International Journal of Social Science Research (IJSSR)
Volume- 3, Issue- 2 | March - April 2026 ISSN: 3048-9490

Use of AI Effects on Critical Thinking: Experimental Study

Vaishnavi Srivastava[1], Seema Rani Sarraf[2]
[1]Amity Institute of Behaviour and Allied Sciences (AIBAS)
[2]Amity University, Uttar Pradesh Lucknow Campus, India

ABSTRACT

Artificial intelligence (AI) tools are becoming an increasingly common part of students' academic lives. From generating explanations to assisting with assignments, these tools offer speed and convenience. However, as their use grows, an important question arises: do they support students' thinking, or do they gradually replace it? The present study explores how AI assistance influences different aspects of critical thinking among students. An experimental research design was used, in which participants were randomly assigned to either an AI-assisted group or a non-AI group. Critical thinking was assessed using a 25-item Critical Thinking Questionnaire (CThQ) based on Bloom's revised taxonomy, measuring remembering, understanding, applying, analyzing, evaluating, and creating. In addition, a structured Resource Allocation Task was administered to examine real-time decision-making and applied reasoning. It was expected that AI assistance might improve performance in foundational cognitive domains such as remembering and understanding, but could potentially reduce engagement in higher-order processes like analysing, evaluating and creating if students relied heavily on generated responses. By combining questionnaire-based and performance-based measures, this study seeks to provide a clearer understanding of how AI affects thinking at multiple cognitive level. The results of this study suggests that participants using AI often produced more structured and organize responses, particularly in tasks involving understanding and presenting information. However, participants who worked without AI demonstrated stronger independent reasoning and more detailed justification in their responses. overall, the results suggest that while AI may support lower-level cognitive processes, excessive reliance on it may reduce engagement in higher-order thinking skills such as analysis, evaluation, and creation. The findings aim to contribute to ongoing discussions about responsible AI use in higher education and highlight the importance of maintaining independent and reflective thinking in technology-supported learning.

Keywords: Artificial intelligence, Critical Thinking, Bloom's Revised Taxonomy, Experimental Study, Cognitive Offloading, Undergraduate students.

INTRODUCTION

Artificial Intelligence (AI) has quickly become a part of everyday academic life. Students now use AI tools to explain concepts, generate ideas, structure assignments, and even solve complex problems within seconds. These technologies offer remarkable convenience and efficiency,

Published: 08 April 2026
DOI: https://doi.org/10.70558/IJSSR.2026.v3.i2.30985

making learning resources more accessible and saving time for students who often face demanding academic workloads. As AI continues to evolve and integrate into educational environments, it is increasingly shaping the way students gather information, complete assignments, and approach learning tasks.

However, the growing presence of AI in education also raises an important concern. While these tools can assist students in understanding concepts more quickly, it becomes necessary to ask whether AI is truly enhancing students' thinking abilities or gradually replacing the need for independent cognitive effort. When students begin to rely heavily on automated systems to generate explanations, answers, or arguments, there is a possibility that they may engage less deeply with the learning process itself. This concern has led researchers and educators to question how AI use might influence students' intellectual engagement and reasoning abilities.

These tools offer convenience and efficiency, making learning more accessible and less time-consuming. Therefore, when AI becomes more deeply integrated into education, an important question begins to surface: are students using AI to support their thinking, or are they slowly depending on it to think for them?

Critical thinking is widely considered one of the most important goals of higher education. It enables students to analyse information carefully, question assumptions, evaluate evidence, and construct well-reasoned arguments. According to Benjam in Bloom's revised taxonomy, cognitive processes range from basic skills such as remembering and understanding to more complex abilities like analysing, evaluating, and creating. Educational systems aim to guide students toward these higher-order thinking skills because they are essential for problem-solving, decision-making, and intellectual independence. While AI tools may assist with lower-level tasks such as retrieving information or summarizing content, concerns arise when they begin to perform tasks that traditionally require analytical reasoning and original thought.

One concept that helps explain this concern is cognitive offloading. Cognitive offloading refers to the tendency of individuals to rely on external tools or devices to reduce mental efforts. In everyday life, this practice can be helpful; for example, people use calculators to perform calculations or digital reminders tasks. In educational settings, however, excessive reliance on external cognitive aids may reduce opportunities for students to actively engage in complex thinking processes. If AI tools consistently provide ready-made answers or solutions, students may gradually become less involved in analysing problems independently. It occurs when individuals rely on external tools to reduce mental effort. In many situations, this can be helpful and efficient. However, when external tools consistently replace internal thinking processes, there is a possibility that skills such as analysis, reflection, and creativity may not be fully exercised. In academic contexts, this raises questions about whether frequent AI use could unintentionally weaken higher-order thinking abilities.

