The Role of Artificial Intelligence in the Teaching Process of Higher Education

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Abstract:

An analysis of foreign and Russian sources on the emergence and use of artificial intelligence (AI) has revealed how modern technological advancements are being incorporated into the educational process of higher education institutions, including foreign language teaching. This article provides a definition of artificial intelligence as an educational technology and examines this process to forecast the future nature of the higher education system in a world where AI is becoming an integral part of not only education but also society as a whole. The study identifies and analyzes some advantages and disadvantages that both higher education institutions and students may encounter when learning foreign languages. Specific areas of AI application are described that can enhance the effectiveness of foreign language learning.

Keywords: Higher education, foreign languages, artificial intelligence, chatbots, teaching, technological advances.

Introduction

Artificial Intelligence (AI) as a branch of modern science is steadily penetrating into everyday life, becoming an integral part of e-commerce, marketing, manufacturing, medicine, automotive industry, as well as playing an increasingly important role in education, including foreign language learning.

The future of higher education is inextricably linked to the development of new technologies and computing power of intelligent machines. In this area, advances in AI offer both new opportunities and challenges that could fundamentally change the management and internal architecture of higher education institutions.

Literature analysis and methodology

Research in AI began in the 1950s. In 1956, J. McCarthy, a renowned computer scientist, proposed one of the first and best known definitions of AI, according to which its study should be based on the assumption that every aspect of learning or any other feature of intelligence can in principle be described so accurately that a machine can be built to model it [1].

The ability to communicate and control computers through thinking and the prospect of wider application of AI in teaching and learning is now seen as a true technological revolution that will fundamentally change the structure of higher education worldwide [2].

We are currently witnessing how supercomputers are impacting a wide variety of aspects of our daily lives. Higher education is at the centre of these profound changes, which bring with them both enormous opportunities and risks. We believe that the relevance of thoroughly investigating and analysing these important processes stems from the fact that there is the possibility of discovering not only the positive impact of AI on the education system, but also some negative trends that view technological progress as a solution or replacement of sound, human value-filled pedagogical solutions with elementary computer algorithms.

With this in mind, we define as a research task the identification of such conditions for the use of AI in the educational process of universities, under which its real potential will be directed towards human empowerment, as well as improving the effectiveness of teaching, learning and research. Another task is to predict possible negative consequences of AI implementation in the educational process, which may affect the quality of pedagogical communication and interaction with students.

In order to implement the set tasks, we have studied and analysed a number of modern foreign and domestic studies devoted to the use of AI in education. As we expected, the authors, including not only university teachers, but also well-known specialists in the field of computer science, recognising the enormous potential of AI to facilitate routine work in any sphere of life, do not cease to warn about the possible negative consequences of the penetration of this technology in the learning process of the younger generation.

The role of digital technologies in higher education is to develop human thinking and empower the educational process, rather than reducing it to a set of procedures for transmitting information, monitoring and evaluating its learning. With the advent of AI, it is becoming increasingly important for educational institutions to remain vigilant and monitor whether power is monopolised through hidden algorithms in computer programmes by the technical structures that created them.

Professor F. Pascal, in his famous book The Black Box Society, notes that decisions that used to be based on human reflection are now taken automatically, with software encoding thousands of rules and instructions calculated in a fraction of a second. The researcher shows that what is now emerging is not only a quasi-concentrated and powerful monopoly on these decisions, but also a deliberate concealment of the transparency of the algorithms and the purposes for which they are used. This is veiled as a normal state of facts, a natural device of the Internet age, but this situation can lead to a very dangerous concentration of unquestionable power, since in the information society power is determined by the possession of information. The one who controls algorithms controls AI solutions, gaining unprecedented influence on people and every sector of modern society [3, p. 81].

Results and discussion

When considering the use of AI in the manufacturing sector, i.e. where university students typically undertake work placements, we can look to the experience of some of the largest enterprises that have all the resources to implement AI as an example. Technology giants such as Apple, Google, Microsoft and Facebook are now competing in the field of artificial intelligence and investing heavily in new applications and research. The internal architecture of mega-corporations does not

conform to the democratic model, is a model of 'benevolent dictators' who know what is best, make decisions without consulting their internal or external constituents. Monopoly and tight control of information sources, suppression of criticism and de facto silencing of facts that do not agree with the interests of the technocratic leadership are in direct opposition to the ideas of free person-centred education. One of the most important functions of universities is precisely to develop unconventional thinking, creative initiative, and the ability to criticise even established doctrines.

