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Artificial Intelligence Usage and Perceived Critical Thinking Skills of Psychology Students at National University – Baliwag

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Abstract

As Artificial Intelligence continues to advance, it opens doors of opportunities to augment traditional teaching methods and provide personalized learning styles and experiences tailored to the needs of the students. However, students must consider potential risks and ethical implications associated with the integration of AI in education. This prompted the researchers' interest in assessing whether and to what degree a relationship exists between the usage of artificial intelligence towards the perceived critical thinking skills among psychology students. The study utilizes a descriptive-correlational research design. The researchers selected one hundred seventy-nine (179) psychology students through a stratified random sampling procedure. Based on the results of the study, it shows that psychology students have high usage of artificial intelligence and high critical thinking skills. It was found that there is a significant relationship between the two variables, $r = 0.610$, $N = 179$, $p < 0.01$. The positive strong correlation between the usage of artificial intelligence and critical thinking skills indicates that students tend to have a high level of critical thinking skills when they have a high level of overall usage of artificial intelligence, specifically awareness, usage, evaluation, and ethics of artificial intelligence. The researchers take into consideration the sex, year level, and artificial intelligence literacy in studying the overall usage of artificial intelligence and its relation to the critical thinking skills of the psychology students.

Keywords: Artificial intelligence, critical thinking skills, psychology, descriptive-correlational

I. INTRODUCTION

The rapid advancement of technology has led to the widespread use of information and communication technologies (ICTs) and the integration of artificial intelligence (AI) into various aspects of life. AI surpasses human intelligence, enabling tasks to be performed

accurately, conveniently, and efficiently. It has revolutionized communication, finance, retail, transportation, healthcare, and education, improving society's quality of life. AI and ICT are enhancing traditional teaching methods by providing personalized

learning experiences. Intelligent tutoring systems (ITS) use AI algorithms to adapt instructional content and provide personalized feedback, promoting active engagement and critical thinking among students. AI-powered virtual reality (VR) simulations also challenge students to apply their critical thinking skills in a hyper-realistic environment. However, students must consider potential risks and ethical implications associated with AI integration in education, such as ensuring reliability, credibility, accuracy, currency, transparency, addressing bias, and maintaining human oversight.

The researchers conducted this study to determine if there is a significant relationship between the usage of artificial intelligence (AI) and the critical thinking skills of the psychology students of National University-Baliwag. Moreover, the study seeks to find how the usage of artificial intelligence influences and affects the perceived critical thinking skills of the students. Furthermore, the research aims to provide valuable insights into the potential pros and cons of AI usage in the critical thinking skills of students. Through the exploration of successful implementation strategies and practices in integrating and employing AI in education, as well as evidence-based findings, educators, students, researchers, and policymakers can gain a deeper understanding of how AI can be effectively leveraged to nurture and cultivate critical thinking skills among students.

Artificial intelligence (AI) has been around since the beginning of its existence as a scientific breakthrough, and it continues to be one of the most outstanding advancements that humanity has ever accomplished. The early pioneers of artificial intelligence, including Alan Turing, Alonso Church, and Kurt Godel, offered insights into the possibility that a machine may learn on its own. Since then, a multitude of bright minds have carried out research, developments, and modifications in order to improve artificial intelligence's capacity to accomplish its fundamental goal, which is to learn and think critically like humans without the need for human involvement.

Almost seven decades ago, researchers first developed artificial intelligence, and its value in today's culture of widespread digital technology is increasingly apparent. In today's culture, automated systems, which can include a broad choice of different gadgets, have become an essential component in education, business, and work. In addition, the incorporation of artificial intelligence has become pervasive in the lives of billions of people all over the world. Regardless of a person's demographic, which may include students, instructors, company owners, professionals, scientists, politicians, and even the elderly.

Artificial intelligence and its relevance in different phases of the technological revolution are also widely used by many authors and scholars. To a great degree, we cannot deny that technology has been a huge part of our life and it seems that it will continue to remain the same way for over an abundance of years. (Ertel, 2018)