Research on AI in education presents mixed findings. Some scholars argue that AI can act as a scaffold, supporting learning and enhancing reasoning helping students clarify difficult concepts, generate ideas, and improve the quality of their work when used responsibly. In this view, AI functions as a cognitive scaffold that enhances learning rather than replacing thinking.

On the other hand, other researchers argue that unregulated or excessive dependence on AI may lead students to bypass important stages of reasoning, such as problem analysis, reflection, and critical evaluation. When students rely too heavily on AI-generated responses, they may accept information without questioning its accuracy or validity. Importantly, much of the existing research is based on surveys and perceptions rather than controlled experimental comparisons, making it difficult to determine causal effects.

Moreover, the ease and speed with which AI produces answers may encourage surface-level learning rather than deep understanding. Instead of struggling through complex problems or evaluating multiple perspectives, students might prefer quick solutions provided by AI systems. Over time, this pattern could influence how students approach academic tasks, potentially reducing the motivation to engage in independent thinking or critical evaluation.

Given these contrasting perspectives, it becomes important to empirically examine the relationship between AI use and critical thinking among students. Understanding whether AI supports cognitive development or contributes to reduced analytical engagement can help educators design better strategies for integrating technology into education. By exploring how students interact with AI tools and how this interaction relates to their critical thinking abilities, this study aims to contribute to the growing discussion on the role of AI in contemporary learning environments.

Additionally, critical thinking is not a single ability but a combination of different cognitive processes. Remembering and understanding may be influenced differently than analysing, evaluating, or creating. Few studies have examined how AI affects these domains separately, leaving a gap in understanding whether AI supports certain levels of thinking while potentially diminishing others.

In response to these concerns, the present study aims to experimentally examine how AI assistance influences domain-specific critical thinking among undergraduate students. By comparing students who complete tasks with AI assistance to those who work independently, and by measuring performance across six cognitive domains using the 25-item Critical Thinking Questionnaire (CThQ) and a structured Resource Allocation Task, this study seeks to provide clearer insight into the relationship between AI use and higher-order thinking. Understanding this relationship is essential to ensure that technological advancement strengthens, rather than replaces, students' ability to think critically and independently.

METHODOLOGY

Sample

The participants of the study consisted of college going students enrolled in various academic programs. A sample of 10 students was selected using convenience sampling, as the participants were readily accessible within the academic environment. Participants were divided into two equal groups. One group completed the assigned task with the assistance of AI tools, while the other group completed the task without any AI support. The participants belonged to the age group of 18-25 years, which represents a population that frequently uses digital technologies and AI-based tools for academic purposes.

Prior to participation, all students were informed about the purpose of the research and their participation was completely voluntary. Ethical considerations such as informed consent, confidentiality, and anonymity were maintained throughout the research process.

Tools

Two instruments were used in the present study to measure participants' critical thinking abilities under AI-assisted and non-AI conditions: a Critical thinking Questionnaire (CThQ) and a Resource Allocation Task.

The first instrument used in this study was the Critical Thinking Questionnaire (CThQ). This questionnaire consisted of 25 items designed to measure different dimensions of critical thinking. The items were structured according to the six cognitive domains of Bloom's Revised Taxonomy, which include remembering, understanding, applying, evaluating, and creating. Each domain represented a specific aspect of cognitive processing involved in critical thinking. The questionnaire assessed how participants interpret information, analyze problems, evaluate alternatives, and generate solutions in various situations. Participants were required to read each statement carefully and respond according to their level of critical thinking ability of the participants. the instrument was used to obtain a standardized measure of critical thinking that could be compared across the two experimental conditions.

The second instrument used was Resource Allocation Task, which served as a performance-based measure of applied critical thinking. In this task, participants were presented with a hypothetical scenario in which they were required to distribute a limited amount of resources among several competing needs or projects. The scenario required participants to carefully analyze the information provided, consider priorities, evaluate possible consequences, and justify their decisions. Participants in the AI-assisted condition were allowed to consult an artificial intelligence tool while completing the task, whereas those in the non-AI condition completed the task independently without any technological assistance. The responses were later evaluated based on the quality of reasoning, justification of decisions, and logical consistency.

