

Artificial Intelligence in Everyday Life and Education

Karmen Jedvaj

ISSBS, Slovenia

karmen.jedvaj@gmail.com

Vesna Skrbinjek

ISSBS, Slovenia

vesna.skrbinjek@mfdps.si

Abstract

Globalization has made digitalization the driving force of the new society, which is particularly evident in the field of education. This article deals with artificial intelligence usage in everyday life and education. We provide a systematic review of the use of artificial intelligence, its strengths and weaknesses and explain the process of developing and implementing artificial intelligence. For example, in education, artificial intelligence can be used for personalized learning, and in everyday life, it is reflected in smart devices capable of self-regulation. We expect to see the increasing use of artificial intelligence in the coming years, which will change the way we live now.

Keywords: artificial intelligence, ChatGDP, everyday life, education, robots, machine learning

INTRODUCTION

Globalization has led to a profound change in lifestyle in all life areas. The modern way of life is becoming extremely demanding. It requires individuals to be constantly prepared to work, to constantly fulfil knowledge, to find new ways to improve productivity, increase interdisciplinary skills, collaborate in new forms of network, learn foreign language skills, upgrade computer literacy skills and improve social network management. A large part of our lives is categorized by digitalization in both everyday life and education. This process was prompted by the Covid-19 virus pandemic, which merely accelerated the transition to a new technological era, where changes in the ways of work and education supported by artificial intelligence (AI) are already being shown.

We live in a rapidly changing world where we face a new reality daily. The world as we knew it ten years ago is no longer like today, and even fewer similarities can be seen if we look further into the past. New jobs are emerging and new ways of life are being created. We tend to automate everything that can be automated. Accordingly, new technology is being developed that surrounds us.

In the education sector, artificial intelligence (here and after AI) emerged in 1970. It was first involved in computer science but soon ended up in other fields of education due to its versatility. The highly developed display of AI is still today in the field of the computer chess games. (Humble & Mozelius, 2022)

AI enables personalized learning, planning activities and creating an individual curriculum for students. In this paper, we research AI in everyday life and education through a critical review of the literature. We answer the research question *How is AI used in everyday life and education?*

The research goal is to provide a broad overview of the current state of AI, opportunities that arise of using AI both in the everyday life and in education and how can impact our lives in the future.

The paper is divided into two parts. The first part focuses on the use of AI in everyday life and in the second part on how it is used in education from the point of view of researchers and students. The review is not exhaustive and is merely a general overview of the practices and uses of AI to date.

Artificial intelligence in everyday life

In the past, the use of AI was limited only to appear in science fiction films. Today, we are beginning to understand AI differently. We begin to understand its purpose and its involvement in our daily life. The fact is that AI is increasingly present in our daily lives (OECD, 2020). If we take the example of robotic vacuum cleaners, which are already well established in the households of the developed world, whose AI plan to suck and prevent collisions. In addition, digital technologies in the form of the Internet of things are increasingly mentioned, using built-in sensors and networks to intelligently connect surrounding objects capable of communicating with each other (Sadeghi-Niaraki, 2023).

People do not realize the extent to which AI is already part of our lives. AI is not limited just to using robots, AI is hiding in everyday objects. An example of using AI is to unlock your phone using biometric methods, such as user facial recognition. This feature illuminates the face and places more than 10 000 invisible infrared dots on it to compare the data obtained with the previous ones and determine the relevance of the face. Apple states that the possibility of an error with FaceID is one in a million. Another example of regular use of AI is social networks that use algorithms to suggest friendship or expose similar interests and increasingly the AI system is launched by campaigning against online shaming. As a more traditional format, electronic messages and text messages also appear, as well as the functioning of browsers (such as Google). AI also guides smart devices in homes (smart thermostats, smart fridges, smart speakers smart light sensors etc....) and GPS navigation to calculate the most optimal routes. AI also appears in various forms in online banking, for example preventing financial fraud or personalizing offers (Kušar, 2021).

