International Journal of Science Annals, Vol. 8, No. 1, 2025
print ISSN: 2617-2682; online ISSN: 2707-3637; DOI:10.26697/ijsa

LETTERS TO THE EDITOR

LETTER TO THE EDITOR

Does Artificial Intelligence in Education Contribute to Social Development or Cognitive Degradation?

Borshch K. K. [1]

[1] *Uzhhorod National University, Ukraine*

Received: *12.05.2025;* ***Accepted:*** *20.06.2025;* ***Published:*** *30.06.2025*

Abstract

Background and Aim of Study: *Artificial intelligence (AI) has become a strategic element of the modern educational space. Adaptive platforms, automated assessment systems, intelligent tutors, generative models, and big data analytics create new opportunities for individualized and inclusive learning. However, critics point out that excessive reliance on automated solutions can lead to decreased student independence, superficial knowledge acquisition, and disruption of long-term memory formation. The impact of AI on social development and cognitive dynamics is becoming a key issue in 21st-century educational research.*
The aim of the study: to analyze current issues related to the impact of AI on education and identify the conditions that ensure its positive influence on the educational process.

Conclusions: *AI in education has the potential to significantly enhance social development, expand access to knowledge, and foster new collaborative skills. However, without thoughtful implementation and pedagogical support, AI technologies can contribute to cognitive degradation, a decline in critical thinking, and a weakening of social competencies. Therefore, a key challenge for modern science and practice is finding the optimal balance where AI acts as a tool to enhance, rather than replace, human intelligence and social interaction. To this end, educators and educational institutions must take a comprehensive approach that covers the following areas: educators acting as mentors when working with AI; using AI as a mentor in education; and promoting transparency and digital literacy in education.*

Keywords: *artificial intelligence, education, cognitive degradation, social development, critical thinking*

DOI: *https://doi.org/10.26697/ijsa.2025.1.7*
Conflict of interests: *The author declares that there is no conflict of interests*
Peer review: *Double-blind review*
Source of support: *This research did not receive any outside funding or support*

Information about the author: ***Borshch Kostiantyn Kostiantynovych*** *(Corresponding Author) – http://orcid.org/0000-0002-3310-9315; k.borsch@uzhnu.edu.ua, Doctor of Philosophy in Sociology, Affiliated Associate Professor, Uzhhorod National University, Uzhhorod, Ukraine.*

Dear Editor,

Artificial intelligence (AI), being implemented in educational systems, is fundamentally changing traditional forms and methods of teaching, student interaction with information, and the structure of pedagogical processes. Adaptive learning technologies, intelligent tutors, and automated progress monitoring systems are becoming tools capable of enhancing the effectiveness of knowledge acquisition and personalizing the educational process. However, along with its broad opportunities, the penetration of AI into education has become a new challenge for national education systems, a natural consequence of digitalization, and a subject of scientific debate (Chan & Colloton, 2024; Melnyk & Pypenko, 2024).

According to scientists and educators, AI in education contributes to social development in several key ways. First, it personalizes learning and makes it inclusive. AI systems allow for the individual characteristics, pace,

and learning style of each student, including children with disabilities and socially vulnerable groups. This contributes to the creation of an inclusive educational environment, fostering empathy and tolerance (Crompton & Burke, 2023).

Second, it expands educational access. Online platforms powered by AI technologies enable the provision of education in remote and sparsely populated areas, thereby reducing social inequalities in access to quality education. Automatic translation and multimodal information presentation technologies make educational content accessible to people with different language skills and special educational needs. AI assistants for people with visual, hearing, or motor impairments open up new opportunities for inclusive education, promoting social integration and reducing educational inequalities (Aler Tubella et al., 2024).

Thirdly, this promotes the development of positive skills in learners. The use of AI tools develops skills in formulating queries, critically evaluating results, verifying information, and creatively integrating various knowledge sources. They complement the educational process with the benefits of digital communication and have become commonplace in higher education systems (Chan & Colloton, 2024).

