



## Editorial

The Editorial Board of International Journal of Research in E-learning (IJREL) is privileged to present a new volume 9(2) 2023. The content of the current issue was divided into two chapters. The first is devoted to Research on AI and VR in E-learning and Science. The second contains articles concerned with Innovative Methods, Technology and Open Educational Resources (OERs) in Education.

The first part of the volume Chapter I: “Research on AI and VR in E-learning and Science”, contains two articles.

The article “Factors Enhancing Students’ Views on Artificial Intelligence” was written by an international team of Authors from Poland and the Netherlands – Małgorzata Przybyła-Kasperek, Eugenia Smyrnova-Trybulska, Piet Kommers. The researchers stressed that *Artificial Intelligence* now is one of the most important and contemporary directions of development of science in an interdisciplinary context. The EU’s approach to Artificial Intelligence centres on excellence and trust, aiming to boost research and industrial capacity while ensuring safety and fundamental rights. (A European approach to Artificial Intelligence). Strengthening the fostering excellence in AI will strengthen Europe’s potential to compete globally. Simultaneously not yet solved are a lot of challenges and issues. The problem raised in the article is to explore and analyse computer science and education students’ attitude to educational, social, and ethical aspects of AI implementation. The purpose is to discover and analyse computer science students’ opinion and their pedagogical attitude towards education, social, and ethical aspects of AI implementation. Students of two faculties of the University of Silesia in Katowice, Poland, were asked to respond to a survey. They were mainly students of two specializations – Computer Science and Pedagogy. As many as 103 students have been surveyed. The Kruskal-Wallis tests were used for verification.

The Authors from Poland and France, Jan Waligórski, Aleksandra Cząstkiewicz, Zofia Samsel, Natalia Frys, presented the research on “Reimagining Online Academic Conferences: The Promise of Social Virtual Reality for the Return of Co-Presence”. The experts note that new technologies and societal shifts are profoundly influencing communication and conducting meetings. Over the past few years, the number of online conferences has increased. The body of literature indicates that online events allow for reducing cost and social inequalities. Despite

this, they also present challenges in non-verbal communication, and diminish the sense of co-presence, thus affecting networking. The aim of the research was to explore the potential of virtual reality (VR) technology and social VR platforms as alternative methods for organizing online academic conferences. The Authors present the course of one of the first academic conference conducted entirely in social VR (Wirtualium 2.0), along with the survey outcomes regarding the potential of this environment for hosting academic conferences. The Authors' findings indicate that, compared to video-conferencing systems, social VR platforms offer for most participants a higher sense of co-presence, facilitating networking and engagement in informal conversations.

The Chapter II: "Innovative Methods, Technology and Open Educational Resources (OERs) in Education", contains six articles.

The article titled "Importance, Popularity and Elements of Educational Platforms – A Study of the Opinions of Students from Poland, Ukraine and Kazakhstan" was presented by an international team of Authors from Poland, Ukraine and Kazakhstan, Małgorzata Przybyła-Kasperek, Kornel Chromiński, Eugenia Smyrnova-Trybulska, Nataliia Morze, Ainur Bazarbayeva. The experts in their article present a comparative international research study analyzing the opinions of students from Poland, Ukraine, and Kazakhstan, regarding the importance, popularity, and elements of educational platforms in the field of computer science. The study employed the Kruskal-Wallis test for statistical analysis. Five hypotheses are proposed: The country of origin does not affect the frequency of use of educational platforms. The country of origin affects the topics of courses that students are interested in on educational platforms. The country of origin does not affect the motivation to take courses on educational platforms. The country of origin does not affect the evaluation of elements of the courses on educational platforms that students find most important or useful. The country of origin affects the evaluation of value of courses provided on educational platforms. The most popular topics on these platforms are programming and computer networks, with students from Kazakhstan also displaying a keen interest in subjects related to artificial intelligence and computer graphics. Additionally, this study analyzes the conditions of learning and teaching in specialized modules at each university, including teacher requirements, curricula, and the potential for practical implementation of new knowledge by students.

The Authors from Nigeria, Fabunmi Kazeem Olaiya and Yakubu Ibrahim Umar, presented the article "Assessing The Awareness and Perception of Open Educational Resources (OERs) among Nigerian University Students: A Case Study". This study investigated Nigerian university students' awareness and how this influences their perception and use of Open Educational Resources (OERs). The study adopted a descriptive method of quantitative research. 4 research questions were developed and answered a hypothesis was also tested to determine the relationship between students' awareness of and their perceptions of OERs. The percentage, frequency,

mean, standard deviation and t-test were used for the analysis. A correlation coefficient was employed to test the hypothesis. The findings of the study were: Nigerian university students have a high level of awareness of OERs; the most popular OERs among the Nigeria university students were Coursera, EdX, and OpenStax; OERs are generally well-perceived by Nigerian university students; lack of digital literacy skills and lack of adequate knowledge to determine the quality assurance of OERs are the only challenges hindering the effective use of OERs among the students, and there is a significant relationship between the awareness and perception of OERs by the students. The study concluded that the majority of Nigerian university students are familiar with OERs and have positive perceptions of OERs. Universities, lecturers and librarians should continue to promote OERs usage in teaching and learning activities to promote their adoption.

