HSR (LONDON),
HOUGHTON STREET REVIEW JOURNAL
ISSN: 2058-5519|Impact factor-15.9
http://houghtonstreetreview.com/index.php/hsr

THE IMPACT OF AI IN STUDENTS' NEURAL SYSTEM IN EDUCATION

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doi:https://doi.org/10.5281/zenodo.22840683

Annotation: In the digital era, the role of technology becomes more significant, particularly, in the field of education. However, not all students have knowledge of how to use it in an effective way. This paper explores the impact of artificial intelligence (AI) on students' memory processes and neural engagement. The author used mixed methods, particularly the qualitative research method and the quantitative research method, by using focused-group interview and observation methods. The result of this research showed that many students use AI in their studies, but not always in an effective way. While some representatives stated the advantages of AI in improved access to information, others reported that it negatively affects long-term memory use and reduced cognitive development. Ultimately, these results suggest that AI can be beneficial when students use it carefully. Also, the proper guidance and balanced use are essential to avoid the negative impacts on memory retention and thinking skills.
Keywords: Artificial tools, neural systems, encoding information, memorization process, parental control.

Introduction

Nowadays, people cannot imagine their lives without technology. Students use digital tools almost every day to study, search for information, and complete their assignments. As Luo Yating (2023) mentioned that modern technology and education are closely connected and this connection continues to transform contemporary teaching methods. Also, in the dedication of the AI conference (UNESCO, 20 April 2023), neurosciences emphasized that using Artificial Intelligence makes easier to learning process and is able to resolve the learning challenges. Students often use AI tools such as ChatGPT, Gemini, DeepSeek, Gamma, Learna AI, and AI Tutor for academic purposes. Online platforms like Quizlet, Kahoot, Wordwall, and Spinner also make learning more interesting and interactive. According to Zhao Shuai (2023), the use of AI in education is increasing, and it has a positive impact onteachingsystems.

Despite the above mentioned advantages, a spokesperson for Sciences Po told Reuters (2023) demonstrated that using Artificial Intelligence (ChatGPT) is not helpful and beneficial all the time, especially in educational contexts. Similarly, Noam Chomsky (EduKitchen, January 21, 2023) argued that excessive reliance on AI destroy teaching systems and increase cognitive dependency among learners. When students overuse AI, it can shorten attention span and create cognitive dependency, limiting the development of problem-solving and decision-making neural networks. For these reasons, it is necessary to examine the influence of AI on learners' memory and neural system.

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Literaturereview

Artificial Intelligence has appeared in the field of education since 1960 (HackerNoon, 2024). The first AI program system was called PLATO (Robert F. Smith, 2024). During this period, a release of ChatGPT gives learners access to generate text, check writing tasks, and get answers with explanations for each question and a speaking function (HackerNoon, 2024). Dr Xandra (2024) and Anthropic (2025) explain that AI improves students' engagement and makes teaching methods more effective. Particularly, there are both pros and cons of AI in students' memorisation process. On the one hand, Artificial Intelligence provides students with personalised tutoring that works 24/7, and it gives immediate feedback, and also it uses interactive methods based on students' levels and gives simultaneously practical tasks for better understanding and transferring learned information from short-term memory to long-term memory (Ch. Pappas, 2024). Retrieval practice, which is a learning technique by recalling or remembering information, not by re-reading again (A. Sood, 2025), and spaced learning, which is a learning method where learners review the information at planned intervals (Wikipedia), are good options with AI tools. On the other hand, many students rely on these tools. As Vieriu and Petrea (2025) claimed that this dependancy reduce students critical thinking and problem-solving skills. Sparrow, Liu and Wegner (2011) also suggested that easy access can change memory retention. Memory is connected to the neural system and brain process. Information is stored in short-term memory to long-term memory (Priya R. 2023). Overuse of AI-based tools may lead to mental effort reduction and deeper understand limitation (U. Neisser, 2025).

Methodology

The research used both qualitative and quantitative methods. It included 40 students from different levels. Data were gathered through interviews and observation. The aim was to understand students' use of AI in learning. The data were analysed carefully, and all participants took part voluntarily with full confidentiality.

Findings&Discussion

The results show that some students use AI carefully and still think independently. Others depend too much on it and show weaker memory and learning skills. These findings support both positive and negative views about AI (Zhao Shuai, 2023; Reuters, 2023; Chomsky, 2023). This means AI is useful, but only when used properly.

Conclusion

The primary objective of this paper was to better understand how AI-based tools influence the way students learn, especially in terms memory retention, cognitive engagement, and brain processes involved in studying and understanding information. On the one hand, AI has proven to be a useful supportive system for students. Contemporary AI-based tools, such as intelligent tutoring systems and adaptive learning platforms, help students learn more effectively. These tools can adjust the difficulty level of content based on the learners' needs, provide immediate feedback, and offer many practical activities, which contributes positively to cognitive development and enhances memory retention. However, using AI tools leads to weaker critical thinking skills and decreases the level of active learning. From a neuroscientific perspective, learning requires active brain involvement, particularly in areas which are related to attention, reasoning, and memory formation. All in all, it is important to use AI in a balanced and controlled way. AI is better understood as a tool that supports learning, not

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something that replaces human thinking.

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ISSN: 2058-5519|Impact factor-15.9
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