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The Influence of Using Ai Applications on the Effectiveness of Student Learning at ITEB Bina Adinata

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Abstract: This study aims to analyze the effect of the use of artificial intelligence (AI)-based applications on the effectiveness of student learning at ITEB Bina Adinata, especially in five main aspects: type and frequency of AI use, effectiveness in understanding the material, time and energy efficiency, motivation and learning satisfaction, and the potential for negative use of AI. The research method used is descriptive quantitative with a case study approach, and a total sampling technique on 40 students of the Information Systems study program. The research instrument was a closed questionnaire with a Likert scale, which was analyzed statistically through the calculation of the average, percentage, and categorization of indicators. The results showed that three main indicators were in the high category, namely the frequency of AI use (79.6 %), effectiveness of understanding the material (79%), and learning efficiency (78.8%), while the other two indicators were in the medium category, namely motivation and learning satisfaction (72.1%) and the potential for misuse of AI (60.8%). These findings indicate that students generally have a positive perception of the use of AI in supporting learning, although attention is still needed to aspects of internal motivation and ethical awareness. The implications of this research encourage the need for academic policies and learning strategies that support the use of AI in an adaptive, responsible, and balanced manner between the benefits of technology and the development of students' academic character.

Keywords: artificial intelligence; learning effectiveness; students.

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Abstract: This study aims to analyze the influence of using artificial intelligence (AI)-based applications on the learning effectiveness of students at ITEB Bina Adinata, particularly in five key aspects: the types and frequency of AI usage, effectiveness in understanding course material, time and energy efficiency, learning motivation and satisfaction, and the potential for negative AI usage. The research method employed is descriptive quantitative with a case study approach, using a total sampling of 40 students from the Information Systems study program. The research instrument was a closed-ended questionnaire with a Likert scale, analyzed statistically through the calculation of means, percentages, and indicator categorization. The findings show that three main indicators fall into the high category AI usage frequency (79.6%), material comprehension effectiveness (79%), and learning efficiency (78.8%) while the other two fall into the moderate category: learning motivation and satisfaction (72.1%) and potential misuse of AI (60.8%). These results indicate that students generally have a positive perception of AI usage in supporting learning, although attention is still needed regarding internal motivation and ethical awareness. The implications of this study highlight the need for academic policies and learning strategies that promote adaptive, responsible, and balanced AI usage maximizing its benefits while fostering students' academic character development.

Keywords: artificial intelligence; learning effectiveness; students.

Introduction

In the era of rapidly developing digital transformation, higher education is faced with significant challenges and opportunities in integrating information technology into the learning process. These challenges include infrastructure readiness, digital competence of lecturers and students, and curriculum adaptation that is relevant to the needs of the times. On the other hand, great opportunities are also wide open, such as the use of online learning platforms, artificial intelligence, and big data to create a more personal, flexible, and efficient learning experience. As stated by (Munir & Zumrotus Su'ada, 2024) , optimal use of information technology can be a catalyst in improving the quality of higher education as a whole, both in terms of learning effectiveness, expanding access, and innovation in teaching methods. Meanwhile, according to (Muhlis, 2025) ideally, students as active learning agents are expected to be able to optimize technology such as artificial intelligence (*AI*) in completing assignments, understanding material, and improving critical thinking skills. AI-based applications such as ChatGPT, Grammarly, QuillBot, and GitHub Copilot have provided easy access to information, fast feedback, and explanations of complex concepts in a more interactive and personal way.

However, the facts on the ground, especially at ITEB Bina Adinata, show a gap in the use of AI. The use of AI applications tends to be pragmatic and not pedagogically optimal (Noor, 2025) . Some students only use AI to answer questions or correct grammar without understanding how it works and the ethics of its use. Furthermore, dependence on AI can hinder the process of active learning and in-depth understanding of the material. Previous studies have indeed highlighted the role of AI in improving learning effectiveness, but they are generally conducted in large or overseas institutions with different academic characteristics. This study seeks to fill this gap by exploring how Informatics students at local institutions, such as ITEB Bina Adinata, use AI applications in their learning activities, and their impact on learning effectiveness (Maharani & Arzuna, 2025) .