The use of these two instruments allowed the researcher to assess critical thinking from both a structured self-report perspective and a problem-solving perspective. While the critical thinking Questionnaire measured cognitive abilities across different domains, the Resource Allocation Task provided insight into how participants apply those abilities in real-life decision-making situations.

Variables of the Study

Independently Variable: The independent variable in this study was the use of Artificial Intelligence tools during the task.

Dependent Variable: The dependent variable was critical thinking ability, which was measured based on participants' responses to a Critical Thinking Questionnaire (CThQ) and a structured Resource Allocation Task.

Procedure

The present study was conducted in a systematic manner to examine whether the use of artificial intelligence influences individuals' critical thinking abilities. prior to the beginning of the data collection process, participants were informed about the general purpose of the study and were assured that their participation would be completely voluntary. They were also informed that their responses would remain confidential and would be used only for academic and research purposes. After explaining the study procedures, informed consent was obtained from all participants.

Participants who met the inclusion criteria were then recruited using a convenience sampling method. The participants were primarily undergraduate students who were easily accessible to the researcher. After recruitment, participants were primarily undergraduate students who were easily accessible to the researcher. After recruitment, participants were divided into two conditions for the purpose of the experiment: an AI-assisted condition and a non-AI condition. This grouping allowed the researcher to observe potential differences in a critical thinking performance when artificial intelligence tools were available versus when participants relied solely on their own reasoning.

At the beginning of the session, participants were provided with clear instructions regarding the tasks they were required to complete. They were first asked to complete the Crtical Thinking Questionnaire (CThQ). The questionnaire consisted of 25 items designed to measure different aspects of critical thinking based on the domains of remembering, understanding, applying, analyzing, evaluating, and creating. Participants were instructed to read each item carefully and respond honestly based on their understanding and reasoning. Sufficient time was provided to ensure that participants could thoughtfully consider each question before responding.

After completing the questionnaire, participants were given the Resource Allocation Task, which served as a practical exercise to evaluate their applied reasoning and decision-making abilities. In this task, participants were presented with a hypothetical scenario that required them to distribute a limited set of resources across multiple needs or priorities. They were instructed to carefully analyze the information provided, evaluate the available options, and make decisions about how the resources should be allocated. Participants were also asked to provide brief explanations or justifications for their choices in order to understand the reasoning behind their decisions.

Participants assigned to the AI-assisted condition were allowed to use an artificial intelligence tool while completing the Resource Allocation Task. They could consult the AI system to gather information, explore possible solutions, or assist with their decision-making process. In contrast, participants in the non-AI condition were instructed to complete the same task independently without using any AI-based tools or external technological assistance. This difference in conditions allowed the researchers to observe whether access to artificial intelligence influenced the way participants approached the problem and constructed their responses.

Throughout the procedure, the researcher ensured that all participants received the same instructions and were given equal time to complete both the questionnaire and the task. The responses were collected immediately after completion to maintain accuracy and prevent any external influence on the participants' answers.

Once all participants had completed both instruments, the collected responses were organized and reviewed for analysis. The researcher then compared the patterns of responses between the AI-assisted group and the non-AI group in order to examine potential differences in reasoning, decision-making strategies, and overall critical thinking performance. The entire procedure was conducted in a controlled and ethical manner to ensure the reliability and integrity of the research process.

Research Design

The present study adopted a mix method experimental research design to examine the impact of Artificial Intelligence (AI) use on students' critical thinking abilities. Specifically, the study employed a between-group experimental design, where participants were divided into two groups: an AI-assisted group and a non-AI group. The AI-assisted group was allowed to use AI tools while completing the assigned task, whereas the non-AI group was required to complete the same task independently without technological assistance.

This design allowed the researcher to compare differences in the level of critical thinking demonstrated by participants under two different conditions. By controlling the task and environment while manipulating access to AI tools, the study aimed to determine whether reliance on AI influences the depth of reasoning, evaluation, and decision-making abilities of students.

Statistical Analysis

The data in the present study were analysed using descriptive and interpretative methods. Responses from the Critical Thinking Questionnaire (CThQ) were reviewed to observe patterns across the six cognitive domains, with attention to differences between lower-order and higher-order thinking skills.

