domains. Table 6 displays the academic achievement of the students in the Social Sciences topic. Table 7 examines if there is a significant correlation between students' academic achievement and the level of artificial intelligence used in the classroom. The evidence, mean, and related explanation are shown in tables. The variables, r, and p-values are also shown in the table.

Globally, the integration of artificial intelligence (AI) into the educational process is revolutionizing learning settings. As educational institutions seek innovative ways to enhance training, artificial intelligence (AI) technologies offer powerful tools for enhancing teaching and learning outcomes, expediting administrative tasks, and providing real-time feedback. This descriptive study looks at how AI is used in classrooms and how it impacts instructional strategies, student participation, and overall academic achievement.

The scope of artificial intelligence (AI) application in the educational setting is shown in Table 2, along with the benefits and challenges of incorporating AI into the teaching and learning process. In an effort to enhance student learning outcomes and adapt to shifting needs, educational institutions and instructors are becoming increasingly interested in integrating artificial intelligence into the teaching

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and learning process. A significant amount of teachers' time is spent on administrative tasks including scheduling, monitoring attendance, and grading assignments.

Table 2 discusses the effects of artificial intelligence (AI) on the educational process as well as the benefits and challenges of using AI into the teaching and learning process.

Table 2. *Level of Artificial Intelligence (AI) on Learning Process Utilize in Educational Climate in terms of Benefits and Challenges of Using AI in the Teaching and Learning Process*

Indicator	Mean	SD	Interpretation
AI improves content delivery and accessibility.	4.16	0.778	Highly Utilized
AI-powered tools can make education more accessible to students by providing customized learning experiences and assistive technologies.	4.08	0.751	Highly Utilized
Ethical considerations must be addressed when using AI in education.	4.08	0.881	Highly Utilized
Both teachers and students can make use of AI on the course of teaching and learning	4.08	0.904	Highly Utilized
AI can adapt to the individual learning needs of students by providing personalized recommendations and feedback.	4.04	0.771	Highly Utilized
AI enhances student engagement and participation.	3.94	0.823	Highly Utilized
AI personalizes the learning experience.	3.84	0.810	Highly Utilized
Students' readiness and adaptability influence the effectiveness of AI.	3.74	0.815	Highly Utilized
Teacher training and support are essential for effective AI integration.	3.67	0.853	Highly Utilized
Both teachers and students are not really aware of what artificial Intelligence is all about.	2.18	0.788	Slightly Utilized
Overall	3.78	0.572	Highly Utilized

Legend: 4.20-5.00 – Very Highly Utilized (Very Great Extent) | 3.40-4.19 – Highly Utilized (Great Extent) | 2.60-3.39 – Moderately Utilized (Moderate Extent) | 1.80-2.59 – Slightly Utilized (Less Extent) | 1.00-1.79 – Less Utilized (Not at All)

The table illustrates the degree of artificial intelligence (AI) use in the educational environment, including the advantages and difficulties of integrating AI into the teaching and learning process. The indication with the highest rating, "AI improves content delivery and accessibility" (Mean = 4.16, SD = 0.778), indicates that this feature is widely used and has a profoundly positive effect on how learners get and access content. With a high mean, there is broad agreement about how well AI can improve accessibility and content delivery, which can result in more effective and inclusive learning environments.

According to Khribi, Jemni, and Nassaoui (2019), further advantages of integrating AI into education include the possibility of increased instructional efficacy. AI-powered tools help teachers with feedback, personalized learning strategies, and student performance tracking. By focusing on areas that require special attention, it can help teachers save time and effort. Assessment tools with AI capabilities can provide students with quick feedback, freeing up professors to give more focused and customized comments.

However, the indicator with the lowest rating is "Both teachers and students are not really aware of what artificial intelligence is all about" (Mean = 2.18, SD = 0.788). This points to a crucial area that needs attention: a dearth of knowledge about AI among educators and learners. The low mean shows that even while AI tools are used extensively, there is a significant knowledge gap that may prevent AI from reaching its full potential in education.

Baker, Inventado, and Labrum (2020) bolster this claim by stating that one of the main advantages of incorporating AI into education is the ability to design customized learning experiences. AI programs are able to evaluate student performance information and adapt instructional materials to each student's requirements and preferred method of learning. This customized approach boosts academic achievement, motivation, and student involvement. Students may benefit from individualized coaching and feedback from AI-powered adaptive learning systems, which could help them overcome learning challenges and meet academic goals.

