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«ТЕНДЕНЦИИ ИСКУССТВЕННОГО ИНТЕЛЛЕКТА В ОБРАЗОВАНИИ: ВОЗМОЖНОСТИ И РИСКИ. ЗАМЕНА УЧИТЕЛЕЙ ИЛИ ПОМОЩЬ?»

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Team essay contest

"Unity in Diversity: Russia & the English-Speaking World"

Research work (essay)

"ARTIFICIAL INTELLIGENCE TRENDS IN EDUCATION: OPPORTUNITIES AND RISKS. TEACHER REPLACEMENT OR ASSISTANCE?"

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Theses

1. People have been always fascinated by the idea of super intellectual abilities not linked to human brain.

2. Artificial intelligence is represented by two types – Narrow Artificial Intelligence and Artificial General Intelligence.

3. This outstanding technology is not one-parented.

4. The opportunities which AI offers in education (gained via our own experience) include asynchronous learning, flexibility, engaging activities, proximal zone for improvement, getting detailed immediate feedback and designing trajectory for individual development.

5. Risks caused by the use of AI in education might involve lack of students' and teachers' experience, insufficient level of knowledge, cheating, loss of data alongside with identity and motivation.

6. Although the advantages connected with the use of AI in education outweigh the disadvantages, it cannot become a full-fledged replacement for teachers.

Some people call this artificial intelligence,
but the reality is this technology will enhance us.
So instead of artificial intelligence,
I think we'll augment our intelligence.

Ginni Rometty

To begin with, people have always been fascinated by the idea of super intellectual abilities of some mysterious unidentified origin, not linked to human brain. Science fiction writers used to describe aliens scratching their foreheads with tentacles as a hint of a higher level of mentality. What did you associate with the symbols of the distant future in childhood? Is the childish fear of being kidnapped by aliens for scientific experiments familiar to you? Our modern virtual reality seems to be more anyone could have imagined. Undoubtedly, artificial intelligence tops the list of technological wonders of the modern world.

So, nowadays, we do not deal with aliens' intelligence, we face the challenges artificial intelligence has brought us. The latter is known to be the ability of a computer to imitate a person – to think, make decisions and perform any actions. The main task of AI is to simulate the human brain and become indistinguishable from human responses, but it is capable of existing without such factors as emotions, sleep, food, needs for some rest, etc. [2] Nowadays there are two types of AI – Narrow Artificial Intelligence (created for specific purposes) and Artificial General Intelligence (the latter performing in a way similar to the brain of an adult). Turing test helps to distinguish one type from the other. According to it, if by the end of conversation you fail to identify who you have been talking to, your conversation partner appears to be Artificial General Intelligence.

The problem of identifying the father of AI is rather controversial. [6] By the way, the initial letters of the words "alien" and "artificial" are the same. Is it an innocent coincidence or a hidden trace leading to aliens? A lot of scientists

have tried to demystify the myths about the creator of artificial intelligence. However, the intriguing tale about its origin reveals that IT is not one-parented. One of the names of contributors leads to the Russian culture. Semen Korsakov (1787 – 1853) was an inventor of mechanical devices, "intellectual machines" for information search and classifying.

The final birth of artificial intelligence as a scientific direction occurred only after the creation of computers in the 1940s, when Norbert Wiener created his fundamental works on the new science of cybernetics. The term "artificial intelligence" itself appeared in 1956 at a seminar at Dartmouth College (USA). [1]

The Russian roots are traced again when we mention the name of Dmitriy Pospelov (1932 – 2019) who founded the Soviet Institute of artificial intelligence. However, we have to stop listing other contributors and focus on the achievements all the gifted personalities enabled us to enjoy.

Undoubtedly, opportunities which AI offers in education are breathtaking. [7] We were fortunate and honoured to participate in Lancaster project "A more knowledgeable other" launched by Paul Raine (Figure 6). Asynchronous learning, flexibility, engaging activities, proximal zone for improvement, getting detailed immediate feedback and designing trajectory for individual development proved to be the significant benefits. Hybrid learning includes essential factors which make students' interaction enjoyable, they are teachers' empathy, humour, eye contact, body language and ice-breaking activities which turn us into enthusiastic learners.

