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ANALYSIS OF THE APPLICATION OF ARTIFICIAL INTELLIGENCE IN SOCIAL WORK TEACHING

With AI at our fingertips, the teacher's role is to guide the hand[1]

ABSTRACT: The application of artificial intelligence (AI) in education is inevitable, as in all other segments of modern society. Since this is a process that cannot be ignored or avoided, the focus should be on ensuring its effective implementation. This approach maximizes its benefits while minimizing the associated risks. This paper explores the perspectives of students and teaching staff on the use of AI in social work education at HE institutions in the Republic of Serbia, in which these programs are accredited. The paper is structured into three sections. Following the introduction and theoretical analysis, the second section presents the findings of empirical research conducted using a specially designed survey questionnaire targeting the mentioned groups. In the final section, the authors provide conclusions and recommendations for enhancing the application of AI in (higher) education.

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Keywords: *artificial intelligence and education, artificial intelligence and higher education, social work, AI and teaching.*

1. Introduction

As in all segments of modern society, digitization and the application of artificial intelligence systems are also present in education, one of the most important pillars of any society. It is reasonable to expect that with the further development of artificial intelligence, its application in education will grow and that it actually represents "*an opportunity for the reform of teaching and learning*" (Huang, Saleh & Liu, 2021, p. 207). Although the benefits that the application of artificial intelligence has in this area are indisputable, we must also be aware of the many dangers and risks that it can cause in education if it is not developed or not used in an appropriate way, especially in the matter of the application of generative artificial intelligence (see Baidoo-Anu & Owusu Ansah, 2023; Mello et al., 2023).

It could be found in literature that an advantage of the application of artificial intelligence in education is that it "*can help improve learning outcomes, efficiency, and global access to quality education*" (Kamalov, Santandreu Calonge & Gurrib, 2023, p. 23) and it has a particular "*impact on administration, instruction, and learning areas of the education sector or within the context of individual learning institutions*" (Chen, Chen, & Lin, 2020, p. 75277). AI in education is applied in *adaptive learning, teaching evaluation, virtual classroom, smart campus, and intelligent tutoring robots* (see Huang, Saleh, & Liu, 2021), and it is important for *personalized teaching and learning and enabling "teachers to be more focused on humanistic care"* (Huang, Saleh, & Liu, 2021, p. 211). At the same time, "*in order to ensure its responsible use in educational settings"*, as stated in the AI report – By the European Digital Education Hub's Squad on artificial intelligence in education, "*it is important to remain ever aware of the balance that needs to be struck between leveraging AI's benefits and evaluating and mitigating potential risks and ensuring that human oversight is included and human values are served*" (AI report – By the European Digital Education Hub's Squad on artificial intelligence in education, 2023, p. 108).

And those potential risks and challenges of applying artificial intelligence in education are numerous. Although it could be considered that *the biggest challenge* in the application of artificial intelligence is *finding the balance between protecting privacy and restraining advancement"* (Schaeffer, Coombs, Luckett, Marin & Olson, 2024, p. 64), in the education there are also

bias, digital and AI literacy inequalities, inequalities in accessing AI systems (Özer, 2024). Therefore, we could agree with the authors who emphasize that the application of AI in education should "*prioritise and facilitate human rights, democracy and the rule of law"* (Holmes, Persson, Chounta, Wasson, & Dimitrova, 2022, p. 76; see also Slimi, 2023). In this sense, it has to be borne in mind the fact that *more than half of the world is still offline* (Use of AI in education: Deciding on the future we want, 2024). On the other hand, institutions must be adequately equipped for the application of artificial intelligence (see Lee et al., 2024), both teaching staff and students must be fully trained in this technology. It is not realistic to expect that the role of teaching staff will decrease due to the application of artificial intelligence; even on the contrary – *the role of teaching staff in this process remains very important* (AI report – By the European Digital Education Hub's Squad on artificial intelligence in education, 2023), and there is view that "*in the online learning of the future, AI systems and humans will work closely together*" (Seo, Tang, Roll, Fels & Yoon, 2021, p. 19). In addition, it is widely accepted that artificial intelligence should be introduced into curricula as much as possible (see Slimi, 2023; Kamalov, Santandreu Calonge & Gurrib 2023).