Additionally, the indicators "Both teachers and students can make use of AI on the course of teaching and learning" (Mean = 4.08, SD = 0.904), "Ethical considerations must be addressed when using AI in education" (Mean = 4.08, SD = 0.881), and "AI-powered tools can make education more accessible to students by providing customized learning experiences and assistive technologies" (Mean = 4.08, SD = 0.751) all share a mean of 4.08, indicating a high level of utilization. These findings suggest that ethical issues, learning experience customization, and teacher and student use of AI are all highly valued and successfully applied facets of AI in education. High mean values are also shown for the statements "AI can adapt to the individual learning needs of students by providing personalized recommendations and feedback" (Mean = 4.04, SD = 0.771) and "AI enhances student engagement and participation" (Mean = 3.94, SD = 0.823), highlighting the significance of AI-facilitated personalized learning and increased engagement.

A high level of utilization is also reflected in indicators like "AI personalizes the learning experience" (Mean = 3.84, SD = 0.810), "Students' readiness and adaptability influence the effectiveness of AI" (Mean = 3.74, SD = 0.815), and "Teacher training and support are essential for effective AI integration" (Mean = 3.67, SD = 0.853). For AI to be successfully integrated into educational settings, these findings emphasize the vital requirement for teacher preparation, student readiness, and customization.

Wang and Sun (2020) provide strong support for the idea that AI is revolutionizing a number of sectors, including education. The desire to employ artificial intelligence to change the teaching and learning process has grown, leading to more effective teaching, better student results, and customized learning experiences. More study is required, particularly in the Philippines, even if artificial intelligence in educational settings may be advantageous.

AI in education takes a lot of work to implement. AI decision-making presents ethical issues since AI algorithms may produce discriminatory or prejudiced conclusions. Furthermore, relying on AI for learning and education may require extra support for educators and confident students. Making sure artificial intelligence is used in education in an ethical and responsible manner is crucial since it lessens the harmful effects on both instructors and pupils (Lynch, Ashley, & Kargozari, 2021).

All things considered, the degree of AI use in the educational environment is classified as "Highly Utilized" (Mean = 3.78, SD = 0.572), meaning that AI is typically being employed extensively. Although the awareness gap suggests that teachers and students need more education and training on AI ideas, the high mean values across the majority of variables reflect that AI is considered as advantageous in numerous parts of the teaching and learning environment.

As validated by Reyes and Lim (2022), the findings highlight a number of advantages of incorporating AI into the classroom. AI technology can greatly improve personalized learning by modifying course materials to accommodate students' various needs, claim Santos et al. (2023). This customized method enhances academic achievement and encourages student participation.

According to Dela Cruz (2022), artificial intelligence (AI) can assist underprivileged students in closing gaps by offering resources and individualized learning experiences that might not be offered in conventional educational settings.

Artificial intelligence is becoming more and more integrated into education, which has generated a lot of interest and discussion among educators, students, and legislators. It is essential to comprehend how students view and understand artificial intelligence (AI) in the classroom since these aspects have a significant impact on how well AI products are embraced and used. The degree to which artificial intelligence is used in the educational process is shown in Table 3 along with students' awareness and perceptions of its use in the classroom.

Table 3 Presents the Level of Artificial Intelligence (AI) on Learning Process Utilize in Educational Climate in terms of Awareness and Perception of Students toward AI in Education.

Table 3. *Level of Artificial Intelligence (AI) on Learning Process Utilize in Educational Climate in terms of Awareness and Perception of Students toward AI in Education*

Indicator	Mean	SD	Interpretation
Students who are more familiar with technology in their daily lives (such as smartphones, social media, and digital learning tools) are likely to have greater awareness of AI in education.	4.13	0.819	Highly Utilized
Promoting awareness about AI and its potential benefits and challenges through educational programs and campaigns can help shape students' perceptions more positively.	4.10	0.760	Highly Utilized
I believe AI has the potential to enhance teaching and learning.	4.09	0.799	Highly Utilized
I perceive AI as a helpful tool for academic improvement.	4.04	0.824	Highly Utilized
AI fosters creativity in teaching and learning.	3.90	0.803	Highly Utilized
AI can adapt learning experiences to individual students' needs, pace, and learning styles, providing personalized recommendations and interventions.	3.84	0.850	Highly Utilized
AI has a positive impact on academic performance.	3.83	0.771	Highly Utilized
I feel comfortable incorporating AI into educational activities.	3.78	0.909	Highly Utilized
AI improves problem-solving abilities.	3.75	0.872	Highly Utilized
Many students can already use AI and they are not aware of what consequences of using AI.	3.62	0.954	HIghly Utilized
Overall	3.91	0.605	Highly Utilized

Legend: *4.20-5.00 – Very Highly Utilized (Very Great Extent) | 3.40-4.19 – Highly Utilized (Great Extent) | 2.60-3.39 – Moderately Utilized (Moderate Extent) | 1.80-2.59 – Slightly Utilized (Less Extent) | 1.00-1.79 – Less Utilized (Not at All)*