Despite the fact that AI has the potential to assist us in moving forward, we must acknowledge its limitations. To begin with, people are known to have a tough time controlling machines, and this fact is well-accepted. A loss of control might be the consequence of a number of different processes, including failures and breaches in security in particular. Artificial intelligence is becoming more dependable and advanced than was anticipated in the present day. It is possible that humanity now considers artificial intelligence to be easily accessible because it is found in most of

the latest technologies we use on a daily basis; nevertheless, if we lose control of automated robots and such, it may be impossible to recover, particularly if AI is capable of learning and adapting. Ethical questions and concerns regarding the inventor's accountability are raised in light of the possibility that AI would malfunction and because of this, many think that it can lead to a risk of humanity's safety. In addition to the development of artificial intelligence, it is projected that creators will be able to maintain their inventions. Thus, creators are the ones who have authority over their works, rather than the other way around. Many believe that the person who developed an artificial intelligence needs to be held accountable and liable in the event that it fails and causes difficulties for users and consumers, along with the proper consequences. (Scherer, 2015)

Critical thinking is a fundamental skill that enables individuals to analyze, evaluate, and interpret information efficiently and effectively. It plays an essential role in the reasoning, decision-making, problem-solving, and overall cognitive development of an individual. However, the integration of AI systems in education has also negative effects, such as reliance on automated processes for analyzing complex scenarios and problem-solving, which can potentially diminish the critical thinking skills of the students.

This prompted the researchers' interest in conducting a study that would examine the relationship between the usage of artificial intelligence (AI) and the critical thinking skills of students. Moreover, the study seeks to find how the usage of artificial intelligence influences and affects the perceived critical thinking skills of the students. It also explores the extent of the influence of artificial intelligence usage on the critical thinking skills of students. Furthermore, the research aims to provide valuable insights into the potential pros and cons of AI usage in the critical thinking skills of students.

The findings of this study may provide a further comprehensive understanding of the relationship between the usage of artificial intelligence and the critical thinking skills of students. Thus, this study will give benefits to the following individuals.

First, this study can provide ideas for students about the association between artificial intelligence usage and critical thinking skills wherein they can use the information from this research to find how the usage of artificial intelligence influences and affects their critical thinking skills.

Second, this research can be helpful to educators on how they will teach and assist their students in utilizing artificial intelligence appropriately to ensure that it is applied properly in terms of academics. Thus, the result of this study can serve as a guide to teachers when utilizing artificial intelligence in education.

Third, the results of this study can provide knowledge for parents about the development of their children's critical thinking skills upon the usage of artificial intelligence. Hence, they may utilize the information from this study to observe their children's critical thinking skills with the use of artificial intelligence. Lastly, this study can be used as a reference for future researchers who will conduct a similar study regarding artificial intelligence usage and critical thinking skills in the future.

Through the exploration of successful implementation strategies and practices in integrating and employing AI in education, as well as evidence-based findings, students, educators, parents, and researchers can gain a deeper understanding of how AI can be

effectively leveraged to nurture and cultivate critical thinking skills among students.

Review of Related Literature and Studies

Artificial Intelligence and Critical Thinking Skills

According to Wang (2019), Artificial intelligence usage (AI) is often characterized in a broad sense, including several concepts and methodologies, making it challenging to pinpoint its precise meaning. Besides, professionals are unable to provide a precise definition of AI in the field as a whole. Many sources describe AI as computer systems whose function is distributed in a lot of forms such as automated computations, learning, algorithms, reasoning, and end-of-thinking capacity. In addition, AI imitates human behavior and it could work without human intervention. This concept suggests that the usefulness and application of Artificial intelligence may be used for more than one purpose. Moreover, its definition can change depending on where Artificial intelligence is employed, taking a look at the central domains of UNESCO: Science education, cultural identity and diversity, and lastly communication and Information. (UNESCO, 2020).

In the compliance of the study of Teke (2019), Awareness of Ethical ethics is a person's consciousness regarding how he or she views the world while taking their moral virtues into account when identifying morally made solutions. Having awareness of ethical ethics allows the search for a best explanation for a certain problem. In addition, Teke (2019) added that the best example of this is when one considers his own life values when narrowing the finest decisions for life situations.

According to Floridi, et al. (2021), the Evaluation of Artificial Intelligence is the ability of students to assess the strengths, weaknesses, limitations, and ethical implications of AI-integrated softwares and AI algorithms. This involves evaluating the reliability, accuracy, and privacy concerns associated with AI technologies.

As stated by Jobin, et al. (2019), the Ethics of Artificial Intelligence is the understanding and application of ethical or moral principles and values in the development and utilization of AI technologies, such as AI machines and software. This includes considerations of privacy, transparency, liability, and the potential drawbacks of AI not merely on the cognitive processes of individuals as well as in society.