Only in this way can universities produce great scientists and inventors.

Higher education withers when freedom of thought and research is suppressed in any form, because manipulation and restrictions in the process of cognition distort the worldview and creative impulse of a person.

The creative impulse of the individual. According to a group of Mexican researchers, if we reach a point where the content of university activities is determined by a handful of technocrats and they gain control over research and the ethos of universities, higher education will turn towards a bygone era. This set of risks is too important to be overlooked and not explored, braving the challenges of modern technology [4].

At the same time, artificial intelligence is already capable of replacing a large number of administrative and teaching support staff in higher education institutions [5]. Therefore, it is important to study the impact of these factors on the learning process, especially in the context of the growing demand for initiative, creativity and 'entrepreneurial spirit' graduates.

AI is making its way into universities together with so-called assistive technologies, i.e. computer programmes that allow text-to-speech and speech-to-text conversion, zooming, text prediction, spell checking and running search engines. These examples are just a few of the technologies, that were originally designed to assist people with disabilities or to free employees from routine tasks [6]. The use of these technological solutions was then expanded and we now attribute them to common features in all personal computers and mobile devices. These technologies are now enabling learning interactions for students around the world, expanding the possibilities open to learning and designing educational experiences. In addition, artificial intelligence is currently improving the tools, used from day to day: from Internet search engines, smartphone functions and applications to public transport and household appliances.

So, the analysis of domestic and foreign scientific literature has shown that the most serious disadvantages of using AI in the educational process of higher education institution include the following:

➢ AI does not possess purely human qualities - morality, ability to sympathise, empathise, provide friendly support, etc..;

➢ lack of intuitively correct reactions to different life situations;

➢ there is a potential possibility to use AI to collect personal information that can be used against a person's will, etc.

Despite the presence of a number of disadvantages, AI should be perceived in the learning system as an innovative technology. However, as with any technical innovations, it should be remembered that the purpose of 'smart machines' is to help a person, not to reduce human, pedagogical communication to nothing, to destroy the so carefully constructed environment of personal maturation and education, which is created in universities. As A. Schleicher, a well-known researcher in the field of pedagogy, noted, innovation in education is not just a matter of introducing new technologies in the learning process, it is about changing approaches to learning so that students acquire competences and skills necessary for their development in a competitive global economy.

In this regard, scientific interest in artificial intelligence as a potentially effective direction for the development of digital technologies in education is constantly growing. However, there is still no clear definition of this phenomenon in terms of its use in the educational process of higher education. It is accepted to describe it through the list of currently available technical solutions, technologies, learning tools, as well as its functions in terms of modelling human intelligence and the type of tasks to be solved.

We believe that artificial intelligence in higher education is one of the technologies of digital learning that seeks to copy the work of the human brain, and therefore is able to perform the simplest tasks of a logical nature, communicate with students, including in foreign languages, model various professional situations, process large amounts of information and reproduce the requested data in the shortest possible time, which can significantly help the subjects of the educational process in performing routine work.

Speaking about artificial intelligence in education, we would like to dwell in more detail on the introduction of AI in the process of teaching foreign languages based on the use of neural network capabilities.

Despite the identified disadvantages, the advantages of AI in teaching foreign languages are undeniable:

➢ expansion of opportunities for productive foreign language communication;

➢ taking into account individual characteristics and interests of students, their level of foreign language proficiency;

➢ motivation of learners to study foreign languages and language phenomena, etc.

According to the research data of large corporations, such as Intellias, Alphary, Micrsoft, working on the development and implementation of AI, artificial intelligence algorithms have great potential for the development of e-learning in all spheres of life. International corporations are already using AI to train their employees in foreign languages. In large universities with modern facilities, such as leading technical universities or programmes focused on training traffic engineers, students can also use AI to learn foreign languages anytime and anywhere. After some time, traditional schools, colleges and universities will be able to incorporate AI-assisted language learning into their programmes to diversify and empower learners.