Therefore, responses from the Resource Allocation Task were examined based on the quality of reasoning, justification, and decision-making. A comparison between the AI-assisted group and the non-AI group was conducted to identify differences in thinking patterns.

The overall analysis focused on identifying general trends and differences in responses rather than using statistical tests, in order to understand how the use of Artificial Intelligence may influence critical thinking.

RESULTS

The results of the present study were derived from the responses collected through two primary instruments: the Critical Thinking Questionnaire (CThQ) and the Resource Allocation Task. These instruments were designed to capture both the cognitive and practical aspects of critical thinking. While the questionnaire provided insight into participants' cognitive processing across different levels of thinking, the resource allocation task allowed the researcher to

observe how these cognitive abilities were applied in a realistic decision-making situation. Together, the two measures helped provide a broader understanding of how the use of artificial intelligence may influence critical thinking.

The analysis of responses from the 25-item Critical Thinking Questionnaire revealed that participants demonstrated varying levels of engagement across the six cognitive domains measured in the study: remembering, understanding, applying, analyzing, evaluating, and creating. In general, participants appeared more comfortable with the lower and mid-level cognitive processes, particularly remembering and understanding. In these sections, participants were able to recall information, recognize concepts, and interpret ideas with relative ease. Many responses reflected a clear comprehension of the material presented in the questionnaire.

However, greater variation was observed when participants engaged with higher-order cognitive domains such as analyzing, evaluating, and creating. These domains required participants to break down information, assess the credibility of different options, and generate their own solutions or interpretations. In these sections, participants were able to recall information, recognize concepts, and interpret ideas with relative ease. Many responses reflected a clear comprehension of the material presented in the questionnaire.

When the responses of participants in the AI-assisted condition were examined, it became evident that artificial intelligence influenced the way some participants approached the questionnaire items and the decision-making task. In several cases, the responses appeared more structured and organized, possibly reflecting the influence of AI-generated suggestions. Participants sometimes incorporated ideas that appeared well-formulated and logically presented. This suggests that AI tools may assist individuals in organizing information and presenting their thoughts in a clearer manner.

At the same time, the examination of responses also indicated that some participants relied heavily on AI-generated outputs while formulating their answers. In these cases, the explanations provided by participants occasionally lacked deeper personal reflection or detailed justification. The responses sometimes appeared generalized, with limited evidence of independent analysis or evaluation of the situation. This pattern suggests that while AI can provide guidance and information, overreliance on such tools may reduce the extent to which individuals actively engage in deeper cognitive processing.

In contrast, the responses obtained from participants in the non-AI condition demonstrated more individualized reasoning patterns. Since these participants completed the tasks without any technological assistance, they were required to rely entirely on their own knowledge, reasoning abilities, and judgement. As a result, many of their responses reflected personal perspectives and unique approaches to the problems presented. Although some answers were less formally structured, they often showed clearer evidence of independent thought and logical reasoning.

The Resource Allocation Task provided additional insight into participants' decision making strategies and reasoning processes. In this task, participants were asked to distribute a limited set of resources among multiple priorities and provide explanations for their choices. The

scenario required participants to evaluate competing needs, determine priorities, and justify their decisions in a logical manner. This task was particularly useful in assessing the practical application of critical thinking skills.

Participants in the non-AI condition generally approached the task by carefully examining the scenario and developing their own reasoning for allocating the resources. Many participants explained their decisions by considering factors such as urgency, potential impact, and fairness. Their justifications often reflected an attempt to balance different needs while making rational and thoughtful decisions. This indicated that participants engaged in analytical thinking and evaluation when determining how resources should be distributed.

Participants in the AI-assisted condition, on the other hand, sometimes approached the task differently. Some participants used AI tools to explore possible solutions and gather additional perspectives before finalizing their decisions. In such cases, AI appeared to function as a supportive resource that helped participants generate ideas and consider alternative approaches. These participants often combined AI-generated suggestions with their own reasoning when explaining their decisions.

However, there were also instances in which participants appeared to depend primarily on the AI tool when completing the task. In these responses, the reasoning provided sometimes reflected the suggestions generated by the AI system rather than the participants' own independent evaluation of the scenario. As a result, some answers lacked detailed personal justification or reflection on the broader implications of the decisions made.