Due to the importance of education both in a particular society and on a global level, in the process of implementing artificial intelligence in this sector, it is necessary to include all relevant actors – pupils/students, teaching staff, policy makers, creators of algorithms, i.e. experts from the field of artificial intelligence in a broader sense. Therefore, "the state should *institutionalize regulation of educational data security and usage of AI technology, in order to enhance educational equity*" (Bu, 2022, p. 565) and it is very significant *that schools have a proactive approach in this process* (Gocen & Aydemir, 2020, p. 19).

The necessity of a cautious approach to the AI application in education is also indicated by the fact that in one of the most significant legal documents related to the application of artificial intelligence (AI Act), is stated that the application of AI in education is classified as high risk (AI Act, Article 6, Annex III, see also Articles 9-15 – High risk level requirements and Art. 5 Prohibited AI Practices) (AI Act, 2024). Regarding that, in the Republic of Serbia, *Conclusion on the adoption of ethical guidelines for the development, application and use of trustworthy and responsible artificial intelligence* is also specify that "*High-risk systems are considered to be artificial intelligence systems in the areas of: – education, professional development and training: in particular, it includes systems intended for determining the possibility of an individual's access to institutions for education and vocational training or for assigning individuals to those institutions, as well as systems intended for*

evaluating persons who attend the mentioned institutions, including the systems that evaluate the tests (entrance exams) required for enrolling individuals in those institutions" (Conclusion on the adoption of ethical guidelines for the development, application and use of trustworthy and responsible artificial intelligence, 2023; see also requirements recommendable for any AI system deployed and used in education – Human agency and oversight; Transparency; Diversity, non-discrimination, and fairness; Societal and environmental wellbeing; Privacy and data governance; Technical robustness and safety; Accountability (Ethical guidelines on the use of artificial intelligence (AI) and data in teaching and learning for educators, 2022)). At this point, it is important to emphasize the Proposal for Strategy for the Development of Artificial Intelligence in the Republic of Serbia for the Period 2024-2030, where it is prescribed that artificial intelligence will change the approach to education, and that it is among the most important issues, which will bring accelerated development of artificial intelligence. In addition to the inclusion of artificial intelligence into curricula/study programs, the Strategy mentions the benefits of applying artificial intelligence in education, such as personalized learning, facilitating the work of teachers in the preparation of teaching content, which would increase the quality of education as teachers would be able to devote more time to students. Also, it was pointed out the importance of teachers being trained and qualified to use artificial intelligence, but also to be familiar with the risks and possible dangers. Regarding the application of artificial intelligence in higher education, it was stated, among other things, that one of the goals is that all students, regardless of the field of study, should acquire basic knowledge about the possibilities, application and ethical implications of artificial intelligence. It also highlights the indispensability of investment in infrastructure and equipment in academic institutions and monitoring the general AI literacy of students (Proposal for Strategy for the Development of Artificial Intelligence in the Republic of Serbia for the Period 2024-2030).

2. Analysis of the application of artificial intelligence in the education of social workers – empirical research

2.1. Research sample

The research sample consists of 115 respondents who study or work at the Universities of Niš, University of Belgrade and University of Novi Sad, at the departments for social work/social work and social policy. In the survey (questionnaire) participated 95 students and 20 teaching staff. Among the

students, 26.8% were the first-year university students, 11.8% the second-year students, 13.8% the third-year students, 24.4% the fourth-year students, 5.9% master's degree students and 1.2% PhD students. Concerning the teaching staff, 4 Teaching Associates, 6 Teaching Assistants, 5 Assistant Professors, 3 Associate Professors and 2 Full Professors participaded in the survey. 43% of respondents work or study at the University of Novi Sad, 27% at the University of Niš and 30% at the University of Belgrade.