On the other hand, Critical Thinking Skills pertain to the capability of students to analyze, evaluate, and interpret information effectively (Paul & Elder, 2013). Furthermore, according to Alsaleh (2020), critical thinking skill is a person's capacity to think rationally, it is also the cognitive process through which an individual evaluates and selects the most optimal solution from among several possible options for a given issue or problem.

AI usage and critical thinking skills have gained significant attention in recent years due to the rapid advancements in AI technology and its increasing integration into various aspects of society, particularly in education. The use of artificial intelligence in education has been continuously increasing over the past decade, wherein more schools and higher educational institutions started to integrate and incorporate AI machines and software into their curricula. At the same time, the significance of critical thinking skills in education has been widely recognized, leading to increased efforts to enhance critical thinking skills among students through the development and use of AI systems and technologies, which results in higher student outcomes (Ennis, 2011).

Research has shown that the use of artificial intelligence tools can enhance students' critical thinking skills by providing them with opportunities to analyze, evaluate, and interpret complex data as well as AI systems and algorithms. However, there is also a need to ensure that students develop a critical mindset towards the drawbacks of artificial intelligence technologies (Selwyn, 2019).

The literature on AI usage and critical thinking skills of students encompasses a wide range of studies conducted in educational settings. These studies investigate the impact of AI technologies on student learning outcomes, problem-solving abilities, and informed decision-making. Additionally, researchers have explored the pedagogical approaches and strategies for integrating AI into the curriculum to foster students' critical thinking skills. Additionally, research has emphasized the need for educators to help students develop an understanding of the ethical principles and values of using artificial intelligence in learning and education which also involves their problem-solving and decision-making capabilities (Floridi, 2023).

Positive Correlation between Artificial Intelligence and Critical Thinking Skills

The integration of artificial intelligence (AI) in education has been a heated discussion among educators and researchers at the present time. Although the focus of AI is on the overall educational benefits, including its ability to customize or personalize instruction and learning as well as increase knowledge and skills among students is widely recognized and accepted (Luckin et al., 2016), its influence and effect on the development of critical thinking towards the students is a still a controversial issue.

Questioning, analyzing, interpreting, evaluating, and making a judgment are the key elements of critical thinking, which is considered an essential competency for 21st-century learners (Facione, 2015). As AI becomes more prevalent in the educational realm, concerns have been raised regarding its impact on the critical thinking skills of students. Facione (2015) researched the role and importance of critical thinking. The findings of the study showed that critical thinking is a crucial skill that capacitates individuals to creatively solve problems and make informed decisions. It emphasized that educational institutions must prioritize the cultivation of critical thinking skills among the students.

On the contrary side, the proponents of artificial intelligence claim and argue that these tools play an essential role in the learning of students as it helps them improve their thinking skills. They suppose that intelligence-driven learning tools can provide personalized and adaptive feedback, which makes students more engaged and aids them in increasing their learning performance. Moreover, it also allows them to reflect on their learnings, identify their strengths and weaknesses to assess the areas that need more consistent attention and improvement, and consequently, develop critical thinking skills (Grover & Pea, 2013). Grover and Pea (2013) conducted a comprehensive review of the current status of the field of computational thinking in K to 12 education. The study found that computational thinking, which involves critical thinking skills, is crucial for students as it can be a great help for them to efficiently and effectively navigate today's digital world. It highlights the role of artificial intelligence in promoting computational thinking and in encouraging and developing critical thinking skills in students.

Jia and Tu (2024), carried out a particular research about this said topic, and it states that despite the Artificial intelligence capabilities being applied in numerous educational institutions, the results show that significant correlation between AI capabilities and critical thinking skills among students cannot be observed. This study validates that although the influence of AI has prospects in various ways, students' usage of AI does not improve their rational thinking especially during Pandemic, a time where online classes were the only means for education to thrive. Although this study has no relationship, it is recommended that future researchers must still implement in depth additional research regarding students' improvement in critical thinking skills (Jia & Tu, 2024).

Most of the previous studies above suggest that Artificial intelligence usage and critical thinking indeed has a positive correlation. Knowing that AI paves way to a honed and steady path toward extensive and broad knowledge, it is only up to us whether one will employ it effectively. However, these studies show that while maximizing efficiency of its utilization in education and other institutions may improve the ability to think critically.

Even while assertions indicate a link between these two factors, the research done above by Jia and Tu (2024), it reveals no connection at all. Artificial intelligence may have a substantial impact on critical thinking abilities, but these findings should not be used as confirmation; instead, utilizing multiple views of different studies is more beneficial. As a result, if done in the future, it will enable a decisive conclusion on this topic.