A high level of utilization is indicated by the shared mean of 4.08 for other indicators, including "Both teachers and students can make use of AI on the course of teaching and learning" (Mean = 4.08, SD = 0.904), "Ethical considerations must be addressed when using AI in education" (Mean = 4.08, SD = 0.881), and "AI-powered tools can make education more accessible to students by providing customized learning experiences and assistive technologies" (Mean = 4.08, SD = 0.751). These findings suggest that ethical issues, the ability of AI to personalize learning experiences, and its application by educators and learners are all highly valued and successfully used facets of AI in education. The significance of individualized learning and improved engagement made possible by AI is highlighted by the high mean values of "AI can adapt to the individual learning needs of students by providing personalized recommendations and feedback" (Mean = 4.04, SD = 0.771) and "AI enhances student engagement and participation" (Mean = 3.94, SD = 0.823).

There is also a high level of utilization reflected in indicators like "AI personalizes the learning experience" (Mean = 3.84, SD = 0.810), "Students' readiness and adaptability influence the effectiveness of AI" (Mean = 3.74, SD = 0.815), and "Teacher training and support are essential for effective AI integration" (Mean = 3.67, SD = 0.853). These results demonstrate how important instructor preparation, student preparedness, and personalization are to the successful incorporation of AI in learning environments.

According to Wang and Sun (2020), AI is revolutionizing a number of sectors, including education. In order to improve student outcomes, boost teaching effectiveness, and create more individualized learning experiences, there has been a surge in interest in using

artificial intelligence to change the teaching and learning process. Despite the potential benefits of artificial intelligence in educational settings, further research is required, particularly in the Philippines.

It takes a lot of work to use AI in teaching. The application of AI in decision-making presents ethical issues since AI algorithms may produce biased or discriminatory findings. Additionally, self-assured educators and students might need greater support in order to use AI for teaching and learning. It lessens the detrimental effects on both instructors and pupils; it is essential to ensure that artificial intelligence is applied in education in a morally and responsibly responsible manner (Lynch, Ashley, & Kargozari, 2021).

Overall, the educational climate's use of AI is assessed as "Highly Utilized" (Mean = 3.78, SD = 0.572), meaning that it is typically utilized extensively. Although the awareness gap suggests that teachers and students need more education and training on AI ideas, the high mean values across the majority of variables reflect that AI is considered as advantageous in numerous elements of the teaching and learning process.

The findings, which are supported by Reyes and Lim (2022), highlight a number of advantages of incorporating AI into the classroom. By modifying instructional materials to accommodate students' various demands, artificial intelligence (AI) technology can greatly improve personalized learning, claim Santos et al. (2023).

Academic achievement is enhanced and student participation is encouraged by this tailored approach. Dela Cruz (2022) emphasizes that by offering specialized learning opportunities and resources that might not be accessible in conventional educational settings, AI might aid in closing gaps for underprivileged pupils. The use of artificial intelligence into education has generated a great deal of interest and discussion among students, educators, and legislators as technology continues to pervade many facets of daily life. Since student understanding and perception of AI in education can have a significant impact on how well AI tools are accepted and used, it is imperative to understand these issues. Table 3 shows how students' awareness and perceptions of artificial intelligence in education relate to the learning process's use in the classroom.

Other metrics that are highly rated include "I think AI has the potential to improve teaching and learning" (Mean = 4.09, SD = 0.799) and "Promoting awareness about AI and its potential benefits and challenges through educational programs and campaigns can help shape students' perceptions more positively" (Mean = 4.10, SD = 0.760). There is broad agreement that AI supports academic achievement and innovation in learning, as evidenced by indicators such as "I perceive AI as a helpful tool for academic improvement" (Mean = 4.04, SD = 0.824) and "AI fosters creativity in teaching and learning" (Mean = 3.90, SD = 0.803).\

Additionally, "AI can adapt learning experiences to individual students' needs, pace, and learning styles, providing personalized recommendations and interventions" (Mean = 3.84, SD = 0.850) lends credence to the notion that students benefit from AI's personalization capabilities.

