

THE EFFECT OF ARTIFICIAL INTELLIGENCE ON CRITICAL THINKING IN STUDENT LEARNING

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Abstract

The increasing use of artificial intelligence (AI) in higher education has the potential to influence students' critical thinking skills. This study aimed to examine the effect of artificial intelligence on the critical thinking skills of students in the Islamic Guidance and Counseling Study Program at Universitas Islam Negeri Sumatera Utara and to compare the tendency of this effect between the 2022 and 2025 cohorts. This study employed a quantitative explanatory design. The population consisted of 114 active students from the 2022 and 2025 cohorts, all of whom were included as respondents using saturated sampling. Data were collected through a four-point Likert-scale questionnaire and analyzed using simple linear regression. The research instrument met the validity criteria and demonstrated very high reliability, with a Cronbach's alpha value of 0.925. The findings revealed that artificial intelligence had a positive and significant effect on students' critical thinking skills, with a regression coefficient of 0.526, a t-value of 7.814, and a significance value of 0.000. The coefficient of determination of 0.347 indicated that artificial intelligence explained 34.7% of the variance in students' critical thinking skills. Cohort-based analysis showed that the effect of AI was stronger among the 2022 cohort ($R^2 = 0.243$) than the 2025 cohort ($R^2 = 0.104$). These findings indicate that AI can support critical thinking when it is used actively to explore information, evaluate responses, compare perspectives, and construct arguments. Therefore, AI integration in Islamic Guidance and Counseling learning should be implemented critically, reflectively, ethically, and in ways that preserve students' independent learning.

Keywords: Artificial Intelligence, Critical Thinking, Learning.

Abstrak

Pemanfaatan kecerdasan buatan (Artificial Intelligence/AI) dalam pendidikan tinggi semakin meningkat dan berpotensi memengaruhi kemampuan berpikir kritis mahasiswa. Penelitian ini bertujuan menganalisis pengaruh kecerdasan buatan terhadap kemampuan berpikir kritis dalam belajar mahasiswa Program Studi Bimbingan dan Penyuluhan Islam (BPI) Universitas Islam Negeri Sumatera Utara, serta membandingkan kecenderungan kekuatan pengaruh pada mahasiswa angkatan 2022 dan 2025. Penelitian menggunakan pendekatan kuantitatif dengan desain eksplanatori. Populasi penelitian terdiri atas 114 mahasiswa aktif angkatan 2022 dan 2025 yang seluruhnya dijadikan responden melalui teknik sampel jenuh. Data dikumpulkan menggunakan kuesioner skala Likert empat poin dan dianalisis dengan regresi linear sederhana. Instrumen penelitian memenuhi kriteria validitas dan memiliki reliabilitas sangat tinggi dengan nilai Cronbach's Alpha sebesar 0,925. Hasil penelitian menunjukkan bahwa kecerdasan buatan berpengaruh positif dan signifikan terhadap

berpikir kritis mahasiswa dengan koefisien regresi sebesar 0,526, nilai t sebesar 7,814, dan signifikansi 0,000. Nilai koefisien determinasi sebesar 0,347 menunjukkan bahwa kecerdasan buatan menjelaskan 34,7% variasi kemampuan berpikir kritis mahasiswa. Analisis per angkatan menunjukkan bahwa pengaruh AI lebih kuat pada mahasiswa angkatan 2022 ($R^2=0,243$) dibandingkan angkatan 2025 ($R^2=0,104$). Temuan ini menegaskan bahwa AI dapat mendukung berpikir kritis apabila digunakan secara aktif untuk mengeksplorasi informasi, mengevaluasi jawaban, membandingkan perspektif, dan menyusun argumentasi. Implikasinya, pembelajaran BPI perlu mengintegrasikan AI secara kritis, reflektif, etis, dan tetap berorientasi pada kemandirian belajar mahasiswa.
Kata Kunci: Kecerdasan Buatan, Berpikir Kritis, Pembelajaran

INTRODUCTION

The development of digital technology in the era of the 4.0 Industrial Revolution and Society 5.0 is driving changes in higher education, one of which is through the use of artificial intelligence (AI) (Sharab, Butul, & Guha, 2024). AI is a computing technology that can process information, recognize patterns, provide recommendations, and generate text and initial solutions to various problems (Banegas, Tur, & Tierno, 2024; Zuhairi & Iskandar, 2026). AI is a computing technology that can process information, recognize patterns, give recommendations, and generate text and initial solutions to various problems. In learning, AI is used through chatbots, translation apps, recommendation systems, and generative AI to help students get information, understand materials, complete assignments, and receive feedback quickly.

