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Preface

EDULEARN22 Conference Proceedings contain selected and revised papers from the 14th annual International Conference on Education and New Learning Technologies.

EDULEARN22 was held in Palma (Spain) last 4-6 July 2022. Every year, EDULEARN brings together lecturers and researchers from universities and educational institutions from all over the world. This edition welcomed participants from 79 different countries, ensuring a geographic diversity and a multicultural environment.

The main objective of EDULEARN22 was to offer a meeting point for educational experts to share and discuss their experiences and projects on education, pedagogical technologies, and educational innovations. The conference program offered different keynote speeches, plenary sessions, parallel thematic sessions and workshops delivered by education experts. The keynote speeches are available at IATED Talks (iated.org/talks/).

In addition to the Technical Program, different networking activities and events were scheduled where participants could interact with other delegates and shared their perspectives on education.

The scope of EDULEARN22 included the following topics: Digital Tools In Education, Digital literacy, Open Educational Resources, Virtual and Augmented Reality, Flipped learning, e-learning experiences, Blended and Hybrid learning, m-learning, digital transformation in education, Game-based learning, MOOCs, Coding and Computational Thinking, Digital Technologies for learning under lockdown, Personalized and Adaptive learning, Peer and Team-based learning, Student Engagement, University-Industry cooperation, International Projects, Exchange and Mobility Programs, Entrepreneurship Education, Student support and Wellbeing, STEM education, Diversity and Equity in education, Special and Inclusive experiences, Tutoring and Mentoring, Curriculum design, Quality assurance, Active and Experiential learning, Professional Development of Teachers, Pre-Service Teacher experiences, Vocational Education, Digital Competence of Teachers.

The EDULEARN22 Proceedings include the accepted contributions presented at EDULEARN22 Conference. The EDULEARN22 International Program Committee is composed of lecturers and researchers from all over the world. A meticulous job in selecting papers for publication was conducted. We wish to thank the program committee members who conducted a blind peer review process to guarantee the quality of the contributions and presentations. The following points were evaluated: information content, relevance to the field, general structure, clarity of contents, originality, relation to the conference topics and disciplines. The language of the publication was exclusively English.

Moreover, EDULEARN22 aims to publish conference proceedings that contain high-quality original research articles, meeting the expected ethical standards. Authors publishing in EDULEARN22 Proceedings signed the IATED copyright transfer form. IATED guarantees the high technical and professional quality of the publications, and that good practices and ethical standards are maintained. More information about the publication ethics of IATED is available at: https://iated.org/publication_ethics

Finally, we wish to extend our most sincere thanks to all members and delegates who have contributed to EDULEARN22 Proceedings. We also wish to express our gratitude to all participants and attendees for their engagement, motivation and passion for education.

Luis Gómez Chova
Agustín López Martínez
Joanna Lees
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Stephen Heppell – Universidad Camilo José Cela, Spain
Wayne Holmes – University College London, United Kingdom

Wayne Holmes, University College London (United Kingdom)
Workshop: The right type of AI in Education
Current AI in education approaches tend to be solutions-rather than problems-oriented. In this workshop, we’re going to take steps to address this, focusing on identifying genuine education problems that the application of AI might help address. Throughout, we will take a critical and human rights perspective, and will ensure a voice for all.

Michelle R. Weise, National University System (United States)
Workshop: Jumping to your next S-curve
In this futures-oriented workshop, Dr. Michelle R. Weise will facilitate small group breakout sessions in which you will each have an opportunity to think through your current business or organizational model as well as your value proposition for the working learners of today and tomorrow.

Stephen Heppell, Universidad Camilo Jose Cela (Spain)
Workshop: The aggregation of marginal learning gains: making your learning space so very much better
The workshop explores the many environmental details covered in Stephen's keynote and seeks simple, cost effective, proven, try-today, solutions to optimising your learning space. If we want to be our best learning selves, then how might we start today?

Desireé Cranfield, Swansea University (United Kingdom)
Workshop: Knowledge Sharing café – teaching innovation before, during and after Covid-19
The aim of this session is to provide an opportunity for attendees, academics, to come together, in an informal setting to informally share teaching experiences, both good and bad, with the aim to inform practice. The impact of this session can be the building of networks, the immediate sharing of teaching best practice of a time before, during, and after the pandemic, improving the knowledge around teaching practice during this difficult period.

Julie Smith, Webster University in St Louis, Missouri (United States)
Workshop: Media Literacies: The 21st Century Survival Skills that can Change the World
People around the world are spending – on average – eight hours a day with electronic mass media. Yet even in 2022, we are still not talking enough about how this affects people personally, politically, physically, emotionally and educationally. Using theoretical frameworks to provide context as well as classroom experiences to provide relevance, Smith will explain the importance of media literacy skills, how to teach them and the difference they can make in the lives of citizens and students.
Reed Stevens, Northwestern University (United States)

Workshop: FUSE Studios: A Choice and Interest Centered Learning Environment

In this one-hour session, the FUSE team, led by creator Reed Stevens, will seek to bring the audience inside the FUSE experience in two ways over the first 25 minutes: (1) We will provide a tour of the design principles and core activities of a FUSE Studio. (2) We will share vivid representations of youth and teacher-facilitator experiences in FUSE, drawn from a half decade of video-based ethnographic fieldwork and extended interviews with students. In the second 25 minutes, we will seek to bring the audience further inside the FUSE experience via trying one or more FUSE challenges.

Maria Luisa Spreafico, Politecnico di Torino (Italy)
Paola Morando, Università degli studi di Milano (Italy)

Workshop: Not only math: a game-based learning experience for a new teaching approach

In this workshop we present three didactic games in two versions each: math and art, math and science and math and English. Participants will experience the activities live during the workshop. Since we only use everyday materials, like paper and recycled items, teachers can easily replicate the games in their own classes.

Hesham Elmarsafawy, Gulf University (Bahrain)

Workshop: Science Fiction Drama for Continuous Development in Higher Education

The Workshop aims to introduce innovative pedagogy and outline the mechanism of utilizing science fiction drama in the educational processes as alternative tool for Brain warm-up, support the understanding of science matters, forming futuristic view, foster creativity and enhance students’ learning abilities and engagement.
EDULERN22 Keynote Speakers

Michelle R. Weise – National University System, United States
Stephen Heppell – Universidad Camilo Jose Cela, Spain
Wayne Holmes – University College London, United Kingdom

Michelle R. Weise – National University System (United States)

**Keynote speech: Long Life Learning: Preparing for Jobs that Don’t Even Exist Yet**
Tech is advancing; jobs are morphing, and job tenure is shorter; retirement is delayed or gone entirely; and education has to be continuous. Education and workforce strategist Dr. Michelle R. Weise talks about the infrastructure we need to build for a future filled with 20, 30, or more job changes. From wraparound supports for workers to targeted education, integrated earning and learning, and transparent and fairer hiring, Dr. Weise will discuss the research from her latest book and how we prepare talent for jobs that don’t even exist yet.

**Biography:** Dr. Michelle R. Weise (pronounced W-ice) is the Vice Chancellor of Strategy and Innovation at National University System. She is also the author of Long-Life Learning: Preparing for Jobs that Don’t Even Exist Yet (Wiley, 2021). Her book was awarded the 2021 Phillip E. Frandson Award for Literature by UPCEA (University Professional and Continuing Education Association), recognizing the author and publisher of an outstanding work of continuing higher education literature. Thinkers50 named her one of 30 management and leadership thinkers in the world to watch in 2021. Dr. Weise’s work over the last decade has concentrated on preparing working-age adults for the jobs of today and tomorrow. She has served as a senior advisor at Imaginable Futures, a venture of The Omidyar Group. She was also the chief innovation officer of Strada Education Network as well as of Southern New Hampshire University. With Clayton Christensen, she coauthored Hire Education: Mastery, Modularization, and the Workforce Revolution (2014) while leading the higher education practice at Christensen’s Institute for Disruptive Innovation. Dr. Weise also advises BrightHive, a data collaboration platform, the Virginia Economic Development Partnership, the Institute for Higher Education Policy (IHEP), the SkillUp Coalition, Basta, Hitch, Bayes Impact, Clayton Christensen Institute Social Capital R&D Project, and World Education’s Personal and Workplace Success Skills Library. She has also served as a commissioner for Massachusetts Governor Baker’s Commission on Digital Innovation and Lifelong Learning, Harvard University’s Task Force on Skills and Employability, and the American Academy of Arts and Sciences’ Commission on the Future of Undergraduate Education. Her commentaries on redesigning higher education and developing more innovative workforce and talent pipeline strategies have been featured in The Economist, The Wall Street Journal, The New York Times, Harvard Business Review and on PBSNewshour. Michelle is a former Fulbright Scholar and graduate of Harvard and Stanford.

Stephen Heppell – Universidad Camilo Jose Cela (Spain)

**Keynote speech: The aggregation of marginal learning gains: why they matter so much for the future of Learning**
Learners are facing unprecedented choices - not only of nomadic campuses, hybrid systems and remarkable new technologies, but also of the many details, from light brightness to levels of volatile organic compounds in their learning places, and even diet. These combine to have a substantial impact on our learning, but if we neglect them, then today’s learners will seek better places for their learning, elsewhere. This keynote also explores where those better places might be.
**Biography:** Professor Stephen Heppell has been a professor since the 1980s, he has an unrivalled track record of success and a string of huge projects in both Learning and Technology. He is credited with being the person who put the C into ICT. His support for better Learning is sought by everyone from governments and major corporations, through schools and universities, to elite sports – lately England Rugby, and Team GB’s elite Olympic coaches. Everyone needs better learning. He currently holds the Felipe Segovia Chair of Learning Innovation at Universidad Camilo Jose Cela in Madrid. Additionally, he is Emeritus Professor and Chair of New Learning Environments at Anglia Ruskin University.

A pioneer of multimedia and CD-ROM before the Internet, post-internet Professor Heppell created and led what was the Guinness Book of Record’s largest internet learning project, years before Google, Facebook et al. He has been, and continues to be, at the heart of many world leading projects since. Professor Heppell’s learning design work extends beyond the digital and virtual. Pioneering learning space designs include the UK “Classrooms of Tomorrow” project, much work in the UK Building Schools for the Future initiative, and today school and university building projects ranging from Peru to Spain, from Australia to SE Asia, from Syrian refugees to some of the wealthiest learning institutions in the world. Pivotal research including the learnometer project analysing the light, temperatures, CO2 and more that contribute to better learning and working spaces, have led to Stephen being in considerable demand to transform physical learning spaces in education, but also everywhere from new media to the Australian mining industries.

**Wayne Holmes – University College London (United Kingdom)**

**Keynote speech: Artificial Intelligence and Education. A Critical Studies Perspective**

Artificial Intelligence (AI) is frequently hailed as a ‘solution’ to many of education’s core problems (e.g., OECD, 2021) – problems such as the lack of qualified teachers, student underachievement, and better preparing learners for workplaces and career paths that may be very different from current paradigms. However, such claims tend to be aspirational rather than evidence-based (Miao & Holmes, 2021), and overly-simplistic, forgetting issues such as agency, pedagogy, surveillance, efficacy, and ethics (Holmes et al., 2021; Holmes et al., in press; Holmes & Porayska-Pomsta, in press; Porayska-Pomsta, Holmes and Nemorin, in press). Current approaches tend to be solutions- rather than problem-oriented, and all too often replace teacher functions rather than empower teachers, while the teaching of AI almost always focuses on the technological dimension of AI to the exclusion of the human dimension. Accordingly, this presentation will explore teaching with and about AI, from a critical studies and human rights perspective. It will identify and address many of the key myths, and will pose more questions about AI and the futures of learning than it answers.

**Biography:** Wayne Holmes (PhD, University of Oxford) is a learning sciences and innovation researcher who teaches at University College London and is a researcher on Artificial Intelligence (AI) and education for UNESCO, IRCAI (the International Research Centre for Artificial Intelligence under the auspices of UNESCO), and the Council of Europe. Having been involved in education throughout his life, Wayne brings a critical studies perspective to the connections between AI and education, and their ethical and social implications. His recent publications include “The Ethics of AI in Education: Practices, Challenges and Debates” (in press), “Artificial Intelligence and Education, through the Lens of Human Rights, Democracy and the Rule of Law” (in press), “Artificial Intelligence in Education. Promise and Implications for Teaching and Learning.” (2019), “Ethics of AI in Education: Towards a Community-Wide Framework.” (2021), and, for UNESCO, “AI and Education: Guidance for Policy-makers.” (2021). Wayne also co-authored the EU’s DigComp 2.2 Annex “Citizens Interacting with AI Systems” (2022), and has given invited talks on AI and education in Brazil, China, Croatia, Denmark, Germany, Greece, India, Japan, Oman, Slovenia, Spain, and the US (and online to audiences in many other countries around the world).
Conference Tracks & Sessions

The INTED2022 conference program is available online at https://iated.org/edulearn22

ORAL SESSIONS MONDAY

Digital Literacy
Next Generation Classroom
Student Engagement
University-Industry Collaboration
International Cooperation
Language Learning and Teaching
STEM Education during COVID-19
Media Literacy, Cybersecurity and Data Privacy
Flipped Learning
Peer and Team-Based Learning
Entrepreneurship Education
Exchange and Mobility Programmes
Language Learning Technologies
Architecture & Civil Engineering Education
Metaverse and Virtual Reality Environments
MOOCs & Open Educational Resources
Personalized and Adaptive Learning
Life-long & Workplace Learning
Educational Management
Pedagogical Innovations in Engineering Education
Digital Tools in Maths Education
Virtual & Augmented Reality
Blended & Hybrid Learning
Tutoring and Mentoring
Education for Sustainability
Student Support and Wellbeing
Experiences in Engineering Education
Maths in Higher Education

POSTER SESSIONS MONDAY

Emerging Technologies in Education
New Experiences in Education

ORAL SESSIONS TUESDAY

Digital Transformation of Education
Data Science & AI in Education
Student Support during COVID-19
From Face-to-Face to Remote Learning (1)
Diversity and Equity in Education
Health Literacy and Patient Education
Mathematics in Primary & Secondary Education
e-Learning Experiences
Work-based Learning
Assessment of Student Learning (1)
Early and Primary Education
Social Inclusion and Academic Success of Chinese Students in EU Higher Education
Experiences in Health Sciences Education
STEM Education Experiences
m-Learning
Active & Experiential Learning
Assessment of Student Learning (2)
From Face-to-Face to Remote Learning (2)
Digital Divide and Educational Inequalities
Special and Inclusive Education
Curriculum Design & Quality Assurance
Digital Technologies for Learning under Lockdown
Game-based Learning
Computer Science and Programming in Higher Education
From Face-to-Face to Remote Learning (3)
Teaching Experiences and Support during COVID-19
Business Education Experiences
Professional Development of Teachers
21st Century Skills
Digital Competences of Teachers
Coding & Computational Thinking
Emergency Remote Teaching during COVID-19
Student Wellbeing in Social Media and Online Learning
Vocational Education
Pre-service Teacher Experiences

POSTER SESSIONS TUESDAY
From face-to-face to Remote Learning
New Trends in Education and Research

VIRTUAL SESSIONS

DIGITAL TRANSFORMATION OF EDUCATION
Data Science & AI in Education
Learning Analytics & Educational Data Mining
Digital Transformation
Digital Technologies and Resources for Learning under Lockdown
21st Century Skills
Educational Programming & Robotics

DIGITAL & DISTANCE LEARNING
Distance Education in COVID-19 Times
Challenges and Practices during the Pandemic and Beyond
Blended & Mobile Learning
MOOCs & Open Educational Resources
Learning Management Systems & Virtual Learning Environments

INNOVATIVE EDUCATIONAL TECHNOLOGIES
AI, Chatbots & Robots
Virtual & Augmented Reality
Social Media in Education
Technology Enhanced Learning

TEACHER TRAINING & ED. MANAGEMENT
ICT & Digital Skills
Professional Development of Teachers
Educational Management
ACTIVE & STUDENT-CENTERED LEARNING
- Gamification & Game-based Learning
- Experiential Learning
- Problem & Project-Based Learning
- Soft Skills Development
- Pedagogical Innovations

