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Artificial Intelligence in the Educational Context: Value and Challenges

DOI: <https://doi.org/10.55707/ds-po.v39i1.117>

Prejeto 21. 8. 2023 / Sprejeto 15. 1. 2024

Znanstveni članek

UDK 37.01:004.89

KLJUČNE BESEDE: umetna inteligenca, izobraževanje, učitelj, inovacije

IZVLEČEK – Izobraževanje in izobraževalne ustanove so v zadnjih letih doživele številne spremembe, predvsem zaradi razvoja novih tehnologij. Ugotovitve relevantnih raziskav kažejo, da uvedba umetne inteligence v izobraževalni proces vpliva na izboljšanje šolskega uspeha učencev. Uporaba umetne inteligence v izobraževanju je prispevala k razvoju učinkovitosti poučevanja s personaliziranimi pristopi k učenju, ki zagotavljajo edinstveno izkušnjo za vsakega učenca. Prispevek opredeljuje umetno inteligenco v izobraževalnem kontekstu in njene elemente ter predstavlja pomembne rezultate raziskav ter prednosti in slabosti uporabe umetne inteligence v izobraževanju. Namen prispevka je osvetliti pomen tega pojava in njegovo refleksijo v izobraževalni praksi. Kljub nespornim prednostim umetne inteligence je pomembno poudariti, da obstajajo tudi potencialni izzivi, ki jih moramo zaznati, da se lahko nato osredotočimo na njihovo premagovanje.

Received 21. 8. 2023 / Accepted 15. 1. 2024

Scientific paper

UDC 37.01:004.89

KEYWORDS: artificial intelligence, education, teacher, innovations

ABSTRACT – Education and educational institutions have undergone many changes in recent years, mainly due to the development of new technologies. The findings of relevant research indicate that the implementation of artificial intelligence into the educational process affects the improvement of students' achievement. The application of artificial intelligence in education has contributed to the development of teaching efficiency through personalized approaches to learning, providing unique experiences for each student. The paper defines artificial intelligence in the educational context, as well as its elements, along with presenting the significant research results and highlighting the advantages and disadvantages of using artificial intelligence in education. The aim of the paper is to shed light on the importance of this phenomenon and its effect on educational practice. Despite the indisputable benefits of artificial intelligence, it is important to point out that there are also potential challenges that we need to perceive and focus on overcoming.

1 Introduction

The use of artificial intelligence is evident in almost all the spheres of our lives. Artificial intelligence is a technology that transforms all aspects of our social interactions. When it comes to education, artificial intelligence develops new systems and solutions for student learning, but also for educating teachers (Joshi et al., 2021). The implementation of artificial intelligence is a new challenge in the educational process. There are certain obstacles that should be overcome, such as insufficient information for teachers about artificial intelligence, as well as insufficient technological equipment for educational institutions (Atlas, 2023; D'Amico et al., 2023; van Dis et al., 2023; Halaweh, 2023). Artificial intelligence has proven to be a key technology for improving the learning experience because it can personalize the learning process, but it can also automatically analyze student data (Lynch, 2022). This includes a number of meth-

ods and technologies, such as: machine learning, neurolinguistic programming, data research (Tlili and Burgos, 2022).

2 Artificial intelligence in education

There is no universally accepted definition of artificial intelligence. In the educational context, it represents the theory and development of computer systems for performing tasks that require human intelligence, such as: visual perception, speech recognition, decision making and translation from one language to another (Kuleto et al., 2021). Artificial intelligence is the field of study of innovations and developments that have resulted in computers, machines, and other artifacts possessing human-like intelligence (Zhai et al., 2021). Coppin (2004) believes that artificial intelligence is the ability of machines to adapt to completely new situations, answer questions, solve problems, and perform functions typical for humans. Whitby (2008) defines artificial intelligence as the study of intelligent behavior in humans, animals, and machines, as well as the effort to build such behavior into computers and computer technologies. The application of artificial intelligence in education has contributed to the development of teacher efficiency, personalized learning, and implementing better structured contents (Chen et al., 2020). Joshi et al. (2021) believe that the application of artificial intelligence in education is significant for the following reasons:

- Automation process – teachers can increase interaction with students by automating simple tasks through artificial intelligence;
- Integrations – can be integrated with other intelligent technologies;
- Identifications – artificial intelligence will identify priority fields for the student.