Overall, the comparison between the two conditions suggests that the presence of artificial intelligence may influence how individuals approach problem-solving and reasoning tasks. While AI tools can provide useful information, generate ideas, and help organize responses, their influence on critical thinking appears to depend largely on how individuals choose to engage with the technology. When used as a supportive tool that complements personal reasoning, AI may assist individuals in refining and structuring their thoughts. However, when relied upon excessively, AI may reduce the level of independent analysis and evaluation performed by the individual.

The findings of the present study highlight that the relationship between artificial intelligence usage and critical thinking abilities is complex and multifaceted. Rather than simply improving or weakening critical thinking, the use of AI appears to influence how individuals approach thinking and problem-solving tasks. In some situations, AI can assist users by providing information, suggesting ideas, and helping them organize their thoughts more clearly. However, when individuals rely too heavily on AI-generated responses, they may engage less deeply with the problem and may not fully develop their own reasoning or evaluation of the situation.

These observations suggest that the impact of AI on critical thinking largely depends on how individuals choose to use the technology. When AI is used as a supportive tool that complements personal effort and reasoning, it can contribute positively to learning and understanding. On the other hand, if it is used as a replacement for independent thinking, it may limit opportunities for deeper analysis and reflection. Therefore, it becomes important for educational settings to encourage a balanced and thoughtful use of AI tools, where technology

supports learning while still allowing individuals to actively engage in critical thinking and decision-making processes.

Discussion

The present study was conducted to explore whether the use of artificial intelligence has an influence on individuals' critical thinking abilities. By comparing participants who used AI tools with those who did not, the study aimed to understand how AI may affect the way people think, reason, and make decisions in different situations.

The results indicate that AI does play a role in shaping how individuals approach tasks. Participants who used AI generally produced responses that were more organized and clearly structured. This suggests that AI can be useful in helping individuals generate ideas and present them more effectively. In this way, AI appears to function as a supportive tool, particularly in tasks that involve understanding and explaining information.

On the other hand, participants who completed the tasks without AI showed stronger evidence of independent thinking. Their responses were based more on personal understanding and judgment. Although their answers were sometimes less structured, they often reflected deeper thinking, especially in areas that required analysis, evaluation, and reasoning. This suggests that relying on one's own thinking may encourage greater cognitive engagement.

An important finding of the study is that AI does not influence all aspects of critical thinking equally. While it may assist with basic cognitive processes such as understanding and organizing information, it does not always promote deeper levels of thinking. In some instances, participants appeared to rely heavily on AI-generated responses, which reduced their involvement in independent reasoning.

These findings highlight that AI can have both positive and negative effects. When used appropriately, it can support learning, provide guidance, and make tasks easier to complete. However, excessive dependence on AI may limit opportunities for individuals to think independently and develop their reasoning abilities.

Another key observation is that the impact of AI depends largely on how it is used. Participants who used AI as a tool for support while still engaging in their own thinking seemed to benefit more. In contrast, those who relied completely on AI tended to show less depth in their responses. This indicates that the way individuals interact with AI plays a crucial role in determining its effect on critical thinking.

From an educational perspective, these findings are significant. As AI tools become more common in academic environments, it is important to encourage their responsible use. Students should be guided to use AI as a supportive resource rather than as a substitute for their own thinking. Encouraging activities that involve reasoning, explanation, and reflection can help in maintaining strong critical thinking skills.

The study also has certain limitations. The sample size was relatively small and limited to a specific group, which may affect the generalizability of the findings. Additionally, the study

relied on descriptive analysis rather than statistical methods, which limits the strength of the conclusions.

Despite these limitations, the study contributes to a better understanding of the relationship between AI and critical thinking. It shows that AI is not inherently beneficial or harmful, but its impact depends on how it is used. Future research can build on these findings by including larger samples and more detailed methods of analysis.

Overall, the study emphasizes that while AI can be a valuable tool, maintaining independent thinking is essential. A balanced use of AI can help ensure that it supports learning without reducing critical thinking abilities.

CONCLUSION

The present study aimed to explore whether the use of artificial intelligence has an impact on individuals' critical thinking abilities. By examining participants' responses to the Critical Thinking Questionnaire (CThQ) along with their performance on the Resource Allocation Task, the research sought to understand how the availability of AI tools may influence the way individuals process information, reason through situations, and make decisions when dealing with complex problems.

The findings indicate that the presence of AI can influence how individuals engage with thinking and problem-solving tasks. Participants who completed the activities without the support of AI primarily depended on their own knowledge, understanding, and judgment. Their responses often demonstrated personal reasoning and independent thought, as they had to carefully evaluate the information provided and arrive at their own explanations and conclusions.

