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VISION OF EDUCATION FOR FUTURE TEACHERS IN THE ERA OF ARTIFICIAL INTELLIGENCE - CHALLENGES OF A NEW REALITY

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Abstract: The question that arises for everyone working with children and youth is how ready we are to respond to the challenges in education posed by artificial intelligence. It is necessary to consider the risks, as well as the opportunities for creating digital content with the help of artificial intelligence, online behavior, protection of personal data, and prevention of all possible abuses that artificial intelligence brings. The research aimed to determine the benefits of artificial intelligence in education, as well as the existence of potential dangers and risks. The research was conducted during the 2022/2023 school year at the Teacher Training Faculty in Tutin at Educons University and the Faculty of Education in Sombor, with a total of 75 students majoring in teaching. The qualitative component of the research consists of 3 focus groups. The responses of future teachers regarding the creation of the teaching process, teaching content, assessment methods, and the use of artificial intelligence tools in the educational process were analyzed. In this qualitative research, students saw the most benefits in creating the teaching process, greater individualization, creativity, and interactivity, as well as faster feedback on student progress. They mostly identified the dangers and concerns in the inability to control information and content, misuse of personal data, lack of transparency and false information. The general conclusion of the research results indicates a consensus among respondents that artificial intelligence tools are certainly good assistants in the teaching process, but they should not in the future suppress the significant role of teachers.

Keywords: artificial intelligence, challenges in education, teachers
Field: Humanities

1. INTRODUCTION

Artificial intelligence can be defined as an information system controlled by humans, aimed at simulating human intelligence. It is a system that interacts with the environment, to a greater or lesser extent autonomously, and is constantly evolving and upgrading.

The Development Strategy for Artificial Intelligence in Serbia for the period 2020-2025 recognizes the need for greater focus on artificial intelligence in the education system and scientific research. The strategy also acknowledges the relatively small number of researchers in the field of artificial intelligence at universities (Development Strategy for Artificial Intelligence in RS for the period 2020-2025).

The Government Artificial Intelligence Readiness Index for 2023 for Serbia is 55.57, ranking 57th out of 193 countries. The United States ranks first. Serbia is ahead of most Balkan countries: North Macedonia (45.4), Croatia (49.3), Montenegro (47), Albania (43.3), and Bosnia and Herzegovina (36.5). Bulgaria (58.6) and Slovenia (62.6) are ahead of Serbia. This index indicates the readiness of governments to implement artificial intelligence in providing public services to their citizens (Hankins, E., Nettel, F. P. et al., 2023).

Serbia is not included in the Global AI Index, which measures the national level of investment, innovation, and application of artificial intelligence, where the United States also ranks first. From the region, only Slovenia is ranked, and it ranks 37th out of 62 countries (Cesareo, S., White, J., 2023).

To benefit from artificial intelligence, we should follow the following principles grouped into three categories: the first two relate to current research topics and ethics and values, including security, transparency of errors and legal regulations, responsibility, compliance with human values, protection of personal privacy, ensuring freedom and privacy, sharing benefits and progress, human control, and absence of betrayal and use for arms race purposes; and the third to long-term issues. When it comes to research, the emphasis is on creating intelligence that will bring good to humanity, not just individuals, organizations, or parts of society (Shead, 2017, according to Maksić, 2017).

Challenges of artificial intelligence (AI) are present in education as well. It is advancing rapidly, changing our lives daily, and some applications go so far as to have robots with empathy, becoming more and more human-like. Screens are often a substitute for parental attention or kind words, for a teacher's

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explanation of educational content, or for live peer conversation for generations growing up. They have primacy in the lives of our children. What is worrying is the increasing lack of empathy in children and the lack of development of critical thinking in our schools and families. Because of all the above, children are excellent consumers, and the possibility of their abuse in the digital environment is growing day by day. However, teachers are still the drivers of the teaching process, which they create together with students, and with the help of artificial intelligence tools, they can create an even more individualized learning and development environment. It is necessary to constantly raise awareness among students of teaching profiles about following current changes in society and education through education directed towards the future and the challenges that lie ahead.

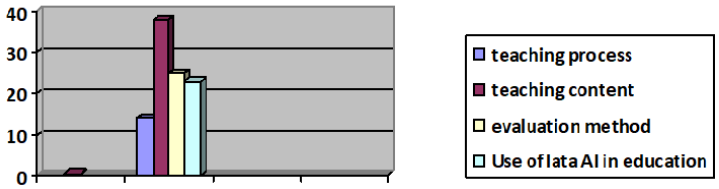
2. MATERIALS AND METHODS

The study utilized a qualitative method consisting of 3 focus groups of first and second year students at the Faculty of Education of Educons University, as well as first-year students at the Faculty of Pedagogy in Sombor during the 2022/2023 academic year. The guided discussions of convenience samples lasted for 1.5 hours during the scheduled exercise time. The research aimed to determine the benefits of using AI in education, as well as to identify possible dangers and risks. Students expressed their opinions, discussed the current state, and made assumptions about future aspects of the new reality in education. The obtained results were qualitatively processed according to: set criteria for grouping responses, categorization related to the set criteria, and defined topics. The research instrument consisted of a specially created group of protocol questions titled Challenges in the Education of the New Reality created by the authors for the research, divided into 4 categories of questions: the teaching process, educational content, assessment methods, and the use of AI tools in education.