Hence, the primary means of enhancing the quality of education is the extensive implementation of new pedagogical technologies in the instruction of students in higher education institutions and the efficient application of cutting-edge technology (Urinov Bakhrom Jamoliddinovich, 2022). According to Tuychieva (2022), employees rely on their ability to think creatively in order to achieve the educational system's high inventive goals and opportunities. According to the research, the majority of college instructors and students possess a rudimentary understanding of digital technology. In order to enhance the quality of education, higher education institutions are also urged to concentrate on the growth of instructors' and students' digital competency, establish pertinent teaching methods, and employ the right resources (Zhao, Pinto & Sánchez, 2021). To spread knowledge and inspire future generations, it is essential to implement the effective integration of sustainability entities in higher education (HE) and create an academic collective curriculum on sustainability (Lim, Haufiku, Tan, Farid & Ng, 2022). The high means of indicators like "I feel comfortable incorporating AI into educational activities" (Mean = 3.78, SD = 0.909) and "AI improves problem-solving abilities" (Mean = 3.75, SD = 0.872) indicate that students are comfortable with the use of AI and understand how it can improve cognitive skills like problem-solving.

Cruz and Santos (2023) argue that although Filipino students are generally aware of AI technology, there are substantial differences in their comprehension of certain applications in education. Although many students are aware that artificial intelligence (AI) is used in their daily lives, especially through social media and online learning environments, they are not well-versed in its educational uses. This disparity emphasizes the necessity of focused educational initiatives to improve students' comprehension of AI's contribution to their educational journey.

The overall awareness and perception of AI use is "Highly Utilized" (Mean = 3.91, SD = 0.605). According to the findings, although most students are aware of and supportive of AI in the classroom, gaps in knowledge about the implications of AI use must be filled to guarantee its responsible and knowledgeable integration into educational procedures.

It adheres pretty well. Manyika, Chui, Miremadi, Bughin, George, Willmott, and Dewhurst (2017) predict that brilliant instructors will continue to teach courses aimed at enhancing students' social skills, creativity, and communication abilities. In fact, according to some authors, the development of automation and computational intelligence would make "people more human." According to Haseski (2019), the results of investigation into artificial intelligence in education can be summed up as follows: Intelligent machines in education will help students discover their abilities, promote greater creativity, provide more effective learning opportunities, boost student autonomy, and reduce the workload of teachers.

Understanding the significance of usefulness and perception in the context of computational intelligence in teaching and learning is essential for both educators and learners. Given the increasing integration of AI technology into educational practices, it is imperative to comprehend the viewpoints of teachers as well as students in order to achieve the greatest their impact on learning outcomes. The adoption and usage of AI tools in the classroom can be significantly impacted by perception, which encompasses comfort levels, attitudes, and beliefs. The degree to which robotic intelligence is utilized in the classroom is shown in Table 4, which highlights the meaning of perception and efficacy for both educators and learners in AI instructional and educational settings.

Table 4 Presents Level of Artificial Intelligence (AI) on Learning Process Utilize in Educational Climate in terms of Significance of Perception and Effectiveness to Students and Teachers in AI Teaching and Learning.

Table 4. *Level of Artificial Intelligence (AI) on Learning Process Utilize in Educational Climate in terms of Significance of Perception and Effectiveness to Students and Teachers in AI Teaching and Learning*

Indicator	Mean	SD	Interpretation
AI can support the development of critical thinking, problem-solving, and digital literacy skills through interactive and adaptive learning experiences.	3.99	0.728	Highly Utilized
The effectiveness of AI in teaching and learning impacts students' learning outcomes.	3.98	0.772	Highly Utilized
Effective AI integration contributes to overall teaching and learning quality.	3.92	0.816	Highly Utilized
Using AI enhances critical thinking of both teachers and students.	3.92	0.740	Highly Utilized
Teachers' perception of AI influences their instruction practices.	3.83	0.741	Highly Utilized
AI tools are aligned with pedagogical goals and instructional strategies affects their relevance and impact on learning.	3.81	0.748	Highly Utilized
Disparities in access to devices and high-speed internet can limit students' ability to benefit from AI-powered tools and resources.	3.79	0.777	Highly Utilized
AI tools as engaging and effective influences students' motivation to learn.	3.77	0.775	Highly Utilized
AI tools effectively cater to individual learning needs and provide meaningful feedback, students are more likely to stay motivated and achieve better learning outcomes.	3.71	0.814	Highly Utilized
Continues using AI makes both teachers and students dependent and can't think with their own.	2.99	0.628	Slightly Utilized
Overall	3.77	0.545	Highly Utilized

Legend: 4.20-5.00 – Very Highly Utilized (Very Great Extent) | 3.40-4.19 – Highly Utilized (Great Extent) | 2.60-3.39 – Moderately Utilized (Moderate Extent) | 1.80-2.59 – Slightly Utilized (Less Extent) | 1.00-1.79 – Less Utilized (Not at All)

With a focus on the significance of impression and efficacy for both teachers and students in AI-enhanced directions, this illustrates the extent to which AI is being used in the field of education. The statement "AI can support the development of critical thinking, problem-solving, and digital literacy skills through dynamic and adaptive learning activities" (Mean = 3.99, SD = 0.728), which has the highest mean score, demonstrates how frequently AI is utilized to foster these crucial skills.

