CHALLENGES AND RISKS OF AI IN EDUCATION

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Abstract

Like any other sector, in the new paradigm of the digital economy, education is also about to be affected by the changes introduced by Artificial Intelligence technologies. Indeed, the way new knowledge is learned is constantly evolving and may be radically transformed in the future.

In the field of education, AI will influence education and how we structure our education system.

Developers have released AI tools that can generate text, images, music, and video with no need for complicated coding but simply in response to instructions given in natural language. These technologies are rapidly improving, and developers are introducing capabilities that would have been considered science fiction just a few years ago. AI is also raising pressing ethical questions around bias, appropriate use, and plagiarism.

Companies such as edX and Coursera have been offering a wide range of university courses of all kinds for several years now, allowing any individual to register to take advantage of lectures, tutorials and examinations taught by faculty from top universities and academic institutions around the world. It is in this area that people have begun to introduce Machine Learning algorithms to experiment with their use in education as well.

Some educators and leaders look forward to these changes with great enthusiasm, probably the biggest positive transformation that education has ever seen." But others warn that AI will enable the spread of misinformation, facilitate cheating in school and college, and cause massive job loss.

Keywords: AI, education, edtech.

1 INTRODUCTION

The starting point of AI is, precisely, the year 1950 when Turing published an article entitled 'Computing machinery and intelligence 'in the journal *Mind.* However, 2023 will likely be considered*,* in the future, the year of exponential growth in artificial intelligence. [7]

Technological advances have opened a world of opportunities for students and teachers lately.

With new access to online and traditional learning platforms, the possibilities for furthering educational goals seem limitless.

The trend in higher education seems to be toward making education more accessible and on-demand. Technology allows the online delivery of educational materials and rapid information sharing, allowing for quick and secure connections among learners. Students and faculty are no longer limited by physical distances and language barriers, allowing them to teach and learn virtually anywhere. [3]

The introduction of augmented reality (AR) and virtual reality (VR) technology will revolutionize learning in higher education. For instance, devices such as virtual whiteboards and 3D simulations will enable teachers to bring lessons truly life, virtual field trips could also be possible, exploring virtual environments. Artificial Intelligence can revolutionize how education is delivered and received by allowing for personalized instruction and interactive learning experiences. [3].

The aim of this paper is to highlight advantages and disadvantages of the introduction of artificial intelligence in higher education.

After a detailed and systematic analysis of existing literature, the research suggests answers and solutions possibly soliciting further research on the basis of renewed questions.

2 METHODOLOGY

The methodology is based on the synthetic review, with a critical contribution, of the knowledge on the chosen topic through the identification, collection, reading and criticism of the most relevant and qualified scientific works.

The study opens with the statement of the research object: analysis of the benefits and disadvantages in the use of AI.

After a detailed and systematic analysis of existing literature, the research suggests answers and solutions possibly soliciting further research on the basis of renewed questions.

This is an explorative research, so a qualitative approach is the most appropriate method with multiple studies (min six case studies), semi-structured interviews and in depth interviews.

After the analysis of existing literature, case studies will be selected among universities and business schools of different dimensions, locations, specializations that are coping with the the changes introduced by Artificial Intelligence technologies.

3 RESULTS

The use of artificial intelligence (AI) in education offers several benefits, such as: personalized learning, more efficiency and time saving, teacher support, instant feedback, accessibility and inclusiveness, skills development, pedagogical innovation, greater students' involvement.

Potential benefits of AI in higher education

B1. Personalized learning – AI can adapt educative materials and learning activities to student's needs and learning rhythms, allowing for a more effective learning environment [below[1], [2], [3], [4], [5]].

B2. More efficiency and time saving – AI can automate repetitive tasks (such as student assessment, assignments' correction, and educational resources management), allowing teachers to focus on more creative and meaningful activities [below[1], [2], [3], [4], [5]].