Using AI can boost learning efficiency, understanding of concepts, creativity, and problem-solving skills if used in a focused way (Gerlich, 2025; Dibek, Kursad, & Erdogan, 2025). However, the ease of getting instant answers can also lead students to accept information without verifying sources, analyzing arguments, or reflecting. Passive use of AI can potentially create technology dependence, reduce independent learning, and weaken critical thinking (Walter, 2024; Aprianto, Sofyan, Rahmawati, & Sufyadi, 2025). Therefore, AI can have a positive or negative impact on critical thinking, depending on how students and lecturers integrate it into learning.

Critical thinking is the ability to identify problems, analyze information, evaluate evidence, compare sources, build arguments, and make decisions rationally. This skill is important so that students don't just passively accept digital information, but are able to assess the accuracy, relevance, and reliability of the information they get, including information generated by AI (Alam & Mosallami, 2024; Shahzad, Raza, Malhi, Ain, & Malhi, 2025).

For students of the Islamic Guidance and Counseling Study Program at the State Islamic University of North Sumatra, critical thinking holds particular importance because they are being prepared to understand individual, family, social, psychological, and religious issues in a humanistic, ethical way, based on Islamic values. BPI students need to be able to assess the validity of information, understand the context of problems, and determine appropriate solutions. AI can help students get information and initial ideas, but its use

still needs to be accompanied by the ability to evaluate content, source validity, social context, and alignment with Islamic values.

The problem that comes up is that AI isn't always used as a tool to deepen analysis, discussion, reflection, and argument development. Some students tend to use AI just to finish tasks faster without double-checking the answers it gives. This can affect how well they understand the material and their independence in solving problems. On the other hand, using AI wisely for asking questions, comparing opinions, testing arguments, and evaluating information can help strengthen students' critical thinking skills.

Previous research (Hassen, 2025) shows mixed results. AI can support critical thinking if used for exploration, discussion, reflection, and evaluating answers. On the other hand, using AI solely to complete tasks quickly can reduce students' engagement in independent reasoning. However, research (Rojas, Ullauri, & Vargas, 2024) still sees AI as a general variable and hasn't distinguished between productive use of AI and passive use of AI. Besides that, research (Liu & Wang, 2024) Regarding the impact of AI on critical thinking, it is still mostly done in the fields of technology, science, general education, and business.

The research gap here lies in the still limited empirical studies on the impact of artificial intelligence on the critical thinking of students in the Islamic Guidance and Counseling (BPI) Study Program, especially within Islamic higher education institutions. BPI students need critical thinking skills to understand individual, social, psychological, and religious issues objectively, empathetically, ethically, and in line with Islamic values. Therefore, the use of AI needs to be examined not just for how it makes completing tasks easier, but also for its influence on students' ability to evaluate information, build arguments, and make decisions.

The novelty of this study lies in its focus on analyzing the impact of artificial intelligence on critical thinking in the learning of BPI students at UIN Sumatera Utara. This research positions AI as a learning tool that can either strengthen or weaken critical thinking, depending on how well it is used. The results are expected to provide a foundation for lecturers and study programs in developing AI-based learning that still encourages independent learning, academic integrity, ethical use of technology, and students' critical thinking skills.

METHOD

This study uses a quantitative approach with an explanatory design to analyze the effect of using artificial intelligence (AI) on students' critical thinking skills in learning. The quantitative approach is used because the research focuses on measuring the relationships between variables through numerical data obtained from questionnaire responses and analyzed statistically (Creswell, 2024). The independent variable in this study is the use of AI, while the dependent variable is the students' critical thinking skills.

Data analysis using simple linear regression to test the direction, magnitude, and significance of the effect of AI usage on students' critical thinking skills (Field, 2018; Ghozali, 2021). The regression model used is $(Y = a + bX + e)$, where (Y) is the students' critical thinking ability, (a) is the constant, (b) is the regression coefficient, (X) is AI usage, and (e) is the error or the impact of other variables outside the model. To see the tendency of the influence strength in different groups, the regression analysis was carried out separately for the 2022 and 2025 student batches.

The research was conducted in the Islamic Guidance and Counseling (BPI) Study Program, Faculty of Da'wah and Communication, State Islamic University of North Sumatra. The study population included 114 active BPI students from the 2022 to 2025 cohorts. The sampling technique used was a saturated sample, meaning all members of the population were taken as research respondents since the total population could be reached entirely (Sugiyono, 2024).