As early as 1955, John McCarthy identified AI as the science and engineering that designs smart devices (Manning, 2020). AI represents a computer's ability to recreate the functioning of the human brain, or its ability to recognize and understand the world around it, learn from it and respond in a way that people

do. It is based on creating systems that act like human and think rationally. Based on the development of AI, we can split it into three phases. The first phase is called artificial narrow intelligence (ANI). This is the level of AI that we have so far successfully realized. It represents targeted mechanisms that perform only tasks. The second phase is artificial general intelligence (AGI), where computers transmit human capabilities and the third phase is artificial super intelligence (ASI), where computers are more capable than humans (Dhawan & Batra, 2020). The last stage in AI development is artificial emotional intelligence. This technology allows the system to study non-verbal cues (body language, gesticulation, migrating, tone of voice ...). The system detects and analyses the perceived process, where it responds according to the emotional cue (anger, fear, happiness, sadness, shame, surprise ...). The purpose is to enable effective knowledge to be received and to identify the level of cooperation (Dhawan & Batra, 2020).

AI is a branch of computer engineering, that intends to create intelligent devices with competent human efficiency or recreate intelligence within a single device. It is about the system's ability to correctly interpret and analyses the data given, according to previously scripted algorithms. The algorithm represents a set of precise commands that the device performs and formats the results. These are more complex algorithms that consist of different smaller algorithms. Depending on the development of each device, the AI system can identify existing algorithms and create a result based on them, or create a new algorithm based on given predispositions (*The 7 Stages of the Future Evolution of Artificial Intelligence*, 2021). Examples of technology-managed algorithms that recreate human intelligence are programs, such as Computer Vision & Audio Processing which help recreate the feeling a human would be experiencing. Further on Natural Language Processing & Knowledge Representation helps create understanding in a similar way that humans understand. The third example is Machine Learning & Expert System which creates humanlike behaviour (Dhawan & Batra, 2020, p. 3).

Modern age implementation of AI in large sectors such as medicine, aviation, education, law manufacturing, agriculture, and transport ... has been going on for many years, using computer systems to perform tasks that require human understanding. The more AI becomes a part of our lives, the more knowledge we're going to need to operate on it (Dhawan & Batra, 2020).

The occurrence of AI takes place a long time ago, but it's been gaining prominence lately. A condition that is necessary for AI use can be found in the emergence of the 5G network. 5G properties allow data transfer from 1 gigabit per second (which is about 10 to 100 times faster than a regular mobile connection). It also enables 1 millisecond of latency, and connectivity to one million smart devices per square kilometre, which opens up additional possibilities for using AI (*Kaj 5G prinaša v razvoj umetne inteligence?*, 2021).

The pioneer of the modern branch of AI is Alan Turing, already during The Second World War. Turing is also considered a pioneer of cognitive science. His research was based on the hypothesis that the human brain is largely similar to a digital computer. His research is based on the assumption that the cortex at birth is a "disorganized machine" that is becoming more and more organized with training starting to resemble a "universal machine" (*Alan Turing - Computer Designer | Britannica*, n. d.)) since 1950, the development of AI has gone through phases of ups and downs. We have recorded three waves of AI enforcement. We are currently part of the third wave, where AI is considered in partner role to humans, and not just our tool for carrying out activities (Humble & Mozelius, 2022).

Alan Turing is the founder of the Turing test. Turing's test is a test of whether a machine is capable of displaying intelligent behaviour which by its characteristics resembles human ones. If the machine engages in a discussion with a human without being perceived as a machine, it is assumed that it transmits human intelligence. It can be defined as an imitation game involving three factors – a remote interrogator, a machine and a human. The purpose is that the remote interrogator identifies the difference between the machine and the human in a predefined time frame. The success of the machine to recreate human-like thinking is measured, given the likelihood of it being misjudged for being human (*Turing test | Definition & Facts | Britannica*, n. d.). Turing assumed, that by the year 2000, machines will be able to play the imitation game so well that the remote interrogator will not have more than 70 % of the right identification after five minutes (Copeland, n. d.).

Chatbots which are nowadays very popular, use AI technology to answer customer questions and help manage accounts. This can improve the user experience as customers can get quick and accurate responses. The second chatbot in the world, that passed Turing's test is ChatGPT (Yalalov, 2022). According to the presented data, ChatGPT is one of the similar chatbots that will completely transform the use of AI. ChatGPT can write academic essays (in the language, that the user chooses), software codes and solve complex mathematical tasks (Mollick, n. d.).