Artem Yurchenko, Volodymyr Proshkin, Olha Naboka, Volodymyr Shamonia, Olena Semenikhina, the Authors from Ukraine, written the article “The Use of Digital Technologies in Education: The Case of Physics Learning”. The article reveals the trends in the use of digital technologies in teaching physics by summarizing scientific results over the past 20 years. To solve the problem, a bibliographic analysis of the sources of the scientometric database of the WOS was used with the involvement of the computer tool VOSviewer (for the construction and visualization of bibliographic data) as of June 2023. Modern trends in teaching physics are singled out: the use of environments where simulation, modelling, visualization, virtualization of physical processes, etc. are possible. The increasing popularity of virtual, augmented, and mixed reality tools; use of mobile applications for learning physics; using artificial intelligence to teach physics; organization of an educational environment based on mobile or online learning, where active learning methods are determined to be appropriate. The importance of developing young people’s intellectual skills (computational skills, algorithmic thinking skills, modelling processes, etc.) and visual thinking for the successful mastery of various sections of physics has been confirmed. The demand for integration links between natural sciences, mathematics, engineering, and digital technologies for STEM education has been monitored. Recommendations for the training of physics teachers have been formulated.

The text “Successful Examples of Asynchronous Teaching in Polish Interactive Remote Medical Education” was prepared by a team of Authors from Poland – Anna Smelkowska, Agnieszka Karbownik, Barbara Purandare, Katarzyna Zaorska, Marta Jokiel, Maurycy Jankowski, Magdalena Roszak – experts in the area of e-learning in the medicine. A thorough theoretical and practical preparation is crucial in the education of medical professionals. The present-day knowledge recipients expect a broad range of multimedia and interactive resources in the consumed media. The article discusses examples of such implementations for the nationwide education of a pharmacy technician, massage technician, medical sterilization technician, and occupational therapy technician. These examples

were created for the Integrated Education Platform of the Ministry of Education and Science in Poland, as part of an EU-funded project. This study delineates the characteristics of e-materials, such as instructional and educational videos, film sequences, scenario-based learning games, interactive documentation, 3D animations, simulators and virtual tours. The Authors prepared a learner benefit analysis based on the e-materials discussed. The article aimed to formulate recommendations and guidelines for designing and developing multimedia and interactive resources, paying special attention to educational values and content for the medical industry. To design and produce high-quality multimedia, it is necessary to know their characteristics and to work with a team of subject matter experts experienced in e-learning development.

Krzysztof Dziedzic, Marcin Barszcz, Tomasz Wiśniewski present the research on “Adaptation of the E-Learning Exercise Creator to the Needs of People with Disabilities with Impaired Access to Education”. This article focuses on the implementation of the WCAG 2.1 guidelines into e-learning courses. The Quizer e-learning platform, which enables the creation of interactive multimedia courses, has provided the basis for the introduction of the WCAG component. The platform includes two basic tools: an exercise creator and an exercise presenter. Once the Quizer Platform Exercise Wizard was analysed, a component was conceptualised and implemented to create e-learning courses compliant with WCAG guidelines and dedicated to people with disabilities. The technology for the implementation of this component was also presented. The research on the correctness of the WCAG standard implementation into e-learning courses was conducted with the use of designed cyber security quizzes. The final results of quizzes prepared according to WCAG guidelines and without WCAG were also compared. The research involved students majoring in computer science at Lublin University of Technology. Its results indicate the validity of using the WCAG guidelines in the design of educational content for students with disabilities and equalizing their educational opportunities.

Tetiana A. Vakaliuk, Oleksii V. Chyzhmotria, Svitlana O. Didkivska and Illia Linevych from Ukraine presented the article “Development of a Web Service for Creating Tests Based on Text Analysis Using Natural Language Processing Technologies”. The purpose of the work is to analyze models, natural language processing methods, and select modern technologies for training these models, as well as to develop a web service for creating tests based on text analysis using natural language processing technologies. The study considers methods and algorithms for intelligent data analysis to generate questions and correct and incorrect answers from the text. The study also describes the activity of the proposed model, which will serve as a basis for creating a web service. After a detailed review of these datasets, the necessary data for the experiment were extracted and transformed into a convenient format for use. The training algorithm for 6 models was designed and implemented, and valuable metrics were obtained

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after their training. Additionally, a server-side and web interface were developed to interact with each other.

We hope that studies and solutions in the present IJREL volume will be inspiring and encourage reflection on how to manage the increasing demand for online education in the current situation.

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