B3. Teacher support – AI can analyze large amounts of data to identify patterns and trends in student learning, providing teachers with valuable insights to adapt teaching strategies and improve student outcomes. In addition, AI can be used for educational planning and course content management [[2], [3], [4]].

B4. Instant feedback – AI can provide instant feedback to students, allowing them to monitor their progress in learning in real time and make prompt corrections. Furthermore, AI can help teachers monitor student progress and identify those who need additional support [[2], [3], [4], [5]].

B5. Accessibility and inclusiveness – AI can be employed to create online learning platforms that are accessible at any time and from anywhere, expanding access to education for students of different age and geographical backgrounds, helping to reduce inequalities in education. Moreover, AI can improve accessibility for students with disabilities by offering support tools such as screen readers, voice recognition, and other customized features [[3], [4], [5]].

B6. Skills development – the use of AI in education can help students develop digital, critical thinking, problem-solving, and collaborative skills, preparing them for the ever-changing labor market [[1], [3], [4], [5]].

B7. Pedagogical innovation – AI provides new opportunities to experience innovative educational approaches, such as virtual tutoring, large-scale customization, and simulation of complex scenarios, enriching student's learning experience [[3], [4], [5]].

B8. Greater students' involvement – AI can make learning more interactive and engaging through the use of games, simulations and virtual reality, increasing students' motivation and interest in learning [[3], [4]].

On the other hand, the use of artificial intelligence (AI) in education features some disadvantages as: technology addiction and excessive standardization, privacy risk and ethical concerns, job losses, algorithmic bias, less human interaction, authenticity risk.

Potential disadvantages of AI in higher education:

D1. Technology addiction and excessive standardization – the widespread use of AI may lead to excessive dependence on technology and excessive standardization of education, undermining the students' development as independent learners, reducing students' ability to develop essential skills, also relational ones. Students may become dependent on AI-based tools to complete tasks, reducing critical thinking and autonomous problem-solving skills if not balanced with traditional educative approaches [[2], [5]].

D2. Privacy risk and ethical concerns – AI collects and analyzes large amounts of student data, increasing worries about privacy and security of personal data. Moreover, some expert raise worries about the use of AI in education, fearing that it may dehumanize what is essentially human through inappropriate analogies between human and computational processes [[1], [4], [5]].

D3. Job losses – the automation of educational tasks through AI could lead to reduce demand for teachers and other education professionals, with possible consequences for employment in that sector [[1], [2], [4]].

D4. Algorithmic bias – the use of AI may lead to implicit discrimination if artificial intelligence models incorporate biases in training data. The algorithms used by AI could incorporate cultural, social or gender biases, influencing educational decisions and contributing to the perpetuation of existing inequalities [[2], [4], [5]].

D5. Less human interaction – excessive use of AI may reduce face-to-face interactions between teachers and students, affecting the quality of empathy and relationship-based learning [[4]].

D6. Authenticity risk – generative AI-based tools can be used to create non-original content, increasing the risk of academic fraud and plagiarism [[5]].

Interviews and case studies will underline pros and cons of the introduction of AI in the education sector, filling the gap research in this field.

4   CONCLUSIONS

It is difficult to predict what AI will bring to our futures given the rapid pace of development.

It is evident that AI will continue to make substantial contributions to how students engage with knowledge, develop academic knowledge related skills and learning experience in their education in terms of personalised learning. This will result in human teachers reinventing their practices to support students to nurture and monitor the other aspects of human intelligence.[6]

Educators will have to place themselves on the continuum between the two poles of: ignoring AI tools and educating about AI tools.

The aim of this paper does not permit exploring other questions that emerge from this study. They are worth raising because they can propel further in-depth conceptual and empirical investigations into education integrity.

Further research on the basis of renewed questions could be the issue of how to embrace such technologies using them judiciously in ethical way. Harnessing and engaging with AI should be grounded in transparent, ethical practices for education and society at large.

Limitations are mainly due to the characteristics of the qualitative method based on literature review, interviews and case studies.

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