

FOREWORD

Dear readers,

In an age of progress and the influence of modern technology on our daily lives and work, which is inevitably also reflected in education, topics from this area have not bypassed our magazine. In this issue, we therefore present a series of studies that focus primarily on current trends in engineering and technology, but also on some other interesting topics that are of lasting value to the educational process. In the first article, we present an interesting study on the challenges of using the OpenAI platform in the higher education of software engineers. The study highlights the shortcomings and obstacles in using this technology and recommends that teachers prioritize a comprehensive review of students' solutions, thus emphasizing the human aspect of the teaching process (the role of the teacher) over the technology. The second article analyzes the capabilities and limitations of large language models, e.g. ChatGPT, and compares their accuracy in solving statistical tasks with students' results. The results suggest a significant advance in these models and their potential for teaching and testing knowledge, while also pointing out that this technology should be used as a supplement to, but not a substitute for, developing students' basic skills. The third article presents research in the field of machine learning and emphasizes the importance of data collection methods for the performance of such systems. The analysis of the different models presented shows that the best results are obtained by the model that uses a neural network previously "trained" on another data set, which speaks to the advantage of transfer learning. The fourth article looks at the problems and challenges and proposes possible solutions for the use of artificial intelligence (AI) in conducting exams at higher education institutions. The research argues the dangers of using AI in the examination of knowledge, suggests ways and institutional procedures to reduce undesirable consequences, and also the application of this technology for the assessment of student work. The fifth article presents a survey on student attitudes towards e-learning and the popular e-learning system Merlin. The survey shows that students are motivated to use e-learning tools and that they believe it facilitates their learning process. Although students are satisfied with the Merlin system, the survey points to divided opinions among students regarding the intensification of e-learning, but also the need for a systematic introduction of students to the e-learning system. The sixth article examines less conventional ways of implementing practical activities in the teaching of technical culture and gives examples of their design and implementation in practice. The research results show the high motivation of students for practical activities in teaching technical culture and their positive impact on the achievement of learning outcomes. These findings confirm the lasting value of such activities for student development, especially in today's age of ubiquitous virtualization. The seventh article provides an overview of the importance, but also the noticeable neglect, of action research for the immediate improvement of one's teaching. At the same time, this type of research is elaborated in the Technical Culture classes as a good example and an incentive for teachers to apply action research in their school environment. The eighth article provides an overview of the importance of lifelong learning in modern society and in the "world of work", as well as research on students' awareness of the importance of lifelong learning. The research shows that students are aware of the importance of lifelong learning, but that they still prioritize the formal education system and that they see motivation and adaptation to their own time as the biggest obstacles to their education. In the last article of this issue, the topic of buckling analysis of a pedestrian bridge using the finite element method is presented as a good professional example of the implementation of this topic in the education of engineers in the field of mechanical structures.

I wish you an entertaining and useful read!

Damir Purković