ASSESSMENT, MENTORING & STUDENT SUPPORT
- Assessment & Evaluation
- Rethinking Assessment in COVID-19 Times
- Feedback for Learning
- Tutoring & Coaching
- Student Support & Motivation

EDUCATIONAL STAGES & LIFE-LONG LEARNING
- From Pre-school to Secondary Education
- Non-Formal and Informal Learning
- Transition to the Job Market
- Developing Entrepreneurship in Education
- Life-Long & Workplace Learning

QUALITY & IMPACT OF EDUCATION
- Quality in Education
- Experiences and Challenges in Curriculum Design
- Sustainability & Social Impact of Education
- Links between Education and Research
- University-Industry Collaboration
- Mobility & International Projects

MULTICULTURALITY & INCLUSION
- Multicultural Education
- Diversity Issues
- Special Educational Needs
- Inclusive Education

STEM EDUCATION
- Mathematics & Statistics
- Engineering Education
- STEM Experiences

LANGUAGE LEARNING AND TEACHING
- Foreign Languages
- Language Learning & Translation Studies
- Teaching Foreign Languages during the Lockdown

DISCIPLINE-ORIENTED SESSIONS
- Architecture & Interior Design Education
- Health Sciences Education
- Computer Science Education
- Business & Tourism Education
# Table of Contents

**TEACHER TRAINING DURING THE PANDEMIC OUTBREAK: THE EXPERIENCE OF AN ECUADORIAN PUBLIC UNIVERSITY**
K. Salvador-Cisneros, C. Bolaños-Mendoza  
1

**PREPARE PUBLIC OPINION AND REMOVE BARRIERS TO INTELLIGENT ENERGY USE**
H. Friman, G. Konforty, M. Zarmati, Y. Sitbon, I. Banner, Y. Einav, N. Shaked  
9

**GAME – SET – MATCH: GROW! HOW PROFESSIONAL TENNIS FOSTERS PERSONAL DEVELOPMENT OF BUSINESS STUDENTS**
B. Greimel-Fuhrmann, R. Berger, W. Eschauer  
16

**STRATEGIES FOR USING SOCIAL MEDIA APPS TO INCREASE ENGAGEMENT IN ONLINE LEARNING**
G. Solano  
21

**PECULIARITIES OF ACQUIRING LINGUISTIC MATERIAL BY AUTISTIC FOREIGN LANGUAGE STUDENTS IN THE INCLUSIVE EDUCATION FRAMEWORK**
S. Kogotkova, O. Lisyutina, O. Beletskaya, D. Ushakova, E. Bogdanova  
22

**IS PUBLIC HEALTH WORTH STUDYING DURING THE COVID-19 PANDEMIC? A QUALITATIVE ANALYSIS**
J. Gotlib, M. Jaworski, P. Malkowski, M. Panczyk  
27

**SELF-REFLECTION IN SHAPING THE RELATIONSHIP BETWEEN THE AUTHENTIC LEADERSHIP SKILLS AND THE ATTITUDE TOWARDS EVIDENCE-BASED NURSING PRACTICE - THEORETICAL MODEL FOR POSTGRADUATE EDUCATION**
M. Panczyk, D. Waterzat, S. Musik, M. Jaworski, J. Gotlib  
35

**USING AN ARTISTIC APPROACH TO THE TEACHING OF SOLID GEOMETRY IN A PROFESSIONAL DEVELOPMENT COURSE FOR MATHEMATICS TEACHERS**
A. Hall, S. Pais  
43

**USING A STEAM APPROACH IN A PROFESSIONAL DEVELOPMENT COURSE FOR MATHEMATICS TEACHERS**
A. Breda, P. Carvalho, A. Hall  
53

**ROLE PERCEPTION OF NOVICE TEACHERS: GENERAL EDUCATION TEACHERS VS. SPECIAL EDUCATION TEACHERS**
S. Bar-On, B. Gavish  
62

**STUDENTS’ PERCEPTIONS OF FLIPPED CLASSROOM APPROACH – RESULTS FROM AN EDUCATIONAL INNOVATION PROJECT**
64

**SPREADING PHOTONICS AT THE EUROPEAN RESEARCHERS’ NIGHT**
R.A. Perez-Herrera, S. Tainta, M. Bravo Acha  
71

**ONLINE ENGINEERING MATHEMATICS COURSE – DEVELOPMENT AND IMPLEMENTATION OF A SUCCESSFUL PROJECT**
76

**ASSESSMENT OF THE EXTENT OF PRESCHOOL TEACHERS’ UTILISATION OF INFORMATION AND COMMUNICATION TECHNOLOGY IN TEACHING**
C. Ugwuanyi, C. Okeke  
86

**COULD YOU TEACH CRITICAL THINKING THROUGH PROJECT-BASED LEARNING? FINDING THE ANSWERS THROUGH A META-ANALYSIS**
I. Alzaabi  
92

**STUDENTS’ PREFERENCES REGARDING SOFT SKILLS TRAINING AFTER REMOVAL OF RESTRICTIONS FROM COVID-19 AND IN GENERAL**
H. Friman, H. Ragones, M. Balberg  
99

**STUDENTS’ PERCEPTION OF PARENTAL BEHAVIOR AND AUTHORITY AS PREDICTOR OF STUDENT-PROFESSOR INTERACTION**
A. Mandarić Vukićević, A. Grčić, D. Đolić, M. Ljubetić  
103

**VISITS WITH STUDENTS TO COMPANIES: EFFECTIVE LEARNING ON SITE**
M.V. Biezma-Moralelda  
113
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICT USE BY CZECH ADOLESCENTS AND YOUNG ADULTS DURING THE PERIOD OF THE COVID-19 PANDEMIC</td>
<td>119</td>
</tr>
<tr>
<td>I. Olecká, J. Pospíšil</td>
<td></td>
</tr>
<tr>
<td>ABUSE EXPERIENCES ON SOCIAL NETWORKING SITES AND RECOMMENDATIONS FOR CHANGES IN PREVENTION</td>
<td>124</td>
</tr>
<tr>
<td>I. Olecká, J. Pospíšil, L. Trochtová</td>
<td></td>
</tr>
<tr>
<td>EVALUATION OF THE IMPACT OF ONLINE TEACHING ON STUDENTS WITH SPECIAL EDUCATIONAL NEEDS (SEN)</td>
<td>130</td>
</tr>
<tr>
<td>V. Lee, J. Lee, A. Ho, R. Cheung, J. Ng</td>
<td></td>
</tr>
<tr>
<td>CONCEPTUAL AND THEORETICAL MODEL OF OPTIMISM AND SHAME IN EVIDENCE-BASED NURSING EDUCATION</td>
<td>131</td>
</tr>
<tr>
<td>M. Jaworski, D. Wawrzuta, J. Gotlib, M. Panczyk</td>
<td></td>
</tr>
<tr>
<td>DEVELOPING PUBLIC SPEAKING SKILLS IN A GROUP OF PUBLIC HEALTH STUDENTS WITH THE USE OF THE MICROSOFT TEAMS PLATFORM. ASSESSMENT OF THE QUALITY OF EDUCATION: A QUALITATIVE ANALYSIS</td>
<td>139</td>
</tr>
<tr>
<td>J. Gotlib, M. Jaworski, D. Wawrzuta, P. Malikowski, M. Panczyk</td>
<td></td>
</tr>
<tr>
<td>USABILITY ASPECTS FOR ONLINE COURSES</td>
<td>148</td>
</tr>
<tr>
<td>B. Doersam, N. Schuler</td>
<td></td>
</tr>
<tr>
<td>GAME-BASED LEARNING AS A TOOL FOR ENHANCING STUDENT ENGAGEMENT AND LEARNING EXPERIENCES IN VIRTUAL CLASSES</td>
<td>158</td>
</tr>
<tr>
<td>MANAGEMENT OF FINAL EXAMINATIONS DURING THE PANDEMIC COVID-19</td>
<td>165</td>
</tr>
<tr>
<td>J. Đurica, A. Velas, V. Soltes</td>
<td></td>
</tr>
<tr>
<td>LINKS BETWEEN MATHEMATICS EDUCATION AND DANCE</td>
<td>171</td>
</tr>
<tr>
<td>M. López, S. Carnero, J. Rodrigo, S. Lantarón, Y. López</td>
<td></td>
</tr>
<tr>
<td>PROMOTING SUSTAINABILITY LITERACY IN SCIENCE EDUCATION</td>
<td>181</td>
</tr>
<tr>
<td>D. Elster</td>
<td></td>
</tr>
<tr>
<td>DO AS I SAY, DON'T DO AS I DO: DEMOCRATISING AND DEMYSTIFYING ACADEMIC WRITING THROUGH TECHNOLOGY</td>
<td>188</td>
</tr>
<tr>
<td>E. Tan, S. Carnegie</td>
<td></td>
</tr>
<tr>
<td>EXPLORING THE CONTRIBUTION OF LINGUISTIC, COGNITIVE AND CULTURAL FACTORS TO THE DIDACTICS AND KNOWLEDGE BUILDING OF SCIENCE WITH A FOCUS ON MATHEMATICS AND COMPUTER SCIENCE</td>
<td>189</td>
</tr>
<tr>
<td>M. Kritikou, D. Tsolis</td>
<td></td>
</tr>
<tr>
<td>HOW SPANISH UNIVERSITIES ARE ADDRESSING SOCIAL ISSUES IN THEIR STRATEGIC PLANS?</td>
<td>194</td>
</tr>
<tr>
<td>E. Planells-Aleixandre, R. Isusi-Fagoya, A. García-Aracil</td>
<td></td>
</tr>
<tr>
<td>SOCIAL INNOVATION APPROACHES AT HIGHER EDUCATION INSTITUTIONS</td>
<td>204</td>
</tr>
<tr>
<td>E. Planells-Aleixandre, A. García-Aracil, R. Isusi-Fagoya</td>
<td></td>
</tr>
<tr>
<td>TEACHING HEALTH PROMOTION TO BUILD RESILIENCE IN CRITICAL COVID-19 TIMES</td>
<td>213</td>
</tr>
<tr>
<td>D. Vankova</td>
<td></td>
</tr>
<tr>
<td>AN INCLUSIVE GAMIFIED LEARNING ENVIRONMENT FOR ENABLING QUALITY EDUCATION FOR DISADVANTAGED LEARNERS</td>
<td>222</td>
</tr>
<tr>
<td>I. Stefan, A. Stefan, H. Tsalapatas, O. Heidmann</td>
<td></td>
</tr>
<tr>
<td>HARDWARE IN THE LOOP TEST BENCH DEVELOPMENT SUITABLE FOR NEW SPACE CONCEPT</td>
<td>223</td>
</tr>
<tr>
<td>A. Flores Caballero, A. Marcos</td>
<td></td>
</tr>
<tr>
<td>EARLY DESIGN OF A HIGHLY INTERACTIVE DIGITAL COLLABORATION SERVICE FOR HYBRID LEARNING</td>
<td>232</td>
</tr>
<tr>
<td>H. Tsalapatas, O. Heidmann, T. Jesmin, J. Terasmaa, C. Vaz de Carvalho, I. Stefan, A. Stefan, M. Caeiro</td>
<td></td>
</tr>
<tr>
<td>SOFTWARE TRAINING TOOL AT SUPPORTING DEVELOPMENT OF CREATIVE KNOWLEDGE IN THE FIELD OF TECHNOLOGICAL PREPARATION OF PRODUCTION</td>
<td>238</td>
</tr>
<tr>
<td>P. Baron, M. Kočisko, E. Franaš</td>
<td></td>
</tr>
<tr>
<td>EDUCATIONAL INTEGRATION OF DIGITAL TECHNOLOGIES DURING COVID-19 PANDEMIC: AN EXPERIMENT IN THE FACE OF EMERGENCY REMOTE LEARNING?</td>
<td>245</td>
</tr>
<tr>
<td>B. Oluooue, V. Mncube, W. Hendricks</td>
<td></td>
</tr>
<tr>
<td>&quot;US&quot; AND &quot;OTHERS&quot;: COMMUNICATING INTERCULTURAL PERCEPTIONS IN HIGHER EDUCATION</td>
<td>251</td>
</tr>
<tr>
<td>A.M. Capraru, S.M. Munteanu, S. Paduretu, L. Bramiste</td>
<td></td>
</tr>
</tbody>
</table>
THE TRANSFORMATION LEADERSHIP ROLE OF PRIVATE HIGHER EDUCATION IN PROMOTING SOCIAL JUSTICE: A SOUTH AFRICAN CASE
W. Engelbrecht, W. Bowles, B. van Wyk

A ROOM OF ONE'S OWN: HOW 'OLD' EDUCATIONAL INEQUALITIES CAN BE PERPETUATED AND DEVELOPED BY ONLINE PLATFORMS
K. Angell

AN EXOGENOUS THREAT THAT LED TO ENDOGENOUS CHANGE: THREE INNOVATIVE PEDAGOGICAL RESPONSES TO TEACHING PRACTICAL COURSES ONLINE DURING COVID-19 LOCKDOWNS
K. Angell

FEMALE FACULTY IN HIGHER EDUCATION IN GREECE: DATA ANALYSIS AND VISUALIZATION, TRENDS AND PERSPECTIVES
E. Prappa, E. Papaioannou, C. Kaklamanis

A WEB APPLICATION FOR SCHEDULING EDUCATIONAL VISITS
A. Prappa, E. Papaioannou, C. Kaklamanis

ENHANCING KNOWLEDGE ACQUISITION IN CHEMICAL ENGINEERING STUDIES THROUGH “QUIZIZZ” PLATFORM CLASS COMPETITIONS

CHANGES IN PERCEPTIONS OF STUDENT SELF-ASSESSMENT
E. Aflalo

CASE STUDY ON THE EFFECTIVENESS OF THE MENTAL AND PHYSICAL ACTIVITIES IN VIRTUAL AND AUGMENTED REALITY
D. Gudoniene, T. Blazauskas, E. Stamaviciene, L. Motiejeunas

NATURAL AND HEALTHIER SOCIAL ENVIRONMENTS FOR UNIVERSITY STUDENTS THAT ENHANCE ACADEMIC MOTIVATION
M. Uyuskan, B. Erkan, Y. Avci, D. Hasirci

PRESCHOOL CHILDREN READING SKILLS TEACHING MODULE THROUGH INTERACTIVE WHITEBOARD
A.H. Masnan, H.H. Baharudin

LEARNING HOW TO USE APA GUIDELINES: AN INNOVATIVE EDUCATIONAL INTERVENTION VIA INSTAGRAM
S. Collado, R. Rodriguez-Key, C. Fidalgo, M. A. Sorrel, L. Bermejo-Toro, M. Prieto-Ursúa

INOCULATING STUDENT PROBLEM-SOLVING SKILLS THROUGH SELF-DIRECTED LEARNING IN A SMART LEARNING ENVIRONMENT
T.K. Neo, A. Amphawan, S.H. Hew, M. Neo, K. Hamidani, Y.C. Chang

A CONCEPTUAL FRAMEWORK USING EXPERIENTIAL LEARNING TO ENCOURAGE STUDENT ENGAGEMENT
K. Hamidani, T.K. Neo, V. Perumal, A.I. Susanti, M. Pradana, S. Artadiita

USE OF TECHNOLOGIES IN HIGHER EDUCATION: THE CASE OF TOURISM COURSES
A.E. Sousa, S. Pais

UN-E-NAV: A PROGRESSIVE WEB CAMPUS NAVIGATOR
A. Ntoumi, E. Papaioannou, G. Moisaidis, C. Kaklamanis

CRITICAL REFLECTIVE ASSESSMENT TECHNIQUE: A FRAMEWORK TO CULTIVATE ENGAGED SCHOLARSHIP IN BUSINESS EDUCATION
P. Mswele, M. Tabane