Conceptual Framework

Two theories used in this study provide structures that can support the main objective of this research. This division of theories discusses and illustrates the theory that explains why the assessment issues in the research problem exist. As a result, the goals of this study are to obtain and explain the significance of these theories to this exploration.

The Cognitive Learning Theory by Jean Piaget (1930)

The Cognitive Development Theory suggests that children's cognitive growth is not influenced by interaction or biological factors but rather by their interactions with objects. Piaget also conveys how children form the fundamental components of knowledge through their mental activities (Piaget, 1994). The Cognitive Development theory can be applied to how the child works on their critical thinking capabilities in terms of education (Steinberg & Williams, 1998).

GOF AI Theory by John Haugeland (1985)

The GOF AI, or Good Old-Fashioned AI refers to an artificial intelligence that replicates human intelligence with the use of symbolic representations. The significance of a symbol lies in the alterations it allows the information processing system to make, whether directed at or in response to an item or process (Boden, 2014).

According to the study of Zhao et al. (2022), artificial intelligence systems are integrated with cognitive psychology. The goal of AI development is to improve AI capabilities by allowing computers to simulate cognition, learning, and reasoning. This integration aims to give computers the ability to perceive emotions, grasp sentiments, and eventually participate in discourse and empathy with both humans and other AI entities, which could have an effect on humans.

The conceptual framework of the study shows the independent and

dependent variables. Hence, artificial intelligence is speculated to affect the student's critical thinking skills.

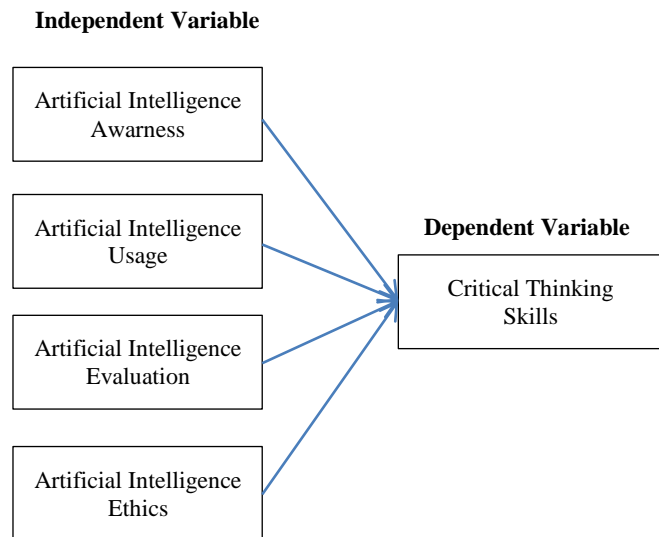


Figure 1. Conceptual Framework

Artificial Intelligence (AI) has resulted in the creation of computer systems and machines that exhibit intelligence to that of humans encompassing cognitive abilities, capacity for learning, adaptability and decision-making skills. Moreover, AI has been embraced and utilized in various ways in education, especially by educational establishments (Chen et al., 2020).

Critical Thinking Skills play a crucial role in learning in the twenty-first century, encompassing expertise, cognitive abilities, emotions, and various complex cognitive skills. Furthermore, it involves a deliberate and careful examination of a previously accepted concept or type of knowledge. As a result, critical thinking skills are an important part of modern education, as well as capabilities in student performance achievement and, most crucially, in real-life skills (Anggraeni et al., 2023).

Thus, artificial intelligence can affect the critical thinking skills of the students. According to Selwyn (2019), artificial intelligence technologies can aid students in analyzing data and understanding AI systems and algorithms. However, it is also necessary to guarantee that students develop a critical perspective regarding the downsides of artificial intelligence technologies.

Research Questions

The researchers conducted this study to assess whether and to what degree a relationship exists between the usage of artificial intelligence towards the perceived critical thinking skills of students. It will provide scholars with a better understanding of how artificial intelligence usage influences and affects their critical thinking skills. Showing the relationship between artificial intelligence usage and critical thinking skills the Psychology students will aid them in utilizing artificial intelligence appropriately and effectively in their studies as well as providing strategies, techniques, and practices that can be implemented to foster their critical thinking skills.

This research aims to determine the relationship between the usage of artificial intelligence and the perceived critical thinking skills of Psychology students for the Academic Year 2023-2024.

Specifically, it aims to answer the following questions:

1. What is the level of the respondents' usage of artificial intelligence?

2. What is the level of the respondents' perceived critical thinking skills?
3. Is there a significant relationship between the overall usage of artificial intelligence and the perceived critical thinking skills of the respondents?
4. What implications can be drawn from the results of the study?