The data was collected through an online questionnaire using Google Form. The instrument was designed with a four-point Likert scale, namely Strongly Disagree, Disagree, Agree, and Strongly Agree. Using the Likert scale allows researchers to measure students' attitudes, perceptions, and response tendencies towards the use of AI as well as their critical thinking skills in learning (Likert, 1932; Sugiyono, 2024). Indicators of AI usage include using AI to look for information, understand material, complete assignments, get ideas, and evaluate answers. Meanwhile, indicators of critical thinking include the ability to identify problems, analyze information, evaluate sources and arguments, draw conclusions, and make decisions rationally (Facione, 1990).

Before being used, the instrument was tested for validity and reliability. Item validity was checked by correlating item scores with the total score, while reliability was tested using the Cronbach's Alpha coefficient. The instrument is considered reliable if it has a Cronbach's Alpha of at least 0.60, although a score of 0.70 or higher usually indicates better internal consistency (Hair, Black, Babin, & Anderson, 2019; Nunnally & Bernstein, 1994). The steps of data analysis include coding, tabulation, descriptive statistics, instrument testing, regression assumption testing, and hypothesis testing. The assumption tests cover residual normality, linearity, and heteroscedasticity. Hypothesis testing is done using the t-test, while the coefficient of determination (R^2) is used to find out the proportion of critical thinking variation that can be explained by the use of AI. All data is analyzed using IBM SPSS Statistics and Microsoft Excel.

RESULTS AND DISCUSSION

Validity Test and Reliability Test

Validity testing was determined based on the calculation of the r-table value at a 5% significance level ($\alpha = 0.05$). With a total sample of 114 respondents, the degrees of freedom were calculated as $n - 2$, resulting in $df = 112$. An item was considered valid if its calculated correlation coefficient (r-calculated) was greater than the r-table value.

Before testing the research hypothesis, the questionnaire was evaluated to determine the validity and reliability of the measurement instrument. Validity testing was conducted to assess whether each statement item accurately measured the intended construct, namely artificial intelligence and students' critical thinking ability. An item was considered valid when its calculated correlation coefficient exceeded the r-table value at the 5% significance level. In addition, reliability testing was conducted to examine the internal consistency of the questionnaire using Cronbach's Alpha. The results of the validity and reliability tests for the research instrument are presented in Table 1.

Table 1. Results of Validity and Reliability Testing

VARIABLE	INITIAL NUMBER OF ITEMS	VALID ITEMS	INVALID ITEMS	SIG.	R- TABLE	CRONBACH'S ALPHA	DESCRIPTION
ARTIFICIAL INTELLIGENCE	15	15	0	< 0.05	0.195	–	Valid
CRITICAL THINKING	15	15	0	< 0.05	0.195	–	Valid
TOTAL	30	30	0	–	–	0.925	Reliable

The validity test results for the artificial intelligence variable and the critical thinking ability variable among Islamic Guidance and Counseling (*Bimbingan dan Penyuluhan Islam*; BPI) students indicated that all statement items were valid. This was demonstrated by the calculated correlation coefficient of each item, which exceeded the r-table value of 0.195 at the 5% significance level. Therefore, all items in both variables were considered appropriate for use as research instruments in data collection.

Based on the reliability test results, the questionnaire measuring artificial intelligence and the critical thinking ability of BPI students was found to be highly reliable. This was evidenced by a Cronbach's Alpha coefficient of 0.925, which substantially exceeded the minimum acceptable threshold of 0.60. Therefore, the research instrument demonstrated very high internal consistency and was suitable for use in collecting research data.

Classical Assumption Test

Before conducting the simple linear regression analysis, a series of classical assumption tests was performed to ensure that the data met the statistical requirements for regression analysis. These tests included normality, linearity, heteroscedasticity, and homogeneity tests. The normality test was used to examine whether the regression residuals were normally distributed, while the linearity test was conducted to determine whether the relationship between the independent and dependent variables followed a linear pattern. In addition, the heteroscedasticity test was performed to assess whether the residual variance remained constant across observations, and the homogeneity test was used to determine whether the variances of data from the 2022 and 2025 cohorts were relatively similar. The results of the classical assumption tests are presented in Table 2.