Regarding the gender, 20% of respondents were men, while 80% of respondents were women. The largest number (58.8%) of surveyed belongs to the 18-22 age category; 22.4% of the respondents belong to the 23-33 age category, 10.6% of the respondents belong to the age range from 34 to 44, 5 .9% of respondents belong to the 45-55 age category and 1.2% of respondents belong to the 55+ age category.

Finally, 14.1% of respondents live in a small town, 12.9% in a village, 24.7% in a medium-sized city, 9.4% in a town, 29.4% in a medium-sized city and 37.5% of respondents live in a large city .

2.2. Research instrument

An online questionnaire created for research purpose was used to collect data. The questionnaire contains questions related to the respondents' demographic data, followed by multiple-choice questions that aim to examine the respondents' awareness of artificial intelligence, its current use in practice, the possibility of AI application in social work teaching, obstacles and necessary conditions for its application, as well as a scale for assessment of attitudes about the application of artificial intelligence in the education of social work students. The assessment scale was made up of 12 items, on which respondents evaluated their attitudes with grades: 1- I do not agree, 2- I am not sure, to 3- I agree. Cronbach's alpha, as the reliability coefficient of the mentioned scale, is 0.86. The metric characteristics of the scale are shown in Table 1.

Based on a more lenient criterion (values between -2 and 2, Finney & DiStefano, 2006), skewness and kurtosis values are considered acceptable. Also, based on the value of Cronbach's alpha coefficient, it can be concluded that the reliability of the scale is acceptable.

Table 1. Metric characteristics of the scale

	Min	Max	M	SD	Sk	Ku	α
Attitude scale	12	36	27,96	5,27	-0,58	-0,19	0,86

Note: Min- minimum, Max- Maximum, M- Arithmetic mean , SD- Standard Deviations, Sk- Skewness, Ku- Kurtosis, α- Cronbach's alpha coefficient

Data collection

Data were collected in the period from June to September 2024 by using an online questionnaire. A convenient sample (teaching staff and students of the above-mentioned universities) was used as a sampling method. The questionnaire was distributed via email addresses and the snowball sampling.

2.3. Research results

Use of AI in teaching

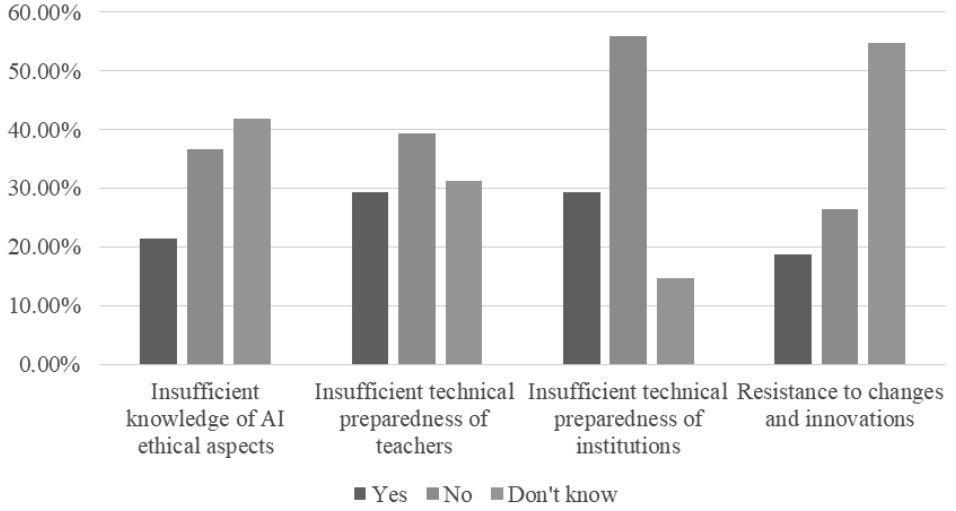
The results of the research show that 16 teachers have never used techniques/methods based on artificial intelligence in teaching, while 4 teachers report that they have. Two teachers used techniques/methods in order to implement interactive teaching, while one teacher used them for checking the originality of student works (plagiarism detection programs).