Hypothesis

This study was guided and tested the hypothesis below:
There is no significant relationship between the Overall Usage of Artificial Intelligence and the Perceived Critical Thinking Skills of Psychology students.

Significance of the Study

The researchers conduct this study to examine the relationship between the usage of artificial intelligence (AI) and the critical thinking skills of students. These findings of the study will contribute to the existing body of knowledge by providing insights into the relationship between artificial intelligence and critical thinking skills among students. Moreover, the study seeks to find how the age of artificial intelligence influences and affects the perceived critical thinking skills of the students, as well as the extent of the influence of artificial intelligence usage on the critical thinking skills of students.

The results will inform students, parents, educators, and researchers about the potential advantages and disadvantages associated with the integration of artificial intelligence in education and research. Additionally, this study will offer strategies, techniques, and practices that can be implemented to foster the critical thinking skills of students in the era of AI.

II. METHODS

Research Design

This study utilized a descriptive-correlational design to determine the relationship between artificial intelligence usage and the critical thinking skills of psychology students. The descriptive-correlational study is a type of non-experimental research used in quantitative studies. It is a study method in which the population, events, and problems are being described without manipulating the variables (Siedlecki, 2020). Similarly, as defined by Quaranta (2017), the major purpose of it is to describe the relationships between variables without intending to establish an underlying connection. Also, to determine whether the relationship outcome would be positive, negative, or zero relation (Tan, 2014). Eventually, utilizing a descriptive-correlational design helped the researchers to have a deeper analysis of the relationship between artificial intelligence usage and the critical thinking skills of students.

Respondents and Sampling

The population of the study consists of Psychology students who are currently enrolled in National University - Baliwag. The respondents will be asked to answer a survey regarding artificial intelligence usage and perceived critical thinking skills to assess whether and to what degree a relationship exists between the two variables. Using a stratified random sampling method, 179 respondents who are currently enrolled in the psychology program were chosen. Hence, the researchers utilized the stratified random sampling method to provide a fair selection of respondents to the total population of psychology students of the National University-Baliwag.

Demographic Profile

In the selection of respondents, the researchers also considered their sex and year level as part of the demographic profile of the respondents.

Inclusion of Respondents

The researchers chose the Psychology students of the National University - Baliwag in their study regarding Artificial Intelligence Usage and Perceived Critical Thinking Skills for several reasons.

First, their in-depth study on human cognition and behavior makes them suitable respondents in the research as they have a better analysis and understanding of the influence and effects of artificial intelligence usage on mental processes, specifically critical thinking. Hence they can provide meaningful responses in studies related to artificial intelligence usage and critical thinking skills.

Second, psychology students focus and spend a significant amount of their academic journey on making research, case studies, thesis, and dissertations wherein it is crucial for them to think critically for them to gain deeper knowledge and understanding of the emotions, mental processes, behavior, and other domains of human psychology.

Instrumentation

The Artificial Intelligence Usage, was from the original research instrument of Wang, Rau, and Yuan, (2023) that was published; and it consists of 12 questions. Furthermore, the 4-Point Likert Scale was utilized in determining the artificial intelligence usage of the respondents which includes awareness, evaluation, and ethics as its domains. The legends used in the scale were 4 (Strongly Agree), 3 (Agree), 2 (Disagree), and 1 (Strongly Disagree). Also, question number 2, 5, and 11 from the instrument were inverted since they came out to be negative statements. In this case, the researchers converted the negative statements to positive statements.

The authors made the instrument with high consistency to measure the respondents' artificial grass usage. Therefore, it is concluded that the survey can be used by other researchers with studies concerning artificial intelligence usage. To measure the reliability and validity of the Artificial Intelligence Literacy Scale (AILS), Cronbach's alpha, composite reliability, average variance extracted, and the heterotrait-monotrait ratio of the correlations were utilized. The Cronbach's alpha value for AILS was 0.83, whereas the Cronbach's alpha values for the four domains namely Awareness, Usage, Evaluation, and Ethics were 0.73, 0.75, 0.78, and 0.73, respectively.

Moreover, the instrument as a whole scored higher than 0.80, indicating that even though all four constructs showed reliabilities of more than 0.70, the instrument as a whole is more reliable than the individual constructs.