Table 2. Results of Classical Assumption Tests

TEST TYPE	INDICATOR	SIG. VALUE	CRITERION	DESCRIPTION
NORMALITY	Kolmogorov–Smirnov	0.230	> 0.05	Normally distributed
LINEARITY	Linearity	0.000	< 0.05	Linear
LINEARITY	Deviation from Linearity	0.080	> 0.05	Linear
HETEROSCEDASTICITY	Glejser Test	0.502	> 0.05	No heteroscedasticity
HOMOGENEITY	Levene’s Test	0.335	> 0.05	Homogeneous

The normality test was conducted to determine whether the data, particularly the residuals in the regression model, were normally distributed. This test was necessary to ensure that the regression model met the required statistical assumptions so that the results of the analysis could be interpreted accurately and reliably. Based on the normality test using the Monte Carlo approach, the significance value was 0.230. Since this value was greater than 0.05, it can be concluded that the research data were normally distributed.

The linearity test was conducted to determine whether the relationship between the independent variable (X) and the dependent variable (Y) was linear. In regression analysis, the two variables should demonstrate a linear relationship to ensure that the applied model is appropriate. The linearity test results showed a significance value of 0.080 for Deviation from Linearity. Since this value was greater than 0.05, it can be concluded that there was no significant deviation from linearity. Therefore, the relationship between the independent and dependent variables was linear.

The heteroscedasticity test was conducted to determine whether there was inequality in the variance of residuals in the regression model. A good regression model should not exhibit heteroscedasticity; therefore, the residual variance should remain constant across observations. In this study, heteroscedasticity was tested using the Glejser test. The results showed a significance value of 0.502, which was greater than 0.05. Thus, it can be concluded that the regression model did not exhibit heteroscedasticity.

The homogeneity test was conducted to determine whether the variances of data from the two research groups had a relatively similar distribution or were homogeneous. In this study, the homogeneity test was conducted for students from the 2022 and 2025 cohorts using Levene’s Test before separate regression analyses were performed. The homogeneity test results showed a significance value of 0.335, which was greater than 0.05. Therefore, it can be concluded that the variances between the two groups were homogeneous. This indicates that the data from the 2022 and 2025 cohorts had relatively similar distributional characteristics, allowing the regression analysis to proceed.

Simple Linear Regression Test

To examine the effect of artificial intelligence on students' critical thinking ability, a simple linear regression analysis was conducted. This analysis was performed to determine the direction and magnitude of the relationship between artificial intelligence as the independent variable and critical thinking ability as the dependent variable. The analysis was first conducted using the overall sample and was subsequently performed separately for students from the 2022 and 2025 cohorts to identify potential differences in the strength of the relationship between the two groups. The results of the simple linear regression analysis are presented in Table 3.

Table 3. Results of Simple Linear Regression Analysis

GROUP	B	R	R ²	T	SIG.	CRITERION	CONCLUSION
OVERALL	0.526	0.589	0.347	7.814	0.000	< 0.05	Significant
2022	0.493	0.493	0.243	4.703	0.000	< 0.05	Significant
COHORT							
2025	0.354	0.323	0.104	2.185	0.035	< 0.05	Significant
COHORT							

The results of the simple linear regression analysis showed that artificial intelligence had a positive regression coefficient (B) of 0.526. This finding indicates that an increase in the use of artificial intelligence was associated with an increase in students' critical thinking ability. In addition, the coefficient of determination (R²) of 0.347 indicated that artificial intelligence accounted for 34.7% of the variance in students' critical thinking ability, while the remaining variance was attributable to other factors not examined in this study. The hypothesis test showed that the calculated *t* value of 7.814 was greater than the critical *t* value of 1.659, with a significance value of 0.000 ($p < 0.05$). These findings indicate that artificial intelligence had a positive and statistically significant effect on students' critical thinking ability. Therefore, the research hypothesis was accepted. To examine differences in the strength of the relationship across cohorts, separate regression analyses were conducted for students from the 2022 and 2025 cohorts.

For the 2022 cohort, the regression results showed that the calculated *t* value was greater than the critical *t* value ($4.703 > 1.994$), with a significance value of 0.000 ($p < 0.05$). This result indicates that artificial intelligence had a positive and statistically significant effect on the critical thinking ability of students in the 2022 cohort. The coefficient of determination (R²) of 0.243 indicated that artificial intelligence explained 24.3% of the variance in critical thinking ability within this group.

