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## Editorial

The present volume includes ten articles gathered in four parts. Part I is entitled “E-learning in the development of key competences and skills in higher education” and includes four articles.

The first article, entitled “Integrating E-learning for Administrative Staff Professional Development: An Inside View from Moroccan Higher Education Institutions,” was prepared by Layla Ajrouh from Faculty of Humanities, Moulay Ismail University, Meknes, Morocco and Karima Slamti, Faculty of Humanities, Cadi Ayyad University, Marrakech, Morocco. They stressed, among other issues, that online learning is increasingly solicited around the world. Higher education (HE) is also concerned as it operates in an uncertain global environment, where communication and information technology are the fundamental keys. The study seeks to examine the Moroccan employees’ perceptions towards this innovative way of learning and its impact on their professional development. It also aims at investigating the presence of distance learning as a growing approach within the administration of Moroccan universities. The research presented shows the increasing necessity of integrating new ways of learning in Higher Education Administrations (HEAs). This work yields to the acceptance of the research hypothesis  $H_1$ , which states that e-learning is not promoted for employees’ career advancement in Moroccan HEAs. This study recommends an anticipatory vision to go beyond any reticence to change, since the online learning approach would bring more productivity and success for the administrative structures and the employees themselves, in addition to more institutional alignment with the revolutionary digital world.

The second article “Elementary Music Education in the Era of Remote Teaching – Constraints and Prospects for Development” is authored by Mirosław Kisiel from the University of Silesia in Katowice, Poland. In the discourse undertaken, an attempt was made to indicate the limits and perspectives for the development of music education within the context of distance teaching. The specificity of music education based on experience, emotions in action, the creative approach to an artistic creation and expressive action requires special attention in this regard. The teacher is expected to develop a new strategy for action, which in the existing

educational situation will result in an increase in students' interest in music by using the contemporary information and communication tools, namely, the specific tools of e-communication.

Pedro Ramos Brandao from Evora University (CIDHEUS), Portugal is the author of the article "Cloud Computing and Distance Learning in Computer Science." His research demonstrates that the use of laboratories for the development of curricular work in the area of information technology exclusively supported by cloud computing technology does not decrease the level of learning and assessment objects on the part of students. This scenario arose due to the need to interrupt face-to-face classes in physical laboratories as a result of the COVID-19 pandemic. The author compares the results and their correlations to various evaluative successes in different curricular units.

The article "Online Collaborative Learning to Enhance Educational Outcomes of English Language Courses," was prepared by Iwona Mokwa-Tarnowska from the Gdańsk University of Technology, Poland. Her study has various aims and objectives, and examines various syllabi of e-learning, blended learning and web-enhanced courses, meant for a particular group of undergraduates or postgraduates. She found that they may vary substantially. However different they are, they are likely to show behaviourist ideas embodied in their instructional design. A plethora of online tools, text based, image based, multimodal production and collaborative ones, can increase students' learning experiences, as they offer opportunities for interactions that are not available in a traditional, instructivist-centered classroom settings. Thus, a university language course with web-enhanced components offers more versatile learning options than face-to-face classes, which may result in students becoming more competent and competitive workers in the years to come. By using online tools such as ThingLink, mural, quip, easel.ly, infogram and venngage to collect and critically analyse data, they learn in a new active way and in a more genuine environment. This way of engaging students helps them to achieve learning outcomes structured around communication, teamwork, media literacy and language skills. These ideas are supported by students' opinions and attitudes expressed in the surveys conducted at the Gdańsk University of Technology in the years 2017–2019.

Part II "Innovative Methods and Technology in Higher Education" consists of three articles. The first study and article is entitled "Application of Computer Mathematical Tools in the University Training of Computer Science and Mathematics Pre-service Teachers," and was authored by Olena Semenikhina, Volodymyr Proshkin, Olha Naboka from Ukraine. It considers the problem of the application of computer mathematical tools in the process of the professional training of future teachers of computer science and mathematics. The two classes of mathematical software are identified: systems of computer mathematics, which use traditional

notation and methods of writing formulas and programs of dynamic mathematics, which provide the possibility of dynamic changes in the original mathematical structure. The concepts are specified as follows: “a program of dynamic mathematics,” “computer mathematical tool.” The methodical receptions provided in PDM are allocated and the authors outline the methodical features of the application of computer mathematical tools. The peculiarities of the educational process with the use of PDM are indicated: rethinking of forms and methods of teaching, use of non-standard and creative tasks, rational choice of software environment, evaluation of learning outcomes, etc. The results of an experiment related to the study of the influence of programs of dynamic mathematics on the level of students’ academic achievements are presented. The necessity of the preparation of future teachers of mathematics and computer science for use of the specified toolkit in the course of professional activity is specified.