The SpeechCoach website is aimed at developing speaking skills. According to the task design you are to answer questions on various topics. The site offers several levels of preparation: General English, TOEFL Independent Speaking and IELTS Long Turn Speaking (Figure 1). Upon completion of the recording, a recording of the answer with a transcript is sent to your email address, as well as an improved answer and provided with its oral model, which

were generated by artificial intelligence (Figure 2). With the improved version, you can continue to practise and also receive feedback on the accuracy, fluency and completeness of the answer. By the way, the platform is based on the learning theories of a Soviet psychologist Lev Vygotsky. According to his ideas, still valuable in linguistics, every student should compete with himself and benefit from the zone of proximal development.

As for Eigo.ai website, it provides even more opportunities for language learning in terms of skills to be mastered. It can be used to train not only speaking, but also other aspects of learning a foreign language, such as reading, listening and writing. You can select the category that is the most interesting for you, and it already contains a lesson on a specific topic (Figure 3). Each text is provided with three levels of difficulty: Beginner, Intermediate and Advanced. The site offers several types of tasks: Watch, Read, Listen, Speak, Review and Write. The materials for the listed blocks are created using artificial intelligence. The presenters reading the text on the video are avatars created by artificial intelligence (Figure 4). In addition, the user can get prompt detailed feedback created by artificial intelligence specifying the results of relevance, grammar, spelling, cohesion and punctuation check.

ZenGengo, the third platform we have worked on, is also created by Paul Raine as well as the two above mentioned platforms. It offers an amazing library of lessons devoted to a variety of interesting topics. All the lessons are provided with innovative tasks designed by AI (Figure 5). Students' performance is checked and assessed automatically.

It is important to note that neural networks are capable of creating personalised educational programmes that take into account the interests and needs of each student. In addition, the use of artificial intelligence significantly simplifies the process of distance and adaptive learning, increasing its quality. It provides disabled students with a variety of opportunities. Asynchronous learning is a perfect solution for students combining work and studies.

In fact, artificial intelligence greatly simplifies the work of people in various professions, including teachers. But this is only possible with its successful implementation, through effective training and collection of a large amount of necessary data. With the help of artificial intelligence, a teacher can diagnose and optimise the knowledge of students who have different learning abilities and speed of mastering the material without unnecessary labour costs and loss of time. [4] In addition, artificial intelligence is an indispensable tool for improving the accessibility and quality of education in the absence of access to qualified teachers.

Although, it is impossible to overestimate the role of artificial intelligence in the field of education, its application causes some risks as well. Being quite inexperienced at first we faced the lack of time and a kind of digital anxiety. Other drawbacks might involve lack of teachers' experience, insufficient level of knowledge, cheating, loss of identity and motivation. Fortunately, it was not our case. Also, with the expanding influence of artificial intelligence in education, some other potential challenges may arise. The worst problem seems to be reduced socialisation and reduced contact between students and teachers, which can negatively affect the development of social skills. Predictably, another problematic zone may be connected with difficulties in the development of critical thinking. It is believed that due to the widespread use of neural networks, students may face problems in making important decisions as they may rely on automatic problem solving thanks to artificial intelligence. [3]

So as to assess the pace of development of artificial intelligence used in the learning process, we can consider the dynamics of the turnover of the educational technology market in Russia (Figure 7). Throughout the entire period under review, there has been a steady upward trend in this indicator, with turnover doubling from 2017 to 2021. According to BusinesStat forecasts, from 2022 to 2026, the educational technology market will not slow down and will continue to grow steadily, increasing by approximately 67%. [5] On the eve of

the International women's day IRIS, the first AI teacher robot, was introduced in Kerala's Higher Secondary School in India (Figure 8). [10] At the same time a Keeko bot entered more than 600 kindergartens in China (Figure 9). [9] It can partly assist with storytelling and problem solving. Russia is one of the top 10 leading countries in terms of total computing power using artificial intelligence. [8] Such stations as Alice, Marusya and Siri help students learn and find the necessary information.

So, aliens tend to be an old-fashioned topic nowadays. People's minds are occupied with a more recent dilemma about the battle between humans and androids – who will manage to conquer all the spheres of life? The computer game "Detroit: Become Human" highlights the problem of rivalry between smart androids and "bad" people (Figure 10).

According to the estimations of the UNESCO Institute for Statistics we will need 69 million new teachers by 2030 in order to meet global educational goals. Predictably, the demands to the level of qualification and experience of teachers will increasingly grow and there will be a boom of online courses for teachers' long life development.

