

THE TEACHER OF THE FUTURE: DEVELOPING THE SKILLS AND CONCERNS REGARDING APPLYING THE ARTIFICIAL INTELLIGENCE IN EDUCATION AND TRAINING

Biljana Lukić Dorđević

Independent Researcher, Serbia, bil.hr@yahoo.com

Sladana Jovanović

PU Zvezdara, Serbia, sladjanazvezdica12@gmail.com

Abstract: The rapid development of the Information Technologies and Artificial Intelligence we are witnessing at present times has caused the polarization of opinion of general public as well as experts, from the ones who appreciate the Artificial Intelligence, to the ones who dislike it. There are people who are delighted that using the various Artificial Intelligence-based platforms and applications is saving their time with routine tasks and data gathering for example, and there are other people who rarely use Artificial Intelligence, don't know much about it or are afraid that the Artificial Intelligence and robots will take over the human lives in the future. Regardless of those differences of opinions, we need to acknowledge that the usage of the Artificial Intelligence is not a matter of the future, it is already present. It has been applied in many industries: from robotic production facilities, to marketing and sales, engineering processes, insurance and healthcare, communications and media, arts, human resources management, and even education among many others. Specifically, the Artificial Intelligence applying in the area of education and training is the purpose and main interest of research and discussion in this paper. Besides the theoretic research conducted based on reviewing the selected books and articles on the subject matter, the empirical research in the form of survey with structured questions on the Artificial Intelligence applying in the area of education in schools and training in companies was conducted. The qualitative methodology used in this paper included: responses of educators and other professionals, as well as university students, are collected, analysed, presented and the findings are synthesised and deducted into conclusions made based on this research. The responses regarding applying the Artificial Intelligence in training at their workplace or university education processes, included the participants' opinions on significance and usefulness of applying the Artificial Intelligence, necessary skills they as educators or their teachers at the university need to develop in order to successfully apply the Artificial Intelligence in those processes, as well as biases and potential risks they believe such usage of the Artificial Intelligence may have on their work or study. The results and conclusions showed that, as previously stated, applying the Artificial Intelligence in education and at workplace, has its advantages and disadvantages. Namely, as advantages, among others, the participants pointed out the speed of the Artificial Intelligence in collecting high-volume data, increased productivity and performing the routine tasks that otherwise take-up much of their time etc. As disadvantages, there are always present concerns regarding the safety of the collected and stored data, especially the personal data linked to children in schools and employees at workplace, reduced critical thinking due to this usage of the Artificial Intelligence and the correctness of the replies provided by the Artificial Intelligence etc. Finally, as recommendations, there are several elements that could be included in a future research: pre-school teachers' concerns about the impact of overreliance of the future generations on Artificial Intelligence in educational processes, which may affect the creativity, natural development processes and children's desire to learn and explore the world around them on their own, as well as concerns of employees about the usage of Artificial Intelligence impact on their work positions, having in mind many recent examples of sudden lay-offs, especially in large Information Technology companies.

Keywords: Artificial Intelligence, education, skills, future generations, development

1. INTRODUCTION

Artificial Intelligence (AI) has been among the most discussed terms for the past several years, nevertheless it was created several decades ago. Starting from the 1940s and the work of mathematician Alan Turing on creating a "universal machine" (Robert, 2024) as a predecessor of a modern-day computer, and not so complicated systems in the 1960s as the professor Ryan S. Baker from the University of Pennsylvania stated: „Artificial intelligence is the capacity for computers to perform tasks traditionally thought to involve human intelligence or, more recently, tasks beyond the ability of human intelligence“ (OECD, 2021, 45). As Artificial Intelligence developed rapidly in the past several years, it quickly became applied in many business areas, such as: dark factories where robots work in production processes; widespread marketing and sales campaigns; various programming engineering processes; insurance and healthcare large data collection; even creating news in communications and media; designing photos, logos, videos; for talent acquisition and recruiting, on-boarding of new employees, internal communications and