On the other hand, the Perceived Critical Thinking Skills, was from the original research instrument of Sarigoz (2012) that was published; and it consists of 21 questions. Furthermore, the 4-Point Likert Scale was utilized in determining the critical thinking skills of the respondents. The legends used in the scale are 4 (Strongly Agree), 3 (Agree), 2 (Disagree), and 1 (Strongly Disagree). Also, question number 1 from the instrument was invented since it came out to be a negative statement. In this case, the researchers converted the negative statement to a positive statement.

The 21-question survey used in the study had an internal reliability coefficient of 0.87 according to validity and reliability studies. The

survey responses were tallied using the t-test and F test, as well as the SPSS 17.0 statistical package program, taking into account the students' sex and class levels.

Furthermore, in order to answer the survey questionnaires, the respondents are requested to answer by putting a checkmark on the statements with the respondents' utmost knowledge. Eventually, the survey questionnaires are modified by the researchers for clarification purposes. It is also composed of related questions only to support the study. Thus, it is primarily centered around Artificial Intelligence Usage and Critical Thinking Skills.

Data Gathering Procedure

The researchers provided a request letter to conduct the study and a consent letter for the participation of the respondents. Then, they sought the assistance of the class representatives of each section in the program of Psychology in obtaining the approval of their classmates to participate in the survey. Afterward, the researchers conducted a survey together with a thorough explanation of the objective and purpose of the study. The researchers then confirmed the number of respondents per class after giving the respondents fifteen (15) minutes to answer the questionnaire. Participation in the survey was entirely voluntary, and rest assured all information provided were kept confidential and for statistical and research purposes only.

The respondents of the study were calculated using Slovin's formula. The respondents were selected through stratified random sampling, in which the segregation of the population's members is into strata before the selection of the respondents. Out of the total population of three hundred twenty-three (323), only one hundred seventy-nine (179) first-year to fourth-year students with a Bachelor of Science in Psychology were selected for the study.

In gathering data, the researchers will also ask for language editing validation from their Research teacher for proofreading to ensure the formality, clarity, consistency, reliability, and relevance of the incorporated statements and data in the survey. They will also ask for face validation to guarantee that the survey questionnaires appear appropriate and relevant to the purpose of the study.

Ethical Considerations

In this study, the researchers followed the Data Privacy Act of 2012 formally known as the Republic Act No. 10173. This act seeks to promote innovation and growth while securing individuals' fundamental rights to privacy and communication, as well as following the State's associated duty to guarantee the safety and confidentiality of personal information in government and private-sector data and communication systems.

Addressing the respondents' rights and will to full disclosure, the researchers will discuss the nature of the study, the members of the participants reserve the option to decline the cooperation, and the researchers' liabilities are involved, before giving them the surveys that the researchers provided. The priority of the researchers is the right to fair treatment and the right to privacy of the participants. The principle of the right to fair treatment is intended to regard their convictions, culture, and ways of life. The right to privacy will be regarded on the grounds that the researchers will consider their responses privately during the gathering of the information from the conducted survey.

Data Analysis

The scores of artificial intelligence usage and critical thinking skills were tabulated in SPSS, a statistical spreadsheet software.

Descriptive statistics was applied first in analyzing the collected data, including frequency, percentage distribution, mean, and standard deviation. Frequency and Percentage Distribution were used to record the number of students in each section of first-year to fourth-year Psychology on the scale measurement. The Mean and Standard Deviation were utilized to describe the artificial intelligence usage and critical thinking skills among the Psychology students. To effectively interpret the gathered information, Pearson r moment Correlation Coefficient, was used to determine the relationship between artificial intelligence usage and critical thinking skills of the psychology students at the National University - Baliwag.

III. RESULTS AND DISCUSSION

To test the hypothesis of the study, the researchers used the Pearson Product Moment Correlation Coefficient to identify if there is an existing relationship between the variables.

Table1. *Mean and Standard Deviation Interpretation for National University - Baliwag Psychology Students' Overall Usage of Artificial Intelligence*

	Inventory Score			
	N	M	SD	Interpretation
Overall Usage of Artificial Intelligence	179	3.41	0.40	High
Awareness of Artificial Intelligence	179	3.53	0.54	High
Usage of Artificial Intelligence	179	3.32	0.53	High
Evaluation of Artificial Intelligence	179	3.31	0.53	High
Ethics of Artificial Intelligence	179	3.49	0.48	High

Legend: Rating Scale Verbal Interpretation (VI)
 3.26-4.00 High
 2.51-3.25 Moderately High
 1.76-2.50 Moderately Low
 1.00-1.75 Low