3. RESULTS

Analysis of the obtained results revealed that the new reality of using AI tools brings with it a variety of viewpoints, which are grouped into categories of responses shown by their importance for the educational system (Graph 1). Students' opinions indicate that AI tools currently most in use (or to be used) are those used for educational content (38%), assessment methods (25%), the use of AI tools is chosen in 23%, while the teaching process is chosen by only 14% (Table 2).

Chart number 1 Presentation of categories and their importance using AI in education



Source: Authors

The dominant subcategory of responses appearing twice is individualization in the teaching process (57%) and individualization in educational content (18%), indicating the possibility of adapting the teaching process and content to the individual educational needs of students. The data indicate students' awareness of the importance of using AI services that greatly influence active learning and knowledge acquisition through the teaching process and the use of active methods in the teaching process. Following that are efficiency (13%) and academic success (6%). The impact on educational content through the use of new AI services has shown that besides individualization, it is possible that it mostly affects the availability of educational content (73%), student motivation (7%), and support (2%). The subcategory of assessment methods showed that most responses would be directed towards the objectivity of success, results (77%), followed by the efficiency of the process (11%), the use of different methods and techniques in assessment (9%), and finally feedback (3%). The last group of responses in the category of responses related to the use of AI tools where the responses were mostly directed towards communication in such an environment (64%), followed by responses indicating a collaborative environment (14%), risks (13%), and lifelong learning (9%).

Table number 2 Categories and subcategories of students' grouped answers about the use of AI in the teaching process

Categories	Percentage Representation	Percentage Representation	Percentage Representation	Percentage Representation	Total Responses
Teaching process	Individualization 57%	Active approach 24%	Efficiency 13%	Academic success 6%	75 (100%)
Teaching contents	Availability 73%	Individualization 18%	Motivation 7%	Podrška 2%	75 (100%)
Evaluation method	Objectivity 77%	Efficiency 11%	Use of different assessment methods and techniques 9%	Feedback 3%	75 (100%)
Use of AI tools for education	Communication 64%	Collaborative environment 14%	Risks 13%	Lifelong learning 9%	75 (100%)

Source: Authors

Didactic theories and practices study the teaching process and system as unique to the educational process through a series of unforeseen factors in the school environment. Individualization has been defined as a model that is necessary both in a "natural school environment" and in a "fictional online school environment." Students have defined new possibilities as ideal for an individual approach to each student: regarding the pace of work, time, and a differential approach that is not so limited by time as a key factor. Therefore, it is not surprising that the data obtained also show a good prior knowledge of students about didactic and pedagogical knowledge that aligns with the needs of an active approach to each student or the so-called "education for all." Authentic student responses indicate such thinking: "Through this type of teaching, it is possible to adapt the teaching to all students so that they progress at their own pace, without stress, and give their maximum effort." Other responses also lead to a similar conclusion: "It can happen that students who are more shy and slower to grasp the material have fears of being active, or that they will not do something on time. Therefore, through new forms of teaching such as online environments, they can more freely demonstrate their knowledge and be motivated for further work." Although academic success is the least represented category in terms of percentage, it is noted that this data is significant and influences the final evaluation of the educational process (6%).

The analysis of responses reveals the specificities of the group of students from the Teacher Training Faculty in Tutin compared to the group of students from the Pedagogical Faculty in Sombor, at the same time about the importance of accessing content outside the classroom environment, but also the inevitability of controlling them and the possibility of false, unchecked content and information. Specifically, the group of students from Tutin stood out for their specific opinion, but at the same time for certain suggestions. They stated the following: "It is already possible to find much more interesting learning material on the internet, and children find it easier to grasp the material that way. But, all of that must be constantly monitored by the teacher or parent, because not all content is suitable for a certain age group. It's better for them not to search for it themselves." On the other hand, students studying in Sombor think a little differently: "It is inevitable that students search for more interesting content and examples than those provided in school. Teachers should use electronic textbooks and examples available on various educational applications as much as possible. Children spend most of their day on their phones, and every teacher should be able to use the phone and computer in teaching, let alone AI applications." Given the above, it is not surprising that availability within educational content was chosen as a subcategory (73%). It is expected that individualization is recognized as one of the positive and significant factors when it comes to content application, because the previous results also indicate its significance through personalized learning plans, progress seen through competencies, setting criteria, problem-based teaching, and teacher mentoring (Safranj, Katić & Zivlak, 2022).