60.87% of respondents (students and teachers) believe that the infrastructure of the institution where they study or work is not prepared to incorporate tools based on artificial intelligence in teaching; 7.83% of respondents are not sure, while 31.30% of them believe that institution has AI-ready infrastructure.

In response to the question whether teachers have sufficient knowledge and skills of the use of artificial intelligence in teaching, 55.65% of respondents are of the opinion that they do not have that level of knowledge and skills, 13.91% are not sure and 30.43% of surveyed think that they do have.

As an argument that teachers do not have enough knowledge, respondents refered to insufficient knowledge about the ethical aspects of the application of artificial intelligence (21.4%), insufficient technical readiness of teachers (29.4%), insufficient technical preparedness of the institution (29.4%) and resistance to changes and innovations (18.8%) (Chart 1).

Chart 1. Reasons why social work teachers do not have enough knowledge and skills to use AI in teaching



Author's research

Contribution of AI application

The results of the research show that 70.6% of the respondents estimate that the application of AI would contribute as a tool for case analysis, 11.8% are not sure, while 17.6% believe that it would not contribute.

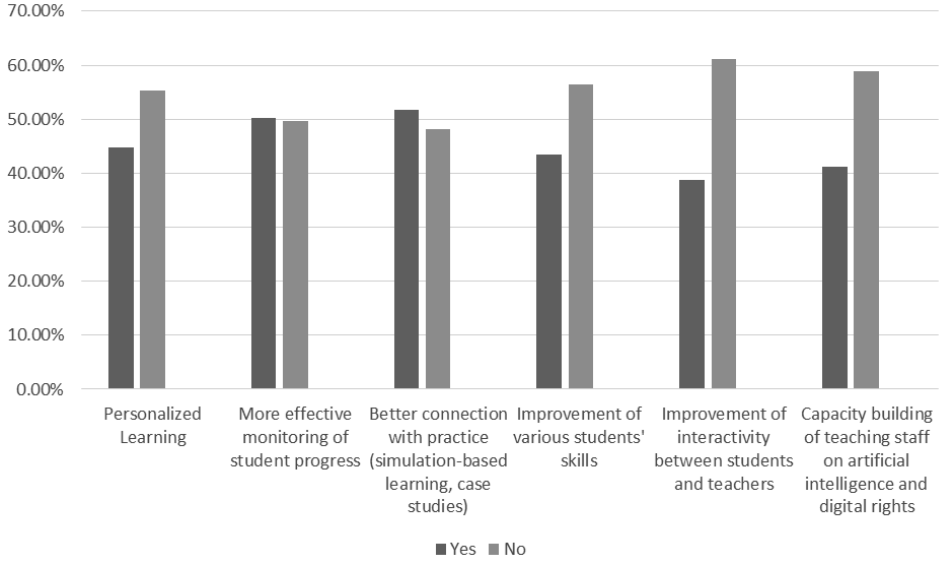
When it comes to the use of AI to create virtual simulations, 63.5% of respondents believe that AI would contribute, 11.8% are not sure and 24.7% believe that it would not contribute.

Regarding student evaluation, 42.4% of respondents believe that the AI would contribute, 16.5% are not sure, and 41.2% believe that the AI would not contribute in that process. Quite a large number of respondents (67.5%) consider that AI can improve interdisciplinary cooperation between social work and other areas in the field of education of future social workers, 23.9% do not know or are not sure and 8.7% believe that it cannot improve it.