payroll data gathering in human resources management, as well as education, among many others. For the centuries of human history, education has been one of the areas where the teaching was traditionally performed in person, by people for people. Sudden outbreak of COVID-19 took by surprise the whole planet, but thanks to already developed Information Technologies (IT) and digital on-line platforms, the schools, universities and companies managed with more or less interruption to continue their educational and work processes during the period of social distancing. Adding to this fast development of IT, AI and robots within the Industry 4.0 (Bonfield, Salter, Longmuir, Benson & Adachi, 2020), as well as global market in which international companies have workforce spread in geographically distant countries, it is expected to have worldwide discussions on changes in ways of workforce training and development, and future generations education to be better prepared for the future work. Employees' future employability is related to their workplace learning (Harteis, 2018). After reviewing the relevant literature on theory as well as practical examples of applying the Artificial Intelligence in educational organizations (Murugan, Periasamy & Abirami, 2025) and employees training in companies worldwide, the objectives of this paper are: to present some of the explored purposes of AI usage in education and training, to propose the skills that teachers and trainers need to have developed for teaching and applying the AI and also to draw attention to benefits and risks, especially of losing jobs due to applying the AI, based on literature review as well as responses of university students and educators from pre-school to university and companies, given within the conducted survey.

2. MATERIALS AND METHODS

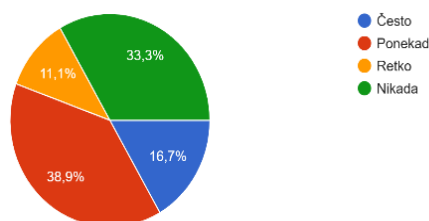
Within the reviewed literature, there are several areas and purposes of AI usage in education and training as basic materials for conducted survey for this paper: opinions of authors suggesting that Artificial Intelligence can be applied starting from pre-school and primary school education, such as “teacher-led, play-based, and culturally grounded educational scenarios” (Papadakis, 2025), how applying Artificial Intelligence reshapes secondary school education (Kemp, 2024), its impact on the future university education and research (Roumate, 2023), as well as applying AI in training in companies in order to perform efficient, personalized, AI-based training of employees with real-time feedback (Na, 2024). The authors of this paper decided to create and conduct an anonymous survey to research local Serbian participants' opinions on applying of AI in education from pre-school to university and in trainings in companies, which skills and competencies are needed by teachers applying Artificial Intelligence, what are participants' opinions on advantages and disadvantages of applying AI, and for employed participants if they are worried because of the layoffs due to Artificial Intelligence usage. The survey consists of 15 questions, it was conducted in April, 2026, with 51 participants – 12 of them male - 23,5% and 39 female - 76,5%, of age from 18 to over 55 years old, mainly living in Belgrade and Novi Sad, Serbia. The questions were written in Serbian language to ensure that all the participants can clearly understand them. The method of survey creation was Google forms. After creation of survey questions, the form was distributed in several online groups which the authors of this paper are members of. The respondents were university students and employed people, including pre-school, primary and secondary school teachers, university professors as well as employees in various companies. The time delegated for conducting the survey was 7 days. After that period, the opinions and replies from the participants were collected, analysed, findings synthesised and in descriptive and graphical method presented herewith. In this paper, besides the literature review, the authors applied description of the results obtained by the survey technique, as well as the appropriate quantitative and qualitative methodology and the methods such as: analysis and synthesis and induction and deduction. Moreover, comparison of the results obtained through the survey was also applied.

3. RESULTS AND DISCUSSIONS

After the replies from the survey participants are collected, here are the most important results presented through all the figures created in Google forms. In the discussion of the findings related to the survey conducted, there are notable differences in gender, out of 51 participants, 12 were males (23,5%) and 39 females (76,5%), mostly due to the fact that larger portion of educators – respondents were pre-school teachers and they are mostly females in Serbia. Of all 51 survey participants, 8 of them were university students - 15,7% and 43 were employed - 84,3%, either in educational organizations or in companies, out of which one student who was also working. Besides 8 students, another 10 recent graduates, at that time employed, 18 persons in total, replied to the question regarding their opportunities to use the Artificial Intelligence (AI) during studies, as given in Figure 1: 3 of them (16,7%) often used it, 7 of them (38,9%) sometimes used it, 2 of them (11,1%) rarely used it and 6 of respondents to this question (33,3%) never used Artificial Intelligence (AI) in class during their education.