Artificial intelligence in education

Most of the innovations of the past period in education relate to the use of the internet in classrooms and various forms of blended learning (OECD, 2020). The field of education is the primary environment where the skills of AI management will be taught by individuals who will encounter it in the labour market. An example of AI use in education is adaptive learning, where the complexity of education is adapted to the individual and enables him to progress gradually, using machine learning techniques. The process allows for personalized learning and a personalized selection of teaching materials. This process is based on the needs of the student. The system selects which teaching materials are best suited to it and what learning approaches are appropriate. The selection described is carried out according to comparable data, which are selected for other students who were previously satisfied and successful with such an approach. Using AI in the personalized learning process helps students to conquer the learning material at their own pace while assisting the lecturer to choose appropriate learning methods based on the data obtained in real-time (OECD, 2020, p. 5).

The leading countries in the introduction of AI are China, the USA and India, which can already boast longstanding traditions and examples of good practice. The Teach to One program has been implemented in the USA for many years. Its purpose is to provide help with understanding and learning math. The program was named one of the Top 50 inventions in 2009 (One, 2020). Another example of good practice is from China. The smart solution provider is called TAL (Tomorrow Advancing League) education group which offers learning opportunities and approaches the use of AI in education. Within the program, two online platforms help students to prepare for written tests – Adaptive Test and Learning Plan (*About TAL Education Group*, n. d.). India also has a globally widespread of good practice implementing AI in education. Their globally innovative program BYJU is present in more than 100 countries around the world. It aims to simplify the learning process with technology based and personalized curricula (*Learn Math, Coding, Music & Arts Online*, n. d.).

Benefits of Artificial Intelligence in education

AI offers a wide range of tasks that are carried out through an algorithm, but it cannot handle human creativity, social skills and comprehensiveness (Kirkland, n. d.). The use of AI in education is a phenomenon, both with positive and negative effects. On one hand, it makes education more efficient and cost-cutting but on the other hand, the question of the quality of education and the future role of the lecturer is repeatedly raised (Humble & Mozelius, 2022, str. 1).

AI provides learning dimensions that were sometimes not possible. AI systems provide individual tutoring systems and learning in virtual environments that provide additional learning support. An example of good practice was introduced by professor Ashok Goel from the Georgia Institute of Technology when he introduced an assistant, guided only by AI – Jill Watson. Jill Watson has thus become one of the most transformative teaching methods, according to The Chronicle of Higher Education (Dhawan & Batra, 2020, str. 4 - 5).

The question arises as to how to implement the use of AI in education. As part of the public debate, the European Trade Union Committee for Education (ETUCE) has published its position on the new rules and restrictions on the use of AI in education, which the European Commission has identified as high risk. The prohibition concerns the use of AI in the sense of replacing educational staff or encroaching on the area of professional autonomy of educational staff (*Umetna inteligenca v izobraževanju*, n. d.).

Since education is based on equality, the purpose is to provide quality education for all students, regardless of the level of education they are attending at the moment. The aim is to create an educational environment where everyone has equal opportunities to acquire knowledge. Future development of AI would further expand the spectrum and promote the development of quality and accessible education, and consequently promote lifelong learning accessible to all (OECD, 2020, p. 4).

Other useful uses of AI within education relate to enabling online and hybrid learning modes, using different technologies such as sensors or cameras in classrooms that allow lecturers to further, later review the dynamic within the classroom and analyse what is happening during the lecture. Within the education sector, AI refers to innovations that enable learning and understanding statistics, analytics and the derivation of meaningful diagnostics according to the collected data (OECD, 2020, p. 6).

The use of AI has also many advantages in learning a foreign language, and one of the methods used for language learning is Natural Language Processing (NLP). NLP is a computer technique for understanding and learning human language. It is used to support the development of social skills, language and work habits, as well as allow students to formulate speech and translate text. These tasks are performed by an AI assistant with NLP algorithms (Humble & Mozelius, 2022).

