INTRODUCTION

The 15th vol. of the Series on E-learning monograph is *"E-learning & Artificial Intelligence"* includes articles of authors, participants from ten countries and from more than twenty universities during the scientific international conference entitled "Theoretical and Practical Aspects of Distance Learning", subtitled: " *E-learning and AI*", which was held on 23 and 24 October 2023 in hybrid mode, organized by the Faculty of Arts and Educational Sciences in Cieszyn, the Faculty of Social Sciences, the Institute of Pedagogy, the Faculty of Science and Technology, the Institute of Computer Science, University of Silesia in Katowice, Poland. Co-organizers and Partners: University of Ostrava (UO), Czech Republic, Silesian University in Opava (SU), Czech Republic, Constantine the Philosopher University in Nitra (UKF) Slovakia, University of Extremadura (UEx), Spain, University of Twente (UT), The Netherlands, Lisbon Lucíada University (LU), Portugal, Curtin University in Perth (CU), Australia, Borys Grinchenko Kyiv University (BGKU), Ukraine, Herzen State Pedagogical University of Russia,, St.Petersburg (HSPU), Russian Federation, Dniprovsk State Technical University (DSTU), Ukraine, IADIS – International Association for Development, of the Information Society, a non-profit association, Polish Pedagogical Society, Branch in Cieszyn, Polish Scientific Society for Internet Education, Association of Academic E-learning, Poland.

Experts on e-learning from 13 countries, in particular Australia, Bulgaria, Czechia, Hungary, Italy, Netherlands, Poland, Portugal, Slovakia, Spain, Pakistan, Ukraine, Great Britain reflect on *E-learning & Artificial Intelligence*, e-learning in the time of COVID-19 pandemic and after this time, presented research results, contemporary trends and scientific and educational project devoted to MOOCs, artificial intelligence (AI), augmented reality (AR), virtual reality (VR), selected Web 2.0 and Web 3.0 technologies, LMS, CMS, STEAM, mobile learning and other topics.

The speakers from the Comenius University in Bratislava (Slovakia), University of Silesia in Katowice (Poland), Plovdiv University "Paisii Hilendarski" (Bulgaria), Borys Grinchenko Kyiv University (Ukraine), Gdańsk University of Technology (Poland), Ostrava University (Czechia), Poznan University of Medical Sciences (Poland), Dniprovsk State Technical University (Ukraine), Pedagogical University in Krakow (Poland), University in Bari Aldo Moro, (Italy), Extremadura University, Spain, K.D. Ushynskyi South Ukrainian National Pedagogical University (Ukraine), Maria Curie-Skłodowska University, Lublin (Poland), Lesya Ukrainka Volyn National University, (Ukraine), The Lisbon Lusiada Uiversity (Portugal), Loughborough University, (the United Kingdom of Great Britain and Northern Ireland), Sumy State Pedagogical University (Ukraine), Technical University in Lublin (Poland), Izmail

State University of Humanities (Ukraine), MEI Cherkasy Regional Institute of Post-graduate education of Teachers of the Cherkasy Regional Council (Ukraine), and other educational institutions delivered lectures providing insights into interesting studies, presented their recent research results and discussed their further scientific work.

The authors include experts, well-known scholars, young researchers, highly trained academic lecturers with long experience in the field of e-learning, PhD students, distance course developers, authors of multimedia teaching materials, designers of websites and educational sites.

I am convinced that this monograph will be an interesting and valuable publication, describing the theoretical, methodological and practical issues in the field of E-learning in STEM education offering proposals of solutions to certain important problems and showing the road to further work in this field, allowing exchange of experiences of scholars from various universities from many European countries and other countries of the world.

This book includes a sequence of responses to numerous questions that have not been answered yet. The papers of the authors included in the monograph are an attempt at providing such answers. The aspects and problems discussed in the materials include the following:

The conference topics include the following thematic sections:

1. **E-learning & Artificial Intelligence**
   - Contemporary trends in world e-learning in conditions of globalization, internationalization, mobilities.
   - E-environment and Cyberspace.
   - Artificial intelligence (AI), augmented reality (AR), virtual reality (VR).
   - Legal, social, human, scientific, technical aspects of distance learning and e-learning in different countries.
   - European and national standards of e-learning quality evaluation.
   - Psychological and ethical aspects of distance learning and e-learning.
   - E-collaboration and e-communication in e-learning.
   - E-environment of the contemporary university.
   - SMART universities. SMART technology in education.
   - E-learning in a sustainable society.
   - Comparative approach in research on e-learning.
2. **E-learning: Methodology and tools developments**
   - E-learning and online learning.
   - Blended learning.
   - Innovative educational technologies, tools and methods for e-learning.
   - Modern ICT Tools for e-learning in the time of Covid-19 pandemic – review, implementation, opportunities for eff ectiveness of learning and teaching.
   - MOOCs – methodology of design, conducting, implementation and evaluation.
   - Selected Web 2.0 and Web 3.0 technologies.
   - E-learning and effectiveness using of Learning Menagement System (LMS), CMS, VSCR, SSA, CSA.
   - Cloud computing environment, social media, multimedia resources.

- Methodological tools. E-tutoring. (Video)tutorial design.
- Simulations, models in e-learning and distance learning.
- Networking, distance learning systems.
- Successful examples of M-learning, e-learning.
- Evaluation of synchronous and asynchronous teaching and learning, methodology and good examples.
3. **E-learning and STEAM Education**
- Immersive learning environments. Blockchain. Bots.
- Robots and coding in education.
- Internet of things. 3D printing.
- STEM education contemporary trends and challenges.
- Distance learning in humanities and science.
- Quality of teaching, training.
- E-learning for science and technologies.
4. **Development of Key and Soft Competences and E-learning**
- Effective development of teachers' digital skills
- Key competences and soft skills in the digital society.
- Use of e-learning in improving the level of students' digital competences.
- E-learning for humanities and social sciences.
- E-Learning and lifelong learning.
- Self-learning based on e-learning and Internet technology.

Publishing this monograph is a good example of expanding and strengthening international cooperation. I am very grateful for valuable remarks and suggestions which contributed to the quality of the publication. Here I especially want to thank Professor Ryszard Kalamarz for his assistance in editing and proofreading this publication. Also, I would like to say 'thank you' to the authors for the preparation and permission to publish their articles and reviewers and experts, who assessed and reviewed the manuscripts of manuscripts, which increased the quality of the monograph. I wish all readers a pleasant read. Thank you.

Eugenia Smyrnova-Trybulska