Figure 1: Opportunity to use AI in class during studies

Pitanje za studente: da li ste u toku školovanja imali prilike da koristite veštačku inteligenciju (AI) u nastavi?
18 odgovora

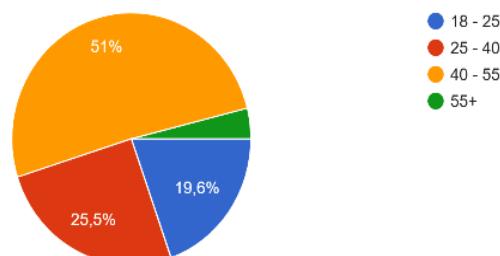


Source: Research of the authors

The relatively high percentage of participants (33,3%) that never used AI in their education might be expected, having in mind recent AI development and that many of the respondents finished their education more than 15 years ago, since out of all 51 participants, almost 55% of them were over 40 years old (26 of them, 51%, were 40-55 years old and 2 of them, 3,9% were over 55 years old), comparing to 13 of them (25,5%) who were 25 to 40 years old and 10 of them (19,6%) who were 18 to 25 years old, as shown in the Figure 2:

Figure 2: Survey participants' age

Godine
51 odgovor

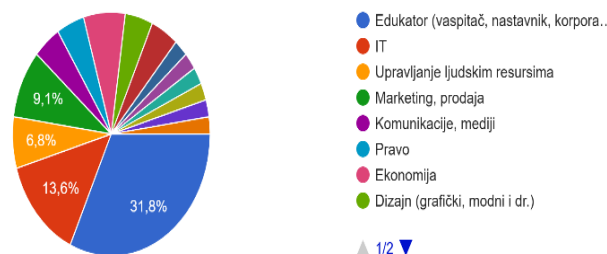


Source: Research of the authors

When considering professional areas where our employed survey participants worked, the largest group was teachers and educators (pre-school, school teachers, professors, corporate trainers), 31,8% and 1 student (2,3%) which also worked in education; 6 of them (13,6%) worked in IT, 4 of them (9,1%) in marketing and sales; 3 of them (6,8%) in human resources management and also 3 of them (6,8%) were economists. All other professions: design, logistics, law, communication, architecture etc. were represented with 1 or 2 participants, which is shown in Figure 3. Such a variety of professions is important in obtaining diversified opinions on the survey questions.

Figure 3: Survey participants' professions:

Pitanje za zaposlene: u kojoj oblasti radite?
44 odgovora



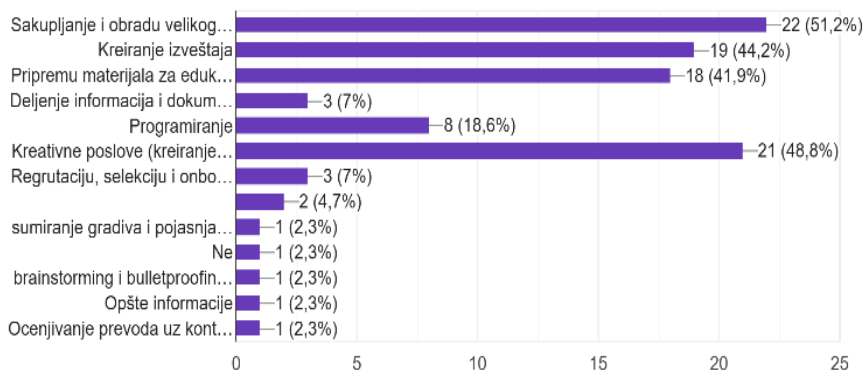
Source: Research of the authors

Of all the employed persons, 72,1% (31 participant) used AI in company they worked for: 17 of them (39,5%) often, 14 of them (32, 6%) sometimes, and 5 of them (11,6%) rarely with 7 of participants (16,3%) who never used AI in their work. There is also the fact that out of all 51 participants, 46 of them used AI either in school or at work, but of those 46, only 9 of them (19,6%) had some kind of special training how to use AI and 37 of them (80,4%) didn't have any kind of training for AI usage. This information of lack of training for applying AI in schools and companies for such a large percentage (80,4%) is very important for future education and training policies creation. Replies presented in Figures 4 and 5 provided following data: participants chose their most often used AI cases such as collecting large amounts of data (51,2%), creation of text, pictures, logos etc. (48,8%), creation of reports (44,2%) and creation of education and training materials (41,9), as shown in Figure 4. Figure 5 showed us that the most useful usage of AI for respondents was for faster performing of "boring" repetitive tasks (72,1%), its speed of collecting and processing large amount of data (65,1%), and AI's 24-hour availability (44,2%). In comparison of data obtained through these two Figures, it is shown that the participants used AI mostly to speed-up their work with large data amounts or for repetitive work, but also to help them in their creative work as well.

Figure 4: The most often used AI purposes

Za sve koji JESU koristili veštačku inteligenciju u školi ili na poslu: za koje poslove ste najčešće koristili AI? Odaberite do 3 odgovora.