Meanwhile, for the 2025 cohort, the calculated *t* value was 2.185, which was also greater than the critical *t* value of 2.018, with a significance value of 0.035 ($p < 0.05$). This result indicates that artificial intelligence also had a positive and statistically significant effect on the critical thinking ability of students in the 2025 cohort. However, the coefficient of determination for the 2025 cohort was 0.104, indicating that artificial intelligence explained a smaller proportion of variance in critical thinking ability in this group than in

the 2022 cohort. Therefore, the separate regression analyses suggest that the association between artificial intelligence and critical thinking ability was stronger among students in the 2022 cohort than among those in the 2025 cohort.

DISCUSSION

The research results show that the instrument for assessing artificial intelligence usage and students' critical thinking skills has good measurement quality. All 30 statement items were declared valid because the correlation value of each item exceeded the table value (r) of 0.195. In addition, a Cronbach's Alpha value of 0.925 indicates very high internal consistency. These findings suggest that the instrument can measure AI usage and critical thinking relatively stably among students in the Islamic Guidance and Counseling (BPI) Study Program. In educational research, a reliable instrument is very important because using AI is not just about how often students use the technology, but also about how they use AI to find information, understand material, develop ideas, check answers, and make academic decisions.

The classical assumption test results show that the regression model meets the statistical requirements. The normality significance value of 0.230 indicates that the residuals are normally distributed. The relationship between artificial intelligence and critical thinking is also proven to be linear, as shown by the Deviation from Linearity value of 0.080. Furthermore, the Glejser test value of 0.502 indicates no heteroskedasticity, while the Levene's Test value of 0.335 shows that the variance of students from the 2022 and 2025 cohorts is relatively homogeneous. Therefore, the regression results can be used to explain the statistical relationship between AI use and critical thinking more convincingly.

Overall, the regression results show that artificial intelligence has a positive and significant effect on the critical thinking skills of BPI UIN Sumatera Utara students. A regression coefficient of 0.526 indicates that an increase in AI usage is accompanied by an improvement in students' critical thinking skills. The R-squared value of 0.347 also shows that AI explains 34.7% of the variation in students' critical thinking. This percentage indicates a fairly significant contribution, even though critical thinking skills are still influenced by other factors, such as learning motivation, digital and information literacy, initial academic ability, learning experience, lecturer teaching strategies, class discussion culture, and learning independence.

This finding supports the view (Jia & Tu, 2024; Suriano, Plebe, Acciai, & Fabio, 2025) that generative AI can be used to challenge students to think more critically, especially when AI is positioned as a dialogue partner in learning. Students can ask for explanations of concepts, pose follow-up questions, get case examples, compare several alternative answers, and then evaluate AI output based on scientific references. In the process, AI doesn't just serve as a provider of answers, but also as a trigger for cognitive activities that encourage students to analyze, evaluate, and build arguments.

This result is also in line with (Rusandi, Ahman, Saripah, Khairun, & Mutmainnah, 2023; Hulmi & Apriadi, 2025). Through systematic study, it was found that integrating AI and critical thinking in higher education can grow if learning is designed through problem-solving activities, reflection, information evaluation, and evidence-based discussions. AI can expand students' access to information and diverse perspectives, but the educational value of AI still depends on the tasks given by instructors. If students are only asked to produce the final answer, AI can be used passively. On the other hand, if students are asked to explain their reasoning, compare AI answers with journals, find weaknesses in arguments, and improve AI outputs, the technology can strengthen the critical thinking process.

Research by (Mayasari, Sastraatmadja, Suparman, Mutiara, & Maqfirah, 2024; Vieriu & Petrea, 2025) It also shows that AI can support the development of student self-evaluation and assessment if its use is accompanied by academic supervision and AI literacy. These findings are relevant to this study because AI's positive influence on critical thinking likely arises through students' ability to use AI as an initial learning resource. Students can use AI to simplify concepts, get examples, or design research questions. However, they still need to evaluate whether AI's answers are accurate, relevant, scientifically sound, and suitable for the context of the material being studied.

Nonetheless, the positive results of this study cannot be interpreted to mean that every use of AI always enhances critical thinking. Research (Ekowijayanto & Ulvia, 2025; Suryanto, et al., 2025) finding that high dependence on AI is linked to a decline in critical thinking. In the study, cognitive fatigue acted as a mechanism explaining this relationship, while information literacy could reduce some of the negative impacts of relying on AI. The findings show that there's a fundamental difference between using AI actively and using AI dependently. Active use is marked by processes like asking questions, checking, comparing, correcting, and reflecting on AI outputs. On the other hand, dependent use is characterized by a tendency to take AI answers at face value and hand over the thinking process to technology.