To conclude, artificial intelligence is currently developing at a rapid pace and is a promising technology in education. However, it still cannot become a full-fledged replacement for teachers, since the quality educational process is closely related to the social interaction of students with each other and with teachers. Artificial intelligence is only an effective tool that helps teachers better design a curriculum, and enables students to achieve goals faster improving the quality of their academic progress. AI will make us improved versions of ourselves and teachers will head us to everlasting development. Their intuition, initiative, passion, duty and devotion, zest for lifelong learning are a blessing. Overcoming challenges we revolutionise ourselves guided by enthusiastic knowledgeable teachers and we shape a better future together enjoying all the benefits artificial intelligence offers.

Annex

Pictures

Figure 1. Difficulty levels and questions to choose from on the SpeechCoach website.

Figure 2. One of the answers provided with an improved version from the SpeechCoach website.
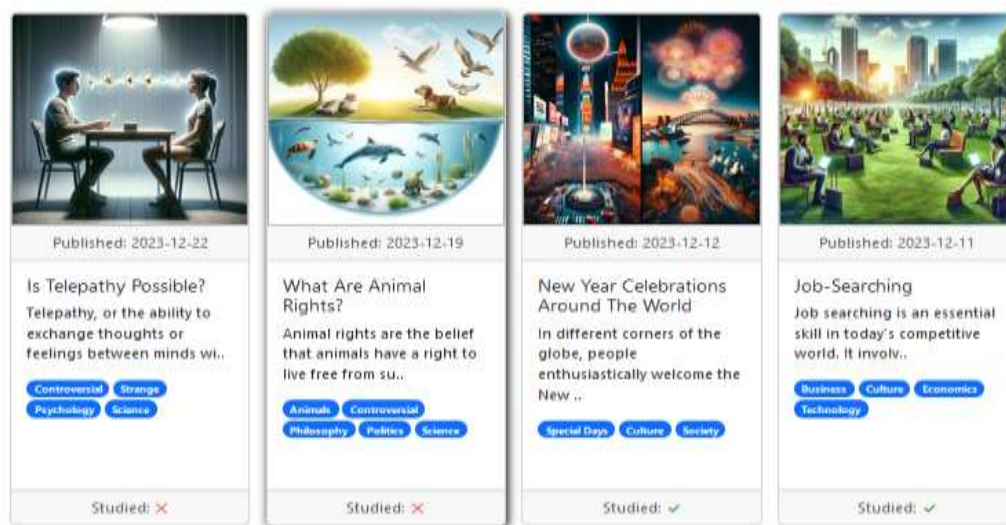
Figure 3. Topics of texts on the website Eigo.ai

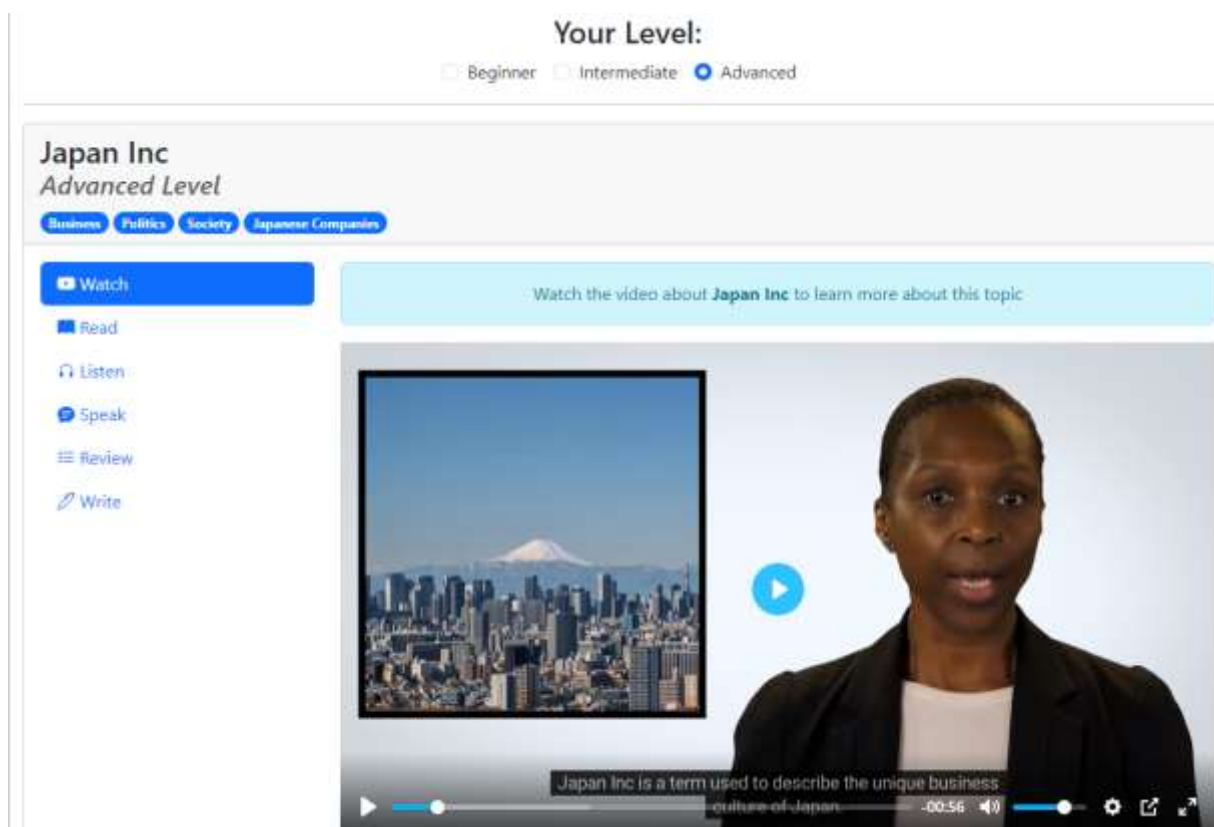Figure 4. Presenters – avatars created by artificial intelligence.