Table 1 discusses the mean and standard deviation of the overall usage of artificial intelligence of the respondents. The results show that the respondents have high overall usage of artificial intelligence ($M = 3.41, SD = 0.40, N = 179$). Furthermore, the table also discusses the mean and standard deviation of the four (4) factors of overall usage of artificial intelligence: awareness, usage, evaluation, and ethics of artificial intelligence. The results revealed that Psychology Students at National University - Baliwag have high awareness of artificial intelligence ($M = 3.53, SD = 0.54, N = 179$), high usage of artificial intelligence ($M = 3.32, SD = 0.53, N = 179$), high evaluation of artificial intelligence ($M = 3.31, SD =$

0.53, N = 179), and high ethics of artificial intelligence (M = 3.26, SD = 0.43, N = 179) represented by the mean verbal interpretation made by the researchers.

Table2. Mean and Standard Deviation Interpretation for National University - Baliwag Psychology Students' Critical Thinking Skills

	Inventory Score			
	N	M	SD	Interpretation
Critical Thinking Skills	179	3.26	0.43	High

Legend: Rating Scale Verbal Interpretation (VI)
 3.26-4.00 High
 2.51-3.25 Moderately High
 1.76-2.50 Moderately Low
 1.00-1.75 Low

Table 2 discusses the mean and standard deviation of the critical thinking skills of the respondents. The results show that the respondents have high critical thinking skills (M = 3.26, SD = 0.43, N = 179).

Table3. Pearson R Product-Moment Coefficient Table for Baliuag National University - Baliwag Psychology Students' Overall Usage of Artificial Intelligence and Perceived Critical Thinking Skills

Artificial Intelligence	Critical Thinking			
	Pearson Correlation	Significance (2-tailed)	Interpretation	Decision
Awareness	0.439**	.000*	Highly Significant	Rejected H0
Usage	0.464**	.000*	Highly Significant	Rejected H0
Evaluation	0.516**	.000*	Highly Significant	Rejected H0
Ethics	0.523**	.000*	Highly Significant	Rejected H0

Note. *p < .05, **p < .01, ***p < .001

In Table 3, a Pearson product-moment correlation coefficient was utilized to determine the relationship between the overall usage of artificial intelligence and perceived critical thinking skills of Psychology Students at the National University - Baliwag. It was found that there is a significant relationship between the two variables, R = 0.610, N = 179, p < 0.01. The correlation is significant at the 0.01 level (2-tailed). This relationship is deemed significant since the gathered probability value (p<.01) is below the (0.05) standard significance. It signifies that the null hypothesis should be rejected since overall usage of artificial intelligence emerged to be significantly correlated with the critical thinking skills of psychology students.

Furthermore, a strong positive correlation was computed between the overall usage of artificial intelligence and perceived critical thinking skills, which means that psychology students' overall usage of AI strongly influences and affects their perceived critical thinking skills. Hence, it was found that overall usage of artificial intelligence and perceived critical thinking skills tend to move in the same direction. Therefore, it can be concluded that if overall usage of artificial intelligence decreases, critical thinking skills also decrease, and as overall usage of artificial intelligence tends to increase, critical thinking skills also increase.

It can be gleaned from this data that all of the four factors under Overall Usage of Artificial Intelligence, namely Artificial Intelligence Awareness (p<.01), Artificial Intelligence Usage (p<.01), Artificial Intelligence Evaluation (p<.01), and Artificial Intelligence Ethics (p=.01), emerged to be significantly correlated on Critical Thinking Skills of psychology students. These outcomes could lead to the decision to reject all four null hypotheses since all of the four assumed correlates of Critical Thinking Skills end up being significant. These results reveal that among psychology students, those who have high overall usage of artificial intelligence, specifically artificial intelligence awareness, artificial intelligence usage, artificial intelligence evaluation, and artificial intelligence ethics are the ones who are likely to have high critical thinking skills.

A significant relationship exists between critical thinking skills and the overall use of AI. Even though there are worries that AI might lessen critical thinking, it is important to remember that AI is meant to enhance human critical thinking, not to replace it. Although ChatGPT and other artificial intelligence tools are excellent at producing text, they are not very good at providing accurate responses. As a result, users must manually identify relevant information from the output (Gigster, 2023). Empirical studies reveal that the influence of artificial intelligence on critical thinking is multifaceted and contingent upon multiple factors. According to some experts, critical thinking skills can be naturally incorporated into computer curricula, fostering intellectual curiosity, encouraging critical thinking, and enhancing the learning capacity of students can also help students become more adept at critical thinking by pushing them to challenge presumptions, biases, and information that they learn from AI systems (Silver, 2023).