At the same time, however, conflicting expert assessments of the use of AI models directly in the educational process are emerging in the scientific debate. Research by Lee et al. (2024), Melnyk and Pypenko (2024) indicate that the situation is not entirely clear-cut, as the use of AI creates not only benefits but also significant risks for learners (Table 1).

Table 1

Benefits and Risks of Artificial Intelligence

Benefits of artificial intelligence	Risks of artificial intelligence
Improved learning efficiency and student engagement	Ethical issues and data privacy
Individualized approach to each student	Possible decreased role of human interaction in learning
Reduced administrative burden on teachers	Technology dependency and technical failures
Objective assessment and rapid feedback	Need for technical user training

The uncontrolled use of ChatGPT and other AI models in academic settings for completing academic assignments (writing papers, essays, and term papers) creates new problems in the higher education system, as it negatively influences learning and academic performance, violates the principles of academic integrity, undermines trust in universities, and reduces motivation for learning (Aler Tubella et al., 2024; Melnyk & Pypenko, 2023).

Bastani et al. (2024), based on a field experiment with student groups, concluded that caution should be exercised when implementing generative AI, as it contributes to the loss of critical independent work skills. Peters et al. (2024) note the potential harm of actively using AI models in social science instruction, as they may undermine students' critical thinking and creativity.

All of this is forcing educational institutions to entirely or partially ban the use of AI. For example, to prevent cheating, Sciences Po (France) banned ChatGPT altogether, including the possibility of student expulsion (Reuters, 2023). Russell Group universities in the UK (including Oxford University) have prohibited the use of AI in grading papers, considering its use a violation of academic ethics and unfair practice (The Tab, 2023). It is worth noting that 18% of US universities ban AI by default without instructor permission (Caulfield, 2025).

According to researchers and educators, delegating cognitive tasks to AI poses significant risks to the development of fundamental intellectual abilities, leading to a decline in memory and critical thinking skills, as well as a tendency to avoid complex intellectual problems (Pypenko, 2024).

A classic example is the phenomenon of "digital amnesia", in which people stop remembering information despite knowing it is available in digital systems when using AI assistants (Musa et al. 2023). While memory has always been part of the human psyche, radically reducing the load on biological memory can have unintended consequences for the brain's cognitive abilities, especially during critical periods of childhood and adolescent development.

Of particular concern is the impact of AI models on the development of written language and critical thinking. This reduces the ability to formulate one's own thoughts, mental flexibility, and the ability to reason independently. The psychological effect of passively consuming ready-made answers leads to superficial information processing, reduced cognitive control, and a deterioration in the ability to distinguish between reliable and unreliable information (Kurtz et al., 2024).

To further promote the positive use of AI in education, we believe that educators and educational institutions must strike a balance between the AI benefits and risks.

Working with AI in educational institutions requires a comprehensive approach that includes the following areas:

Educators as mentors when working with AI

They should teach students how to select an AI model, manage it, verify AI conclusions, and critically interpret them. AI should primarily perform labor-intensive mechanical tasks (e.g., error checking), but not replace thinking.

AI as a mentor in education

Students should optimally use models that ask questions, provide hints, and encourage inquiry, rather than provide ready-made solutions.

Transparency and digital literacy in education

When working with students, a key condition is developing an understanding of how AI models are structured, identifying potential errors, and learning how to avoid cognitive dependence when interacting with AI.

Conclusions

Thus, AI in education can promote social development by expanding access to knowledge, personalizing learning experiences, and fostering interaction skills. However, it can also exacerbate cognitive decline if used as a substitute for thinking rather than as a tool for enhancing it.

Therefore, the key factor is the pedagogical strategy and the level of digital competence when working with AI. When implemented correctly, AI becomes a catalyst for intellectual and social growth when used unsupervised, it can weaken students' cognitive functions.

Ethical Approval

The study protocol was consistent with the ethical guidelines of the 1975 Declaration of Helsinki as reflected in a prior approval by the Institution's Human Research Committee.

Funding Source

This research did not receive any outside funding or support.

Conflicts of Interests

The author declares that there is no conflict of interests.

