International Scientific Conference on Innovative Approaches to the Application of Digital Technologies in Education

November 12-13, 2020
Stavropol, Russia
Preface


This is a scientific event dedicated to the exchange of advanced research experiences in the field of Information and Educational Technologies between Russia and Western countries. The aim of the contributions is to promote a discussion between research and practice and to share and exchange academic research results and practical experience.

The conference focuses on the following areas:
- Innovative approaches to teaching and learning with digital technologies
- E-learning and online learning
- Game-based learning
- ICT supported collaborative learning
- Multimedia teaching/learning materials, different forms of assessment
- ICT support for inclusive and special education
- The use of robotic systems for education

The contributions show from a theoretical and practical perspective how existing, emerging and future digital learning technologies can be better understood by learners and educators and how they can be usefully applied to contribute to efficient education. The authors look at the practical use of technologies for learning to improve, change or extend learning practice in formal and informal learning environments. The conference provides an opportunity for educators and researchers to reflect on different aspects of the use of digital technologies in education, on different teaching and learning paradigms and themes, and on the links to everyday life.

The conference received 117 contributions. Each submission was reviewed by up to three International Program Committee members, who assessed the quality, originality and relevance of all submissions to the conference. The Program Committee decided to accept 45 contributions for presentation at the conference and for publication in this conference proceedings.

In addition, the program also includes invited talk by Kristian Stancin and Natasa Hoic-Bozic from the University of Rijeka, Croatia “The importance of using digital games for educational purposes for students with intellectual disabilities”.
We would like to thank all authors who prepared submissions, our Program Committee and our Organizing Committee for their hard work in these challenging times.

November 12-13, 2020
Online
North-Caucasian Federal University, Stavropol, Russia

Co-chairs of the conference:
Prof. Jože Rugelj
University of Ljubljana, Ljubljana, Slovenia
Prof. Maria Lapina
North-Caucasian Federal University, Russia
Program Committee

Committee Chairs
Jože Rugelj  
University of Ljubljana, Ljubljana, Slovenia
Maria Lapina  
North Caucasus Federal University, Stavropol, Russia

Committee Members
Anna Aletdinova  
Novosibirsk State Technical University, Novosibirsk, Russia
Tatyana Avdienko  
Novosibirsk State Technical University, Novosibirsk, Russia
Ivan Azarov  
North Caucasus Federal University, Stavropol, Russia
Maxim Bakaev  
Novosibirsk State Technical University, Novosibirsk, Russia
Elena Basan  
Southern Federal University, Taganrog, Russia
Yulia Bogatyreva  
Tolstoy Tula State Pedagogical University, Russia
Ana Madevska Bogdanova  
Ss. Cyril and Methodius University, Skopje, Macedonia
Nataša Hoć Božić  
University of Rijeka, Rijeka, Croatia
Carlos Vaz de Carvalho  
Polytechnic Institute of Porto, Porto, Portugal
Hong-In Cheng  
Kyungsung University, Pusan, South Korea
Fabrizio D’Amore  
Sapienza - Università di Roma, Rome, Italy
Carlos Grilo  
Polytechnic of Leiria, Leiria, Portugal
Sanja Jedrinović  
University of Ljubljana, Ljubljana, Slovenia
Alla Klepikova  
Belgorod State National Research University, Belgorod, Russia
Slavko Kocijancic  
University of Ljubljana, Ljubljana, Slovenia
Valentina Kormakova  
Belgorod State National Research University, Belgorod, Russia
Ekaterina Konopko  
North Caucasus Federal University, Stavropol, Russia
Evgeny Kostyuchenko  
Tomsk State University of Control Systems and Radioelectronics, Tomsk, Russia
Galina Kurcheeva  
Novosibirsk State Technical University, Novosibirsk, Russia
Aleksander Malnič  
University of Ljubljana, Ljubljana, Slovenia
Svetlana Panyukova  
Moscow State University of Psychology and Education, Russia
Ekaterina Pakulova  
Southern Federal University, Rostov-on-Don, Russia
Olga Pankratova  
North Caucasus Federal University, Stavropol, Russia
Denis Parfenov  
Orenburg State University, Orenburg, Russia
Vyacheslav Petrenko  
North Caucasus Federal University, Stavropol, Russia
Irena Nancovska Serbec  
University of Ljubljana, Ljubljana, Slovenia
Daniela Tuparova  
South-West University "Neofit Rilski", Blagoevgrad, Bulgaria
Terje Väljataga  
Tallinn University, Tallinn, Estonia
Roman Voronkin  
North Caucasus Federal University, Stavropol, Russia
Svetlana Zenkina  
Academy of Social Management, Moscow, Russia
# Table of Contents

