

Education and generative artificial intelligence. Open challenges, opportunities, and risks in higher education

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Abstract

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In recent months, the intertwined narratives of education and artificial intelligence (AI) have gained remarkable momentum, framing dialogues on the future of learning and teaching. The potency of generative artificial intelligence (GenAI), particularly in higher education, offers a rich tableau of both promises and perils. This keynote delves into the challenges, opportunities, and risks of such technologies within the ambit of higher education.

Between the most promised opportunities, we can underline:

- Personalised learning pathways: GenAI promises a paradigm shift from one-size-fits-all educational models. Analysing individual student data can generate customised learning materials and study plans catering to each learner's strengths, weaknesses, preferences, and pace.
- Assisting faculty: Educators can harness these technologies to generate lesson content, identify teaching materials gaps, and offer real-time feedback. This could revolutionise pedagogic strategies, making them more responsive and dynamic.
- Language translation and globalisation: Generative models can instantaneously translate academic materials into multiple languages, breaking down linguistic barriers and democratising access to knowledge.

However, risks are also presented in this new scenario, such as:

- Over-reliance on technology: The allure of AI might seduce institutions into diminishing the role of human educators. The intangible qualities of mentorship, inspiration, and human connection, which are pivotal in the learning process, might be overshadowed.
- Data privacy and security: With AI systems analysing student data to provide personalised learning experiences, concerns over data privacy emerge. How institutions store, process, and protect this data from breaches becomes paramount.
- Ethical dilemmas: The capacity of GenAI to create content poses questions about authorship, authenticity, and credibility. In academic research, for instance, discerning human-generated insights from AI-generated ones can be ethically murky.

Finally, higher education decision-makers need to accept AI and GenAI as a reality that now has a considerable impact in the education realm, with a special emphasis on universities. From the higher number of new challenges that universities must face, we put the focus on:

- Integration with existing systems: The seamless incorporation of AI into higher education's technological ecosystems can be intricate. Institutions must grapple with the logistics of technology adoption, ensuring compatibility and minimal disruption.
- Bias and representation: AI models are trained on vast amounts of data. If this data is skewed or biased, the AI's generative capabilities may inadvertently perpetuate or exacerbate existing prejudices, leading to non-inclusive or misrepresentative learning materials.
- Dependence on proprietary solutions: Large Language Models (LLM) have popularised AI in education with important applications such as ChatGPT or Bard. Universities know that the faculty and the students use these tools. However, the dependence of the third parties introduces ethical, security and privacy issues. The higher education institutions should join initiatives to build up their own models based on fine-tuned open-source LLMs.
- Depersonalisation of Learning: While AI can customise learning, there's a risk of reducing education to algorithmic interactions, side-lining the humanistic and relational dimensions of learning.

Conclusion: A call for thoughtful integration

The confluence of GenAI and higher education is undeniably transformative. It beckons an era where personalised, globally accessible, and highly efficient education might become the norm. However, this journey has challenges and risks that demand meticulous attention.

A balanced approach is vital for higher education to benefit from GenAI. Universities must be proactive, not just in harnessing the opportunities AI presents but in pre-emptively addressing its challenges. Ethical considerations, especially concerning bias, data privacy, the collaboration consortiums to create a set of safe fine-tuned models for higher education that will be part of their institutional technological ecosystems, and the potential depersonalisation of education, should be at the forefront of any AI integration strategy.

In essence, while generative AI stands as a formidable tool in the arsenal of higher education, its deployment must be thoughtful, ethical, and always in service of enhancing human-centric education, which must comply with universities' digital transformation strategies. Only then can the true potential of this symbiotic relationship be fully realised.

Keywords

Education, Artificial Intelligence, Generative Artificial Intelligence, Higher Education

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