The benefits of incorporating artificial intelligence into e-learning can be astounding. Let us illustrate this point with the following examples.

1. Individualisation and personalisation of education. It is assumed that in a group with 15-25 students it is quite difficult for a foreign language teacher to find the right approach to each one. But thanks to the use of artificial intelligence when learning a new language, it is possible to take into account the needs of each individual student. With AI integrated into the classroom, teachers will be able to collect gigabytes of data about their students, their interests, abilities, etc. When analysed, this data will be able to pave the way for personalised education.

Today, there are many artificial intelligence-based language learning platforms that allow learners to work at their own pace, exploring language material and identifying what they are having trouble with, engaging them in tasks they are best by appealing to their interests and taking into account their cultural background. Data will also be able to allow instructors to understand what is going on in the minds of their students, to predict their future outcomes.

2. Providing instant feedback. When learning foreign languages with artificial intelligence, feedback will come quickly. When students work hard on an important test, waiting for results can be stressful. When they see their mistakes a week later, they will no longer be able to remember how or why they made them. A foreign language learning platform using artificial intelligence will

be able to automatically assess test scores and even analyse essays as soon as students submit them, pointing out mistakes and suggesting ways to avoid them in the future. This will allow students to instantly take action to correct their mistakes and likely do better on future test papers. As for teachers, AI-assisted language learning solutions can identify weaknesses in their curriculum and help them see what could be improved in lectures or practical assignments, which aspects of the language are most challenging for students, which learners need additional guidance.

3. Addressing the fear of failure. It is normal to make mistakes, as people learn from mistakes. But when students make mistakes, they get low grades, or when they fail to answer questions, they often feel embarrassed or even afraid of what the instructor will say. AI in language learning will not criticise or humiliate students, it will be able to assess students without judging them.

4- Changing the role of the teacher. AI will not force teachers to leave the university, but it will redefine their role. Instead of being the 'sage on the stage,' the teacher will become a conduit of knowledge, a counsellor and a facilitator, which means that the technology will do the daily, routine duties for teachers, while they will be freed up to spend time communicating and supporting learners. As AI-assisted language learning begins, instructors will have more time to coordinate learning and mentor students. The most tech-savvy teachers will be able to try their hand at being data scientists, analysing and using the data generated during the learning process.

1. An informed approach to learning. With AI used for foreign language learning, learners will be able to learn from anywhere in the world at their own pace, set their own goals, and follow a personalised learning plan. Teachers won't have to go through the same material every year thanks to a personalised approach that varies from student to student. In addition, AI can help design engaging games, quizzes and other learning and research activities that match curricula with students' interests.

It is safe to say that once artificial intelligence and education finally merge, the challenges of learning experiences will reach a new level. Personalisation of learning, instant feedback and customisation will have a significant impact on the development of learners. AI technologies will also enhance foreign language learning through language bots, machine translation and personalised textbooks. Thus, AI is already being used in the practice of foreign language teaching in higher education institutions today, so it is impossible to ignore its presence. Hence, it is necessary to start an academic discussion about its future role in teaching and learning in higher education institutions and what choices universities will make regarding AI. In essence, now is the time for universities to rethink their teaching functions and pedagogical systems, as well as their future relationship with AI technologies and their owners. Furthermore, higher education institutions need to recognise the full range of opportunities and challenges actualised by AI. These new opportunities will facilitate continuous learning in an enhanced model that can maintain the integrity of the core values and goals of higher education. Further research is essential to identify new roles for teachers in the educational process, as well as new ways of educating higher education students with a new set of graduate competencies, with a focus on imagination, creativity and innovation that are unlikely to ever be replicated by machines.

Conclusion

Clearly, basic research is needed to develop effective ways for humans and AI to interact and collaborate. Despite its rapid development, the idea that we can rely on technology alone to improve the quality of education is a dangerous path. In our opinion, the right of the human being - teacher and learner - to freely criticize emerging learning issues, to make unconventional decisions, to human communication and pedagogical support in the process of personal development and maturation should be fully supported. At the same time, the initiative and creativity of each member of the academic community should be encouraged, which will benefit not only individuals, but also all those involved in the educational process.

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