The Importance of Using Digital Games for Educational Purposes for Students with Intellectual Disabilities ........................................................................... 8  
 *Kristian Stancin and Natasa Hoic-Bozic*  

## Session 1: Digital Transformation of Education, Science and Society  

Aspects of Ensuring Information Security in the Educational and Pedagogical Sphere .................................................................................................................. 16  
 *Magomed Abdurazakov, Elena Burdakovskaya, Ziyauddin Batygov, Lyubov Shilova*  

Use of IT for Student-Centered Learning Approach to Education at Modern University ............................................................................................................. 32  
 *Lyudmila Alexandrova, Galina Mozhaeva, Malvina Karabasheva, Maria Lapina, Joze Rugelj*  

Innovative Approaches in the Educational Process Management of the University with the Use of Information and Educational Environment .................. 41  
 *Vladimir Belenko, Alla Klepikova, Sergey Nemtsev, Tatiana Belenko*  

S-curves of R. Foster’s Technological Processes and Labor Market Challenges to the Higher Education System ............................................................................. 53  
 *Victoria Drozdova, Galina Shagrova, Oksana Mezentseva, Nurlan Tursynhanov*  

Anthropology of Teacher Training in Interdisciplinary and Digital Education .......................................................................................................................... 60  
 *Valerian Gabdulchakov, Natalya Novik, Olga Yashina*  

The Self-organizational Potential of SMART University and Its Evolution ......................................................................................................................... 70  
 *Bella Kazieva, Kantemir Kaziev, Valery Kaziev, Fatimat Kudaeva*  

The Proorientation Method of Students with Directions of Training "Information Security" and its Software Implementation .................................................... 80  
 *Valentina Kuznetsova, Iskandar Azhmukhamedov, Oleg Evdoshenko*  

Information Technology Importance in the Development of Learners’ Professional Self-Identity ............................................................................................. 88  
 *Lyudmila Mahleeva, Valentina Kormakova, Suhel Mustajab*  

Digital Learning Environment in Modern Conditions ........................................ 97  
 *Natalya Novik, Svetlana Bashinova, Natalya Kunshina, Aleksandr Sukharev*
Session 2: Developing Digital Competencies

Digital Competencies of Russian Rural Pensioners for Labor Activity: Features, Changes in Demand ................................................................. 139
  Anna Aletdinova, Zoya Kapelyuk, Yulia Makurina

Development of Competences of the Digital Economy of Teachers in the Conditions of Digital Transformation Education .................................. 147
  Yulia Bogatyreva, Alexandr Privalov, Vladimir Romanov, Maria Lapina

Teacher Refresher Course as Digital Pedagogy Tool in Moscow ............. 158
  Nina Khodakova, Anna Antonova, Tatiana Semenova

Building Professional Competence for Teachers in the Field of Educational Robotics ................................................................. 164
  Olga Pankratova, Ekaterina Konopko, Natalya Ledovskaya, Taisia Shabaldas

Digital Technologies and Effective Practices in Teacher Training .......... 172
  Lilia Savelova, Ekaterina Konopko, Olga Pankratova

Formation of Digital Competences of Future Teachers by Means of Information Educational Environment .............................................. 179
  Svetlana Zenkina, Tatiana Suvorova, Elena Gerasimova, Ekaterina Mamaeva
Session 3: E-learning and Distance Learning Technologies

Electronic Educational Resources as a Means of Digital Education Development ............................................................. 188
Magomed Abdurazakov, Svetlana Volkova, Polina Vasilyeva, Elvira Matveeva, Margarita Tyutyunkova

Improving the Credibility of Pedagogical Diagnostics in E-Learning ........ 203
Aleksei Alipichev, Liudmila Nazarova, Marina Shingareva, Aleksei Siman

Organizational and Pedagogical Problems in the Process of Distance Learning at a University .................................................. 210
Ekaterina Blagoveshchenskaya, Victor Garbaruk, Nina Popova