63.4% of respondents believe that artificial intelligence could be useful in social work education/teaching, 27.5% do not know or are not sure and 9.9% of respondents think that it would not be useful. Respondents who gave an affirmative answer believe that artificial intelligence would be useful as a form of personalized learning (44.7%), to enable more efficient monitoring of student progress (50.3%), to enable better connection with practice (51.8%), to enable the improvement of students' skills (43.5%), to enable the improvement of interactivity between students and teachers (38.8%)

and to enable the improvement of the capacity of teaching staff on artificial intelligence (41.2%) (Chart 2).

Chart 2. Reasons for using AI in the teaching of future social workers

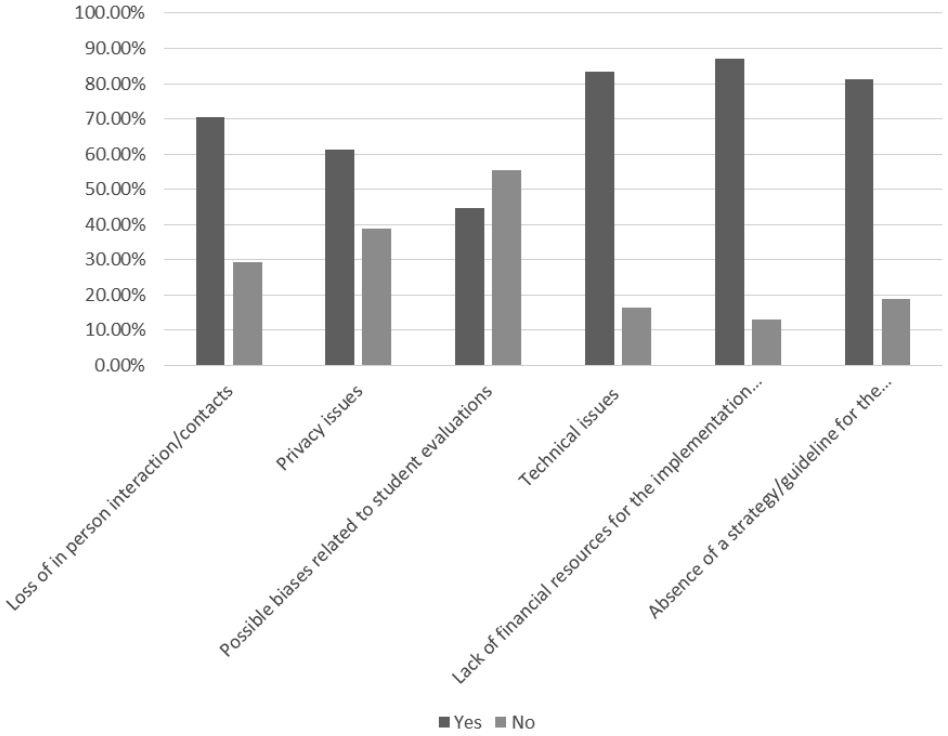


Author's research

Risks of using AI

The results of the research indicate that respondents find following risks of applying artificial intelligence in the education of future social workers: loss of in-person interactions (70.6%), privacy concerns (61.2%), possible bias related to the evaluation of students (44.7%), technical issues (83.5%), insufficient financial resources for the application of artificial intelligence in education (87.1%), the absence of strategies for the implementation of artificial intelligence in education (81.2%) (Chart 3). In the category "others respond", the respondents mentioned the resistance and/or lack of interest of the teaching staff for the use of artificial intelligence in the education of future social workers.