Figure 5. ZenGengo offers a variety of texts provided with innovative tasks designed by AI.

Figure 6. One of the bestselling books of Paul Raine, an award-winning teacher, presenter, author, and developer.
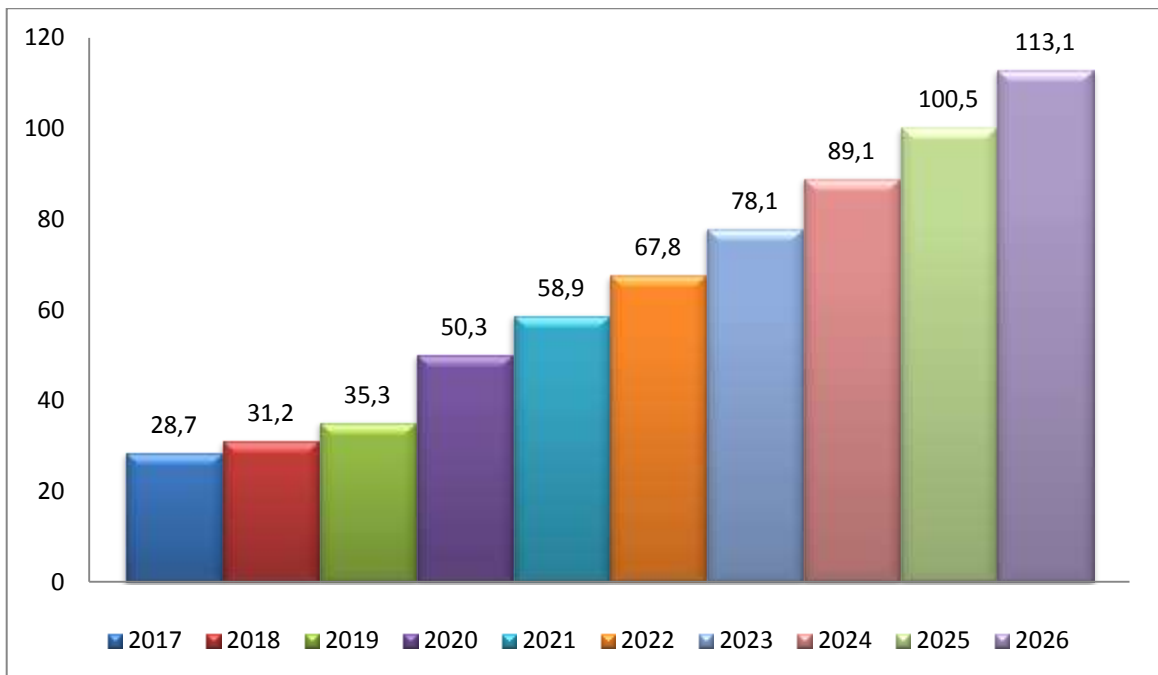
Figure 7. Dynamics of turnover of the Russian educational technology market in the period from 2017 to 2026 (billion rubles) [5].

Figure 8. Iris, India's First Generative AI Humanoid Teacher, is being introduced in Kerala Higher Secondary School.

Figure 9. A two-foot (60 cm) tall robot is being used to teach young children in Chinese schools.

Figure 10. The computer game "Detroit: Become Human" touches upon rivalry between smart androids and "bad" people.

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