TEACHERS, THE INTERNET, COMPUTERS, AND SMARTPHONES - WHAT SKILL SETS SHOULD TODAY'S EDUCATORS HAVE?
L. Tomczyk

SOFTWARE AND HARDWARE IN THE WORK OF THE MODERN TEACHER IN THE INFORMATION SOCIETY
L. Tomczyk, L. Fedeli

PUBLIC HIGHER EDUCATION FEES IN SOUTH AFRICA: WHAT ACCOUNTS FOR DIFFERENCES?
G. Ngorima, P. Mswele

ENGINEERING STUDIES IN HEBREW FOR ARABIC SPEAKING STUDENTS – THE EFFECT OF STUDYING IN A NON-NATIVE LANGUAGE
E. Gur

THE IMPACT OF COVID-19 ON ACCOUNTING EDUCATION
C. Fajardo
THE IMPACT OF THE MEDIUM ON TIME ESTIMATION, READING COMPREHENSION AND CONFIDENCE AMONG STUDENTS WITH AND WITHOUT ADHD
Y. Meer, T. Katzir

MULTIMEDIA DESIGN FOR TACTICAL PLAY LEARNING AMONG SPORT PRACTITIONERS
M. McMahon

INFUSION OF THE LEARNING MANAGEMENT SYSTEM AT A SOUTH AFRICAN UNIVERSITY OF TECHNOLOGY
O. Ogundaini, N.B.W. Mlitwa (Mlita)

PSYCHOLOGICAL OWNERSHIP AND THE INTENTION TO DEVELOP OPEN EDUCATION RESOURCES (OER): A THEORETICAL MODEL APPROACH
A. Schneider, A. Schmalfuß

INDUSTRY-GUIDED EDUCATION (IG-EDU)
A. Elmessiry, M. Elmessiry, M. Elmessiry

REINFORCING EXPERIENTIAL LEARNING: MAINTAINING AND SUSTAINING ARCHITECTURAL PEDAGOGY PRE- AND POST-COVID
V. Hui, A. Weiss, A. Winslow, E. Fernandes, J. Lieberman

FINANCIAL LITERACY OF TECHNICALLY ORIENTED STUDENTS IN SLOVAKIA: AN EVALUATION OF FUNDAMENTALS OF FINANCIAL LITERACY
I. Katrenick, M. Zatrochova

PSYCHOLOGICAL RESEARCH OF INTELLECTUAL AND CREATIVE ABILITIES OF YOUNGER SCHOOLCHILDREN
K. Satova, A. Dzhussupova, B. Satoanov, B. Sadykova, A. Karkulova

LEARNING BY DOING ABOUT HEALTH AND SUSTAINABILITY THROUGH FOOD LABELING

SENSORY ANALYSIS OF FOODS AS A TOOL FOR EDUCATION IN HEALTHY FOOD CHOICES: A SERVICE LEARNING EXPERIENCE (APS)

CHATBOTS: A PERSONALISED TEACHER'S ASSISTANT OR DIGITAL FAQ?
A. Forrester

DESIGN AND MULTIMEDIA AS A RESPONSE AND STIMULUS TO NON-FACE-TO-FACE CLASSES IN PRIMARY EDUCATION IN TIMES OF THE COVID 19 PANDEMIC
M. Zunguze, Y. Mondlane

THE FACTORS CONTRIBUTING TOWARDS POOR LEARNERS’ PERFORMANCE IN LIFE SCIENCE: A PRACTICAL COMPONENT
K. Maremane, M. Rankhumise, O.N. Mafa-Theledi, E. Ngobeni

THE INTRODUCTION OF INTERNATIONAL STUDENTS IN NEW ZEALAND TO THE INDIGENOUS MAORI CULTURE
D. Lopez, C. Freeman

A FRAMEWORK FOR EMBRACING DIGITAL TRANSFORMATION TO EMPOWER REMOTE LEARNING IN TIMES OF CRISIS (COVID-19) IN SOUTHERN AFRICAN PRIMARY AND SECONDARY SCHOOLS
S. Nkomo, W. Muli

USE OF VIDEO TUTORIALS AS A TEACHING TOOL FOR LABORATORY PRACTICALS IN THE FIELD OF CHEMICAL ENGINEERING

COMPARISON OF PROBLEM-BASED LEARNING VERSUS TRADITIONAL TEACHING METHOD AMONG HIGH SCHOOL STUDENTS: AN EXPERIMENTAL STUDY
Y. Sorroche-Del-Rey, L. Piedra-Muñoz, E. Galdeano-Gómez, E.M. García-Granero

LIGHTING DESIGN AND VIRTUAL THEATRE LABORATORIES: 3D VISUAL SIMULATORS FOR ONLINE CLASSROOM ENVIRONMENTS
J. Greenberg

IN-SERVICE TEACHER EDUCATION: A MODEL TO ADVANCE TEACHER KNOWLEDGE AND SKILLS OF TECHNOLOGY INTEGRATION IN TEACHING AND LEARNING
M.Z. Ramorola
EDUCATIONAL PLANNING AND PROFESSIONAL PRACTICES IN EARLY
CHILDHOOD SERVICES: CASE STUDIES
A. Giuliani

PROMOTE UNDERGRADUATE STUDENTS' DISTRIBUTED LEADERSHIP THROUGH
PROJECT-BASED LEARNING EXPERIENCES
A. Giuliani

ENGAGING LEARNERS IN E-LEARNING HEALTH ROOMS: A MALAYSIAN-KOREAN
CASE STUDY

VIRTUAL SPEAKING HEAD AS A TOOL IN SPEECH THERAPY
E. Pajorova

REFLECTIONS ON A MULTI-NATIONAL SOUTH-NORTH HIGHER EDUCATION
CAPACITY BUILDING PROJECT IN MARINE EDUCATION AND TRAINING
H. Theunissen, T. Pittaway, B. Du Plooy

AUDIO USE AS A TEACHING TOOL: A STUDY IN SÃO LUÍS REGION/BRAZIL
R.J. Silva Ferreira, M.J. Antunes

DIDACTIC PROPOSAL FOR THE STUDY OF THE BIOLOGICAL IMPORTANCE OF
CHIRAL COMPOUNDS IN THE CONTEXT OF THE REMOTE LEARNING
A. Grunewald Nichele, K. Silva dos Santos Moraes, F. Niones da Silva

CREATING EDUCATIONAL EQUIPMENT FOR CHEMISTRY LABS USING MOBILE
DEVICES
A. Grunewald Nichele, K. Silva dos Santos Moraes

MATHS FOR ENGINEERING: PARTING FROM CLASSICAL METHODS
E. Martínez-Martín, A. Costa

A SOFTWARE PLATFORM FOR DIGITAL ASSESSMENT OF PEDAGOGICAL
SPECIALISTS' QUALIFICATION PROGRESS IN BULGARIA
P. Nakov, E. Mihaylova, M. Lazarova, O. Nakov, V. Mladenov

PLATFORM OF OPEN EDUCATIONAL RESOURCES (OER) ON CYBERSECURITY AND
PROFESSION
S. Esteban-Gonzalo

A VIDEOGAME FOR FOSTERING CYBERSECURITY
L.A. López-Fraile, G. Mariscal-Vivas, J. Fernandez-Collantes, S. Martínez-Requejo, S. Esteban-Gonzalo,
E. Jiménez-García

THE EFFECT OF PRACTICING WITH DIGITAL TOOLS ON THE VOCABULARY
ACHIEVEMENTS AND ACADEMIC EMOTIONS OF THIRD GRADERS WITH
DIFFERENT READING PROFILES
M. Sadan, T. Katzir

ENHANCING ENGAGEMENT OF DENTAL UNDERGRADUATES BY FLIPPING
HISTOLOGY
M.P. Álvarez-Véquez, M.T. Angulo-Carrere, C. Bravo-Llatas

MOOCS AND ACCESS TO HIGHER EDUCATION BY SOUTH AFRICAN
UNDERPRIVILEGED LEARNERS
M.C. Mathele, J.P. Van Belle

DESIGN AND EVALUATION OF A TEACHER TRAINING COURSE ON
VIDEOCONFERENCE-BASED EFL TEACHING: A CASE STUDY OF SYRIAN PRE-
SERVICE EFL TEACHERS
L. Isperdon, H. Selcuk

LOW-COST TELEPRESENCE ROBOT USING ARTIFICIAL AND CELLULAR
INTELLIGENCE FOR USE IN EDUCATION
R. Coutinho, P. Notargiacomo

DEVISING A PROFESSIONAL DEVELOPMENT PROGRAM FOR ADJUNCT FACULTY
TO UPSKILL FOR BLENDED LEARNING CAPABILITY
S.Y. Clye

EDUCATION EVOLVED FOR THE 22ND CENTURY: FACING THE NEW WORLD OF
Mega-complexity
D. Brooks

IS FACEBOOK AN ADEQUATE TOOL TO IMPROVE STUDENTS' INTRINSIC
MOTIVATION AND ACADEMIC PERFORMANCE DURING COVID PANDEMIC?
C. Fidalgo, S. Collado, G. López-Crespo, M. Menéndez-López, S. Garces-Arilla
RESULTS OF A UNIVERSITY EXPERIENCE, COMPARING FACE-TO-FACE, ONLINE AND HYBRID TEACHING IN A CONTEXT OF SARS-CoV-19

ENGAGING YOUR COLLEGE STUDENTS: 30 TOOLS YOU CAN USE NEXT WEEK
J. Smith

AN INTEGRATIVE HOLISTIC MODEL OF ECONOMIC EDUCATION
B. Greimel-Fuhrmann

DIGITAL FORENSICS: 17 TOOLS TO DISCERN FACT FROM FICTION ONLINE
J. Smith

COMMUNICATION SKILLS FOR RESEARCHERS
B. Butraguño, J.F. Raposo Grau, M.A. Salgado de la Rosa

THE 4TH INDUSTRIAL REVOLUTION: THE NEW BUSINESS MODEL FOR HIGHER EDUCATION – PRELIMINARY FINDINGS
J. Bengoechea, A. Bell

DIDACTIC MATERIAL DEVELOPMENT IN TEACHING ENGLISH TO MASTER’S DEGREE STUDENTS FROM THE PERSPECTIVE OF SKILLS ACQUISITIONS AND STUDENT LEARNING OUTCOMES
M. Saryan

COURSE DESIGN MODIFICATION BASED ON STUDENTS’ PREFERENCES
M. Saryan

USE OF THE ANKI SOFTWARE IN COASTAL ENGINEERING COURSES: METHODOLOGY AND RESULTS
J.J. Muñoz-Perez, A. Contreras, B. Jigena, F. Contreras, P. Lopez

POSTS ON INSTAGRAM AND FACEBOOK TO ENHANCE COLLEGE STUDENTS INTERACTION IN EFL SUPPORTED BY GRAMMAR AND VOCABULARY PRACTICE
D. Vásconez, S. Vásconez, J. Samaniego Villarroel, A. Carrera Rivera

DISCUSSION BOARDS AND DIGITAL PORTFOLIOS TO DEVELOP METACOGNITIVE SKILLS IN AN ONLINE EFL CLASS
S. Vásconez, D. Vásconez, A. Carrera Rivera, J. Samaniego Villarroel

CRITICAL READING AND USE OF COMICS IN TEACHING FRENCH AS A FOREIGN LANGUAGE
C.M. Míguez Álvarez

THE COMIC AS A DIDACTIC RESOURCE IN TEACHING FRENCH IN HIGHER EDUCATION
C.M. Míguez Álvarez

SIMULATION IN ADVANCED LIFE SUPPORT TRAINING: OPINION OF STUDENTS IN POSTGRAD CRITICAL CARE
C. Pinto, F. Segadães, A. Pinto, A. Teixeira, C. Augusto, I. Rocha, A. Veríssimo

APPLIED TOOL TO EXAMINE FACTORS ENHANCING OR INHIBITING SENSE OF COHERENCE IN TEACHING SITUATION (SOCITS) AMONG TEACHING INTERNS
E. Bracha, D. Hoffenbartel

CURRICULUM DESIGN IN A LIFE-LONG-LEARNING PROGRAMME CONSIDERING INDUSTRY 4.0 AND DIGITALISATION – BUZZWORDS OR NECESSITY?
M. Koenig

ARTIFICIAL INTELLIGENCE AND EDUCATION: MYTH AND FACTS
V. Queiroz, M. Simonette, E. Spina

EXPLORING HOW SIMULATION-BASED TECHNOLOGY CAN ENHANCE TEACHING AND LEARNING IN BUSINESS SCHOOLS
N. Papanikolaou

ADDRESSING SUSTAINABILITY AND CLIMATE CHANGE THROUGH PARTICIPATORY SIMULATION GAMES IN A MULTICULTURAL ENVIRONMENT IN HIGHER EDUCATION: AN EXPERIENCE IN A MASTER DEGREE ON SMART CITIES AND COMMUNITIES
J. Terés-Zubiaga, I. Capellán-Pérez, A. Campos-Celador