An artificial intelligence application can create an individualized curriculum for a student's specific needs. Intelligent Tutoring Systems (ITS) use artificial intelligence techniques to simulate individual teaching, provide learning activities that best suit the learner, and provide timely feedback, all without the teacher's presence (Luckin et al., 2016). Artificial intelligence can translate the teacher's presentation into any language the student chooses. This is particularly important for students with hearing or visual impairments (Joshi et al., 2021). Thus, it could be said that artificial intelligence is being promoted as a strategic value for education (Zhai et al., 2021).

Artificial intelligence can also improve assessment methods in traditional classrooms by providing timely information on the student's learning progress, success, or failure (Sánchez- Prieto et al., 2020). It enables us to determine whether the student has reached the correct answer, at the same time providing the teacher with an insight into the student's actions that have led to the correct answer. Moreover, artificial intelligence can successfully identify students' psychological states, as well as provide support for each individual situation (Kim and Kim, 2022).

3 Overview of relevant research

In the context of this paper, it is important to mention the research by Kim and Kim (2022), which aimed to examine the perception of teachers regarding the implementation of artificial intelligence into the educational process. The results showed that the majority of teachers had a positive perception of artificial intelligence in education (Kim and Kim, 2022).

The research conducted by Paek and Kim (2021) aimed to understand the impact of artificial intelligence on education. Namely, the research was conducted by analyzing international research trends and assessing the direction of future education. The authors derived key research topics and analyzed research trends in the field of artificial intelligence in education, such as changes in research topics. A total of 5,035 papers related to the application of artificial intelligence in education were found in the *Web of Science database*. Over the past 20 years, the number of papers on the implementation of artificial intelligence in education has increased. A particularly rapid increase since 2015 indicates that the impact of artificial intelligence on education is becoming increasingly significant (Paek and Kim, 2021).

A relevant study (Zhao et al., 2019) has shown that the application of artificial intelligence-based teaching is highly correlated with the academic achievement of students. Consequently, students have high achievements in artificial intelligence-based teaching. Moreover, the use of chatbots can help science teaching by improving student learning and performance. Research has shown that the use of artificial intelligence can have a positive impact on the scientific writing of students of natural sciences (Kim and Kim, 2022).

A study by Celik et al. (2022) that investigated the application of artificial intelligence and machine learning methods by teachers showed that artificial intelligence offered teachers several possibilities for effective planning of the teaching process. Namely, through the application of artificial intelligence, teachers could evaluate students more easily. They could provide immediate feedback to students and develop their new roles in teaching.

4 ChatGPT and virtual assistants (robots) in teaching

ChatGPT is a tool based on artificial intelligence that allows generating texts based on user queries. It is designed in a way that it can understand the language and offer relevant answers to the user's questions. It includes a large amount of data, but all models are trained on data up to 2021 (Halaweh, 2023). This technology has the potential to change educational activities in the future. A chatbot called ChatGPT-3 was released last year, and it is evident that this application of artificial intelligence will have huge implications for all aspects of society (Tlili et al., 2023).

What can be seen as a problem with this tool is insufficient user privacy, as data and query searches can be saved (Tlili et al., 2023). ChatGPT can lead to the development of unemployment, but also to a lack of critical thinking and creativity. This tool

is not insightful, hence the content obtained lacks deeper insight, even if it is correctly specified (Tlili et al., 2023). In addition to the above, plagiarism or theft of intellectual property can be a serious drawback (Atlas, 2023; D'Amico et al., 2023; van Dis et al., 2023; Halaweh, 2023). However, experimental research by different authors (Khalil and Er, 2023; Šušnjak, 2022) has shown that ChatGPT creates high-quality results that easily reach plagiarism detection software (Halaweh, 2023). It is free to use, so for now it is available to everyone.

When talking about robots in teaching, opinions differ, and some authors believe that robots will never be able to take over the role of teachers (Toh et al., 2016; Bosede and Cheok, 2018). Still, it may be premature to draw conclusions about what the future holds in terms of robots in the classroom. Robot teachers have many advantages over human teachers. Namely, the ability of machines to process vast amounts of information and use different ways to meet the needs of students highlights another significant area in which artificial intelligence surpasses humans (Bosede and Cheok, 2018). It also refers to the ability of interaction with learners without human emotions getting in the way. Continuously maintaining a team of satisfied teachers is a challenge, but if they are robots, it can be done much cheaper through artificial intelligence, which implies that robots could be a good substitute for teachers (Bosede and Cheok, 2018). In teaching, robots stimulate the interest of teachers as a tool for the development of students' cognitive and social skills. This way of working can offer students practical activities and get them to be active. Educational robotics tends to enhance the learning experience of students by using activities related to technology, robots, virtual objects (Kuleto et al., 2022). Using educational robotics, students can develop an empathic approach to the literary text. A current example of the use of robots in schools is the "Savremena" school from Belgrade. The school has its own teaching assistant, the robot Pepper. This robot can communicate through voice commands, reacting quickly to human emotions. Pepper also has 2D and 3D HD cameras that allow it to see everything in its environment (Kuleto et al., 2022). It is important to emphasize that this robot cannot be used as an independent teacher, but only as a teacher's assistant (Kuleto et al., 2022). Therefore, Pepper's main task is to help teachers more efficiently implement the lesson, but also to make lessons more interesting and accessible for students.