AI integration in Philippine education could benefit student learning outcomes. It could enhance evaluation processes offer immediate feedback, and customize instructional strategies. In addition to adherence to ethical guidelines, this study must address disparities in an equitable digital divide. In teaching and learning, technology must complement the human element. AI has an opportunity to enhance education, but its fair and appropriate application necessitates thorough preparation (Estrellado, 2023).

The indicator with the lowest mean score, however, is "Continues using AI makes both teachers and students dependent and can't think with their own" (Mean = 2.99, SD = 0.628). This suggests that, even with all of AI's advantages, relying too much on it may impair one's ability to think for themselves. High levels of use are also demonstrated by other metrics, such as "Effective AI integration contributes to overall teaching and learning quality" (Mean = 3.92, SD = 0.816) and "The effectiveness of AI in teaching and learning impacts students' learning outcomes" (Mean = 3.98, SD = 0.772). According to the aforementioned findings, when successfully included, AI is thought to improve learning outcomes and the general standard of education.

Benefits of AI in education, including improved analytics, accessibility, efficiency, flexibility, and adaptation, have been demonstrated. It can evaluate student information, develop personalized lesson plans, automate administrative tasks, and enhance instructional strategies. However, there are drawbacks, such as the expense of implementation, the importance of a human connection, data bias, privacy concerns, and the possibility of false information. When weighing the benefits and drawbacks, integration must put students' privacy and welfare first (Tribdino, 2023).

The idea that AI may greatly improve critical thinking skills is supported by the claim that "Using AI enhances critical thinking of both teachers and students" (Mean = 3.92, SD = 0.740), which also indicates high utilization. Further highlighting the significance of instructors' perspectives regarding AI influencing their teaching methods is the assertion that "Teachers' perception of AI influences their instruction practices" (Mean = 3.83, SD = 0.741).

Sekeroglu, Dimililer, and Tuncal (2019) predict that when artificial intelligence becomes more prevalent in the industry, major changes in educational institutions and practices will likely occur. asserted that teachers may use artificial intelligence to improve the individualized instruction of their students. Artificial intelligence can provide better and more appropriate learning opportunities for people with disabilities, refugees, out-of-school individuals, isolated communities, and excluded individuals (Pedro, Subosa, Rivas, &

Valverde, 2019). Research indicates that intelligent learning environments and artificial intelligence techniques can effectively support the provision of individually tailored approaches (Mohammed & Watson, 2019).

Other indicators, such as "AI tools are aligned with pedagogical goals and instructional strategies affects their relevance and impact on learning" (Mean = 3.81, SD = 0.748) and "AI tools as engaging and effective influences students' motivation to learn" (Mean = 3.77, SD = 0.775), show that AI tools are viewed as relevant and motivating in the learning process. "Disparities in access to devices and high-speed internet can limit students' ability to benefit from AI-powered tools and resources" (Mean = 3.79, standard deviation = 0.777) draws attention to the challenges of ensuring equitable access to AI tools, which could keep some students from making the most of them.

This backs up the claim made by Kim, Soyata, and Behnagh (2018) that future teachers need to understand the reality of artificial intelligence (AI) and successfully integrate it into their teaching strategies in order to ensure the effectiveness and efficiency of the educational process. shows how artificial intelligence (AI) can provide teachers with real-time feedback during a lecture by analyzing the presenter's audio and visual elements to gauge the presentation's quality and improve the audience's experience. By analyzing instructional behavior, motivation, and social interaction datasets, Woolf et al. (2013) employ a similar tactic, acknowledging that AI can improve education over time by customizing lessons and improving student experiences. There are disadvantages to AI as well, such as the expensive cost of implementing the technology, the potential for job losses, and higher electricity consumption (Păvăloaia and Necula, 2023). Extended virtual time can also result in communication issues, a lack of empathy, and reliance. Concerns have also been raised regarding the security of the data that AI uses, since it might be stolen or compromised if it contains flaws (Pisica, Edu, Zaharia & Zaharia, 2023).

The total level of AI use is rated as "Highly Utilized" (Mean = 3.77, SD = 0.545) based on perception and efficacy. This implies that although concerns around disparities in access and potential over-reliance on AI highlight areas for development, AI is widely accepted to be advantageous in improving teaching and learning outcomes.