AN INTERVENTION TO SUPPORT STUDENTS WITH ACADEMIC WRITING DURING THE COVID-19 LOCKDOWN
N. Mather

THE STATE OF VISUAL IMAGINATION OF CHILDREN WITH VISION IMPAIRMENTS IN THE PROCESS OF MUSIC PERCEPTION
L. Darinskaia, R. Demjanchuk, V. Sorokin
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSYCHOLOGICAL CHARACTERISTICS OF CREATIVE THINKING OF CHILDREN</td>
<td>1025</td>
</tr>
<tr>
<td>SUFFERING FROM COMORBID OPHTHALMIC PATHOLOGY</td>
<td></td>
</tr>
<tr>
<td>L. Darinskaia, V. Sorokin, G. Molodtsova, R. Demjanchuk</td>
<td></td>
</tr>
<tr>
<td>LEAF PROJECT: SCIENCE COMMUNICATION IN COVID ERA</td>
<td>1030</td>
</tr>
<tr>
<td>M. Martini, A. Della Ceca, G. Burzachechi, R. Donghia, G. Ciocca, S.</td>
<td></td>
</tr>
<tr>
<td>Pierangeli, E. Diociaiuti, V. Guglielmetti</td>
<td></td>
</tr>
<tr>
<td>THE EFFECTS OF PHONOLOGICAL FEATURES IN GENERAL ENGLISH PROFICIENCY</td>
<td>1040</td>
</tr>
<tr>
<td>PREDICTION BY DICTION PERFORMANCE</td>
<td></td>
</tr>
<tr>
<td>K. Kotani, T. Yoshimi</td>
<td></td>
</tr>
<tr>
<td>LIVE LEARNING AS A REQUIREMENT OF ASYNCHRONOUS FIRST-YEAR</td>
<td>1048</td>
</tr>
<tr>
<td>EXPERIENCE: THEMES AND UNDERSTANDINGS FROM STUDENT RESPONSES</td>
<td></td>
</tr>
<tr>
<td>J. Robinson, S. Manning, T. Mooney, D. Hilbrink, C. Dollar, B. Sorensen</td>
<td></td>
</tr>
<tr>
<td>PAUSE: REVISITING AN ACRONYM FOR PROVIDING SOLID AND ACTIONABLE</td>
<td>1058</td>
</tr>
<tr>
<td>FEEDBACK FOR ONLINE UNIVERSITY STUDENTS</td>
<td></td>
</tr>
<tr>
<td>J. Robinson</td>
<td></td>
</tr>
<tr>
<td>VIRTUAL ROOM EXPERIENCE: DEVELOPING SKILLS IN REMOTE TEACHING</td>
<td>1059</td>
</tr>
<tr>
<td>Sousa</td>
<td></td>
</tr>
<tr>
<td>USING ONLINE FOCUS GROUP TO DEVELOP VIRTUAL SERVICE-LEARNING PROJECTS</td>
<td>1063</td>
</tr>
<tr>
<td>M.C. González-Rabanal, A. Acevedo-Blanco</td>
<td></td>
</tr>
<tr>
<td>BLENDED LEARNING – HOW TO CREATE AN EFFECTIVE COURSE</td>
<td>1071</td>
</tr>
<tr>
<td>K. Buckley</td>
<td></td>
</tr>
<tr>
<td>ADULT EDUCATION DURING COVID-19: BEST PRACTICES, TECHNOLOGY TOOLS,</td>
<td>1072</td>
</tr>
<tr>
<td>AND THE INSTRUCTORS’ PERSPECTIVES TO ENHANCE ONLINE TEACHING,</td>
<td></td>
</tr>
<tr>
<td>LEARNING, AND TRAINING</td>
<td></td>
</tr>
<tr>
<td>L. Orozco, R. Giraldo-Garcia</td>
<td></td>
</tr>
<tr>
<td>EVALUATION OF THE COGNITIVE-EMOTIONAL APPROACH IN LISTENING TO MUSIC</td>
<td>1073</td>
</tr>
<tr>
<td>IN CROATIAN GENERAL EDUCATION SETTING</td>
<td></td>
</tr>
<tr>
<td>S. Vidulin</td>
<td></td>
</tr>
<tr>
<td>A FRAMEWORK FOR DEVELOPING SOCIAL RESPONSIBLE BUSINESS LEADERS</td>
<td>1082</td>
</tr>
<tr>
<td>A. Kukreja, J. Ricks, J. Bartkus, A. Helm</td>
<td></td>
</tr>
<tr>
<td>THE DEBATE AS A TOOL FOR SCIENCE LEARNING AND EVALUATION OF</td>
<td>1090</td>
</tr>
<tr>
<td>SCIENTIFIC WORK. APPLICATION TO POSTGRADUATE TEACHING IN BIOMEDICINE</td>
<td></td>
</tr>
<tr>
<td>A. Bort, B. Sánchez, J.M. Mora-Rodríguez, I. Díaz-Larciada</td>
<td></td>
</tr>
<tr>
<td>THE BENEFITS OF APPLYING PROJECT-BASED LEARNING FOR BETTER STUDENT</td>
<td>1100</td>
</tr>
<tr>
<td>COMPREHENSION</td>
<td></td>
</tr>
<tr>
<td>B. Kirilova</td>
<td></td>
</tr>
<tr>
<td>THE ROLE OF DIGITAL TECHNOLOGIES IN CELEBRATING FESTIVITIES UNDER</td>
<td>1105</td>
</tr>
<tr>
<td>COVID-19</td>
<td></td>
</tr>
<tr>
<td>I. Kacane, O. Koezele, M. Grizane</td>
<td></td>
</tr>
<tr>
<td>FACTORS HINDERING EFFECTIVE ONLINE TEACHING AND LEARNING: INSIGHTS</td>
<td>1114</td>
</tr>
<tr>
<td>FROM A HIGHER LEARNING INSTITUTION IN SOUTH AFRICA</td>
<td></td>
</tr>
<tr>
<td>K. Minty, R. Brink, A. Alao</td>
<td></td>
</tr>
<tr>
<td>QUALIFICATION RECOGNITION SYSTEMS ADOPTED BY UNIVERSITIES: AN</td>
<td>1124</td>
</tr>
<tr>
<td>EXPLORATORY DATA ANALYSIS</td>
<td></td>
</tr>
<tr>
<td>K. Zourou, M. Ziku</td>
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<tr>
<td>ADAPTATION OF STUDENTS TO THE EDUCATIONAL ENVIRONMENT OF THE SCHOOL:</td>
<td>1131</td>
</tr>
<tr>
<td>STATEMENT AND SOLUTION OF THE PROBLEM</td>
<td></td>
</tr>
<tr>
<td>A. Menedugalieu, N. Litvinenko, N. Nikolaeva</td>
<td></td>
</tr>
<tr>
<td>BREAKING OUT OF THE TRADITIONAL CLASSROOM: A REVIEW ON THE USE OF</td>
<td>1136</td>
</tr>
<tr>
<td>ESCAPE ROOMS IN PRIMARY AND SECONDARY SCHOOLS</td>
<td></td>
</tr>
<tr>
<td>M. Cruz</td>
<td></td>
</tr>
<tr>
<td>DESIGN, DEVELOPMENT, AND IMPLEMENTATION OF NON-FACE-TO-FACE DYNAMIZATION STRATEGIES IN A MASTER’S IN SCIENCE SUBJECT</td>
<td>1146</td>
</tr>
<tr>
<td>I. Fernandez-Bueno, R. Usategui-Martin</td>
<td></td>
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<tr>
<td>SELF-EFFICACY AND SATISFACTION WITH ONLINE LEARNING DURING COVID-19</td>
<td>1147</td>
</tr>
<tr>
<td>LOCKDOWN: UPPER-YEAR AND LOWER-YEAR STUDENT COMPARISON</td>
<td></td>
</tr>
<tr>
<td>L. Zekanović-Korona, P. Petković Dušić, J. Grzunov</td>
<td></td>
</tr>
<tr>
<td>LANGUAGE LEARNING STRATEGIES OF CZECH MILITARY PROFESSIONALS IN THE</td>
<td>1155</td>
</tr>
<tr>
<td>CONTEXT OF SELF-REGULATED LEARNING</td>
<td></td>
</tr>
<tr>
<td>J. Rozsypalkova, H. Brzobohata, E. Tomeskova</td>
<td></td>
</tr>
</tbody>
</table>
STUDENTS' ACCEPTANCE OF GAMIFICATION IN SECONDARY SCHOOL COMPUTER SCIENCE CLASSES
A. Vrcelj, M. Holenko Dlab, N. Hošć-Božić

THE CARNEGIE CLASSIFICATION SYSTEM AND AMERICAN HIGHER EDUCATION FUNDING POLICIES: AN ANALYSIS OF INFORMATION RESOURCE COLLECTIONS AT SELECTED RESEARCH INSTITUTIONS

ONLINE TEACHING STRUCTURE IN IT – A CASE STUDY
T. Drange

THE POTENTIAL OF ONLINE SCIENCE CAFÉS TO FACILITATE INFORMAL STEM LEARNING IN JAPAN: EXPERIENCE UNDER THE INFLUENCE OF COVID-19
M. Nakamura

AN INNOVATION IN THE PREPARATION OF TEACHERS OF LANGUAGE USING MULTIMEDIA BASED EDUCATION
Z. Kumorová

LESSONS, DISCOVERIES, CHALLENGES, AND RESULTS IN AN INTERDISCIPLINARY LEARNING COMMUNITY OF HIGHER EDUCATION TEACHERS
T. Sanches, C. Duarte, M. Batista, J.P. Miranda

BLOCK AND BLEND: A MIXED METHOD INVESTIGATION INTO THE IMPACT OF A PILOT BLOCK TEACHING AND BLENDED LEARNING APPROACH UPON STUDENT OUTCOMES AND EXPERIENCE
E. Buck

AUDIOVISUAL RESOURCES IN LABORATORY PRACTICES FOR HYDRAULIC ENGINEERING
A. Contreras, O. Castillo, J.F. Muñoz-Perez, F. Contreras, B. Jigena, E. Garcia, P. Lopez

GUIDED CLINICAL CASE AS A METHODOLOGY FOR LEARNING: EXPERIENCE IN THE SUBJECT OF ENDOCRINOLOGY AND NUTRITION IN THE MEDICAL DEGREE

READINESS OF TEACHERS FOR THE FORMATION OF FUNCTIONAL LITERACY OF YOUNGER STUDENTS
A. Mendugalieva, G. Muss, J. Ivkina, Z. Iskuzhieva

HOW CAN HIGHER EDUCATION PROMOTE GENDER EQUALITY, DIVERSITY AND NON-Discrimination?
M. Drake, P.K. Juutilainen, L. Vanhanen-Nuutinen, P. Aura

HOW TO EMPOWER HIGHER EDUCATION COLLABORATIVE LEARNING WITH CLOUD-BASED GRAPHIC DESIGN TOOLS
M. Aho

IMPLEMENTATION OF “KAHOOT!” APPLICATION TO COMPLEMENT THE MASTER CLASSES IN "STATISTICS" SUBJECT
S. Mollà-Casanova, P. Serra-Aitó, C.F. Calvo Saiz, A. Bizy, M. Bernabé-Viladre, M. Zarzoso

A.R.E.A. - AUGMENTED REALITY IN EDUCATION ACTIVITIES: PERSPECTIVES FOR NEW LEARNING PROCESSES
E. Lonardo

HOW TO SUPPORT JOB INTRODUCTION WITH 360° DEGREE VIRTUAL REALITY ENVIRONMENT IN CASE FOREST MACHINE OPERATOR MOTOAOJO OY
M. Aho, M. Jänne

EDUCATION AND THE 2030 AGENDA: IMPACT ON INFORMATION AND COMMUNICATIONS TECHNOLOGIES
A. Baquero, R. Escortell

PANDEMIC TIMES: A DIDACTIC INTERVENTION OF NUMERIC CALCULATION COURSE
E. Cruz, M.M. Nascimento, J. Matias

A STUDY ON THE GROUP INTERACTIVE EFFECT OF DIFFERENT GROUPING MODELS IN FOREIGN LANGUAGE FLIPPED LEARNING: A CONTRASTIVE STUDY BETWEEN HETEROGENEOUS-MULTIPLE-INTELLIGENCES GROUPS AND FREE GROUPS
J. Ma

MULTIMODAL DISCOURSE ANALYSIS OF ENGLISH LANGUAGE MASSIVE OPEN ONLINE COURSES (MOOCS): FROM A RHETORICAL STRUCTURE THEORY PERSPECTIVE
J. Ma
FLIPPED CLASSROOM AND GAMIFICATION IN THE TEACHING OF THE PHYSICS LABORATORY
J.C. Jiménez-Suáez, P. Palacios, S. Muñoz

INFORMATION TECHNOLOGY PROMOTES THE DEVELOPMENT OF TEACHERS’ LIFELONG EDUCATION
Y.J. Li

ACTIVE LEARNING DURING THE COVID-19 PANDEMIC - A TRIPLE EXPERIMENT
V. Santos, A. Hall, N.R.O. Bastos, C.M.R. Caridade

PRODUCTS DEVELOPED AND RESULTS OBTAINED WITHIN THE EUROPEAN TRANSNATIONAL EDUCATION PROJECT “CHERISH - CULTURAL AND NATURAL HERITAGE: A SUSTAINABLE TOURISM VET INTEGRATED APPROACH”
P. Ciccioli, R. Coratella, F. D’Esposito, P. Ragni

ENHANCEMENT OF SCHOOL TEACHER EDUCATION IN DEVELOPING COUNTRIES: EGYPT AS A CASE STUDY
M.A. Zaki Ewiss, L. Olivo, S. Afifi

USE OF RESEARCH AS A TRAINING TOOL IN BACHELOR AND MASTER SUBJECTS IN A MULTIDISCIPLINARY APPROACH
F. Jiménez, J.E. Narango, M. Clavijo

RESEARCH AND CRITICAL ANALYSIS OF SOLUTIONS AS A TEACHING TOOL IN MASTER STUDIES
F. Jiménez

HOW TO IMPROVE THE TEACHING OF SCRUM IN SPANISH UNIVERSITIES
J. Gutiérrez Rodríguez, F. Gracia Ahufinger

CRITICAL THINKING SKILLS IN NURSING STUDENTS
C. Pinto, A. Veréssimo, F. Segadães, A. Pinto, C. Augusto, A. Teixeira, I. Rocha, A.L. Carvalho

SHIFTING TO REMOTE TEACHING IN TIME OF SOCIAL DISTANCING: A STUDY OF A FACULTY OF EDUCATION IN TEACHER EDUCATION COLLEGE
O. Broza, L. Bibernan-Shalev, D. Patkin

SAFEGUARDING UNIVERSITY STUDENTS AND STAFF ON LINE: WHAT WORKS IN HIGHER EDUCATION
E. Bond

IMPLEMENTATION OF SCHOOL MEDIATION PROGRAMS AS A TOOL FOR CONFLICT RESOLUTION IN ECUADORIAN ADOLESCENTS

THE IMPACT OF EVERYDAY TECHNOLOGY ON THAI SECONDARY SCHOOL STUDENTS’ CONFIDENCE IN ENGLISH COMMUNICATION
N. Srisuk, N. Songkram, P. Tantrarungroj, P. Thamsuwan, N. Songkram

SECONDARY TEACHERS’ PEDAGOGICAL REASONING FOR USING TECHNOLOGY IN MATHEMATICS LESSONS: AN EXPLORATIVE STUDY
B. Cabbeke, T. Rotsaert, T. Schellens

DESIGNING THE GEO-HISTORY CURRICULUM: A CASE OF PARTICIPATORY RESEARCH IN THE ITALIAN SCHOOL
M. Pentucci

EXPERIENCE IN THE APPLICATION OF FLIPPED CLASSROOM METHODOLOGY IN A COURSE OF CHEMICAL ENGINEERING
F. Espínola, M. Moya, I. Romero, C. Cara, M. Ocaña

STUDENT’S SKILLS DEVELOPMENT IN THE FRAMEWORK OF EXTRACURRICULAR ACTIVITIES IN HE-S
U. Kesli, L. Ariou

ENTREPRENEURIAL SKILLS IN ENGINEERING STUDENTS BASED ON ENTRECOMP: AN ANALYSIS OF THEIR REFERENCES IN THE ENTREPRENEURIAL VOCATION THROUGH GAMIFIED LEARNING STRATEGIES
J.J. Morillas Guerrero, E. Tovar Caro

FLIPPED LEARNING AND STUDENT APPROACH TO LEARNING IN A FIRST YEAR CHEMISTRY SUBJECT
L. Atarés-Huerta, M. Leiva-Brundo

A NATURAL FACE TO FACE INTERACTION USING SOCIAL ROBOTICS
F.J. Perales, S. Ramis, J.M. Buades, C. Manresa-Yee, A. Jaume

MATHEMATICS, COMPUTERS AND COMPETITIONS: 30 YEARS TOGETHER
M.P. Oliveira
USING ‘CYBERTASKS’ TO INTEGRATE TECHNOLOGY AND WRITING SKILLS INTO 21ST CENTURY HIGHER-EDUCATION: AN ANALYSIS OF STUDENTS’ PERCEPTIONS
C. Girón-García, A.J. Silvestre-López

PERCEPTION OF THE EFFECTIVENESS OF TEACHING OBSERVATION AS A MEANS OF SETTING UP AND DESIGNING FACULTY DEVELOPMENT PATHWAYS
M. Milani

PRESCCHOOL EDUCATION AND EMERGENCY REMOTE TEACHING IN THE COVID ERA: EXPLORING THE PRACTICES AND EXPERIENCE OF IN-SERVICE PRESCCHOOL EDUCATORS
S. Syppsa, I. Voulgari, D. Manessis, M. Sfyroera

DIGITAL PROFILES OF BASIC EDUCATION TEACHERS: PANDEMIC CONTEXT
R.A. Gómez Ortíz, M.F. Trejo

GOOD PRACTICES IN THE USE OF TECHNOLOGY IN TEACHING
F. Pinedo, R.A. Gómez Ortíz

STUDENT SOCIOECONOMIC STATUS AND EMPLOYMENT EXPECTATIONS: DO POORER STUDENTS EXPECT LESS?
J. Bagraim, M. Weaver

IMPROVEMENT AND UPDATING OF THE THERMOTECHNICS TEACHING PROJECT IN INDUSTRIAL ENGINEERING
A. Picallo-Perez, P. Sarriugarte, J.M. Hidalgo-Betanzos, J.M. Sala-Lizarraga

HAVE THE BOYS GONE OVERBOARD? A STUDY TO INVESTIGATE THE ACADEMIC PLIGHT OF MALE LEARNERS
N. Matther

CHALLENGES OF DISTANCE ASSESSMENT IN HIGHER EDUCATION AND THE IMPACT OF ACADEMIC ACHIEVEMENT ON ALUMNI EMPLOYMENT (EVIDENCE FROM GEORGIA)
E. Kharaishvili, I. Natsolishvili, N. Shonia

INTERNET ADDICTION PREVENTION IN MEDIA EDUCATION
I. Rác

HANDS-ON AND GAME-BASED ACTIVITIES FOR TEACHING MATH IN PRISON
A. La Fortuna, P. Morando, M.L. Spreafico

BRAINS ON IN MATH CLASSES
P. Morando, G. Turconi

CREATIVELY CONTEXTUALIZING THE MATH COURSE FOR ARCHITECTURE FRESHMEN
M.L. Spreafico

A FUZZY MULTI-CRITERIA STUDENT-BASED MODEL FOR EVALUATION OF UNIVERSITY LECTURERS’ PERFORMANCE
M. Pavlačková, O. Pavlačka

PROJECT-BASED LEARNING IN MACHINE LEARNING COURSE: EXPERIENCE AND OUTCOMES
K. Mallibhat, S. Chikkamath, R. Tabib, S.R. Nirmala, U. Mudenagudi