When it comes to the very sensitive process of monitoring progress and presenting it through established educational outcomes, which is also reflected in academic success - the assessment method, we can say that the answers of students from Tutin and Sombor are almost identical. The responses mostly indicate the most significant use of AI tools, which is objectivity. It is noticed that the responses are almost identical, in most cases similar responses were obtained: "If it is a good program for testing knowledge, it will certainly assess tasks in the best way.", "Many students prefer to see where they went wrong and thus immediately learn what they did not know. That is why the machine program is good because it is fair in assessment.", "Assessment in this way contributes to fewer 'invisible students' because well-made

quizzes or other assessment models objectively assess, and everything becomes clearer to students immediately. Certainly, feedback on achieved success is significant for further progress of students. Although the data obtained for feedback is low (3%), it is assumed that they are closely related to the choice for objectivity and are thus explained: "Certainly, assessment in an online environment is more objective and provides better feedback."

Using available data sources, it is found that the concept of skeuomorphisms is increasingly used, not only in educational applications, with the meaning of an environment that carries a certain experience and emotions because the given environment is exceptionally realistically set up and encourages the illusion that everyone is in the same place (Sangyeon & Sangwon, 2020).

Although the full use of AI tools in the educational process cannot be predicted at this time, it is only hinted at through a passable communication channel, which is significantly different from what happens in a school building or face to face. The exceptional nature of such communication contributes to the fullness and speed of the communication channel flow. The students' responses suggest that AI tools, among other things, greatly facilitate communication at all levels: teacher-student, teacher-parent, student-student, etc., regardless of whether it is a working or non-working day, day or night. Thus, the data analysis also shows that students' opinions were mostly grouped around communication (64%), which carries clarity and unambiguity. The obtained responses support such a conclusion: "After the pandemic, many teachers still use Google classrooms, where, in addition to posting materials, they provide instructions to students, thus having open communication.", "Most educational programs and applications have a chat where students can ask questions at any time or engage in discussion." It is noticeable that there are almost equal choices for collaborative environment (14%) and risks (13%) associated with this type of learning.

Students were specifically asked to list possible risks and dangers associated with the use of AI in the educational process. Their responses mostly focused on the fear of manipulated digital content or information that is easily accessible but not labeled as AI-generated. They also questioned what additional mechanisms could prevent the misuse of educational and media content, besides stating that the product was created using AI, whether with a watermark or in any other way.

As for the dangers, they mentioned the following statements: "It is possible that most of the content is created through the application and that it does not exist in reality, or that it never existed at all." They also believe the following: "Students in lower grades are not able to assess what is best for them", "They may constantly encounter false information without realizing it and thus be misled", "Some content may be recommended as educational, but may not be in that context at all", "Students in lower grades do not have a developed critical attitude and when they see something, they usually do not doubt it." The highest concentration of responses regarding risks and dangers was directed towards the categories of educational content and the use of AI tools, as they are the most obvious examples that indicate an immeasurable use towards children and young people, who certainly cannot avoid the new reality, both in school and in other aspects of life.

The obtained responses indicate a concern that in the future, distance learning in an online environment using AI could be a poor substitute for the classroom and face-to-face teaching process. In this regard, it is recommended that such an environment be welcomed as a support, motivation, and inspiration for conducting classes and exercises in the classroom, especially where laboratory costs or costs of exercises or simulations are high, and greatly contribute to facilitating and learning knowledge and abilities of students.

4. DISCUSSIONS

The significance of the study lies in the fact that it addresses a current topic, as seen in the Strategy for the Development of Artificial Intelligence in the Republic of Serbia for the period 2020-2025 and in the Law on Artificial Intelligence. This legal framework recognizes the need to increase security and ethical measures related to the protection of human rights, which the students in the research also identified as important. Any use of AI that negatively affects human behavior and exploits individuals, for example, misuse in recognizing emotions in school and work environments, is prohibited. The goal is for AI to be used in a safer, more reliable, and more inclusive manner. Greater checks and assessments of systemic risk mitigation, as well as incident reporting, will be introduced. The law states that content created using AI - such as photos, videos, and audio content (deepfakes) - must be clearly marked as such. This is extremely important because, as students point out, students often are not able to independently determine what is a deepfake and what is not. The focus groups conducted were aimed at raising awareness among students about the thoughtful use and misuse of AI in education.

5. CONCLUSIONS

In this qualitative study, students expressed the greatest benefits of using AI in education, as well as in creating the teaching process, including greater individualization, creativity, and interactivity among students, as well as faster feedback on student progress. It was recognized that the main misuse of AI comes from a lack of control over the information that AI uses, and that this information is often devoid of context and therefore unreliable. Students recognized that it is important for AI to do everything in its power to reduce the misuse of personal data. Clarity and transparency of content should be reflected in the specific labeling of certain content as deepfakes, in order to avoid misconceptions and misuse of such content. The general conclusion of the research results indicates the alignment of the respondents' opinions with the regulations in the new legal act, i.e., the Law on Artificial Intelligence, but also that AI tools are certainly good assistants in the teaching process that should not in the future suppress the significant role of teachers who need to be well acquainted with the capabilities, as well as the weaknesses and threats of artificial in. Conducting opinion research among students through focus groups is a small step forward in this area of education, which is part of everyone's daily life and is present in almost all fields. Furthermore, comparability of the obtained research results with similar multidisciplinary research is expected, which will certainly influence the further use and development of AI.

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