Even if it seems that human teachers must actively participate in order to deliver high-quality instruction, artificial intelligence aspires to improve education and quality at all levels, especially by offering personalization (Grosz & Stone, 2018). Pedro et al. (2019) highlight a dual-teacher paradigm using artificial intelligence in terms of tailored education: Teachers spend a lot of time on administrative and routine chores, such as answering inquiries on a range of subjects and repeating information frequently. However, mundane tasks will be reduced by in-class AI-supported assistants (secondary instructors), freeing up teachers to focus on one-on-one interactions and student assistance.

One of the sectors most severely impacted by the quick development of artificial intelligence is education. By improving teaching strategies, tailoring student experiences, and boosting administrative effectiveness, artificial intelligence (AI) has the potential to completely transform the educational process. Understanding how these new developments are used and how they affect student performance is crucial as more and more teachers incorporate technology and artificial intelligence (AI) tools into their lectures.

Numerous examples of artificial intelligence (AI) in education range from straightforward automation programs to more intricate systems that provide collaborative tools, individualized instruction, and predictive analytics. Education will become more effective, scalable, and personalized as technology advances. Data privacy, moral conundrums, disparities in equality, and the possible loss of the human aspect in education are some of the problems we must address. In the end, artificial intelligence (AI) should be used in education to support deeper and more meaningful learning experiences rather than replacing the essentially human components of teaching and learning.

Applications of AI in education include data analytics that influence instructional decisions, adaptive learning platforms, and self-directed tutoring systems. These tools help teachers effectively manage the various requirements of their pupils in the classroom and support personalized learning pathways. Schools can use AI to develop dynamic learning environments that encourage critical thinking, teamwork, and student involvement.

Table 5 illustrates how artificial intelligence impacts learning and the educational process.

Table 5. *Summary on the Level of Artificial Intelligence on Learning Process Utilize in Educational Climate*

No.	Indicators	Mean	Descriptive Rating	Qualitative Interpretation
1	Awareness and Perception of Students toward AI in Education.	3.91	Highly Utilized	Very Great Extent
2	Benefits and Challenges of Using AI in the Teaching and Learning Process.	3.78	Highly Utilized	Very Great Extent
3	Significance of Perception and Effectiveness to Students and Teachers in AI Teaching and Learning	3.77	Highly Utilized	Very Great Extent
	Overall Mean	3.82	Highly Utilized	Great Extent

Legend: 4.20-5.00 – Very Highly Utilized (Very Great Extent) | 3.40-4.19 – Highly Utilized (Great Extent) | 2.60-3.39 – Moderately Utilized (Moderate Extent) | 1.80-2.59 – Slightly Utilized (Less Extent) | 1.00-1.79 – Less Utilized (Not at All)

The summary shows the degree of artificial intelligence on learning process usage in the educational environment, suggesting high utilization, or great extent, with an overall mean score of 3.82. Given this, the following details are crucial: Benefits and Difficulties of

Using AI in the Teaching and Learning Process (3.78); Students' and Teachers' Perception and Effectiveness of AI Teaching and Learning (3.77); Students' Awareness and Perception of AI in Education (3.91).

This implies that the introduction of artificial intelligence into the educational setting has generated a lot of curiosity and discussion about how it impacts learning. How well AI tools are utilized in the classroom depends in large part on how students view and comprehend them when they engage with them. Understanding the benefits of AI, such as personalized learning, enhanced engagement, and immediate feedback, is as important as addressing the problems that arise, such as concerns about data privacy and the potential for bias. Furthermore, perception matters for both teachers and students since their views on AI influence how well it teaches and learns. Together, these elements provide a comprehensive framework for examining AI's role in education, highlighting the need for informed and proactive approaches to optimize its potential and address associated problems.

AI is everywhere, according to Scijournal (2022). Among the many popular digital tools and resources that teachers and students can utilize in the classroom are digital pinboards, e-learning platforms, lesson planning applications, and collaborative tools. Furthermore, Google and other search engines have become a popular tool for both teachers and students, as indicated by the 94 percent of teachers who say that their students identify conducting "research" with utilizing them. Other digital tools and resources include copywriting tools, citation generators, plagiarism detectors, flashcard makers, educational quiz apps like Quizlet, and even virtual assistants. By providing a multitude of knowledge and enabling creative collaboration between educators and learners, these tools and resources are transforming traditional teaching and learning methodologies.

The academic performance of social science students is an important topic for educational research because it demonstrates how well they can apply analytical and critical thinking skills in addition to their understanding of complex societal issues. The broad category of social sciences includes history, geography, sociology, political science, and many other disciplines. These disciplines collaborate to provide students with a well-rounded education and prepare them to actively participate in a diverse and interconnected society.