APPLICATION AND RESULTS OF THE INTERNAL COHERENCE SCALE IN A MEDICAL SCHOOL AS A PRIOR STEP FOR THE DETECTION OF EDUCATIONAL NEEDS
R. Ruiz Moral, D. Monge Martín, C. García de Leonardo, S. Alvarez Montero, E. Cervera Barba, F. Caballero Martínez

STUDENT REFLECTION ON THE TRANSLATIONAL PLATFORM FOR ADDRESSING & SOLVING SOCIAL-PROBLEMS (T-PASS) AND ITS POTENTIAL TO UNDERGRADUATE PEDAGOGY
K.T. Chan, Y.C.Y. Lie, T.S. Li, V. Lee

FLIPPED CLASSROOM TEACHING METHOD OF A BUSINESS MODEL PROJECT AT EAE BUSINESS SCHOOL
S. Ajour El Zein, A. Ariso, C. Tomas-Perez, P. Sartorato Neto

INTEGRATING AUGMENTED REALITY INTO EDUCATION AND TRAINING: REMARKS AND INSIGHTS FROM A FIVE-YEAR EXPERIENCE IN THE FIELD
S. Pitsikalis, I.E. Lasica, A. Kavitas, C. Vitsilaki

"ROTEIRO ENTRE MARES": AN APP FOR THE PROMOTION OF OCEAN LITERACY
C. Faria, R. Gaspar, D. Boaventura, C. Duarte

WORK BASED LEARNING AND APPRENTICESHIP IN ITALY, SPAIN, GREECE, LITHUANIA, UK AND IRELAND: A STUDY REPORT
D. Kiriakos, A. Moungelis
YOUTH DIGITAL LIFE
M. Amzalag, S. Hardof-Jaffe

KNOWN AND UNDERSTOOD? SNOZELEN – MSE: A COMPARATIVE ANALYSIS OF STUDENTS’ KNOWLEDGE
K. Janku, A. Smrokowska-Reichmann, R. Ribes Castells

DIGITAL TWIN ARCHITECTURE TO DEVELOP BUSINESS INTELLIGENCE AND DIGITAL COMPETENCIES
A. Santana Reynoso

DESIGN OF BUSINESS PROCESSES THROUGH AN INNOVATION CHALLENGE-BASED LEARNING COURSE
A. Santana Reynoso, M.F. Matamoros Huerta, M. Lule Salinas

THE IMPACT OF THE COVID-19 PANDEMIC ON SOCIAL EMOTIONAL LEARNING
A. Martino, M. Dono-Koulouris

REIMAGINING AN UNDERGRADUATE GENETICS LABORATORY: USING BIOINFORMATIC TOOLS AND 3D PRINTING TO STUDY THE COVID VIRUS IN AN ONLINE ENVIRONMENT
A. Ribes-Zamora, A. Simmons

ENHANCING STUDENTS’ CONCEPTUAL UNDERSTANDING REGARDING ELECTRICAL ENGINEERING CONCEPTS: RELEVANCE BETWEEN CIRCUIT AND Electromagnetic-field Considerations
G. Pagiatakis, N. Voudoukis, D. Uzuntos

ENHANCING HIGHER EDUCATION TUTORING WITH ARTIFICIAL INTELLIGENCE INFERENCE
B. Silva, A. Reis, J. Sousa, E. Solteiro Pires, J. Barroso

DEVELOPMENT OF PRE-SCHOOL CHILDREN’S COGNITIVE COMPETENCE THROUGH GAMES
A. Širiakovienė, S. Kovienė

RELATIONSHIP BETWEEN PERSONAL QUALITIES OF MODERN PARENTS AND DEFICIENCIES IN THEIR PEDAGOGICAL PREPARATION TO EDUCATE THEIR CHILDREN
A. Širiakovienė, S. Kovienė

ENHANCING STUDENT ENGAGEMENT WITH ASYNCHRONOUS LEARNING ACTIVITIES IN FLIPPED CLASSROOMS IN FULLY ONLINE LEARNING ENVIRONMENTS– A CASE STUDY
V. Elumalai, D. Bino

CHILDREN’S LITERATURE: A WAY FOR THE DEVELOPMENT OF MATH AND SOFT SKILLS
A. Breda, C. Cruz

THE ORIGINS AND CREATION OF A STUDENT INVESTMENT TEAM
F. Sánchez Coll, C. Donaldson, J. Villagrasa

TEACHERS’ REFLECTIONS ON STUDENTS’ LEARNING APPROACHES WHO RESUMED PHYSICAL CLASSROOMS AFTER ALMOST TWO YEARS DUE TO COVID-19 PANDEMIC-INDUCED DISRUPTIONS
S.K. Shankar, S. Tripathi, N. Nupur, P. Chejara

INTERNATIONAL NETWORKING: THE CASE OF THE EUROPEAN PROJECT QUILL
E. Mendes Silva, I. Chumbo, V. Gonçalves, C. Martins, A. Dotras Bravo, A. Alves

STUDY COMPETENCES – A CONCEPT AND A PLATFORM FOR INTEGRATING STUDY SKILLS AS A PART OF HIGHER EDUCATION
M. Gundtoft, J. Winding

MODEL OF INCLUSIVE CLASSROOM IN BULGARIA
V. Sivakova

VIRTUAL REALITY TO REDUCE STUDENT TEST ANXIETY AND ENHANCE PREPAREDNESS FOR CLINICAL EXAMINATIONS
S. Esmail, B. Concannon, K. Werther, S. Mulholland

APPLICATION OF AUGMENTED REALITY IN TEACHING AND COMPUTER MODELING WITHIN TECHNICAL DOCUMENTATION
S. Harata, E. Frances, M. Kocisko, M. Pollak

THE ROLE OF GLOBALIZATION IN THE DEVELOPMENT OF EDUCATION IN SUDAN
A. Mohamed Abdalla, K. Hussein, M. Moseykina

TRAINING AND SUPPORT FOR SUDANESE TEACHERS AND SCIENTISTS: CHALLENGES AND SOLUTIONS
K. Hussein, A. Mohamed Abdalla
EDUCATIONAL DEVELOPMENT IN THE POST-COVID-19 ARAB WORLD USING CAPABILITY MATURITY APPROACH  
M.A. Zaki Ewiss, A.A. El-Sherif, W.M. Seif  
1700

USING PLAYER TYPES TO DEVELOP IMPLEMENTATION OF EDUCATIONAL GAME  
A. Sivonen, K. Heikkinen  
1710

DESIGN THINKING, TEACHER PROFESSIONALISATION AND INNOVATION OF EDUCATION: A GOOD MATCH?  
M. Henderikx, N. Heeroma  
1719

PROXIMITY OR LANGUAGE: FACTORS ATTRACTING INTERNATIONAL DOCTORAL STUDENTS TO THE UNIVERSITY OF THE BASQUE COUNTRY (UPV/EHU)  
G. Barandika, E. Simón, E. Portillo, O. González-Abrisketa, I. Astorkiza  
1725

INTERNATIONAL DOCTORAL STUDENTS IN THE AREA OF “SCIENCES” AT THE UNIVERSITY OF THE BASQUE COUNTRY (UPV/EHU)  
G. Barandika  
1731

ONLINE EXAMS: BENEFITS AND DAMAGES (PROS AND CONS)  
1738

INVESTIGATING STUDENTS’ USE OF INTUITION THROUGH PUZZLE-BASED INTERVENTIONS IN SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHEMATICS EDUCATION  
P. Murphy, S. Klymchuk, T. Evans, J. Stephens, M.O.J. Thomas  
1746

HAS THE LEARNING-SERVICE METHODOLOGY AN IMPACT ON THE ACADEMIC COMPETENCES? THE RELEVANCE OF TEMPERAMENTAL INDIVIDUAL DIFFERENCES IN A SAMPLE OF UNIVERSITY STUDENTS  
N. Sánchez-Pérez, M.C. Blanco-Gandía, C. Ferrer-Pérez, G. López-Crespo  
1754

INDIVIDUAL DIFFERENCES PREDICTING ACADEMIC ACHIEVEMENT AT UNIVERSITY LEVEL  
N. Sánchez-Pérez, M.C. Blanco-Gandía, C. Ferrer-Pérez, G. López-Crespo  
1755

MOBILITY IN THE TIME OF CORONA: WHEN VISITING THE EUROPEAN CAMPUSES CHANGED TO VIRTUAL MEETINGS  
M. Laamanen, L. Kallio  
1756

LABORATORY EXERCISES IN ELECTRONICS ENGINEERING EDUCATION – EVALUATION OF PHYSICAL AND DIGITAL FORM  
B. Pollen, M. Fojcik, A.L. Kampen  
1757

HOW TO PROMOTE LEARNING READING THROUGH PHONO-SYLLABIC EXERCISES: THE IMPLEMENTATION OF A DISTANCE LEARNING PROGRAM  
R. Vegliante, A. Marzano, S. Miranda, C. Montefusco  
1765

MATHEMATICS DISTANCE LEARNING AND TEACHING IN UPPER SECONDARY SCHOOL: A STATE-OF-THE-ART REVIEW  
R. Vegliante, A. Marzano, S. Miranda, C. Montefusco  
1772

AUDIO-BASED LEARNING AT WORK: PRELIMINARY RESULTS OF AN EXPLORATORY INTERVIEW STUDY  
A. Ogunyemi, M. Bauters  
1780

INCLUSIVE UNIVERSITY DIGITAL EDUCATION: LESSONS LEARNED FROM THE COVID-19 MOVE TO ONLINE LEARNING  
A. Carminke, M. Hilzensauer, A. Pecher, R. Vaughan, F. Rannou, F. Angeloni, M. Marchadour  
1788

AN ENHANCED ASSESSMENT METHODOLOGY FOR SIGNIFICANT WORK PLACEMENT  
N. Fitzgerald, K. O’Sullivan, I. Morris, J. Walsh, F. Boyle, E. O’Connell, G. Corkery  
1795

INCREASING UNDERGRADUATE’S ENGAGEMENT THROUGH REFLECTIONS IN ELECTRONIC PORTFOLIOS  
1802

LEARNING STRATEGIES: TRADITIONAL VS AUTONOMOUS MODEL  
S. Montaño-Romero, M.C. Blanco-Gandía, C. Ferrer-Pérez  
1806

IDENTIFICATION OF THE EXTENT OF THE UNIVERSITY’S INFLUENCE ON STUDENTS’ CREATIVE THINKING  
T. Corejova, J. Ciba, M. Rostasova, A. Valicova  
1806

xxviii
DIGITAL TEACHING LITERACY: IDENTIFYING SKILLS GAPS AND BEST PRACTICE IN ONLINE TEACHING IN SCHOOLS

THE ACQUISITION OF ETHICAL, PROFESSIONAL AND ENVIRONMENTAL RESPONSIBILITY IN THE ARCHITECT ACADEMIC TRAINING
I. Cabrera, E. Fenollosa, A. Llorca

INCLUSION OF NOVICE TEACHERS IN THE SCHOOL AS A LEARNING ORGANIZATION
J. Dzerviniks

LANGUAGE IMMERSION FOR EVERYONE: MASSIVE EXPOSURE TO TARGET LANGUAGE THROUGH AUTHENTIC MATERIALS & THE USE OF NEW TECHNOLOGIES
S. Betancor Falcon

ACCOUNTING STUDENTS’ CONSTRUAL OF POTENTIAL EMPLOYERS: AN APPLICATION OF THE REPERTORY GRID TECHNIQUE
J. Bagaim, J. Sher

CITIZEN SCIENCE AS A TOOL FOR CHALLENGE-BASED LEARNING IN HIGHER EDUCATION
F. Vilariño

IMPLEMENTING HACKATHONS WITH STUDENTS FROM MULTI-DISCIPLINARY HIGHER EDUCATION DEGREES FOR A CHALLENGE-BASED LEARNING APPROACH
F. Vilariño, J. Serra-Ruiz

APPROACHES FOR EDUCATION IN INVESTMENT PROJECTS MANAGEMENT
D. Yordanova

DEVELOPING A FLIPPED CLASSROOM MODEL TO INCREASE CONCEPTUAL UNDERSTANDING IN BIOLOGY COURSES AT A COMMUNITY COLLEGE
P. Bhansali, S. Ghoshal, M. Tawde

FANFICTION COMMUNITIES AND THEIR ROLE IN PROMOTING BOTH READING AND WRITING IN YOUNG PEOPLE
G. López Sánchez, A. León-Geyer

OPPORTUNITIES FOR THE FORMATION OF DIGITAL COMPETENCIES IN EDUCATION DURING TRADITIONAL AND DISTANCE LEARNING
B. Ilieva, G. Atanasova

TRANSFORMATIONAL CHALLENGES FOR PEDAGOGICAL COMPETENCE: THE PERSPECTIVE OF ACADEMIC STAFF
O. Vindalu, V. Žubkina

ACADEMIC MIGRATION AND THE JUDICIALIZATION OF POLICIES IN THE ITALIAN HIGHER EDUCATION SYSTEM
M. Verardi

THE INTERNATIONALIZATION OF THE ITALIAN HIGHER EDUCATION SYSTEM, A PUBLIC POLICY ANALYSIS
M. Verardi

TEACHING LATIN-GREEK MEDICAL TERMINOLOGY FOR INTERNATIONAL MEDICAL STUDENTS: CHALLENGES AND PITFALLS
N. Malinovská, V. Sadloňová, S. Javornický

GAMIFICATION AS A MEANS TO INCREASE TEACHING EFFICIENCY
P. Brečka, M. Sebo, A. Hasková, J. Žáhora

REMOTED CURATION: DIGITAL OBJECT-BASED LEARNING IN UNIVERSITY MUSEUMS DURING THE COVID-19 PANDEMIC
S. Tanabashi

VIRTUAL INTERNSHIPS IN TECH CENTERS

EDUCATIONAL INCLUSION INTO DIVERSITY, FACING SCHOOL LEAVING: INNOVATIVE METHODOLOGIES TO SUPPORT ETHNIC MINORITY STUDENTS AND STOP HATE SPEECH IN EUROPE