The Use of Information (Distance) Technologies in the Process of Hospitality Industry Professional Training under COVID19 Pandemic Conditions in the Southern Region of Russia ................................. 217
Petr Chetyrbok, Marina Shostak, Yulia Andrusenko, Tatiana Gish

Benefits and Drawbacks of Online Education ........................................ 224
Tatyana Dalgaly

Implementation of the Principle of General Accessibility of Education and Adaptability of the Education System in the Russian Federation through the Use of E-Learning and Distance Educational Technologies .... 231
Tatyana Ivanova, Ekaterina Mityachkina, Marina Fastova, Anna Kharitonova

Online Activities of Students Living in a Metropolis under the Pandemic . 238
Ekaterina Karyapolova, Yulia Davydova, Natalya Denisenkova, Natalya Akimova

Practice of Transition to Distance Learning Format ................................. 245
Natalia Kononova, Tatyana Grobova, Yana Agakhanova, Liza Elkanova

Distance Teaching and Learning: Online Marathons as a Tool of Improving Foreign Language Skills ................................................. 253
Svetlana Lebedeva, Ekaterina Starodubtseva, Irina Krivko, Vera Denisova

Introduction and Development of Innovative Methods and Technologies of E-Learning at the University ........................................... 261
Olga Pankrutova, Ekaterina Konopko, Polina Konopko, Valentina Kormakova, Lilia Savelova

Complex System of Automation of the Educational Process, Implemented with the Application of Distance Educational Technologies in the System of Higher Education ............................................. 268
Denis Parfenov, Leonid Legashev
Development of an Approach to Adaptive Construction of Individual Educational Trajectories for Students of Massive Open Online Courses
Based on the Methods of the Fuzzy Set Theory .................................. 277
Denis Parfenov, Veronika Zaporozhko

Tasks, Functions and Basic Activities of an Online Tutor .................. 285
Galina Shevchenko, Anna Kalashnikova, Aleksandra Rybakova,
Svetlana Brynza

Information Security Risks of Distance Learning Software in the Sphere of Education as an Element of Critical Information Infrastructure .......... 292
Yuriy Sosnovskiy, Veronika Ilyina, Victor Milyukov

Session 4: Intelligent systems, AR/VR technologies and gamification

Application of Geologic Modeling Technologies in Educational Process and Scientific Activity (Based on Petrel Software Package) ............... 300
Tatiana Ibragimova, Alekseandr Rozhnoy, Natalia Yeromina,
Katerina Chernenko

Formation of Digital Literacy of Students by Means of Virtual and Augmented Reality Technologies .................................................. 309
Natalia Poddubnaya, Tatyana Kulikova, Alekseandr Ardeev, Polina Alekseeva

Crowd Intelligence System in Project Training of Students ................. 318
Galina Kurcheeva, Georgy Klochkov, Maria Lapina

Design and Implementation of a CAT Training Course ...................... 324
Tatiana Marchenko, Anastasia Kolobkova

Formation of Highly-Demanded Soft Skills in the Game Environment of Educational WebQuest ......................................................... 332
Tatiana Masharova, Magomedhan Nimatulaev, Elena Kharunzheva,
Marina Perevozchikova

Measuring Cognitive Load Based on EEG Data in the Intelligent Learning Systems ................................................................. 342
Marina Murtazina, Tatiana Avdeenko

Methodological Support of Game Modeling in the Educational Process ... 351
Sergey Shcherbakov, Maria Lapina, Vitalii Lapin, Joze Rugelj

Augmented Reality as a Modern Learning Tool ............................. 362
Viktoriya Taran, Ivan Azarov, Polina Konopko

A Merging Method to Discretizing and Grouping the Input Factors of ANOVA Model while Research of Time Dynamic of the Students Intelligence Quotient .................................................. 370
Anastasiia Timofeeva, Tatiana Avdeenko, Olga Razumnikova
Use of Augmented Reality Technology as a Way to Increase Learning Motivation of Students..........................................................372

Julia Tsarapkina, Alena Anisimova

Strategies of Social Engineering Attacks on Information Resources of Gamified Online Education Projects................................. 386

Vyacheslav Zolotarev, Anastasiya Arkhipova, Nikolay Parotkin, Anna Lvova