Chart 3. Risks of using AI in the teaching of social workers



Author's research

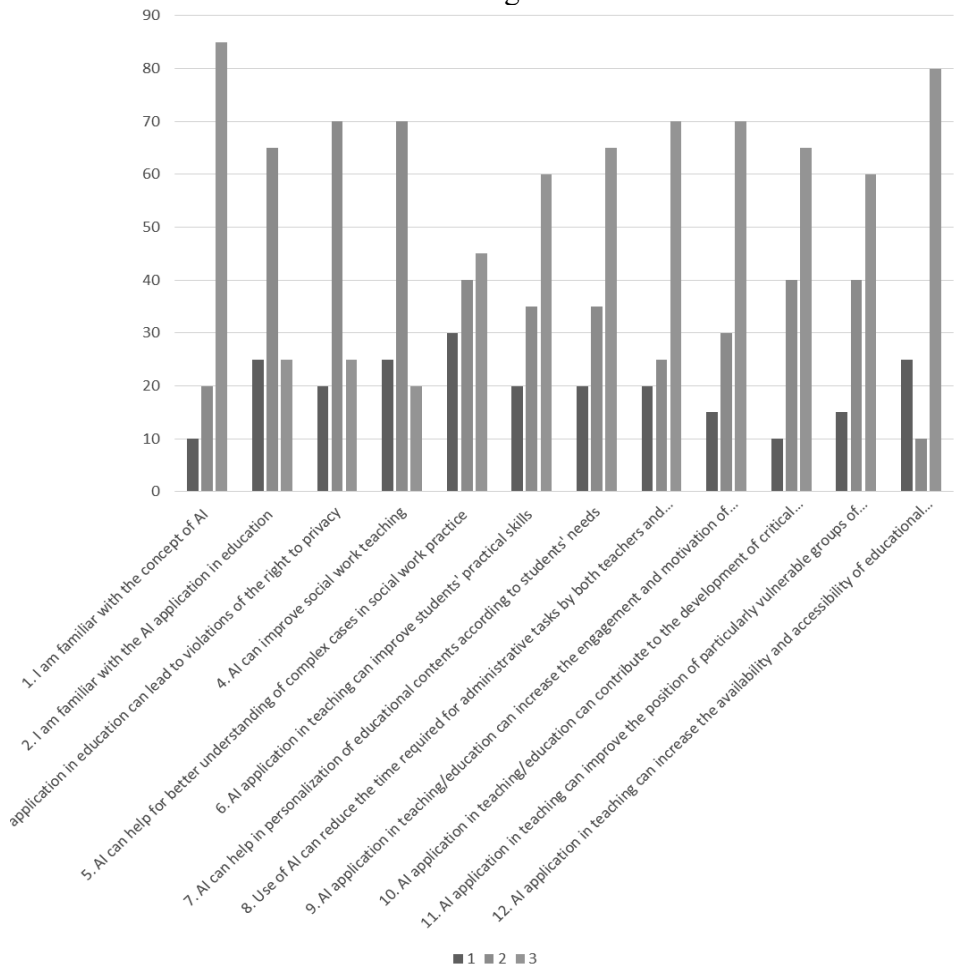
Attitudes about AI

Chart 4 shows respondents' answers on the scale of attitudes about artificial intelligence. It can be seen that on almost every item, in the majority of cases, high estimates are chosen by respondents. The most of respondents rate with a high grade the item that they are familiar with the concept of artificial intelligence, as well as the item that it would enable greater availability of educational material. Respondents are not sure, i.e. most often evaluate the following items with a medium grade: I am familiar with the application of artificial intelligence in education; Application of artificial intelligence in education can lead to violation of the right to privacy and Artificial intelligence can improve the social work teaching.

Testing the differences between respondents from different universities on the scale of attitudes about artificial intelligence, the results of the analysis of variance, when the number of respondents in each group is equalized, show that there are no statistically significant differences on the total score of the scale ($F=0.21$, $p=0.85$), as well as on individual items (attitudes) of the scale. Also, when

the number of respondents is equalized according to the independent variable status of respondents (student/employee), the results of the t-test show that there is no statistically significant difference between teachers and students on the total score of the scale (t=1.03, p=0.30), as well as on individual items (attitudes) of the scale. Regarding the differences between students, when the number of respondents is equalized according to the year of study (due to the small number of respondents, doctoral and master's studies were excluded from the analysis), the results of the analysis of variance show that there are no differences between the groups in attitudes about artificial intelligence (F=1.41 , p=0.29).