A study that has already been done by Mikunas and Pilotta (2023) supports this conclusion. It has been discovered that critical thinking abilities are positively impacted by artificial intelligence (AI) in a number of disciplines, including human-computer interaction, journalism, and education. Research indicates that integrating AI tools in teaching enhances students' critical thinking skills and enhances their understanding of the contexts in which AI is applied. This study explores the meaning of artificial intelligence, utilizing a phenomenological framework, can be used to develop strategies that align with ethical principles, ensuring the protection of vulnerable populations and enhancing technology development. This has the potential to trigger a long-lasting revolution in the political, scientific, and social communities. The paper highlights the importance of ethical considerations in the development of AI, emphasizing the need for phenomenology in AI communities to provide foresight and support in the development of future technologies that promote wellbeing (Mikunas & Pilotta, 2023).

Furthermore, as per the research conducted by Arli et al. (2023), ChatGPT, an artificial intelligence platform, is revolutionizing the field of education and research. It encourages critical thinking, enabling students and researchers to distinguish factual and misleading information. However, the application of AI, particularly ChatGPT, requires ethical and wise use. By integrating specific instructional techniques, AI can enhance learning and research processes. As long as academic integrity and critical thinking abilities are prioritized, AI and humans can positively impact individuals and society.

Moreover, The study reveals that incorporating AI tools in classrooms enhances students' critical thinking skills by fostering collaboration, in-depth analysis, and maturity in English, particularly among non-native speakers, through the use of AI friend apps.

AI-based language training teaches non-native English speakers how to think critically, which is the cornerstone of 21st-century skills, and helps them become more mature, open-minded, trusting, and self-assured in the language. These results emphasize the significance of AI technologies literacy and the potential advantages of integrating AI technologies across a range of fields to enhance critical thinking and nurture skills (Muthmainnah, Seraj & Oteir, 2022).

IV. CONCLUSION

The results of the study revealed that there is a positive significant relationship between the overall usage of artificial intelligence and the perceive critical thinking skills of psychology students, which means that if overall usage of AI increases, the critical thinking skills of psychology students also increases; and if the overall usage of AI decreases, the critical thinking skills also decreases. The critical thinking skills possessed by the students is associated with their awareness, usage, evaluation, and ethics of Artificial Intelligence.

Recommendations

Based on the findings and conclusion formulated from this study, the researchers had come up with the following recommendations. First and foremost, it is best to take heed of the usage of ethical consideration not only in the field of artificial intelligence but also in other subjects. Unethical use of AI raises a lot of concerns especially in the topic about academic integrity because it can lead to intentional and unintentional plagiarism or copyright infringement. Ignorance of the law should not be used as an excuse, furthermore legal principles must be taken seriously by everyone else, since it is a system that if not followed accordingly one must face the consequences for their specific crime charges. To avoid this, generated information from AI tools that is going to be applied in a specific literature should include proper citations. Being familiar with the smart and ethical usage of AI is a must.

Academic institutions must employ AI tools in education, because not only it makes tasks easier to finish but it also enhances the learning experience of students as well. Since AI has a variety of ways for learning to be interactive, making learning enjoyable and less stressful. AI also allows students to choose the right material source for their personal type of learning method, granting them to learn effectively eventually getting good marks .

On the other hand, critical thinking skills should not be dependent on usage of Artificial intelligence, and for that reason both educators and learners must not only work on how to implement

AI effectively but also try to employ in-depth thinking in front of challenges. To begin with, critical thinking skills are significant in addressing problems because it allows individuals to reflect on the information received from observing and reflecting experiences. In addition, critical thinking skills can be honed if it is being used actively, meaning if it is left unused then analytical skills will be stagnant.

Artificial intelligence makes labor simpler for everyone else, and applying AI takes less time to complete tasks yet, overreliance on AI should be avoided since it poses potential risks and issues to mankind. Despite the fact that this study demonstrates that AI usage impacts critical thinking abilities, overreliance may be the cause of lower critical thinking skills, since if one does not assess the information obtained by AI, it could lead to multiple errors because the information is not processed and verified.

Lastly, one must not use this as conclusive findings that could end the argument whether Artificial intelligence and critical thinking skills have indeed a relationship. Therefore, future researchers must conduct further study about this topic, allowing them to understand it more and eventually at some point the gaps of this research will be answered.

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