5 The role of the teacher

The evolution of education towards digital education does not imply that people will need fewer teachers in the future (Dillenbourg, 2016; Zakrajšek, 2018; Šimunović, 2021). There should be less speculation that artificial intelligence will replace teachers and a greater focus on the advantages that artificial intelligence offers teachers, and on how these advantages can change the role of teachers in the classroom (Hrastinski et al., 2019). Given the tremendous technological progress, many researchers have addressed this issue (Pedro et al., 2019; Huang et al., 2010; Čepon, 2018; Harl, 2021; Lamerar and Arnab, 2021; Ouyang et al., 2022). In order to develop awareness, competences and teaching skills by using artificial intelligence in education, teachers would have to acquire certain digital skills and abilities that would be crucial for their role of mo-

tivators in teaching based on artificial intelligence. In addition to digital competences, teachers should: understand the characteristics of artificial intelligence in education in order to be able to make decisions more easily; improve their research skills to guide students' learning; develop team spirit and management skills to ensure their interaction with teaching assistants (Bosede and Cheok, 2018). Artificial intelligence can take over some of the tasks that teachers currently perform (assessment, record keeping). That way, teachers could devote more time to more important aspects of teaching (Luckin et al., 2016). Teachers have limited participation in the development of educational systems based on artificial intelligence. Although some studies have employed experienced teachers to train AI algorithms, further efforts are needed to involve a wider population of teachers in the development of such systems (Celik et al., 2022). Teachers' perceptions of artificial intelligence systems in education vary depending on their pedagogical beliefs, teaching experience, and previous experience in using educational technologies, all of which can affect their willingness to adopt new educational technologies (Gilakjani et al., 2013; Kim and Kim, 2022).

6 Advantages and disadvantages of artificial intelligence application in education

Many authors in their research have highlighted the advantages and disadvantages of using artificial intelligence in the educational process (Bhosale et al., 2020; Khanzode, 2020; Chhaya et al., 2020). A main advantage of artificial intelligence is that its decisions are based on facts, not emotions. Moreover, artificial intelligence can enable: greater efficiency compared to humans; performing different functions simultaneously; a high success rate; fewer mistakes in the implementation of tasks; faster resolution of complex situations (Chhaya et al., 2020). The advantage of artificial intelligence in the educational process is the personalization of learning. Namely, personalized learning is an educational approach that aims at customized learning based on the individual needs and strengths of students. In addition, artificial intelligence can help students who need extra support in education. Providing inclusive access to education is a challenge for most countries. Artificial intelligence systems have shown their effectiveness in creating assistance for students with disabilities. Namely, wearable devices that use artificial intelligence can help visually impaired people to read and recognize faces more easily (OECD, 2020). Since 2016, China has had an intelligent speech recognition system that simultaneously converts the spoken language of teachers into text that students can read on a large screen.

In addition to the above advantages, the application of artificial intelligence in education has a number of disadvantages. The most frequently mentioned shortcomings are: incompatibility of programs and commands; a reduced need for labor force, increasing the unemployment problem; creativity is conditioned by the developer; lack of human contact; the use of artificial intelligence can lead to laziness in younger generations; it requires a lot of time and money; increased technological dependence (Chhaya et al., 2020).

7 Conclusions

The implementation of artificial intelligence in education creates new opportunities for improving the educational process. By using artificial intelligence, teachers enjoy various benefits such as faster data collection and development of new teaching strategies (Hwang et al., 2020). Teachers' perceptions of artificial intelligence systems in education are conditioned by numerous factors, such as their pedagogical beliefs, previous experience in using them, and readiness to introduce artificial intelligence systems (Gilakjani et al., 2013; Kim and Kim, 2022). It appears that there is a large number of studies focused on the future of the teacher's role and position in the changed educational process (Huang et al., 2010; Lamas and Arnab, 2021; Ouyang et al., 2022), and that there is still a fear that the teaching profession will soon be replaced by artificial intelligence systems. Artificial intelligence systems require human control; thus, the human factor is unquestionable. Artificial intelligence through a personalized learning plan can become an innovation to transform the teaching process.