The urgency of this research lies in the rapid development of AI use in education, but has not been fully accompanied by adequate critical understanding and academic ethics. If not managed wisely, the use of AI has the potential to reduce critical thinking skills, increase dependence on technology, and cause violations of academic values. Therefore, it is important to study the use of AI applications in more depth, especially in local environments such as ITEB Bina Adinata, so that academic policies and learning approaches can be formulated that support the use of AI ethically, adaptively, and responsibly (Nurjannah et al., 2024) .

According to (Setyaningsih & Putri, 2025) it has high relevance to the latest developments in the world of higher education, especially in the context of digital transformation. This study is important because it systematically examines how artificial intelligence (AI) applications contribute to improving the effectiveness of student learning. Its relevance lies in its suitability to the needs of modern education that demands personalization, efficiency, and flexibility of learning, as also emphasized in the study (Huda & Suwahyu, 2024) which states that AI is able to support adaptive learning through analysis of student learning behavior to organize materials according to individual needs.

The novelty *of* the study (Dodi Faedlulloh et al., 2020) lies in the contextual focus on the practical use of AI applications in a local environment, namely at ITEB Bina Adinata, which has not been widely explored in previous literature. In addition, a systematic approach to various AI applications provides a comprehensive understanding of the impact of AI on motivation, material understanding, and learning efficiency, in line with the findings (Rauf et al., 2025) which emphasize the importance of ethical integration of AI to support meaningful learning. The findings of this study are also supported by a study (Hidayatulloh & Sofiyyah, 2025) which shows that the use of AI has a significant impact on increasing active student participation and involvement in the learning process. Thus, this study not only strengthens previous studies but also provides new contributions by presenting contextual and applicable data related to the effectiveness of AI in improving the quality of learning at the tertiary level.

This study aims to analyze the effect of using AI-based applications on the effectiveness of student learning, identify the types of AI applications most frequently used by students, and explore student perceptions of the benefits of using AI in improving material understanding, learning time efficiency, and academic motivation. Thus, the results of this study are expected to provide real contributions to the development of innovative learning methods and assist educational institutions in designing technology-based academic policies that are relevant to the needs of the times.

Method

This study is a descriptive quantitative study that aims to determine the extent to which the use of artificial intelligence (AI)-based applications *affects* the effectiveness of student learning in a higher education environment. According to (Dr. Sugiono, 2019) the quantitative approach is very suitable for answering objective research questions, testing variable relationships, and relying on numerical data. However, he also emphasized the importance of choosing a method that is appropriate to the characteristics of the research problem at hand.

Population, Sample, Sampling

The population in this study were all students registered at the Bina Adinata Institute of Technology and Business (ITEB). Since the focus of this study was to examine the use of artificial intelligence (AI) technology *in* the learning process, the population was narrowed down to the target population, namely students majoring in Information Systems at ITEB Bina Adinata. The sample in this study was all students registered in the Information Systems study program in semester 6, totaling 40 people. Therefore, this study uses a sampling technique in the form of saturated sampling (*total sampling*), namely a sampling technique that takes all members of the population as research samples. This technique is used because the population is relatively small and allows for research as a whole.

According to (Dr. Sugiono, 2019) , saturated sampling is a sampling technique when all members of the population are used as samples. This technique is appropriate to use when the population is less than 100 people or when researchers want to obtain comprehensive

data from all members of the population. Thus, all students majoring in Information Systems at ITEB Bina Adinata were used as respondents in this study to obtain accurate and comprehensive data regarding the level of AI utilization in the learning process.

Instrument

In this study, the instrument used was a questionnaire arranged in the form of closed questions using a Likert scale. This questionnaire was distributed online using Google Form media, in order to facilitate the process of collecting data from respondents who were 6th semester Information Systems students at ITEB Bina Adinata. According to (Ernawati & Sukardiyono, 2017) . a questionnaire is a data collection technique carried out by providing a set of written questions or statements to respondents to be answered. This instrument is considered appropriate for quantitative research because it allows measurement of variables objectively and systematically. In addition, the use of digital media such as Google Form is also considered practical and able to minimize data input errors, as well as speed up the process of recapitulating the results.

The data analysis technique in this study uses a categorization approach based on the Likert scale to group the average score of respondents' responses to the questionnaire distributed via Google Form. The analysis was continued with the calculation of the percentage in each answer category using Microsoft Excel, in order to interpret the pattern of student responses to the use of AI applications in the learning process. Each item in the questionnaire consists of a statement with a five- level assessment scale , which reflects a positive or negative attitude towards the statement, namely: Strongly Disagree (STS), Disagree (TS), Neutral (N), Agree (S), and Strongly Agree (SS).