Chart 4. Attitudes about artificial intelligence



Author's research

3.Concluding remarks

The idea of the research itself was to analyze the views on the application of artificial intelligence in the social sciences, in the field of higher education, and the teaching of social work was chosen as representative sample. The results of the conducted research indicate that positive attitudes and changes have been noticed, but *it is necessary to continue and intensify the application of artificial intelligence* in this area.

Namely, it can be seen that in the sample of surveyed teachers, 80% have never used techniques/methods based on artificial intelligence in teaching, 60.87% of respondents (students and teachers) believe that the infrastructure of the institution where they study or work is not ready for the application of artificial intelligence and 55.65% of respondents believe that teachers do not have enough knowledge and skills to use AI in teaching.

It is particularly important to emphasize that it is very positive that 63.4% of the respondents believe that artificial intelligence could be useful in the teaching of social work, that is, in the education of social workers (27.5% do not know or are not sure, while only 9.9% of respondents believe that it would not be useful). The majority of respondents are familiar with the concept of artificial intelligence and believe that it would enable greater availability of educational material.

It is interesting that respondents in a large percentage (over 80%) see insufficient financial resources for the AI application in education, the absence of strategies for the implementation of artificial intelligence in education, and technical issues as obstacles to this application. Loss of human interaction (70.6%) and protection of privacy rights (61.2%) are mentioned as high risks and challenges. At the same time, they state that there is resistance and/or lack of interest among teaching staff for the use of artificial intelligence in the education of future social workers.

Based on the all abovementioned, it could be concluded that the application of artificial intelligence in education is inevitable and that both teaching staff and students should be prepared for these changes. AI implementation into all segments of education should not be passively observed, but all those who will use it in their studies and work should continuously be encouraged, explained, trained and taught about its application. In that manner, AI could be safe, trustworthy and ethical used; advantage of all its benefits could be taken, but also the risks of its use/abuse should be reduced. Also, we are of the opinion that also the authorities at all levels and decision-makers play a very important role in this process. In that regard, the Republic of Serbia

has already invested significant efforts and funds in the development and application of artificial intelligence in general, including education sector, and strives to follow global trends and positive practices. On the other side, the attitudes of students and teaching staff are very useful because they indicate segments of the application of artificial intelligence in higher education that should be improved, as well as obstacles that should be overcame. In order to speed up (or at least not slow down) and ensure the safe and reliable AI application in higher education, joint action of all stakeholders – and first of all the state, students and teaching staff – is necessary.

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ANALIZA PRIMENE VEŠTAČKE INTELIGENCIJE U NASTAVI SOCIJALNOG RADA

APSTRAKT: Primena veštake inteligencije (VI) u obrazovanju je, kao i svim ostalim segmentima savremenog društva, neminovnost. Kako je u pitanju proces čije se postojanje ne može ignorisati, niti izbeći, fokus bi trebalo staviti na njegovu efikasnu implementaciju koja bi obezbedila korišćenje svih njegovih benefita, uz istovemeno minimiziranje rizika. Autori se u radu bave ispitivanjem stavova studenata i nastavnog osoblja o primeni veštačke inteligencije u nastavi socijalnog rada na visokoškolskim

ustanovama u Republici Srbiji, na kojima je ovaj program akreditovan. Rad se sastoji iz tri dela. Nakon uvodnih razmatranja i teorijske analize, u drugom delu rada su predstavljeni rezultati empirijskog istraživanja. U tu svrhu je korišćen posebno pripremljen upitnik – anketa za navedene ciljne grupe. Konačno, zaključci i preporuke autora u cilju unapređenja primene veštačke inteligencije u (visokom) obrazovanju izneti su u poslednjem delu rada.

Ključne reči: *veštaka inteligencija i obrazovanje, VI i visoko obrazovanje, socijalni rad, VI i nastava.*

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