Challenges and shortcomings of Artificial Intelligence in education

The problem with using AI arises because it does not possess human characteristics that could assess how to interpret or present the information correctly. As mentioned, the system is managed by algorithms that collect data. When they select data, they present the result. This result can be disrespectful, discriminatory or even racist, not to mention inaccurate in the eyes of the reader. An example of that is Amazon's chatbot, which has been criticized as sexist (because it has detected more male jobs in companies, according to the data collected). Another example is from 2016 when Microsoft

released the Twitter chatbot Tay, which had to be removed within 24 hours because of offensive comments it collected from data on the internet (Dhawan & Batra, 2020, p. 6).

One of the main problems is also the potential technical difficulties and the possibility of hacking into private databases and prices. The costs of developing and implementing AI systems are extremely high. Costs depend on the available data and the format and algorithms that are and will potentially be used. When implementing the system, we must also consider the costs incurred by the change in infrastructure. One of the problems is that, regardless of the level of current computer level, we are still facing digital illiteracy, as we still have areas and schools where students do not have access to a computer. In such cases, the shortfall in basic computer literacy means that any upgrade made possible by AI is all less understandable. Disproportionate access to the internet creates a digital distribution at a time of formal knowledge acquisition but results in a lack of manpower and expertise needed to design AI systems (Dhawan & Batra, 2020, p. 6 - 7).

Complex Bots, that are managed by AI need a huge amount of data if we want them to provide the most accurate answers possible. Getting this data, however, requires a lot of manpower and money. The return that such technology offers are long-term and enormous. The incidence of AI in everyday life will, on one hand, wipe out many jobs, while opening up new possibilities for which we will need new knowledge and competencies. The main challenge here is for higher education – as it will be necessary to guide students in understanding and developing these new competencies and to prepare them for a reform signed labour market to help to shape and digitize them. The market will start to operate on the principle that anything that can be automated, will be automated (Dhawan & Batra, 2020, p. 7).

The key question in the implementation of AI is the moral aspect. The period of formal acquisition of knowledge is a period of designing the thinking and acting process for students. The involvement of AI in this period can lead to affecting the privacy of students and put in question the fairness of the process, which can be treated like an ethical dilemma (Dhawan & Batra, 2020).

The implementation of AI strategy poses one of the major problems in higher education. Regardless of the development and progress of digitalization, there are still institutions and lecturers that do not have sufficient knowledge to implement AI and are still using technology that has poorly supported base for such a system. These are indicators, that in the case of AI use, the quality of education will not improve, and at the same time, there may be security barriers as such systems poorly guarantee the privacy and increase the possibility of intrusion into personal data. (Humble & Mozelius, 2022, p. 10)

The use of Artificial Intelligence for lecturers and researchers

AI can help lecturers highlight the benefits of education, and increase the quality of learning programs and gained knowledge. AI can also assist lecturers in their work. 86 % of lecturers believe that technology will become an important part of education and the key task in this technology is AI, which enables the process of learning and teaching to be optimized (Karandish, n. d.).

One of the most exposed problems of lecturers is lack of time. Using AI offers them the possibility of more effective spending of their time. Based on the data obtained, the system analyses and enables the lecturer to create a personalized curriculum and to identify the advantages and disadvantages of each student. In this way, lecturers can consult students individually. Advantages from the lecturer's point of view also relate to the personalization of learning content, answering standard answers and automation

of tasks (Karandish, n. d.). AI can help in assessing written essays and also taking on the task of implementing important and curriculum prescribed knowledge that students must obtain, while giving time to the lecturer to work on formulating personal views and conclusions with students. The AI assistant would analyse the students work, and according to the collected data report back to the lecturer. Further, based on the data, the lecturer could identify where improvements or assistance are needed. AI would appear in the form of a co-robot (co-working robot). Unlike humans, robots do not need breaks between works, so they could offer support even when lecturers are not working. In this way, work would not become time-consuming, and would be more effective with fewer errors (Humble & Mozelius, 2022).

AI can help researchers to research complex topics by generating potential hypotheses and research questions and designing potential experiments. It also helps edit text, by checking for errors and plagiarism, edits literature etc. In the future, AI could look for links between texts and create meaningful models of solutions which in turn would mean a transformation of the whole industry (Dhawan & Batra, 2020).