The inclusion of a neutral option is intended to provide space for respondents who feel they do not have a firm opinion or do not have enough information about a statement. This approach is used to capture more accurate nuances of attitudes and avoid being forced to choose extreme answers. For analysis purposes, each answer is converted into a numeric score, averaged, and then classified based on certain intervals to facilitate interpretation of the level of respondent perception quantitatively and systematically. The following are the criteria for interpreting scores based on intervals (Dr. Sugiono, 2019) :

0% – 19.99 %	= Strongly Disagree / Bad / Very Poor
20% – 39.99 %	= Disagree / Not Good
40% – 59.99 %	= Sufficient / Neutral
60% – 79.99 %	= Agree / Good / Like
80% – 100%	= Strongly Agree / Very Good / Very Like

Results

Based on the results of descriptive statistical analysis, it is known that the number of respondents whose data is valid is 40 people. The questionnaire score obtained had a minimum value of 45 and a maximum value of 85, with a score range of 40. The average score obtained was 61.65 , which reflects that in general students gave a fairly good assessment of the use of AI in learning. The *standard error value* of 1.591 indicates that this

average estimate is quite precise, while the *standard deviation value* of 10.060 indicates a fairly high spread of responses. The variance of 101.208 also strengthens this.

standard deviation value reflects that there is a significant variation in students' perceptions of the use of AI. This can be interpreted as differences in the level of digital literacy among students, or possible segmentation in the way and purpose of their use of AI, for example based on interests, learning habits, or even the level of understanding of the benefits and risks of the technology. Some students may be quite proficient and reflective in using AI as a learning tool , while others may still use AI pragmatically or even without adequate ethical understanding. The descriptive statistical results can be seen in table 1.1

Table 1.1 Descriptive Statistics

	Range	Minimum	Maximum	Mean		Std. Deviation	Variance
	Statistics	Statistics	Statistics	Statistics	Std. Error	Statistics	Statistics
Questionnaire _Score	40	45	85	61.65	1,591	10,060	101.208
Valid N (listwise)							

The table shows that although the average score reflects a positive trend, respondents' responses still show considerable variation. This can be seen from the wide difference between the minimum and maximum scores and the relatively high standard deviation value , which indicates diversity in respondents' perceptions of the questionnaire statements.

The table below presents a summary of the results of student responses to the use of artificial intelligence (AI) applications in learning based on the five main indicators studied, namely: (A) Type and Frequency of Use of AI Applications, (B) Effectiveness and Understanding of Material, (C) Time and Energy Efficiency, (D) Motivation and Learning Satisfaction, and (E) Negative Potential of Using AI. Each indicator consists of several statements given to respondents in the form of a closed questionnaire using a Likert scale.

Respondents were asked to provide an assessment of each statement with a maximum score of 200, which was then converted into a percentage. The purpose of compiling this table is to map the level of student perception regarding certain aspects of AI use, both in terms of benefits and potential risks. By displaying the actual score, maximum total, and percentage for each item, this table provides a comprehensive quantitative picture of the pattern of use and students' perceptions of the integration of AI technology in daily academic activities. The recapitulation of the student questionnaire can be seen in table 1.2.

Table 1.2 AI Usage Questionnaire

No	Statement	Total Score	Maximum Total	Percentage
A. Types and Frequency of Use of AI Applications				
1	I have used AI applications in learning activities.	174	200	87%
2	I use AI apps regularly every week.	149	200	74.5%
3	I use AI applications when working on college assignments.	155	200	77.5%
B. Effectiveness and Understanding of Material				
4	AI applications help me understand lecture materials better.	161	200	80.5%
5	I found it easier to answer questions after using AI.	162	200	81%
6	I found it easier to understand the lecturer's explanation after studying with the help of AI.	151	200	75.5%
C. Time and Energy Efficiency				
7	AI helps me learn in less time.	158	200	79%
8	I can complete tasks faster with AI.	161	200	80.5%
9	AI reduces my time in searching for learning information.	154	200	77%
D. Motivation and Learning Satisfaction				
10	I am more enthusiastic about learning when using AI.	147	200	73.5%
11	I am satisfied using AI in my learning activities.	148	200	74%
12	I plan to continue using AI to support learning.	138	200	69%
E. Negative Potential of AI Use				
13	I once copied the answer directly from the AI without understanding the content.	132	200	66%
14	I have used AI to create fake images or information.	93	200	46.5%
15	I have tried to use AI to trick or deceive others.	78	200	39%
16	AI makes me less critical when studying.	134	200	67%
17	I agree that the use of AI should be limited to prevent misuse.	171	200	85.5%