A descriptive analysis of students' academic performance aims to identify patterns, trends, and variables that influence learning outcomes in the social sciences. By examining a range of indicators, such as assessment outcomes, participation rates, and demographic factors, educators and policymakers can gain a better understanding of the effectiveness of instructional practices, curriculum design, and resource allocation. Furthermore, this study may highlight the challenges that students face when learning the social sciences, including disparities in access to resources and varying levels of teacher support.

Table 6 displays the students' academic achievement in the social sciences.

Table 6. *Students' Academic Achievement in Social Sciences' Subject*

Grading Scale	Frequency	%	Qualitative Description
1.0-1.50	61	50.8	Excellent Superior
1.6-2.0	52	43.3	Very Good
2.1-2.5	7	5.8	Good
2.6-3.0	0	0	Fairly of Passing
3.1-4.0	0	0	Conditional
4.1-5.0	0	0	Failed
Total	120	100	

In the social sciences, it is essential to document students' academic performance based on a grading system and related periodicity. The majority of students, 61 (50.8%), fall into the "1.0-1.50" range, which is best described as "Excellent Superior." This demonstrates that over 50% of the students are attaining exceptionally high academic achievement in the social sciences.

Fifty-two students (43.3%) received grades in the "1.6-2.0" range, which is considered "Very Good." This suggests that a sizable percentage of pupils are also performing well, albeit slightly below those in the "Excellent Superior" category. Only seven students (5.8%) fall inside the "2.1-2.5" category, which is regarded as "Good." This implies that a very small proportion of children do well on the subject, yet not to the greater levels shown in the previous groups. Interestingly, there are no pupils in the "2.6-3.0" ("Fairly of Passing"), "3.1-4.0" ("Conditional"), or "4.1-5.0" ("Failed") categories. This indicates that all of the group's students have performed at least at a "Good" level or above, with none of them falling short of this benchmark.

Academic achievement is a crucial element of educational success and is the result of students' combined efforts, abilities, and classroom experiences, according to the findings, which are consistent with Engelmann and Carnine (2021). It encompasses a wide range of accomplishments, showing students' knowledge of several subjects as well as their cognitive capacities, socioemotional development, and overall learning advancement. In essence, academic achievement is the accumulation of information, understanding, and proficiency across a range of subject areas. It encompasses their ability to think critically, solve problems effectively, and comprehend complex concepts. Academic achievement is not restricted to academic subjects like math, language arts, science, and social studies because children have a diverse variety of interests and abilities. It also includes disciplines like vocational training, physical education, and the arts.

With over 94% of pupils earning a "Very Good" or "Excellent Superior" rating, the data shows that most students do well academically in the social sciences.

Furthermore, no student performs poorly or fails. As a result, Huitt (2017) asserts that a student's academic achievement encompasses not just their academic knowledge and skills but also their character development and socio-emotional growth. It demonstrates their ability to collaborate effectively, speak clearly, and remain resilient in the face of adversity. Perseverance, honesty, empathy, and a growth mindset are examples of positive character traits that are directly related to academic performance and are essential for success in school and beyond.

Academic achievement also reveals how well-prepared students are for opportunities for further education, career progression, and civic involvement. A solid academic record enables students to advance both professionally and personally by providing them with access to professional pathways, scholarships, and schools of higher learning. Academic achievement also boosts a student's self-efficacy, autonomy, and confidence, allowing them to pursue their objectives and significantly impact their communities (Hijazi & Naqvi, 2016).

The degree or intensity of the link between the continuous variables analyzed in this study was assessed using Pearson Product-Moment Correlation. More specifically, students' academic achievement in the social sciences and the level of artificial intelligence used in the learning process inside the educational environment were the dependent variables, and the Pearson correlation was used to ascertain how the two were related.

The results are displayed in the matrix of Table 7, together with the Pearson correlation coefficients and the significant value, based on the scores that the research participants at Camiguin Polytechnic College, Balbagon, Mambajao, Camiguin Province, reported during the first semester of 2024. Because the community was so diverse, random sampling was utilized to determine which students were enrolled in the Social Science course. The degree of artificial intelligence used in the classroom learning process is strongly correlated with students' academic success in the social sciences, as seen in Table 6.

Table 7 Presents Test of Significant Relationship between the Level of Artificial Intelligence of the Learning Process Utilized in Educational Climate and Students' Academic Achievement.

Table 7. *Test of Significant Relationship between the Level of Artificial Intelligence of the Learning Process Utilized in Educational Climate and Students' Academic Achievement*

Variable	tb	p-value	Interpretation
Benefits and challenges of using AI in the teaching and learning process,	.169	.025	Significant
Awareness and perception of students toward AI in education	.243	.001	Significant
Significance of perception and effectiveness to students and teachers in AI teaching and learning	.220	.004	Significant

This is an indication of the test of relevant links between different aspects of applying artificial intelligence (AI) in the educational process and students' academic achievement. The factors include students' knowledge and perception of artificial intelligence (AI), the benefits and challenges of using it, and the significance of AI's effectiveness and perception for both students and teachers in the classroom.