The disadvantage of the use of AI in education occurs in the form of lecturers fearing losing their jobs. While AI is not advanced enough to fully replace lecturers, it is effective enough to replace assistants and administrative support in the current range. Another disadvantage is the possibility of deteriorating the relationship between the student and lecturer and enhancing the possibility of obstructing the process for the student to become independent. There is also a possibility that the AI system assumes, that the standardized material (prescribed by the curriculum) is unnecessary and with that establishes more than needed individualism in the education process (Humble & Mozelius, 2022).

The use of AI in education will not replace lecturers, whose share is expected to increase even more drastically in the coming years. According to the survey with Microsoft's participation, lecturers work on average 50 hours a week, of which 20 – 40 % represent work that can be automated with current technology. The purpose of using AI is to carry out time-consuming administrative work and with the aim of helping professors to pay additional attention to students. Students' needs change over time. We are faced with the emergence of more complex cooperation between lecturers and students. Using AI allows professors to perform their work better and more effectively and increases the satisfaction of both students and professors (Bryant et al., 2020).

AI system cannot replace and excellent lecturer because it lacks precisely the characteristics that are shaped by an excellent lecturer – motivation of students, creating a positive climate, resolving conflicts, creating a sense of belonging, creating different world views, individual treatment, mentoring and guidance (Bryant et al., 2020).

The use of Artificial Intelligence for students

From the students' perspective, their purpose is to complete their studies and obtain their chosen qualification. AI allows them to make this process as efficient as possible. Based on the algorithm, it creates a personalized learning environment, offers suitable lectures, improves the process of communication with lecturers – optimizes the time students invest in their studies and allows more free time. The benefits are personalization of the learning process, tutoring system, quick response (average response time is 2,7 seconds) and universal 24/7 access to learning (Karandish, n. d.).

Also, from a student's point of view, priority would be given to the implementation of AI in creating closer links between professors, thereby increasing the effectiveness of learning. Additional support would be provided for students with special needs (Humble & Mozelius, 2022, p. 10). It can provide hearing aid, visible assistance, and assistance for students with a lack of certain social skills (for example, correct use of language, communication). With AI we can also guarantee a smooth course of education for students with health or mental problems. AI systems provide help to students who are diagnosed with dyslexia or have been diagnosed with attention deficit disorder. In practice, this means, that by using AI, students who have vision problems can read books or even recognize faces OECD, 2020, p. 6).

Students who are currently in the education system and are entering the labour market will face the digitization of jobs and the use of AI in their line of work. The reoccurring issue in the labour market is, that we are facing a lot of differences between knowledge thought in school and practical implementation. Using AI could help balance theoretical knowledge and practice, as the system would recognize the competencies that need to be conquered. One of the modern ways of using AI to conquer these skills are through Coursera courses (Dhawan & Batra, 2020).

LIMITATIONS AND FUTURE RESEARCH

This paper has limitations regarding the missing empirical part which can be included in future research. The theoretical part can also be enriched with more references from peer reviewed journals in the last 2 years. Future research could focus on how EU countries view AI in light of positive future technological and digital progress or more on the negative side with many ethical restrictions. We could review the projects that are currently being carried out in the field of AI by individual countries (eg in the framework of Erasmus+, Horizon etc.). Since the development of the AI field is in its infancy, it makes sense to start research at the project level and then compare the results with the other economic indicators of the countries (GDP index etc.).

CONCLUSION

AI plays an increasingly prominent role in everyday life and education. More and more daily tasks are managed by AI and is gaining increasing importance daily. In higher education, it goes beyond the commands of automated processes, virtual tutors and support for lecturers. Its implementation has a major impact on the design of the working class of the future and the design of knowledge for the jobs that come and continue to evolve. The advantage of using AI during education is that we create more professional staff to work in digital environments. As we bid farewell to traditional forms of employments, the education system also needs to be changed, especially in the field of higher education, which forms a highly educated staff – the innovators of the new era.

We could say that fire was feared in prehistoric times by the ancient people because they did not know it. They soon realized its strengths and weaknesses and learned to control and steer it by taking advantage of its strengths. In the new era, fire became AI, and it is on us, to take advantage of it.

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