That difference is also explained by (Malik, et al., 2023; Jasmadia, Saddamb, & Lasri, 2024), which emphasizes that AI can support or hinder critical thinking at the stages of problem identification, information gathering, evidence processing, and drawing conclusions. AI can help students quickly get initial information, but students still need to determine the relevance of the information, check the accuracy of sources, and test whether the answers fit the issues being discussed. In other words, AI can speed up access to information, but it can't replace human judgment in determining the truth, feasibility, and ethical value of an answer.

For BPI students, this research has a more specific meaning. BPI students are trained to understand individual, family, social, psychological, and religious issues. In the context of guidance and counseling, students need more than just mastering information; they also need to understand human conditions empathetically, consider the socio-cultural

context, uphold ethics, and formulate responsible alternative solutions. AI can help students find basic concepts, case examples, or alternative perspectives, but AI cannot replace students' sensitivity in understanding the experiences, emotions, backgrounds, and needs of the individuals they are guiding.

The use of AI in BPI learning also needs to pay attention to professional ethics and confidentiality. Students should be guided not to input personal data, counseling issues, or sensitive information into AI platforms without adequate protection. Besides that, students need to understand that AI responses can contain factual errors, biases, generalizations, or recommendations that may not fit individual circumstances. Therefore, critical thinking skills in using AI should include the ability to verify information, recognize technology limitations, consider ethical impacts, and connect responses with Islamic values as well as guidance and counseling professional principles.

Analysis by cohort shows that the impact of AI on critical thinking is stronger for students from the 2022 cohort compared to the 2025 cohort. For the 2022 cohort, the R^2 value of 0.243 indicates that AI explains 24.3% of the variation in critical thinking, while for the 2025 cohort, its contribution is 10.4%. Both groups still show a positive and significant effect, but 2022 students have a stronger relationship between AI use and critical thinking. This could be linked to their longer academic experience. 2022 students have likely faced more analytical tasks, scientific writing, case discussions, and learning activities that demand more directed use of AI.

Students from the 2025 batch, as a group that has more recently entered college, are probably still in the process of adapting to academic culture, the demands of scientific literacy, and ethical use of AI. So, AI might be used more for understanding basic material or completing initial assignments, meaning its contribution to critical thinking isn't as strong as it is for students from the 2022 batch. However, the difference in values (R^2) only shows a tendency in the strength of the relationships. This study hasn't done any specific statistical tests to prove that AI's impact differs significantly between the two batches. Future research could use moderation analysis or multi-group regression to test the role of batch as a differentiating variable.

Practically, the findings of this study show that BPI lecturers need to integrate AI through learning designs that encourage the thinking process, not just producing answers. Students can be given assignments to compare AI outputs with scientific journals, find errors or biases in AI responses, critique AI recommendations, create personal reflections, and present the reasoning behind their academic decisions. Learning can also use case studies in guidance and counseling, and then students are asked to evaluate whether AI responses align with the principles of empathy, confidentiality, professional ethics, and Islamic values. These strategies can help students use AI productively while maintaining independent thinking and academic integrity.

So, the research shows that artificial intelligence has positive potential in supporting critical thinking for BPI students at UIN Sumatera Utara. However, that positive impact

doesn't just come from the technology itself, but from the quality of students' interactions with AI, their information literacy skills, the way lecturers design learning, and students' habits of verifying and reflecting. AI should be seen as a learning tool that expands exploration and analysis, not as a replacement for thinking, ethical judgment, and students' professional responsibility.

CONCLUSION

This study concludes that artificial intelligence has a positive and significant impact on the critical thinking skills of students in the Islamic Guidance and Counseling (BPI) program at UIN Sumatera Utara. This is shown by a regression coefficient value of 0.526 with a significance of 0.000 and a determination coefficient value of 34.7%. The impact of AI was also found among students from the 2022 and 2025 batches, although its contribution was greater for the 2022 batch. These findings suggest that AI can support critical thinking when it's used to search for information, compare perspectives, evaluate answers, and build arguments, rather than just getting instant answers. Practically, lecturers need to design AI-based learning that encourages source verification, reflection, case analysis, and academic ethics, especially in the context of Islamic guidance and counseling. However, this study is limited to one study program, two cohorts, the use of questionnaire data, and simple regression analysis that hasn't examined other factors like AI literacy, motivation, learning independence, and teaching strategies. Therefore, future research is recommended to involve a wider range of respondents, use mixed methods or experimental approaches, and test additional variables to better explain the mechanisms of using AI to improve students' critical thinking skills.

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