43 odgovora

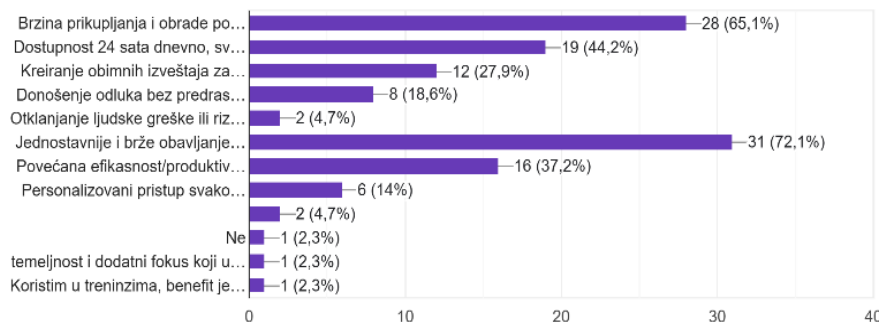


Source: Research of the authors

Figure 5: The benefits of AI usage

Za sve koji JESU koristili veštačku inteligenciju u školi ili na poslu: koje su koristi od upotrebe AI? Odaberite do 3 odgovora.

43 odgovora



Source: Research of the authors

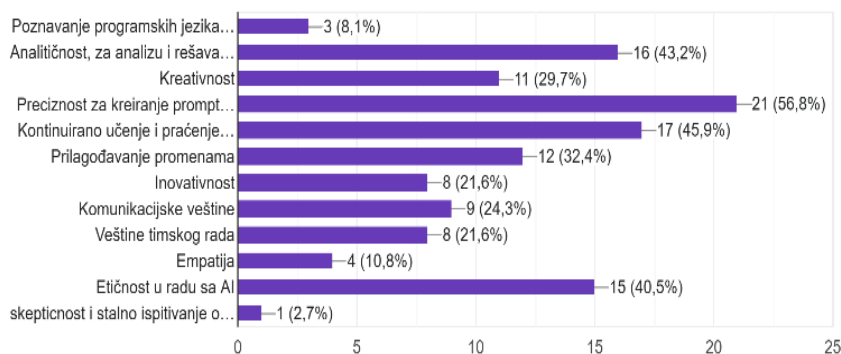
When considering which skills were necessary to be developed by their teachers if the respondent was a student or they need to develop themselves in case of educators, the participants replied that the most important skills for working with AI were: precision in creating prompts for AI (56,8%), continual learning and following up the newest

achievements (45,9%), analytical skills for analysis and complex problem solving (43,2%), ethical work with AI (40,5%), adaptability to changes (32,4%) and creativity (29,7%), as shown in Figure 6:

Figure 6: The most important skills of teachers for working with AI

Za sve koji JESU koristili veštačku inteligenciju u školi ili na poslu: koje veštine posebno cenite kod svojih profesora sa kojima ste koristili AI? Ukoliko...no razvijati za primenu AI? Odaberite do 3 odgovora.

37 odgovora



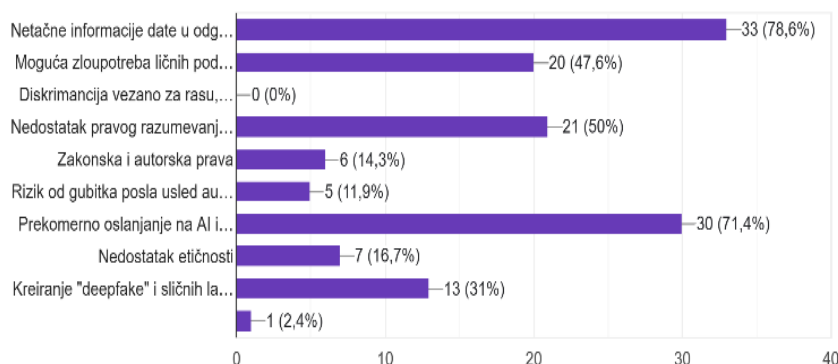
Source: Research of the authors

All the respondents who used AI in school or at work provided their replies on the biggest risks of using AI: incorrect information provided by AI (78,6%), over-reliance on AI and reduced critical thinking (71,4%), AI's lack of proper understanding and context (50%), possible misuse of personal data (47,6%) and creation of "deepfake" and similar fake content (31%), as given in the Figure 7:

Figure 7: The biggest flaws/risks of using AI

Za sve koji JESU koristili veštačku inteligenciju u školi ili na poslu: koje su najveće mane/rizici od upotrebe AI? Odaberite do 3 odgovora.