BEYOND EDUCATION: DEVELOPING 21ST CENTURY COMPETENCIES THROUGH ONLINE LEARNING PROGRAMS AMONG INTERNATIONAL YOUNG STUDENTS
M.P. Celume
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>USABILITY AS A PREDICTOR OF CONTINUANCE INTENTION TO USE A SYSTEM FOR DIGITAL COMPETENCE ACQUISITION</td>
<td>1945</td>
</tr>
<tr>
<td>A. Sobodić, I. Balaban</td>
<td></td>
</tr>
<tr>
<td>APPROACH TO PHYSICS AND TECHNOLOGY, THROUGH ITS APPLICATIONS, TO STUDENTS IN THE FIRST YEAR OF DEGREES IN INDUSTRIAL ENGINEERING</td>
<td>1955</td>
</tr>
<tr>
<td>J. López, B. Montero, J. Martín, M. Rico, R. Bouza</td>
<td></td>
</tr>
<tr>
<td>A BLENDED LEARNING IN-SERVICE TEACHER TRAINING FOR SUPPORTING INQUIRY-BASED LEARNING IN ELEMENTARY SCHOOLS</td>
<td>1962</td>
</tr>
<tr>
<td>B. Kopp, A. Clerc, H. Mandl</td>
<td></td>
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<tr>
<td>DETERMINANTS OF STUDENTS’ SATISFACTION WITH HIGHER EDUCATION INSTITUTIONS: A LITERATURE REVIEW</td>
<td>1971</td>
</tr>
<tr>
<td>M. Rodríguez Gascó, J. Martí-Parreño, J. González Such, R. Currás Pérez</td>
<td></td>
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<tr>
<td>DEVELOPMENT OF LEADERSHIP SKILLS IN WORKING LIFE PROJECTS</td>
<td>1977</td>
</tr>
<tr>
<td>T. Tallgren, T. Uusitalo</td>
<td></td>
</tr>
<tr>
<td>ANALYSIS OF THE RESULTS ACHIEVED BY DIFFERENT FORMS OF TEACHING COMPUTER SCIENCE AT SECONDARY SCHOOLS</td>
<td>1986</td>
</tr>
<tr>
<td>K. Shoylekova, B. Ivanova</td>
<td></td>
</tr>
<tr>
<td>ANALYSIS OF THE EVALUATION SYSTEM FOR THE RENEWAL OF ACCREDITATION IN UNIVERSITY MASTER'S DEGREES IN THE EDUCATIONAL FIELD IN ANDALUSIA</td>
<td>1992</td>
</tr>
<tr>
<td>M.T. Nestares</td>
<td></td>
</tr>
<tr>
<td>FACT CHECKING IN HIGHER EDUCATION</td>
<td>1997</td>
</tr>
<tr>
<td>A. Teles Vieira</td>
<td></td>
</tr>
<tr>
<td>HOW CAN WE TACKLE SOCIAL INCLUSION THROUGH GAMIFICATION MECHANISMS?</td>
<td>2003</td>
</tr>
<tr>
<td>A. Teles Vieira</td>
<td></td>
</tr>
<tr>
<td>DIGITAL TECHNOLOGIES AND RESOURCES FOR ONLINE LEARNING</td>
<td>2009</td>
</tr>
<tr>
<td>M.R. Jianu, V. Gridan</td>
<td></td>
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<tr>
<td>M.P. Celume, H. Maoulida</td>
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<tr>
<td>HOW TO SUPPORT HEALTHCARE PROFESSIONALS’ CONTINUING DEVELOPMENT IN LOW- AND LOW-MIDDLE-INCOME COUNTRIES?</td>
<td>2017</td>
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<tr>
<td>C. Larue, L. Merry, R. Rouleau, D. Létourneau-Aspirot, M.F. Deschènes, S.A. Castiglione</td>
<td></td>
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<tr>
<td>GRAFFA: A SCIENTIFIC COMMUNICATION PROJECT BY YOUNG RESEARCHERS FOR VERY YOUNG PEOPLE</td>
<td>2018</td>
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<tr>
<td>E. Diociaiuti, R. Donghia, M. Giovannetti, S. Macis, E. Margoni, E. Patrignanelli, M. Petrassi, L. Rabino</td>
<td></td>
</tr>
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<td>FROM FACE-TO-FACE ONLINE LEARNING: PERFORMANCE AND PERCEPTIONS IN A COMPUTER ORGANIZATION AND ARCHITECTURE COURSE</td>
<td>2026</td>
</tr>
<tr>
<td>C. Margi, R. Silveira</td>
<td></td>
</tr>
<tr>
<td>4 X 4: METHODOLOGY TO DESIGN A SET OF 4 MOOCS BETWEEN 4 ENTITIES UNDER THE SAME TOPIC – ERASMUS + SMART REHABILITATION 3.0 PROJECT</td>
<td>2034</td>
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<tr>
<td>B. Onecha, M. Bosch, M. Bosch Prat, C. Cornadó, E. Crespo, J. Martí</td>
<td></td>
</tr>
<tr>
<td>WHY AND HOW TO IMPLEMENT A MENTORING PROGRAMME IN UNIVERSITY ENVIRONMENTS?</td>
<td>2041</td>
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<tr>
<td>M.L. Fernando Velázquez, A.I. Tarrero Fernández, V.A. Lafluente Sánchez</td>
<td></td>
</tr>
<tr>
<td>STUDENT VOLUNTEERING AND RESEARCH READINESS FOR INCLUSION IN PROGRAMS IN SUPPORT OF THE PUBLIC HEALTH</td>
<td>2050</td>
</tr>
<tr>
<td>M. Obregkova, A. Andonova</td>
<td></td>
</tr>
<tr>
<td>PRACTICE OF COMPUTER THINKING EDUCATION WITH THE COOPERATION OF UNIVERSITY STUDENTS IN ELEMENTARY SCHOOL - PROPOSAL OF CLASS MANAGEMENT METHOD UNDER COVID19</td>
<td>2056</td>
</tr>
<tr>
<td>A. Minamide, K. Takemata, S. Fujishima</td>
<td></td>
</tr>
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<td>ON TOLERANCE AND TEACHING STRATEGY IN DESIGNING TOOLS FOR TEACHING FOREIGN LANGUAGES TO MULTICULTURAL AND MULTIETHNIC GROUPS OF STUDENTS</td>
<td>2062</td>
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<tr>
<td>G.A. Necula</td>
<td></td>
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<tr>
<td>THE PRODUCTION OF SPACE: ONLINE EXPERIENTIAL LEARNING</td>
<td>2063</td>
</tr>
<tr>
<td>Title</td>
<td>Page</td>
</tr>
<tr>
<td>---------------------------------------------------------------------</td>
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<tr>
<td>TOURISM FACULTY PERCEPTIONS TOWARDS ONLINE TEACHING DURING ERT</td>
<td>2067</td>
</tr>
<tr>
<td>EDUCATION FOR SUSTAINABLE CONSUMPTION AND CONSUMER PREFERENCES</td>
<td>2072</td>
</tr>
<tr>
<td>MICROTEACHING VIA ZOOM IN PRESERVICE ENGLISH LANGUAGE TEACHER</td>
<td>2078</td>
</tr>
<tr>
<td>TRAINING: TECHNOLOGY, PEDAGOGY, AND CONTENT KNOWLEDGE</td>
<td></td>
</tr>
<tr>
<td>TOWARDS SEAMLESS INCORPORATION OF EXPERIENTIAL LEARNING INTO</td>
<td>2085</td>
</tr>
<tr>
<td>SUMMATIVE EVALUATIONS CONDUCTED IN REALISTIC SETTINGS</td>
<td></td>
</tr>
<tr>
<td>THE SCHOOL MEETS ITS ENVIRONMENT, DISCOVERING THE VENICE LAGOON</td>
<td>2086</td>
</tr>
<tr>
<td>MICRORGANISMS IN PRIMARY SCHOOL: A LABORATORY APPROACH TO STUDY</td>
<td>2095</td>
</tr>
<tr>
<td>MICROBIOLOGY AND BIOTECHNOLOGIES</td>
<td></td>
</tr>
<tr>
<td>DESIGN EDUCATION FOR A HEALTHIER AGEING: DESIGN STUDENTS EXPLORE</td>
<td>2105</td>
</tr>
<tr>
<td>MULTIMORBIDITY, A WIDESPREAD AGE-RELATED CONDITION</td>
<td></td>
</tr>
<tr>
<td>DOES ONLINE TEACHING IN UNIVERSITY ENVIRONMENT LACK AMBITION</td>
<td>2116</td>
</tr>
<tr>
<td>DURING THE COVID-19 PANDEMIC?</td>
<td></td>
</tr>
<tr>
<td>IMPACT OF MOBILE APPLICATIONS (APPS) IN FIRST-YEAR AGRICULTURE</td>
<td>2117</td>
</tr>
<tr>
<td>COURSES</td>
<td></td>
</tr>
<tr>
<td>DEVELOPMENT OF A PRELIMINARY EDUCATION PROGRAM USING DIGITAL</td>
<td>2124</td>
</tr>
<tr>
<td>STORYTELLING: EDUCATIONAL PROGRAM FOR STUDENTS BEFORE LEARNING</td>
<td></td>
</tr>
<tr>
<td>FULL-SCALE PBL</td>
<td></td>
</tr>
<tr>
<td>REFLECTION ON FEVER FOR &quot;1+X&quot; CERTIFICATE EXAMINATIONS</td>
<td>2128</td>
</tr>
<tr>
<td>HYBRID LEARNING COMPARED TO OTHER METHODS USING AVIATION GAMING</td>
<td>2132</td>
</tr>
<tr>
<td>SOFTWARE</td>
<td></td>
</tr>
<tr>
<td>A SYSTEM FOR DESIGN AND DEVELOPMENT OF MULTIMEDIA M-LEARNING</td>
<td>2141</td>
</tr>
<tr>
<td>RESOURCES: PROTOTYPE</td>
<td></td>
</tr>
<tr>
<td>CHARACTERISTICS OF COGNITIVE LOAD RAISED DURING QUESTION-ASKING IN</td>
<td>2148</td>
</tr>
<tr>
<td>MATHEMATICAL ACTIVITIES</td>
<td></td>
</tr>
<tr>
<td>MORE THAN THE TEXTBOOK TEACHES - CLIENT-BASED GLOBAL VIRTUAL TEAMS</td>
<td>2158</td>
</tr>
<tr>
<td>PROJECTS</td>
<td></td>
</tr>
<tr>
<td>PRESCHOOL CHILDREN’S ABILITY TO SOLVE DIVERSE TYPES OF COMPARISON</td>
<td>2159</td>
</tr>
<tr>
<td>TASKS</td>
<td></td>
</tr>
<tr>
<td>AN EFFICIENT PERFORMER-BASED MODEL FOR AUTOMATIC FEEDBACK</td>
<td>2167</td>
</tr>
<tr>
<td>GENERATION FOR TEACHING OBJECT-ORIENTED PROGRAMING</td>
<td></td>
</tr>
<tr>
<td>CHILDREN’S LITERATURE: A PATHWAY OF SCIENTIFIC AND DIDACTICAL</td>
<td>2175</td>
</tr>
<tr>
<td>OPPORTUNITIES</td>
<td></td>
</tr>
<tr>
<td>@FISIOFARMA_US OUTREACH ACTIVITY: A NOVEL WAY TO LEARN PHYSIOLOGY</td>
<td>2183</td>
</tr>
<tr>
<td>AT THE UNIVERSITY OF SEVILLE</td>
<td></td>
</tr>
<tr>
<td>THE DIALOGUE READING AS AN OPPORTUNITY FOR STUDYING LITERATURE</td>
<td>2184</td>
</tr>
<tr>
<td>ENVIRONMENTAL AWARENESS THROUGH VIDEOS: PERCEPTIONS OF MIDDLE-</td>
<td>2189</td>
</tr>
<tr>
<td>SCHOOL TEACHERS IN INDIA</td>
<td></td>
</tr>
<tr>
<td>xxxi</td>
<td></td>
</tr>
</tbody>
</table>
COULD ‘INSTAGRAM STORIES’ IMPROVE PHYSIOLOGY SKILLS? AN EXPERIENCE IN PHARMACY AND OPTICS DEGREE

PREPARING LIBRARIANS WITH THE SKILLS NECESSARY TO EDUCATE ENGLISH LANGUAGE LEARNERS IN THE U.S.
D. Lashaun Smith, X. Zhang, T. Tyler-Wood

TEACHERS, STUDENTS, AND PARENTS AS EDUCATION PARTNERS AND THEIR EDUCATIONAL OBJECTIVES IN PERSPECTIVE OF THE FUTURE EDUCATION
I. Barone

MANAGING STRESS IN ONLINE DISSERTATION STUDENTS: A MULTIPLE CASE STUDY OF FACULTY PERCEPTIONS OF LOWERING STUDENTS’ AFFECTIVE FILTER
L. Bedford, A. Babcock

THE IMPACT OF POSITIVE ILLUSORY BIAS ON THE ESTIMATION OF SCHOOL COMPETENCE OF CHILDREN WITH ADHD
P. Škobití, I. Benešová, Z. Stránská, L. Lacková, M. Novotný, I. Tonhajzerová

THE CONTRIBUTION OF TECHNO-PEDA GOGY COURSES TO TEACHERS’ SELF-EFFICACY IN PROVIDING SOCIAL, EMOTIONAL AND LEARNING SUPPORT TO STUDENTS THROUGH DISTANCE LEARNING PROCESSES DURING COVID-19 AND BEYOND
E. Salman, A. Sharif-Rasslan, J. Massa, A. Fattum

INTRODUCTION OF ELECTRONIC LEARNING IN THE EDUCATIONAL DISCIPLINE "LASER-THERAPY"
I. Koleva, B. Yoshinov, R. Yoshinov

INTRODUCTION OF PC-BASED TESTS IN THE PROCESS OF EVALUATION OF PROFESSIONAL COMPETENCES IN THE FIELD OF “PEDIATRIC NEUROREHABILITATION”
R. Yoshinov, I. Koleva, B. Yoshinov

FOSTERING MEDICAL EDUCATION TECHNOLOGY STUDENTS’ INNOVATION CAPABILITY THROUGH INNOVATIVE LEARNING FRAMEWORK IN THE NEW NORMAL ERA
K. Wilaphan, N. Songkram, S. Ngudgratoke

THE EVALUATION OF UNIVERSITY DISTANCE TEACHING DURING THE COVID-19 PANDEMIC: AN ON-GOING ITALIAN RESEARCH ACTIVITY ON THE IMPACT OF DIGITAL TECHNOLOGIES
A. Fornasari, C. Angelini, M. Conte, P. Contini

ACQUISITION OF STUDY COURSES IN THE CONTEXT OF LIFELONG LEARNING
I. Neime

WORKING STATUS, TEACHING EXPERIENCES AND WORKPLACE DEVIANT BEHAVIORS OF PRIMARY SCHOOL TEACHERS IN ENUGU STATE NIGERIA
C. Okeke, C. Okeke, M. Ede

COLLABORATION AMONG THE TEACHING PRACTICUM TRIAD DURING COVID-19 USING THE PERUSALL PLATFORM
C. Nel

QUALITATIVE ANALYTICAL CHEMISTRY IN A CRIME SCENE: A MEANS OF INCREASING STUDENTS’ INTEREST
V. Romero, I. Lavilla, I. de la Calle, F. Pena, C. Bendicho

THE CHALLENGE OF THE INCLUSION OF THE SUSTAINABLE DEVELOPMENT GOALS IN THE INITIAL TRAINING OF SECONDARY SCHOOL TEACHERS
C. López-Elizalde

CHOOSING FOR LIFELONG LEARNING? THAT’S CREATING TOGETHER A SUPPORTED VISION, MAKING THE EDUCATIONAL OFFERING FLEXIBLE, USING A HYBRID EDUCATIONAL APPROACH AND DEVELOPING A COACHING MODEL FOR LEARNERS
S. Theuwen, A. Wanzeele

TROUBLESHOOTING IN AN ONLINE CIRCUIT SIMULATION PLATFORM: A STUDY ON THE TROUBLESHOOTING PROCESS BY FIRST-YEAR UNDERGRADUATE STUDENTS IN A BLENDED PROJECT-BASED LEARNING COURSE
N. Humb, P.B. Patil, M. Vijayalakshmi

A PROPOSED APPROACH TO TEACHING INTRODUCTORY PROGRAMMING. EXPERIENCES FOR NON-SPECIALISTS IN COMPUTER SCIENCE
J.R. Pérez Beltrán, R.P. Ñeco, N.M. García Aracil, J.M. Catalán
M-LEARNING AS A LONG-LASTING SCAFFOLDING TOOL. HOW SOCIAL MEDIA AND MOBILE COULD SUPPORT NEW HYBRID FORMS OF DESIGN STUDIO TEACHING
V. Linfante, A.G. Manciaracina

COLLECTIVE PERCEPTION OF GEOGRAPHICAL SPACE IN EDUCATION
O. Cerba, K. Jedlicka

THE DISTRIBUTED CLASSROOM: FACING NEW CHALLENGES IN THE IMPLEMENTATION OF ITALIAN LANGUAGE COURSES DURING THE COVID-19 PANDEMIC
R. Dolci, T. Sbardella

SPEED NETWORKING AS TEAM MENTORING TOOL FOR EMPOWERING YOUNG WOMEN ENGINEERING STUDENTS
B. Lopez, M. Baena, B. Innocenti, N. Mancebo, I. Ferrer

ONLINE ENVIRONMENT TO SUPPORT THE INTERVENTION OF EXECUTIVE FUNCTIONS IN YOUNG CHILDREN: USER NEEDS IN A PILOT STUDY
S. Panesi, L. Ferlino, G.P. Caruso

APPLIED INTERNET TEACHING INNOVATION
Y. Cao, Q. Bai, Y. Huang

ANIMATION OF A FORGOTTEN INVENTION - THE SODA LOCOMOTIVE
A.L. Ehrhardt, N. Vorhauer-Hugot, H.J. Rzepus, D. Bronske