In comparison, participants who had access to AI tools sometimes produced responses that appeared more structured and well-organized. This suggests that AI can assist individuals in generating ideas and presenting their thoughts in a clearer manner. However, the results also revealed that some participants relied heavily on the suggestions generated by AI. In such cases, their responses occasionally lacked deeper personal reflection or detailed justification, indicating that they were less actively involved in the reasoning process.

These observations suggest that the relationship between artificial intelligence and critical thinking is complex and cannot be viewed as entirely beneficial or harmful. AI can serve as a valuable aid when it is used to support idea generation, clarify information, and enhance learning. Nevertheless, excessive dependence on AI may reduce opportunities for individuals to independently analyze situations and develop their own reasoning abilities.

In conclusion, the study emphasizes the importance of using artificial intelligence in a thoughtful and balanced manner, particularly within educational contexts. AI should ideally function as a supportive tool that enhances learning and broadens understanding, rather than replacing independent thinking. Encouraging individuals to question, evaluate, and reflect on information remains essential for nurturing strong and effective critical thinking skills.

Limitations of the study

While the present study provides useful insights into how artificial intelligence may influence critical thinking, it is important to consider certain limitations that may have affected the findings. One of the main limitations of the study is the small sample size. The research was conducted on a limited number of participants, which makes it difficult to generalize the findings to a larger population. The results may reflect the behaviour and thinking patterns of this specific group rather than representing all students.

Another limitation is that the participants were selected using convenience sampling. Since the participants were chosen based on their availability, the sample may not be fully representative of individuals from different educational backgrounds, regions, or levels of experience with AI. This could influence the overall findings of the study.

The study also relied on descriptive and interpretative analysis rather than statistical methods. While this approach helped in understanding patterns and differences in responses, it limits the ability to draw strong or definitive conclusions about the relationship between AI use and critical thinking.

Additionally, the time given to participants for completing the tasks was limited. Critical thinking often requires time for reflection and deeper analysis, and the time constraint may have affected the quality of responses provided by participants.

Another important limitation is related to participants' familiarity with AI tools. Some participants may have been more experienced or comfortable using AI than others, which could have influenced how effectively they used the tool during the task. This variation in familiarity was not controlled in the study.

Lastly, the study focused on short-term performance rather than long-term effects. It examined how participants responded in a single session, but it does not provide information about how continuous or long-term use of AI might influence critical thinking abilities over time.

Despite these limitations, the study still offers valuable insights and can serve as a foundation for future research. Addressing these limitations in future studies can help in gaining a more comprehensive understanding of the relationship between artificial intelligence and critical thinking.

REFERENCES

Abbas, J., Aman, J., Nurunnabi, M., & Bano, S. (2025). The impact of artificial intelligence usage on critical thinking skills among university students. Policy Research Journal, 12(1),

Anderson, L. W., & Krathwohl, D. R. (2001). A taxonomy for learning, teaching, and assessing: A revision of Bloom's taxonomy of educational objectives. Longman.

Bloom, B. S., Engelhart, M.D., Furst, E. J., Hill, W. H., & Krathwohl, D. R. (1956). Taxonomy of educational objectives: The classification of educational goals. Longman.

Carr, N. (2020). The shallows: What the internet is doing to our brains. W. W. Norton & Company.

Ennis, R. H. (2015). Critical thinking: A streamlined conception. Inquiry: Critical Thinking Across the Disciplines, 32(1), 5-17.

Facione, P. A. (2011). Critical thinking: What it is and why it counts. Insight Assessment.

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

Luckin, R., Holmes, W., Griffiths, M., & Forcier, L. B. (2016). Intelligence unleashed: An argument for AI in education. Pearson.

Risko, E. F., & Gilbert, S. J. (2016). Cognitive offloading. Trends in Cognitive Sciences, 20(9), 676-688.

Shukor, N. A., & Osman, K. (2025). Artificial intelligence and critical thinking in education: A systematic review. International Journal of Academic Research in Progressive Education and Development, 14(1), 112-128.

Zawacki-Richter, O., Marin, V. I., Bond, M., & Gouverneur, F. (2019). Systematic review of research on artificial intelligence applications in higher education. International Journal of Educational Technology in Higher Education, 16(39), 1-27.