Students' academic success is substantially correlated with the first variable, "benefits and challenges of using AI in the teaching and learning process" ($t_b = 0.169$, p-value = 0.025), as indicated by the p-value being less than 0.05. This suggests that understanding the benefits and challenges of artificial intelligence in education leads to a positive and statistically significant impact on student performance. "Awareness and perception of students toward AI in education" ($t_b = 0.243$, p-value = 0.001) is the second variable with the strongest link to the others. The p-value of 0.001 indicates a highly significant relationship. Academic success also has a substantial link with the third variable, "significance of perception and effectiveness to students and teachers in AI teaching and learning" ($t_b = 0.220$, p-value = 0.004).

In conclusion, all three variables have strong positive relationships with students' academic achievement, with the strongest association being found between students' awareness and perception of AI. Consequently, the null hypothesis is refuted.

There is a positive correlation between the use of AI tools in the classroom and students' academic success, claim Santos, Lim, and Villanueva (2023). AI-driven personalized learning platforms enhanced students' performance, particularly in courses that require critical thinking and problem-solving skills. With AI, learning experiences may be tailored to each student's needs, potentially enhancing academic success.

AI technologies, however, have the potential to significantly boost student engagement and passion, two critical factors influencing academic success, according to Reyes and Gonzales (2023). Their research indicates that when students use AI apps, including intelligent tutoring systems, they are more likely to take control of their education and do better.

Conclusions

Based on the findings of the study, the following conclusions were drawn:

The educational environment makes extensive use of machine learning, particularly in relation to students' comprehension and

perception of the technology in the classroom, as well as the positive and negative aspects of its deployment. The findings illustrate that students value AI tools, which enhance learning possibilities and encourage constructive interaction. Furthermore, since both teachers and students gain from the integration of AI into teaching and learning processes, the significance of perception and efficacy is evident. This complete understanding emphasises the importance of fostering an environment that supports AI literacy, addresses challenges, and leverages AI's benefits to enhance the educational experience for all stakeholders.

An intriguing pattern emerges from the analysis of students' academic achievement in the Social Sciences topic based on a rating system and related frequency: the majority of students are classified as "Excellent Superior." This shows that over half of the students are performing at extraordinarily high levels, demonstrating their thorough understanding and mastery of that subject matter. Such high academic achievement highlights the importance of curriculum and instructional strategies as well as the necessity of fostering a situation that promotes learning excellence. This positive outcome offers a foundation for improved social science training and ensuring sustained student success.

The correlation study's conclusions showed the close relationships between numerous aspects of using AI in the learning process and students' achievements in school. The factors include the benefits and challenges of using AI, students' knowledge and opinions about it, and the meaning of AI's effectiveness and perception for both educators and learners in the classroom.

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

Institutions of higher learning ought to actively encourage AI literacy among educators and students. This can be performed by implementing targeted training programs that increase understanding of AI tools and their applications in education. Furthermore, stakeholders will be better prepared to benefit from AI's advantages if an ecosystem emerges that supports AI adoption and overcomes problems like protecting information and technology access. By fostering teacher-student collaboration in the testing of AI applications, schools may enhance engagement and offer enriched learning experiences that will improve learning results for all parties.

Higher education institutions are constantly improving their curricula and teaching strategies because most students are earning "Excellent Superior" grades in the social sciences. This can be managed by upholding high standards of instruction while providing opportunities for ongoing professional development to teachers so they can adopt creative approaches to teaching that maintain learners' attention and comprehension. Promoting continued brilliance will also require a nurturing learning environment that encourages collaboration, critical thinking, and active involvement. Improving this positive outcome will ensure that all students have identical chances to achieve their academic goals.

Higher education institutions should prioritize integrating AI tools. The main objective of this integration should be to optimize the benefits of AI while effectively addressing the challenges associated with it. Promoting knowledge and positive views about AI among educators and students is also essential. Organizing training sessions and workshops can raise knowledge and acceptance of AI technology, which will ultimately make it easier to utilize in the classroom. By actively promoting AI knowledge and support, schools can create a setting that not only enhances academic performance but also prepares educators and students for a future increasingly impacted by computer.

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Affiliations and Corresponding Information

Rex J. Chanpokin
Camiguin Polytechnic State College – Philippines

Elpedio Y. Lomarda, PhD
Valencia Colleges (Bukidnon), Inc. – Philippines