In order to clarify the distribution of the questionnaire data, the following diagram presents the percentage of respondents' responses to the 17 statements submitted in the questionnaire, which represent five main indicators in the study, namely: type and frequency of use of AI applications, effectiveness and understanding of the material, efficiency of time and energy, motivation and learning satisfaction, and the negative potential of using AI. Each statement is analyzed based on the frequency of responses on a Likert scale: Strongly Disagree (STS), Disagree (TS), Neutral (N), Agree (S), and Strongly Agree (SS).

This diagram aims to visually illustrate the tendency of student perception towards each statement item. The height of the bars in each category shows how large a proportion of respondents gave a particular response. With this presentation, the general pattern and differences between statements in terms of acceptance or rejection of the use of AI can be observed more thoroughly before further interpretation is carried out. The diagram can be seen in Figure 1.1

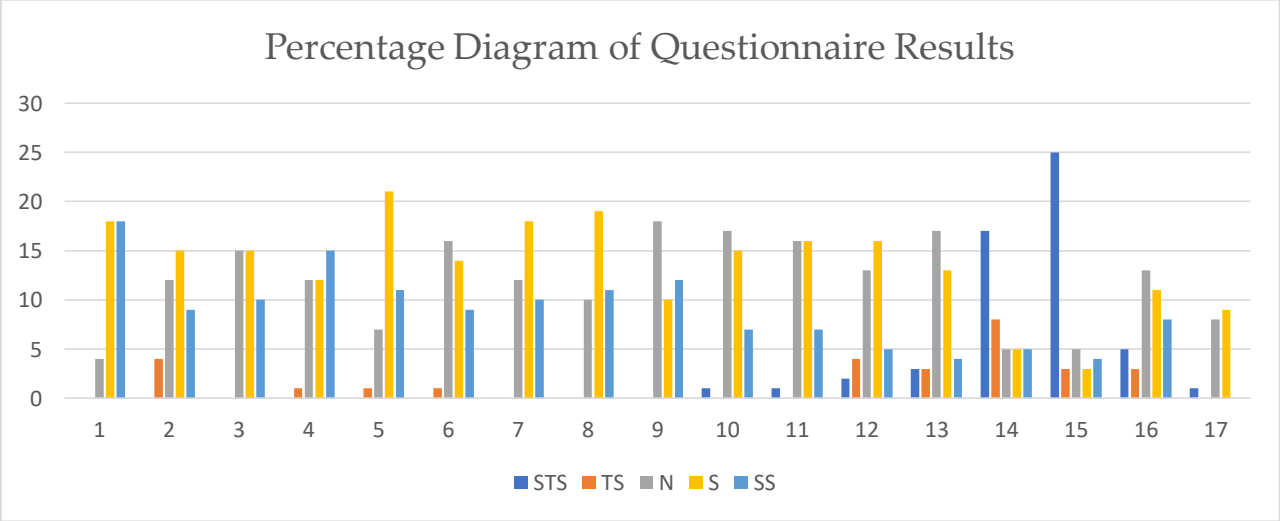

Figure 1.1 Percentage Diagram of Questionnaire Results

The following table presents a recapitulation of the total scores and average percentages of the five main indicators used in this study, namely: (1) Type and Frequency of Use of AI Applications, (2) Effectiveness and Understanding of Material, (3) Time and Energy Efficiency, (4) Motivation and Learning Satisfaction, and (5) Negative Potential of Using AI. Each indicator is calculated based on the maximum score of the statements representing each aspect, with a maximum score of 600.