42 odgovora



Source: Research of the authors

The final results presented are employed participants responses related to layoffs in their companies due to applying AI and their personal opinions on future benefits and risks that AI might bring, considering their previous experiences: 88,4% employed respondents reported no layoffs due to AI usage in their company and 11,6% replied positively. This is related to the fact that the largest group of respondents (31,8%) were educators mainly employed in state or city owned pre-schools and schools, in which there was less possibility to be laid-off due to applying AI at the moment. On the other hand, when asked if they were worried about possible future layoffs due to applying AI, 68,2% of them replied negatively and 31,8% replied positively. This increase of around 20% of the survey respondents who are worried about the possible future layoffs compared to percentage of recently happened ones, emphasizes the uncertain feelings of future with AI usage.

For further discussion, comparisons may be made between the applying AI in countries with wide-spread AI usage, such as the US, China, Canada etc., as presented in the selected reviewed literature and the responses from the locally conducted survey. Namely, the already mentioned literature authors (Papadakis, 2025), (Kemp, 2024), (Roumate, 2023), (Miller, 2023), suggest starting with practical AI literacy at a very young, pre-school age. The teachers use AI not only to create lessons plan and activities (Skrabut, 2023), but also to lead gamified learning, with direct and practical participation of students and their parents. Robert (2024) points out the benefits of using AI in education, such as: adaptive personalized learning created by teachers with AI for each student's specific needs, AI's timely feedback to students etc. The biggest concerns regarding applying AI are: correctness of AI replies, protection of personal data, cultural, racial and gender biases (Kemp, 2024), so it is needed to ensure ethical and meaningful usage of AI (UNESCO, 2023). Woodhouse (2022) believes that professional ethic courses should be mandatory part of all the future teachers' education curriculum. On the other hand, participants of the survey - local Serbian teachers stated they rarely use AI directly with students participating during the class, but rather for class and educational material preparation and creative work, leaving teachers more time to spend with students in the classroom; company trainers used AI to collect and summarize large amount of company's educational materials, policies, regulations etc. into creating training material for each specific employee. The survey participants are mostly concerned about incorrect information provided by AI, over-reliance of students on AI, reduced critical thinking and possible misuse of personal data. In not so diversified local society, there is not much concern regarding cultural, racial and gender biases. Having in mind these differences and similarities, all could agree upon one matter: jobs losses to AI usage. As West (2018) stated opinions of AI researchers who predicted "dramatic workforce transformation" in the next several decades in the sense of AI overtaking writing, driving, sales and even medical jobs from people and Schiller (2016) suggested career planning based on job's automation possibility, more recently Cramer (2026) calls for caution due to noted infamous AI company's advertisement for hiring AI instead of people.

4. CONCLUSIONS

In order to provide contemporary education to their students, educational organizations need to provide their employees - teachers with appropriate means and opportunities to improve their own skills and competencies needed for the future. As students graduate and enter workforce, it is important for company leaders and human resources professionals to continue workforce training for personal development of employees' skills and organization's ability to apply new technologies, by creating organizational culture ready for adoption of Artificial Intelligence (Marchioto, 2024) among other technologies, all in order for companies to survive and grow (Uddin, Khan, Aleem, & Farheen, 2025) at the contemporary market.

After the relevant literature review, the authors of this paper concluded that literature authors pointed out several skills the teachers of the future need to continue developing: creativity and communication skills to use AI to foster in-class group discussions and learning to prepare students for future workplace team work, explaining to students the impact of using AI responsibly, not to copy and paste the text, but to think, learn and develop themselves; curiosity and willingness to learn new skills and explore innovations (Miller, 2023). The survey participants' opinion is that teachers and educators in companies of the future need to develop creativity and precision in creating prompts for AI, to apply lifelong learning of innovative achievements, develop analytical skills for complex problem solving, promote ethical applying of AI, as well as develop adaptability to changes. When summarizing the concerns on applying AI in educational processes and training in companies, both authors and local respondents are concerned about incorrect information provided by AI that might be deemed as correct, over-reliance of future generations on AI to reduced critical thinking, ethical management of personal data, losing jobs over applying AI (Chow, 2026), (RTCG, 2025), which is crucial for understanding the uncertainty that applying AI brings to people.

Future research may be conducted to research the impact of applying AI in educational processes on natural creativity and development of future generations, as well as future employees' concerns about AI taking over their jobs. In the meantime, teachers and educators need to find a way to further develop their own skills and skills of their students, since it seems that the Artificial Intelligence will continue with its wide-spread impact on the society.

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