References

Aler Tubella, A., Mora-Cantallops, M., & Nieves, J. C. (2024). How to teach responsible AI in higher education: Challenges and opportunities. *Ethics and Information Technology, 26,* Article 3. https://doi.org/10.1007/s10676-023-09733-7

Bastani, H., Bastani, O., Sungu, A., Ge, H., Kabakcı, Ö., & Mariman, R. (2024). Generative AI can harm learning. In M. Barnhart & M. Wells (Eds.), *Global Reach of The Wharton School, University of Pennsylvania Research Paper Series* (pp. 1–59). Elsevier. https://doi.org/10.2139/ssrn.4895486

Caulfield, J. (2025, February 21). *University policies on AI writing tools: Overview & list.* Scribbr. https://www.scribbr.com/ai-tools/chatgpt-university-policies/

Chan, C. K. Y., & Colloton, T. (2024). *Generative AI in higher education: The ChatGPT effect* (1st ed.). Routledge. https://doi.org/10.4324/9781003459026

Crompton, H., & Burke, D. (2023). Artificial intelligence in higher education: The state of the field. *International Journal of Educational Technology in Higher Education, 20,* Article 22. https://doi.org/10.1186/s41239-023-00392-8

Musa, N., Mukhtaruddin, & Bakkara, V. F. (2023). The effects of digital amnesia on knowledge construction and memory retention. *Khizanah Al-Hikmah: Journal of Library Science, Information Science, and Archival Science*, *11*(2), 313–326. https://doi.org/10.24252/kah.v11i2cf1

Kurtz, G., Amzalag, M., Shaked, N., Zaguri, Y., Kohen-Vacs, D., Gal, E., Zailer, G., & Barak-Medina, E. (2024). Strategies for integrating generative AI into higher education: Navigating challenges and leveraging opportunities. *Education Sciences*, *14*(5), Article 503. https://doi.org/10.3390/educsci14050503

Lee, D., Arnold, M., Srivastava, A., Plastow, K., Strelan, P., Ploeckl, F., Lekkas, D., & Palmer, E. (2024). The impact of generative AI on higher education learning and teaching: A study of educators' perspectives. *Computers & Education: Artificial Intelligence*, *6,* Article 100221. https://doi.org/10.1016/j.caeai.2024.100221

Melnyk, Yu. B., & Pypenko, I. S. (2023). The legitimacy of artificial intelligence and the role of ChatBots in scientific publications. *International Journal of Science Annals, 6*(1), 5–10. https://doi.org/10.26697/ijsa.2023.1.1

Melnyk, Yu. B., & Pypenko, I. S. (2024). Artificial intelligence as a factor revolutionizing higher education. *International Journal of Science Annals, 7(1)*, 8–16. https://doi.org/10.26697/ijsa.2024.1.2

Peters, M. A., Jackson, L., Papastephanou, M., Jandrić, P., Lazaroiu, G., Evers, C. W., & Fuller, S. (2024). AI and the future of humanity: ChatGPT-4, philosophy and education – Critical responses. *Educational Philosophy and Theory*, *56*(9), 828–862. https://doi.org/10.1080/00131857.2023.2213437

Pypenko, I. S. (2024). Benefits and challenges of using artificial intelligence by stakeholders in higher education. *International Journal of Science Annals, 7(2)*, 28–33. https://doi.org/10.26697/ijsa.2024.2.7

Reuters. (2023, January 27). *Top French university bans use of ChatGPT to prevent plagiarism.* https://www.reuters.com/technology/top-french-university-bans-use-chatgpt-prevent-plagiarism-2023-01-27/

The Tab. (2023, March 3). *These are the Russell Group unis that have banned students from using ChatGPT.* https://thetab.com/2023/03/03/these-are-the-russell-group-unis-that-have-banned-students-from-using-chatgpt

Cite this article as:
Borshch, K. K. (2025). Does artificial intelligence in education contribute to social development or cognitive degradation? *International Journal of Science Annals, 8*(1), 60–62. https://doi.org/10.26697/ijsa.2025.1.7

The electronic version of this article is complete. It can be found online in the IJSA Archive https://ijsa.culturehealth.org/en/arhiv