The percentage is obtained from the conversion of scores to the maximum value, thus providing a quantitative picture of the level of respondent response to each indicator. The calculation results show that the first three indicators are in the high category, which is above 78%, while the other two indicators are in the medium category, especially the indicator of the negative potential of AI use which has the lowest percentage, which is 60.8%. The overall average of the five indicators is at 79%, which shows that in general students give a positive response to the use of AI in the learning process, although the motivational

and ethical aspects of use still need further attention. The recapitulation of Questionnaire Question Indicators for the Effectiveness of AI Use can be seen in table 1.3

Table 1.3 Percentage of Questionnaire Question Indicators for the Effectiveness of AI Use

No	Indicator	Amount	Percentage
1	Types and Frequency of Use of AI Applications	478	79.6%
2	Effectiveness and Understanding of Material	474	79%
3	Time and Energy Efficiency	473	78.8%
4	Motivation and Learning Satisfaction	433	72.1%
5	Negative Potential of AI Use	608	60.8%
Average		493.2	79%

Based on the data in Table 1 and Diagram 1.1 which have been displayed previously , the results obtained from 40 respondents were that from a total maximum score of 600 for each indicator, the following results were obtained:

For the Type and Frequency of Use of AI Applications indicator, question number 1 scored 174 with a percentage of 87%, number 2 scored 149 with a percentage of 74.5%, and number 3 was 155 with a percentage of 77.5%, with a total overall score of 478 and a percentage of 79.6%. In the Effectiveness and Understanding of Material indicator, question number 4 scored 161 (80.5 %), number 5 was 162 (81%), and number 6 was 151 (75.5%), with a total of 474 and a percentage of 79%.

Furthermore, on the Time and Energy Efficiency indicator, the score obtained for question number 7 was 158 (79%), number 8 was 161 (80.5 %), and number 9 was 154 (77%), with a total of 473 and a percentage of 78.8%.

The Learning Motivation and Satisfaction indicator recorded a score of 147 (73.5%) for number 10, 148 (74%) for number 11, and 138 (69%) for number 12, with a total of 433 and a percentage of 72.1%. Meanwhile, for the Negative Potential for AI Use indicator, the scores obtained were 132 (66%) for number 13, 93 (46.5 %) for number 14, 78 (39%) for number 15, 134 (67%) for number 16, and 171 (85.5%) for number 17, with a total overall score of 608 and a percentage of 60.8%.

The negative statements are in numbers 13-17. Among them: number 13 scored 132 (66%), number 14 scored 93 (46.5 %), number 15 scored 78 (39%), number 16 scored 134 (67%), and number 17 scored 171 (85.5%). Meanwhile, the positive statements are in numbers 1-12. Among them: number 1 is 174 (87%), number 2 is 149 (74.5%), number 3 is 155 (77.5%), number 4 is 161 (80.5%), number 5 is 162 (81%), number 6 is 151 (75.5%), number 7 is 158 (79%), number 8 is 161 (80.5%), number 9 is 154 (77%), number 10 is 147 (73.5%), number 11 is 148 (74%), and number 12 is 138 (69%).

Overall, the average value of the five indicators is 493.2 out of 600, with an average percentage of 79%. This shows that students give a positive response to the use of AI in the learning process, although attention is still needed to the ethical and motivational aspects of its use.

Therefore, as a recommendation, a digital literacy training program is needed that not only emphasizes the technical aspects of using AI, but also emphasizes academic ethics, critical awareness, and the development of independent learning characters. Thus, AI is not only an efficient tool , but also becomes part of a learning ecosystem that forms a responsible and adaptive intellectual attitude towards technological developments.

Discussion

The results of this study indicate that students gave quite positive responses to the use of artificial intelligence (AI) applications in the learning process. Based on the results of descriptive statistical analysis, an average score of 61.65 was obtained from a minimum score range of 45 to a maximum of 85, with a standard deviation of 10.060. This value indicates a diversity of responses from respondents, which is reinforced by a variance of 101.208. This variation suggests that students' perceptions of AI use are not entirely uniform. Some students may have a better understanding and experience in using AI productively, while others are still in the early stages of exploration or pragmatic use without considering ethics or depth of learning.

Based on the recapitulation of scores from 17 questionnaire statements classified into five main indicators, it can be seen that students actively use AI in their learning activities. The first indicator, namely Type and Frequency of Use of AI Applications, obtained a total score of 478 out of 600 with a percentage of 79.6%. This value shows that the majority of students have known and used AI regularly, both when doing assignments and in daily learning activities. Statements such as "I have used AI applications in learning activities" (87%) and "I use AI to do college assignments" (77.5 %) show that this technology has become part of their academic routine.