Research results (Bhosale et al., 2020; Khanzode, 2020; Chhaya et al., 2020) have shown that there are many advantages and disadvantages of implementing artificial technology in the teaching process. The consequences of the development of artificial intelligence cannot yet be predicted, but it is assumed that the applications of artificial intelligence will be the main issue of educational technology in the next few years. These tools have great potential to support students and teachers (Zawacki-Richter et al., 2019). Teachers already use ChatGPT to provide feedback to students. What should be pointed out is that it is difficult to ignore all the new tools that have been created or will be created, however, it is important to learn how to use any tool properly. All the mentioned models are continuously being improved to include even more data, which will inevitably have an impact on our daily life and work. Furthermore, we are only at the beginning of what artificial intelligence can achieve, and it is evident that new technology can help people improve their lives.

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Umetna inteligenca v izobraževalnem kontekstu: vrednost in izzivi

Umetna inteligenca je sposobnost strojev, da se prilagajajo popolnoma novim situacijam, odgovarjajo na vprašanja, rešujejo probleme in tudi opravljajo funkcije, značilne za ljudi. V izobraževanju umetna inteligenca razvija nove sisteme in rešitve za učenje učencev, pa tudi za učenje učiteljev. Dve izmed ovir, ki bi jih bilo treba premagati, sta nezadostna tehnološka opremljenost izobraževalnih ustanov in nezadostna usposobljenost učiteljev o umetni inteligenci. Prav tako bi lahko rekli, da je uporaba umetne inteligence pomembna zaradi več razlogov: integracije – lahko se integrira z drugimi inteligentnimi tehnologijami; avtomatizacije procesa – učitelji lahko povečajo interakcijo s študenti z avtomatizacijo preprostih nalog preko umetne inteligence; identifikacije – umetna inteligenca bo prepoznala prednostna področja študenta. Aplikacija umetne inteligence lahko ustvari prilagojen učni načrt za specifične potrebe študenta. Inteligentni sistem za tutoriranje (ITS) uporablja tehnike umetne inteligence za simulacijo individualnega po-

učevanja, zagotavlja učne dejavnosti, ki najbolj ustrezajo učencu, ter omogoča pravočasno povratno informacijo brez prisotnosti učitelja. Umetna inteligenca lahko prevaja predstavitev učitelja v kateri koli jezik, ki ga študent izbere. To je še posebej pomembno za študente s slušnimi ali vizualnimi ovirami. Umetna inteligenca lahko tudi izboljša metode ocenjevanja v tradicionalnih učilnicah, saj zagotavlja pravočasne informacije o napredku študenta pri učenju. Omogoča ugotavljanje, ali je študent podal pravilen odgovor, hkrati pa učitelju omogoča vpogled v študentove korake, ki vodijo do pravilnega odgovora. Prav tako umetna inteligenca uspešno zazna psihološka stanja študentov.

Poleg definicije umetne inteligence članek predstavlja najpomembnejše raziskave na tem področju. Prva raziskava, ki je bila predstavljena v tem članku, je raziskava avtorjev Kim in Kim (2022), katere namen je bil preučiti, kako učitelji dojemajo implementacijo umetne inteligence v izobraževalni proces. Rezultati so pokazali, da ima večina učiteljev pozitiven odnos do umetne inteligence v izobraževanju (Kim in Kim, 2022). Raziskava (Celik idr., 2022), ki je preučevala uporabo umetne inteligence in metod strojnega učenja s strani učiteljev, je pokazala, da umetna inteligenca učiteljem ponuja več možnosti za učinkovito načrtovanje poučevanja. Z uporabo umetne inteligence so učitelji lažje ocenjevali študente. Študentom so zagotavljali takojšnje povratne informacije in razvijali nove vloge v poučevanju.