PERSONAL EXCELLENCE BASED PROFILING TO IDENTIFY AND APPLY TOOLS AND TRAININGS FOR A BETTER AND SUSTAINABLE WORK-LIFE-FLOW
J.P. Czakert, L. Pais, N. Rebelo, P. Nogueira, F. Scheibein, J. Wells, R. Berger

EXPERIENTIAL KNOWLEDGE INTO THE HIGHER EDUCATION SYSTEM: POSSIBILITIES AND PERSPECTIVES
M.B. Gambacorti-Passerini, F. Oggiorni, G. Romeri, M. Sottocorno

STRATEGIES FOR CONTENT CHUNKING AND SEGMENTING FOR ONLINE COURSE DESIGN
S. Kavale, N. Humbi, S. Karrundawade

ANALYTIC RATING SCALES: TRAINING STUDENT TEACHERS TO JUDGE LANGUAGE LEARNERS’ WRITTEN PERFORMANCES
J. Bérešová

DEVELOPMENT OF TEACHING STRATEGIES USING VIRTUALIZATION STRATEGIES AS COMPLEMENTARY RESOURCES ON GEOLOGY, CRYSTALLOGRAPHY, AND ARCHAEOLOGY
S. Barroso-Solares, O. Fadon, E. Rodriguez, C. Sánz-Minguez, A.C. Prieto, J. Pinto

INTERACTIVE CLINICAL VIRTUAL REALITY LAB FOR HIGHER EDUCATION STUDENTS IN BIOMEDICAL LABORATORY TECHNOLOGY

PLURALISTIC APPROACHES IN TEACHING GERMAN AS A SECOND LANGUAGE
J. Bérešová, R. Ševčík

DEVELOPMENT OF ADVANCED LABORATORY PRACTICES ON X-RAY DIFFRACTION USING PORTABLE X-RAY DIFFRACTOMETERS
A.I. Quilez-Molina, V. Hurtado-Garcia, S. Barroso-Solares, M.A. Rodriguez-Perez, J. Pinto

ESTALQUIM. AN EXTRACURRICULAR PROJECT IN CHEMISTRY
M. Rodriguez Délgado, D. Quiñonero, J. Frau

INNOVATIVE TOOL OF PROGRESS ASSESSMENT: LEARNER-CREATED E-BOOK
O. Mangova, M. Andreeva

GENDER AND POWER RELATIONSHIPS IN GREEK AND ENGLISH PAREMIOLOGY: COMBATING GENDER STEREOTYPES IN EDUCATION
E. Theodoridou, M. Loikov

INNOVATIVE METHODS OF ENHANCING LISTENING SKILLS AND PERCEIVING PROPER NAMES IN POLITICAL DISCOURSE
O. Mangova, M. Andreeva

PERCEPTION OF ADVANTAGES/DIFFICULTIES OF REMOTE TEACHING DURING COVID-19 PANDEMIC: RESULTS FROM A SURVEY WITH 3000 ITALIAN ENGINEERING STUDENTS
R. Mazzaola, M. Bozzi, I. Testa, F. Brambilla, M. Zani

IS BLENDED LEARNING FOR FUTURE DOCTORS BETTER THAN TYPICAL FACE-TO-FACE TEACHING? (COMPARATIVE ANALYSIS)
Z. Balázsiová
CONVERSATIONAL MACHINES: CHATBOTS IN ENGINEERING EDUCATION

TRANSITION, DOUBLE IMAGE AND A GREENHOUSE - DIFFERENT PERSPECTIVES ON TRANSITION TO SCHOOL
I. Somoláníj Tukić, E. Slunjški

EXAMINATION OF THE PREVALENCE AND PREDICTORS OF VIDEOGAME ADDICTION AMONG SCHOOL CHILDREN
M. Ede, C. Okeke, C. Okeke

POPULARIZATION OF READING BOOKS IN THE FORM OF CREATING LEISURE READING CLUBS AND HOBBY GROUPS IN PRIMARY SCHOOLS IN THE CZECH REPUBLIC
J. Trávníček

TEACHING INDIVIDUALS WITH AUTISM ONLINE SEXUAL ABUSE PROTECTION SKILLS
N. Akmanoğlu, Ş. Şahin

FRUGAL PROTOTYPING: AN INTERVENTION TO IMPROVE PROTOTYPING SKILLS IN ENGINEERING EDUCATION
K. Mallibhat, M. Vijayalakshmi, M. Assundi, S. Chamnang

FRAMING DIGITAL SKILLS DEVELOPED THROUGH INFORMAL, DIGITAL ACTION INSIDE AND OUTSIDE UNIVERSITIES
K. Zourou, S. Oikonomou

STUDENTS' EVALUATION OF FAKE NEWS DETECTION AND COUNTERMEASURES AGAINST FAKE NEWS
T. Sigmund

THE DIGEDU-2021 PROJECT: DIGITIZATION AND DIGITALIZATION OF ELEMENTARY EDUCATION THROUGH MOBILE APPLICATIONS
M. Ćarapina, L. Labura, M. Mišić, M. Zerč, S. Životković

CROSS-PLATFORM MOBILE APPLICATION FOR LEARNING PHYSICS
M. Vranić, M. Ćarapina, I. Stipanićev

TEACHERS EXPERIENCE ON GAME-BASED LEARNING AND IDENTIFICATION OF THEIR MOST COMMON PRACTICES: A CROSS-NATIONAL EXPLORATORY RESEARCH
J. Martí-Parreño, J. Oceja-Castañeda, S. Arkun Kocadere

ACQUISITION OF TRANSVERSAL SKILLS THROUGH INFORMAL COOPERATIVE LEARNING VS INDIVIDUALIZED LEARNING IN RESPIRATORY PHYSIOTHERAPY
S. Cortés-Amador, M.A. Cebrià-I-Iranzo, F.M. Martínez-Arnau

EDUCATIONAL ESCAPE ROOMS ACTIVITIES TO FACILITATE LEARNING STRATEGIES AND IMPROVE TEACHING, LEARNING, AND ASSESSMENT PROCESSES
D. Sousa, A. Coelho, M. Torres

LABOR TRENDS IN THE FRAMEWORK OF THE CIRCULAR ECONOMY AND ITS IMPACT ON THE ADAPTATION OF UNIVERSITY TRAINING PROFILES FOR 2035
J.V. López

THE 4X4 PROBLEM-BASED LEARNING MODEL AS A STRATEGY FOR THE DEVELOPMENT OF THE FIVE DIMENSIONS OF COOPERATIVE LEARNING AND ITS IMPACT ON THE DEGREE OF MOTIVATION OF PHYSIOTHERAPY STUDENTS
S. Cortés-Amador, M.A. Cebrià-I-Iranzo, F.M. Martínez-Arnau

A GAME-BASED LEARNING CASE STUDY: WHO WANTS TO BE A MILLIONAIRE?
N. Kadnic, B., Divjak, D. Oreški

STUDENTS' SOFT COMPETENCES IN TIMES OF COVID-19
F. Achcaoucaoui, A. Núñez-Carballosa, P. Miravitlles, L. Güttart

THE MODERN APPROACH TO IMPLEMENTATION OF SLOVAK AND ENGLISH MATHEMATICAL TERMS INTO UNIVERSITY TEACHING/LEARNING PROCESS
B. Bačová, E. Leláková

WORK BASED LEARNING IN ENGINEERING EDUCATION
R. Ayinde, Z. Rihawi, F. Azmat

AUTHENTIC LEARNING FOR UNDERGRADUATE STUDENTS IN A B2B CONTEXT
S. Filipe, I. Saur-Amaral

CHILDLESSNESS AS AN AWARENESS ISSUE FOR THE WORKPLACE INCLUSION IN EDUCATION
V. Stiže-Skuškovnik
RECORDING STUDENT-GENERATED VIDEOS OF THEORETICAL NOTIONS AS A SELF-LEARNING TOOL IN CHEMISTRY EXPERIMENTAL SUBJECTS BY FIRST-YEAR UNDERGRADUATE STUDENTS

THEORETICAL CONCEPTS IN STUDENT-GENERATED VIDEOS AS A SELF-LEARNING TOOL IN CHEMISTRY-RELATED SUBJECTS

MANAGING THE MONSTER OF TIME: A THEMATIC ANALYSIS EXPLORING HOW WOMEN TALK ABOUT THAT BEAST
A. Burnett, N. DiTunnariello, B. DeGreeff

EXPLORE TECHNOLOGY RESISTANCE IN ONLINE ASSESSMENT AND FEEDBACK PRACTICES
A. Soares, M. Lerigo-Sampson, J. Barker

OPPORTUNITIES AND CHALLENGES OF SUPERVISING INTERNATIONAL DOCTORAL STUDENTS FROM THE COMMUNITY OF PORTUGUESE LANGUAGE COUNTRIES: PORTUGUESE SUPERVISORS’ PERSPECTIVES
S. Pinto

NEUROTECHNOLOGY APPLIED TO THE ASSESSMENT IN HIGHER EDUCATION
D. Puente Berdanco, T. Magal-Rayos, E. Jiménez-Ibáñez

VOCATIONAL TRAINING OF THE BASIC BODIES OF INTEGRATED RESCUE SYSTEM OF THE CZECH REPUBLIC WITH THE USAGE OF THE SIMULATION TECHNOLOGIES AND THE VIRTUAL REALITY
M. Antonín

UKRAINIAN EDUCATION IN THE CONDITIONS OF WAR: CHALLENGES AND RISKS
V. Chepak, O. Klymenko

STAFF TRAINING AS A DETERMINING FACTOR IN THE ADOPTION OF 4.0 TECHNOLOGIES IN THE FURNITURE SECTOR
A. Muñoz-Puche, A.I. Jiménez-Zarco, A. Izquierdo-Yusta

DEVELOPMENT OF A PROGRAM: A GAMIFICATION-BASED APPLICATION TO ENHANCE PROGRAMMING LEARNING
A. Carrera Rivera, A. Mayorga Alban, J. Samaniego Villarroel, B. Bajana Tomalá

ACCESSIBILITY OF INTACT PUPILS TOWARDS PUPILS WITH DISABILITIES THROUGH INTERACTIVE TEACHING MATERIALS
A. Hanakova, T. Hrudova, B. Hudcova, K. Kroupova, M. Potmesil, V. Ruzickova, G. Špinarova, L. Travnickova, E. Urbanovska, V. Vachalova

ONLINE TEACHING AND STUDYING AT A SELECTED UNIVERSITY IN THE CONTEXT OF THE COVID-19 PANDEMIC
M. Beranová, M. Navrátilová

THE IMPACT OF GAMIFICATION IN EDUCATION: LEARNING MATH FROM MOBILE GAMES
A. Carrera Rivera, A. Mayorga Alban, J. Samaniego Villarroel, S. Arias Rosales, D. Romero Herrera

ASSESSMENT OF ADHD TRAITS VIA STIMULI-TARGETED VIRTUAL REALITY
A. Bingham, M.F. Obeid

A TUTORING SERVICE TO RESPOND TO THE OCCASIONAL LEARNING DIFFICULTIES OF STUDENTS
S. Ammar

EXPERIENCE WITH VARIOUS FORMS OF HANDS-ON TEACHING
P. Fantu, L. Cupal, D. Skokanová

POSTPHENOMENOLOGICAL STUDIES OF MACHINE LEARNING EDUCATION IN ELEMENTARY SCHOOL
G. Shamir, G. Wellner, I. Levin

ADVANCING INCLUSIVE EDUCATION THROUGH INTERNATIONAL SIGN
T. Oliveira, P. Escudeiro, N. Escudeiro

IMPLICATIONS OF E-LEARNING DURING THE COVID-19 PANDEMIC
E. Babintseva, E. Kartseva, D. Mansur, E. Trifonova

WIDENING PARTICIPATION IN HIGHER EDUCATION: EXPLORING THE FACTORS THAT IMPACT ON BLACK ASIAN AND MINORITY ETHNIC STUDENTS ATTAINMENT AT A POST-1992 UNIVERSITY IN ENGLAND
A UNIVERSITY-SECONDARY SCHOOL COLLABORATION TO PROMOTE SOCIAL INCLUSION FOR OLDER ADULTS WITH PHYSICAL DISABILITIES
S.H.S. Lo, J.P.C. Chau

FLIPPED LEARNING METHODOLOGY WITH DEVELOPMENT OF A TOXICOGENOMIC DATABASE IMPROVES TOXICOLOGY STUDENTS’ ACADEMIC PERFORMANCE

SIMULATED WORLDS AND TOXICOGENOMIC 3D MODELS USE IN CLASS IMPROVES TOXICOLOGY STUDENTS’ ACADEMIC PERFORMANCE

A PATCHWORK QUILT: A COVID-INDUCED INNOVATION
C. Beaton

THE IMPORTANCE OF COLLABORATIVE AND MULTIDISCIPLINARY WORKS IN THE CO-CONSTRUCTION OF A PROJECT FOR COMPUTER LITERACY AND HEALTH RESEARCH FOR PREGNANT IMMIGRANT WOMEN IN QUEBEC CITY: A CASE STUDY
M.P. Gagnon, E. Corona Velazquez

EXPERIENCE WITH THE IMPLEMENTATION OF PERSONAL IT SUPPORT FOR TEACHERS IN TEACHING, RESEARCH, PUBLISHING AND E-LEARNING USING IN-HOUSE EDUCATIONAL SOFTWARE
S. Svetbsky, O. Moravcik, D. Mikulowski, Z. Cervenanská

CERTIFICATION OF FEATURED CURRICULUM, THE EXPLORATION OF USING AR TO LEARN FEATURED COURSE
S.T. Wei

CHOICES FOR HIGHER EDUCATION AFTER COVID-19: TO BE OR NOT TO BE SERIOUSLY DIGITAL
A. Rof, A. Bikfalvi, P. Marques

CROSS-DISCIPLINARY NARRATIVES WITH THE METHOD OF OBJECT DECIPHERING FOR SELF-EXPLORATION
S. Tanabashi

DEVELOPMENT OF LOCAL WISDOM RESOURCE-BASED LEARNING MODEL WITH CLOUD TECHNOLOGY IN GAMIFICATION ENVIRONMENT TO DEVELOP COMMUNITY INFORMATION LITERACY FOR HIGHER EDUCATION LEARNERS IN THAILAND
N. Chammiyon, P. Koraneekij, J. Khaisang

DIGITAL EDUCATIONAL ENVIRONMENT AS A PHENOMENON OF UNCERTAINTY IN PEDAGOGICAL PRACTICE
T.M. Rezer

TRANSFORMATION OF TEACHERS’ CAPABILITIES IN THE IMPLEMENTATION OF PROFESSIONAL ACTIVITIES IN CONDITIONS OF UNCERTAINTY
T.M. Rezer

A COLLABORATION BETWEEN THE SOUTH AUSTRALIAN GOVERNMENT AND ABORIGINAL NATIONS TO EMBED ABORIGINAL KNOWLEDGES AND WAYS OF KNOWING INTO THE EDUCATION CURRICULUM
C. Dean, K. Price

THREE SEMESTERS OF ONLINE ASSESSMENT IN HIGHER EDUCATION FROM STUDENTS’ VIEWPOINT
M. Plavsčić, M. Diković, R. Matković

STUDENTS’ OPINIONS OF PROLONGED ONLINE TEACHING AT UNIVERSITY DURING COVID-19
M. Plavsčić, M. Diković, R. Matković

UPSKILLING MASTER STUDENTS: ADDING DATA MANAGEMENT COMPETENCE FOR ALL DOMAINS
T. Mikoša, A. Rauber, B. Sanchez, B. Saurugger

THE DEVELOPMENT OF PERSONAL AUTONOMY AND THE IMPACT OF PSYCHO-LINGUISTIC CODE "MY CHILD", "MY STUDENT" ON MENTAL ATTITUDES AND BEHAVIORAL PATTERNS OF FORMAL AND INFORMAL EDUCATORS
H. Grigorova

INTRODUCTION TO OPEN SOURCES EDUCATION FRAMEWORK - NEW OPEN ACCESS OPPORTUNITIES
R. Yotova
DYNAMIC PRE-MODERATION: COLLABORATION AS AN INTEGRAL PART OF THE ASSESSMENT DESIGN PROCESS
D. Wagner, A. Whitham

MOBILE DEVICE AS A TOOL FOR DEVELOPING COMMUNICATION SKILLS
D. Tran, K. Kostoldnyová