Furthermore, on the Effectiveness and Understanding of Material indicator, a total score of 474 (79%) was obtained, indicating that students felt helped in understanding the lecture material through the help of AI. For example, a score of 80.5% on the statement "AI helps me understand the lecture material better" indicates that AI is considered capable of simplifying complex information and providing easy-to-understand explanations. This finding is consistent with research by (Naila, KZ 2024) which states that the use of ChatGPT significantly improves conceptual understanding in text-based learning and discussions.

The third indicator, namely Time and Energy Efficiency, also showed almost similar results, namely a total score of 473 with a percentage of 78.8 % . Students feel helped in terms of time because AI allows them to complete tasks faster and access information directly without having to search from various sources. This strengthens the results of the study (Mulyawan et al., 2024) which states that AI acts as a learning assistant that accelerates access to information and supports the efficiency of digital learning.

Interestingly, the data also shows a tendency for students who use AI more frequently to have a more positive assessment of efficiency and understanding of the material. This can be seen from the high score of indicator A (frequency of use) which is in line with indicators B and C (effectiveness and efficiency). In other words , more frequent experience in using AI seems to increase students' ability to utilize the technology optimally. However, high intensity of use also appears to be associated with an increased risk of misuse. Several students who routinely use AI also admitted to having copied answers without

understanding (66%) or even using AI to create false information (46.5 %). This indicates that students who are technically proficient do not automatically have the same ethical awareness.

Challenges arise in the Motivation and Learning Satisfaction indicator, which only obtained a total score of 433 (72.1 %). Although it is quite high, this value is lower than the previous three indicators. This may indicate that although AI provides technical convenience, not all students feel increased motivation or learning satisfaction. This possibility is in line with the opinion of (Syaputra et al., 2021) who explained that not all students will show optimal results in e-learning-based learning, because the success of online learning is highly dependent on student independence and concentration.

In the fifth indicator, namely the Negative Potential of AI Use, a score of 608 (60.8%) was obtained from five statements. Several students admitted that they had copied answers directly from AI without understanding (66%), and some even used AI to create false information (46.5 %) or cheat (39%). However, most students agreed that the use of AI needs to be monitored or limited to prevent misuse (85.5 %). This shows that amidst the high use of AI, there is an ethical awareness that is starting to form, although it is not yet evenly distributed. This is in line with research by (Samsiadi & Humaidi, 2022) which states that the ethics of using technology is an important aspect that must be instilled in higher education along with the increasing dependence on digital technology.

Overall, the average percentage of all indicators of 79% shows that AI has had a positive impact in terms of ease of access to information, efficiency, and increased understanding of the material. However, challenges remain in terms of internal motivation and potential for misuse. Therefore, higher education policies are needed that not only encourage the technical use of AI, but also develop digital literacy programs that emphasize ethical aspects, academic responsibility, and critical awareness. Proper mentoring will ensure that the use of AI supports the quality of learning in a comprehensive and sustainable manner.

Compared to previous studies that generally focus on the effectiveness of AI from a purely technical perspective, this study adds dimensions of students' ethical and motivational perceptions, and illustrates how technology does not necessarily replace the role of active learning and human interaction. Thus, the use of AI in higher education must be balanced with mentoring, strengthening digital literacy, and instilling ethical values so that this technology truly supports the continuous improvement of learning quality.

Conclusion

This study shows that the use of artificial intelligence (AI)-based applications has a positive influence on the effectiveness of student learning, especially in terms of understanding the material, time efficiency, and the use of technology in completing academic tasks. Using a descriptive quantitative approach and empirical data support from 40 respondents, this study advances the understanding of how AI is actually adopted in local institutions, which has not been widely studied so far. In addition to confirming the results of previous studies, this study also underlines the importance of ethical awareness and motivation in the use of AI, which is still a challenge in itself. The scientific justification of these results shows that although AI can accelerate the learning process, without good

regulation and digital literacy, its use has the potential to weaken students' critical thinking skills.

This research opens up opportunities for further experiments that systematically examine campus policy-based interventions and AI literacy training, as well as longitudinal observations of the long-term impacts of AI use on students' academic achievement and learning characteristics.

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