Relevantna študija (Zhao idr., 2019) je pokazala, da je uporaba poučevanja na osnovi umetne inteligence močno povezana z akademskimi dosežki študentov. Posledično študenti dosegajo visoke rezultate pri poučevanju na osnovi umetne inteligence. Raziskave so pokazale, da ima uporaba umetne inteligence pozitiven vpliv na znanstveno pisanje študentov naravoslovnih ved (Kim in Kim, 2022). Raziskava, ki sta jo izvedla Paek in Kim (2021), je bila namenjena razumevanju vpliva umetne inteligence na izobraževanje. Raziskava je bila izvedena z analizo mednarodnih raziskovalnih trendov in oceno usmeritve izobraževanja v prihodnosti. Avtorja sta izpeljala ključne raziskovalne teme in analizirala trende raziskav na področju umetne inteligence v izobraževanju, kot so spremembe v raziskovalnih temah. V bazi Web of Science sta našla skupno 5.035 člankov, povezanih z uporabo umetne inteligence v izobraževanju. V zadnjih 20 letih se je število člankov o implementaciji umetne inteligence v izobraževanje povečalo. Še posebej hitro povečanje od leta 2015 naprej kaže, da postaja vpliv umetne inteligence na izobraževanje vse pomembnejši (Paek in Kim, 2021). Eden od pomembnih orodij umetne inteligence je ChatGPT, o katerem smo podrobneje pisali v okviru članka. Ta tehnologija ima potencial, da v prihodnosti spremeni izobraževalne dejavnosti. Lani je bil predstavljen klepetalnik, imenovan ChatGPT-3, in očitno je, da bo ta uporaba umetne inteligence imela ogromne posledice za vse vidike družbe (Tlili idr., 2023). Oblikovan je na način, da razume jezik in ponuja ustrezne odgovore na uporabnikova vprašanja. Vključuje veliko količino podatkov, vendar so vsi modeli usposobljeni na podatkih do leta 2021 (Halaweh, 2023).

Ko govorimo o robotih pri poučevanju, se mnenja razlikujejo, nekateri avtorji verjamejo, da roboti nikoli ne bodo mogli prevzeti vloge učiteljev. Roboti učitelji imajo veliko prednosti pred človeškimi učitelji. Natančneje, sposobnost strojev za obdelavo ogromnih količin informacij in uporabo različnih načinov za zadovoljevanje potreb študentov predstavlja pomembno področje, na katerem umetna inteligenca presega ljudi (Bosede in Cherek, 2018). Prav tako se nanaša na sposobnost interakcije z ljudmi, ki se učijo, brez človeških čustev, ki bi ovirala proces. Neprekinjeno vzdrževanje ekipe zadovoljnih učiteljev je izziv, vendar se lahko s pomočjo umetne inteligence to opravi veliko ceneje, če so to roboti,

kar nakazuje, da bi roboti lahko bili dober "nadomestek" za učitelje. Dober primer uporabe robotov v šolah je šola Savremena iz Beograda. Šola ima svojega lastnega pomočnika pri poučevanju, tj. robota Pepperja. Ta robot lahko komunicira preko glasovnih ukazov in hitro reagira na človeška čustva. Pepper ima tudi 2D in 3D HD kamere, ki mu omogočajo, da vidi vse v svojem okolju (Kuleto idr., 2022). Pomembno je poudariti, da ta robot ne more delovati kot samostojni učitelj, ampak le kot pomočnik učitelja (Kuleto idr., 2022).

Da bi razvili ozaveščenost, kompetence in poučevalne veščine z uporabo umetne inteligence v izobraževanju, bi morali učitelji pridobiti določene digitalne veščine in sposobnosti, ki bi bile ključne za vlogo motivatorjev pri poučevanju na podlagi umetne inteligence. Poleg digitalnih kompetenc bi morali učitelji: razumeti značilnosti umetne inteligence v izobraževanju, da bi lažje sprejemali odločitve; izboljšati svoje raziskovalne veščine, da bi usmerjali učenje študentov; razviti duh sodelovanja in veščine vodenja, da bi zagotovili svojo interakcijo s pomočniki pri poučevanju. Perceptije učiteljev o sistemih umetne inteligence v izobraževanju se razlikujejo glede na njihova pedagoška prepričanja, pedagoške izkušnje, prejšnje izkušnje pri uporabi izobraževalne tehnologije, kar lahko vpliva na njihovo pripravljenost sprejetja nove izobraževalne tehnologije (Gilakjani idr., 2013; Kim in Kim, 2022). Veliko število avtorjev se je ukvarjalo s prednostmi in slabostmi uporabe umetne inteligence. Prednosti umetne inteligence v izobraževanju so lahko:

- personalizacija učenja: umetna inteligenca lahko prilagodi izobraževalni proces posameznim potrebam učencev, jim omogoča prilagojene lekcije, vaje in povratne informacije;
- učinkovitost in produktivnost: učenje z uporabo umetne inteligence lahko postane bolj učinkovito in produktivno, saj lahko računalniški programi hitreje obdelajo informacije in ponudijo ustrezne vire;
- interaktivnost: sistemi umetne inteligence omogočajo interaktivno učenje prek simulacij, virtualnih eksperimentov ali dialoga s klopetaalnimi roboti;
- spremljanje napredka: umetna inteligenca lahko s spremljanjem in analizo podatkov o učenju omogoči vpogled v napredek vsakega učenca, kar omogoča učiteljem, da prilagodijo svojo podporo in intervencije.
- Navedene so le nekatere od mnogih obravnavanih prednosti in slabosti uporabe umetne inteligence v izobraževanju, avtorji pa pogosto izvajajo podrobnejše analize in raziskave, da bi zagotovili globlje vpogled v to temo.

Vendar pa se prav tako izpostavljajo nekatere slabosti umetne inteligence v izobraževanju, kot so:

- izguba človeške interakcije: uporaba umetne inteligence lahko zmanjša človeško interakcijo in osebni pristop, ki ga učitelji nudijo učencem;
- pomanjkanje čustvene povezanosti: računalniški programi nimajo čustvene inteligence, zato lahko manjka empatija ter sposobnost prepoznavanja in odzivanja na čustvene potrebe učencev;
- etika in vprašanja zasebnosti: uporaba umetne inteligence v izobraževanju postavlja vprašanja o zaščiti zasebnih podatkov učencev in etičnih vidikih uporabe tehnologije;
- tehnične težave: uvedba umetne inteligence v šolskem okolju se lahko sooča s tehničnimi težavami, kot sta vzdrževanje in posodabljanje tehnološke infrastrukture.

Najpogostejše omenjene pomanjkljivosti so: neskladje med programi in ukazi; zmanjšana potreba po delovni sili, večji problem brezposelnosti; ustvarjalnost je pogojena s strani razvijalca; pomanjkanje človeškega stika; uporaba umetne inteligence lahko vodi k lenobi pri mlajših generacijah; zahteva veliko časa in denarja; večja tehnološka odvisnost. Če učitelji uporabljajo umetno inteligenco, imajo različne koristi, kot sta hitrejša zbiranje podatkov in razvoj novih učnih strategij (Hwang idr., 2020). Učiteljevo zaznavanje sistemov umetne inteligence v izobraževanju je pogojeno z različnimi dejavniki, kot so: njegova pedagoška prepričanja, prejšnje izkušnje z uporabo takih sistemov, pripravljenost na uvedbo sistemov umetne inteligence (Gilakjani idr., 2013; Kim in Kim, 2022). Posledice razvoja umetne inteligence še ni mogoče napovedati, vendar se predpostavlja, da bodo aplikacije umetne inteligence glavna tema v okviru tehnologij izobraževanja v naslednjih nekaj letih. Ta orodja imajo velik potencial za podporo učencem in učiteljem (Zawacki-Richter idr., 2019). Učitelji že uporabljajo ChatGPT za zagotavljanje povratnih informacij učencem. Pomembno je poudariti, da je težko prezreti vsa nova orodja, ki so bila ustvarjena ali bodo ustvarjena, vendar je pomembno, da se naučimo pravilno uporabljati vsako orodje.

Torej je pomembno, da so tako učitelji kot študenti ustrezno usposobljeni za uporabo sistemov umetne inteligence v izobraževalnem procesu. Učitelji morajo razumeti, kako ti sistemi delujejo in kako jih lahko najboljše vključijo v svoje poučevanje. Prav tako morajo biti sposobni podpirati študente pri uporabi teh orodij in razlaganju rezultatov, pridobljenih z umetno inteligenco. Po drugi strani pa morajo biti tudi študenti usposobljeni za uporabo sistemov umetne inteligence. Morajo se naučiti, kako lahko izkoristijo ta orodja za izboljšanje svojega učenja, kako si razlagati rezultate in kako učinkovito uporabljati pridobljene informacije. Prav tako morajo biti ozaveščeni o etičnih vidikih uporabe umetne inteligence in se naučiti, kako jo uporabljati odgovorno in brez zlorabe. Usposabljanje učiteljev in študentov za uporabo sistemov umetne inteligence bi moralo biti del njihove strokovne rasti v izobraževalnem sektorju. To bo omogočilo, da bodo vsi udeleženci izobraževalnega procesa maksimalno izkoristili prednosti umetne inteligence in jo učinkovito uporabljali pri svojem poučevanju in učenju.

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