Iwona Ruta-Sominka and Anna Budzińska from the Institute for Child Development, Gdańsk, are the authors of the article entitled “Using the Application Friendly Schedule on a Tablet to Promote Independence in Children with Autism Spectrum Disorder.” The prevalence of autism spectrum disorder (ASD) has increased in recent decades. The need to provide evidence-based practices in the field of ASD is also growing. The Institute for Child Development (IWRD) in Poland is offering science-based intervention to children with autism, based on the model developed initially by McClannahan and Krantz (1993) in the Princeton Child Development Institute, USA. Their research and clinical experience show that activity schedules are very effective in teaching people with autism many new skills. However, as stressed by the authors, activity schedules in the “traditional” paper version could lead to stigmatization while used in a social environment. It is essential to give people with autism spectrum disorder socially acceptable tools, which can help them to function more independently. The intensive development of modern technologies, as well as an easy access to various types of mobile devices inspired the authors to implement tablets into their treatment of children with ASD. Friendly Schedule is an application for children and youth with autism and related disorders, developed as a joint initiative of the Gdańsk University of Technology and the Institute for Child Development. The application was created as a “non-profit” project. In the IWRD program, the application Friendly Schedule is used to teach students with autism a variety of new skills, including verbal and social behaviours.

The aim of the third article, “Padlet as a Modern Form of E-learning in the context of Sugata Mitra’s Research – a New Model of Education” prepared by Tomasz Piotr Kopczyński from the University of Silesia and Kamil Szpyt from Andrzej Frycz Modrzewski Kraków University, presents the results of surveys concerning the Padlet tool. The authors analyze contemporary trends in education, legal

regulations and research, which are part of the new model of education. The text contains descriptions of research results from 230 surveys conducted on students in relation to three categories. The first category presents the results of the evaluation of Padlet as a tool for content segregation, the second category concerns the evaluation of Padlet in terms of the function of group work, and the third category concerns the functionality and comparison of the Padlet tool with other similar tools. The researchers stressed that in the current educational situation caused by the global coronavirus pandemic SARS-Covid-2 causing the disease called COVID-19, the evaluation and presentation of research results related to distance learning tools and methods is very necessary.

The third part “Theoretical, Methodological and Practical Aspects of ICT and E-learning in Education” includes three articles. The international team of authors: Natalia Maria Ruman from the University of Silesia, Faculty of Arts and Sciences on Education, Martha Finger, Stephan Sampt from Kirchliche Pädagogische Hochschule Wien/Krems and Zdenek Mruzek from Albrechtova Stredni Škola in Český Těšín presented their research entitled “The Role of Information Technology in Ecological Education in the Context of Cooperation between High Schools from Poland, Austria and the Czech Republic” and stressed that contemporary ecological problems of the world can not only be studied as a survey of knowledge, opinions and attitudes, but also as a project designed to stimulate society from an early age to responsibility concerning the protection of the environment and increase individual ecological awareness. The article is a summary of the work carried out under the project of three cooperating schools representing Poland, Austria and the Czech Republic. The aim of the project was to consider the importance of ecology at the level of participating secondary schools in selected countries and the use of technology to implement this project. International project coordinators were interviewed. The questions concerned: application of technology in an international school project, summary of the effects of the Polish school’s cooperation with foreign schools and new challenges in the digital school environment. A qualitative study was also carried out. The project was also analyzed in terms of the activities included in it, and its effects were presented.

Rapid technological development in recent years has contributed to numerous changes in many areas of life, including education and communication, as stressed by Ewa Kozłowska from the Gdańsk University of Technology, Poland, who is the author of the second article of Part III, “Using Moodle as a Solution to Interdisciplinary E-collaboration Issues.” The researcher discusses various issues including establishing interdisciplinary collaboration, which brings many benefits; however, it is often associated with numerous problems and inconveniences, as well as the need of constant improvement, lifelong learning, professional development (CPD) and finding an effective way of transferring information. Living in a constant rush

makes the logical order of transferring information a key aspect, as more and more operations are being done chaotically, using multiple online tools. Although collaboration happens to be complicated even for colleagues specializing in different aspects of the same profession, establishing cooperation between specific groups of interdisciplinary specialists, such as engineers and physicians, has a significant impact on modern diagnostics and medical treatment development. Based on some selected case studies investigated at the Gdańsk University of Technology and the Medical University of Gdańsk, supported by an overview of the available education and collaboration tools, a solution based on the Moodle LMS platform has been proposed, implemented, and analysed.

Natalia Maria Ruman, Agata Pokładnik from the University of Silesia, Faculty of Arts and Sciences on Education, Poland consider in their research entitled “The Interactive Board – an Indispensable Device in Upper Secondary Education” various dynamic social transformations and the lives of modern children and young people. In these conditions, the school should use modern educational technologies to a greater extent than ever before. One of the great opportunities to increase the attractiveness of the school for students is to use, for example, an interactive board that offers great opportunities in this regard. Children and young people living in the world of multimedia devices have been taught to demand surprises, news and a faster pace for information. Therefore, they have different expectations for school education. For a greater use of modern technologies in school, it is necessary to prepare and motivate the teachers. The article presents the educational values of this type of teaching aids, as well as their use by teachers in upper secondary school.

Part IV “Reports” comprises the article entitled “The Report on 11th Annual International Scientific Conference DLCC2019” prepared by Eugenia Smyrnova-Trybulska from the University of Silesia, Poland, which is devoted to the International Scientific Conference DLCC2019 entitled “E-learning and STEM Education.” The article describes the topics of the conference, speakers, conference activities, along with a few presented conclusions.

We hope that all the articles will be interesting for our readers and will inspire them with new ideas, innovations and trends in education.

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