SCHOOL LEADERSHIP AND DIGITAL TRANSFORMATION - THE ROLE OF THE SCHOOL LEADER
C.E. Toemte

BIG INTEGER DATA TYPES - USAGE AND PERFORMANCE COMPARISON
M. Mikac, R. Logožar, M. Horvatić, E. Đumić

REMOTE LEARNING EXPERIENCES WITH INTRODUCTORY WEB PROGRAMMING COURSE
M. Mikac, R. Logožar, M. Horvatić

EVALUATION OF THERAPEUTIC AND EDUCATIONAL INTERVENTIONS WITH REGARD TO DRAMA THERAPY BY PEOPLE WITH DRUG DEPENDENCE
J. Vávra, M. Valenta, J. Pospíšil

AUTONOMY OF BEGINNIGN TEACHERS AS A PROCESS AND STATE IN THE ADAPTATION PERIOD
J. Ševčíková, J. Ptischke

COMPARATIVE ANALYSIS OF PLATFORMS FOR CREATING MASSIVE OPEN ONLINE COURSES
J. Fabus, M. Garbarová, L. Vartiak

ANALYSIS OF THE MANAGEMENT AND OPERATION OF E-LEARNING IN THE WORLD
M. Garbarová, L. Vartiak

COMBUSTION ANALYSIS USING EXPERIMENTAL EQUIPMENT AND MATLAB
A.J. Extremera-Jiménez, A. Palomar-Torres, E. Torres-Jiménez, F.J. Gómez-de la Cruz, F. Cruz-Peragón

LAB SESSION IN THERMAL ENGINEERING: MODELLING PROPERTIES OF PURE SUBSTANCES VIA MATLAB
A. Palomar-Torres, A.J. Extremera-Jiménez, F. Cruz-Peragón, F.J. Gómez-de la Cruz, E. Torres-Jiménez

WHAT HAS COVID-19 THOUGHT US - CURRENT ISSUES AND DEVELOPMENT IN UNIVERSITY PRE-SERVICE ECEC EDUCATION IN CROATIA
I. Somolanji Tokić, T. Borovac

MAPPING BETWEEN INDUSTRY 5.0 AND EDUCATION 5.0
B. Andrés, F. Sempere-Ripoll, A. Esteso, M.M.E. Alemany

ACTIVE LEARNING METHODOLOGIES AT THE UNIVERSITY CLASSROOM
B. Andrés, F. Sempere-Ripoll, A. Esteso, R. de la Torre

FROM THE ANALYSIS OF A CASE STUDY TO THE CREATION OF STORYTELLING AS AN ACTIVE LEARNING METHODOLOGY AND ITS COMPARISON IN RELATION TO ACADEMIC PERFORMANCE AND SATISFACTION
B. Oliván-Blázquez, A. Asensio-Martínez, A. Aguilar-Latorre, M. Samper-Pardo, S. León-Herrera, F. Méndez-López de-la-Manzanara

CONSTRUCTION MANAGERS' LIBRARY FOR MODERN EDUCATION OF BUILDING PERSONNEL
P. Nowak, A. Nicał, J. Rosłon

LEARNING EXPERIENCES AFTER HIGHER EDUCATION: DOCTORAL STUDIES - WHAT IS HAPPENING?
S. Denchev, G. Petkov, B. Televeniska, R. Yotova

GENERIC COMPETENCES CONSIDERED AS RELEVANT BY LABOR MARKET AND THEIR TRAINING AT THE UNIVERSITY IN THE FIELD OF SOCIAL WORK
E. García-Uceda, C. Sánchez-Alvarez, B. Oliván-Blázquez

REVERSE MENTORING AND COACHING FOR CONSTRUCTION MANAGERS
M. Książek-Novak, P. Novak, A. Nicał, J. Rosłon, M. Frydrych

TEACHING STONE CLADDING SAFE ASSEMBLING OPERATIONS WITH AUGMENTED REALITY
A. Nicał, P. Novak, J. Rosłon

INTEGRATION OF THE INTERNET OF THINGS INTO THE CURRICULUM OF THE STUDENTS OF INFORMATICS AT THE UNIVERSITY
J. Pillár

DESIGN OF A ROBOTIC BOARD FOR TEACHING THE WATER CYCLE
A. De la Hoz Serrano, F. Cañada Cañada, L.V. Melo Niño, A. Álvarez Murillo, J. Cubero Judénez
SAFE EARTHWORKS PERFORMANCE EDUCATION WITH AUGMENTED REALITY
A. Nica, P. Nowak, J. Rosłon

MANAGING THE MOTIVATION OF UNIVERSITY TEACHERS DURING A PANDEMIC FOR ENSURING THEIR WELL-BEING AT THE UNIVERSITY OF ZILINA
M. Stretnitzerová, T. Corejová, K. Stalmachová

DIGITAL TWINS TO SUPPORT TEACHING IN AUTOMATIC CONTROL: THE ROTARY MOTION PLATFORM
J.E. Traver, C. Nuevo-Gallardo, I. Tejado, E. Pérez, B.M. Vinagre

BIM FOR THE INTEGRATION OF ENVIRONMENTAL PRODUCT DECLARATIONS IN SUSTAINABLE CONSTRUCTION STRATEGIES
J. Rosłon, A. Nicał, P. Nowak

IS BUSINESS EDUCATION BOOSTING ETHICAL DECISION-MAKING? AN EXPLORATION OF THE OPPORTUNITIES TO ADD ETHICAL ISSUES IN THE HIGHER EDUCATION CURRICULA

CART-PENDULUM PLATFORM IN CONTROL LEARNING IN ENGINEERING: FIRST STEPS TO CREATE ITS DIGITAL TWIN
C. Nuevo-Gallardo, J.E. Traver, I. Tejado, E. Pérez, B.M. Vinagre

IMMERSIVE DESIGN FOR BUILT HERITAGE VALORIZATION AND REHABILITATION
J. Rosłon, A. Nicał, P. Nowak

WHAT HAPPENED TO US? THE EFFECTS OF ONLINE LEARNING ON EMBODIED ENCOUNTERS DURING COVID-19
F. Kivioho-Kallio, A. Dimkar

EVALUATING THE IMPACT OF USING AUDIOVISUAL RESOURCES IN MATHEMATICS
M.A. García Muñoz, J.J. Ruiz Ruiz, C. Ordóñez-Cañada

ISSUES OF ICT SECURITY IN SECONDARY SCHOOLS AND ITS IMPACT ON EDUCATION
L. Pavlík
PHYSICAL ACTIVITY AND GENDER STEREOTYPES. PERCEPTIONS OF HIGH SCHOOL STUDENTS
M. Lopez-Bartual, M.T. Bartual-Figueras, J. Turno-Garuz

ALGEBRAIC REASONING IN PROBABILITY TASKS
M. Burgos, M.M. López-Martín, N. Tizón-Escamilla

PROGRAM LEVEL ADAPTATIONS DURING PANDEMIC: OPPORTUNITIES AND FACULTY PERCEPTIONS
K. Mallibhat, N. Iyer

HIGHER EDUCATION DURING LOCKDOWN IN THE FACULTY OF ECONOMICS AND BUSINESS (UB): SOME EXPERIENCES AND REFLECTIONS
J. Turno-Garuz, M.T. Bartual-Figueras, F J. Sierra-Martínez

MATHEMATICAL PROBLEM POSING IN TEACHER TRAINING
M. Burgos, J. Chatverri, N. Tizón-Escamilla

H. Atanasov

ONCE AGAIN ON THE DIGITIZATION OF BULGARIAN STATE ARCHIVES – STRATEGIES, REPORTS, RESULTS, ASSESSMENTS AND PERSPECTIVES
H. Atanasov

DEBATE AS AN INTERACTIVE METHOD OF EDUCATION IN SECONDARY SCHOOLS IN BULGARIA FOR INCREASING MOTIVATION AND FORMATION OF KEY COMPETENCIES OF STUDENTS IN BIOLOGY AND HEALTH EDUCATION
N. Vakrilov, M. Becheva, A. Kirikova-Bogdanova, B. Torninova, M. Bozhkova, P. Kasnakova, S. Ivanova

TEACHING COMPUTATIONAL THINKING AND PROGRAMMING AT THE LOWER SECONDARY SCHOOL: A SYSTEMATIC ANALYSIS
R. Saadjärv, P. Liuk, T. Palts

GAME AS A LEARNING TOOL FOR FRENCH VOCABULARY AND PRONUNCIATION
D. Liakin, N. Liakina, W. Cardoso

AN EXPLORATION OF TRANSITION BETWEEN COMMUNITIES OF PRACTICE: FROM CLINICAL HEALTH CARE PROFESSIONAL TO ACADEMIC LECTURER
B. Ball

COVID-19 AND LECTURERS - A STUDY ON THE TRANSFORMATION OF TEACHING AND WORKING IN HIGHER EDUCATION INSTITUTIONS WITH A FOCUS ON THE POST-COVID ERA AND WORK OVERLOAD DURING THE PANDEMIC
T. Rachfall, D. Förster-Trullo, S. Dressler, S. Dressler

LIFELONG LEARNING AT THE FACULTY OF CIVIL ENGINEERING OF THE TECHNICAL UNIVERSITY IN KOšICE (SLOVAKIA) UNDER LOCKDOWN
R. Bašková, A. Tažíková, Z. Struňková, J. Čabala

APPLICATION OF BLOOM’S TAXONOMY IN CHEMISTRY LABORATORY CLASSES IN HIGHER EDUCATION
E.L. dos Santos Veiga, E. Cordoncillo, H. Beltrán-Mir

A SYSTEMATIC REVIEW OF INTRODUCTORY COMPUTER SCIENCE CURRICULUMS
G. Myers, B. Merga, M. Marques Samary

A PRELIMINARY STUDY ON SPATIAL ABILITY FOR PRIMARY SCHOOL TEACHERS’ PROFESSIONAL DEVELOPMENT
E. Bufasi, I. Cakane, I. Dudareva, D. Namsone

USING MAGIC TO TEACH COMPUTER PROGRAMMING
D. Reed, R. Greenberg

EMOTIONAL ASPECTS OF LECTURERS’ EMERGENCY REMOTE TEACHING DURING THE COVID-19 PANDEMIC
I. Ravel, S. Morad, M. Shacham

PHYSIO-OUT DOORS: ADAPTING THE TEACHING RESOURCES TO THE COVID19 CONTEXT IN PHYSIOTHERAPY COURSES

SIMULATION OF GROUP-BASED SPORTS PHYSIOTHERAPY SESSION IN PHYSIOTHERAPY STUDENTS: A PROPOSAL STUDY
THE IMPACT OF RESOLUTELY CHOOSING FOR HYBRID LEARNING AS A DIDACTIC DESIGN PRINCIPLE DEVELOPING A SUPPORT AND PROFESSIONALIZATION MODEL FOR STUDY PROGRAMS, TRAINING TEAMS AND TEACHERS  
S. Theeuwen, B. Boelen, Y. Conincks, K. Billiau, E. Camis, T. Vets

HIGHER EDUCATION AS A VALUE AND ITS IMPACT ON THE WELL-BEING OF SOCIETY  
I. Mietule, I. Maksymova, K. Holíkova, I. Kotánek, L. Viskere

THE INFLUENCE OF PHYSICAL ACTIVITY COMPLEX ON PSYCHOPHYSIOLOGICAL PARAMETERS OF STUDENTS ASSESSED BY USING VIENNA TESTS  
J. Porozovs, V. Veliks, A. Kļaviņa, A. Zuša

IMPLEMENTATION OF THE UNITED NATIONS SUSTAINABLE DEVELOPMENT GOALS IN THE PROJECT FRAMEWORK FOR RETHINKING ENGINEERING EDUCATION IN IRELAND  
K. O'Sullivan, I. Morris, N. Fitzgerald, J. Walsh, F. Boyle, E. O'Connell, G. Corkery

DEVELOPING YOUNG CHILDREN'S COGNITIVE ARGUMENTATION IN COLLABORATION WITH TEACHERS: THE ROLE OF VERBAL AND NON-VERBAL ARGUMENTATIVE COMPONENTS IN CLASSROOM ACTIVITIES  
J. Convertini, F. Arcidiacono, C. Miserez-Caperos

CONTRIBUTIONS OF CLIMATE CHANGE RESEARCH TO THE IMPLEMENTATION OF THE 2030 AGENDA  
R. Ramos, M.J. Rodrigues, I. Rodrigues

PROBLEMS FACED BY ENGLISH SECOND LANGUAGE LEARNERS IN SOUTH AFRICA: TOWARDS A DIGITAL LANGUAGE LEARNING MODEL  
R. Moyo, S. Ngidi

ENHANCING AUTHENTIC LEARNING THROUGH STUDENT-LED KNOWLEDGE EXCHANGE  
D. Cotton, S. Bloxham, S. Cooper, J. Downey, M. Fornasiero, J. Allison

COLLABORATION AND LEARNING PROCESSES: DESIGN SPRINT FRAMEWORK WITHIN PRODUCT DISCOVERY  
L. Cupal, D. Skokanová, P. Fanta

CROSSING BORDERS TO CONNECT ROUTES: RESEARCHING WITH EDUCATIONAL COMMUNITIES TO PROMOTE EQUITY AND FIGHT RACISM TOWARDS IMMIGRANTS IN A POST-PANDEMIC WORLD  
A. Creus, A. Ornellas

IS THERE ANYBODY OUT THERE? OLD AND NEW CHALLENGES OF FORMATIVE FEEDBACK IN E-LEARNING  
A. Creus

FIDELITY OF A 360° IMMERSIVE VIRTUAL REALITY SIMULATION ACTIVITY IN PHYSICAL THERAPY STUDENTS: A PILOT STUDY  
A. Bermejo-Franco, L. Martínez-Caro, M. Medina-Sampedro, L. Rubio-Martínez, R. Ucero-Lozano, M.I. Gaviña-Barroso

ENHANCING PROBLEM-SOLVING COMPETENCE BY ACQUIRING MOTIVATION THROUGH AUTOMATIC TUTORING  
L.H. González Guerra, A.J. Leal Flores

ATTEMPTS TO IMPROVE TEACHING-RESEARCH LINKS THROUGH EMERGENCY REMOTE TEACHING IN HIGHER EDUCATION: A CASE STUDY FROM UNIVERSITY  
A. Uaciquete, M. Valcée

THE PERCEPTION OF THE SDGS IN UNIVERSITY STUDENTS: OVERVIEW AND SURVEY DESIGN  
R. Oltra-Badenes, V. Guerola-Navarro, H. Gil-Gomez, J.A. Gil-Gomez, D. Botella-Carrubi

EMPIRICAL TEST ON THE KNOWLEDGE THAT STUDENTS OF A FIRST-YEAR UNIVERSITY COURSE HAVE ABOUT THE SUSTAINABLE DEVELOPMENT GOALS (SDG)  
V. Guerola-Navarro, R. Oltra-Badenes, H. Gil-Gomez, D. Botella-Carrubi, J.A. Gil-Gomez

PEDAGOGICAL TRAINING OF TEACHERS IN PORTUGUESE PUBLIC HIGHER EDUCATION INSTITUTIONS  
T. Ferreira, J.P. Cravino

REVOLUTION OUR BODY. EXPLORING ARCHITECTURE STUDENT'S INTERCONNECTIVITY DURING CONFINEMENT  
P. Lourenço, F. Bastos, T. Heitor
EVALUATION OF THE USE OF COMPUTER TOOLS THROUGH VIDEOS: A NEW TEACHING PROPOSAL IN LIGHT OF THE COVID UNCERTAINTY IN THE TRANSLATION AND INTERPRETING DEGREE
J. Gutiérrez-Artacho

DEPLOYMENT OF CREATIVE DIGITAL TECHNOLOGIES TO ENHANCE LEARNING AND TEACHING IN ONE OF THE SOUTH AFRICAN UNIVERSITIES
L. Baleni, N. Vokwana

HEALTHCARE CURRICULUM PRIORITIES TO ENHANCE DIGITAL SKILLS DURING THE COVID-19 PANDEMIC
I. Marin, D. Popovici

TEACHERS-STUDENTS-PARENTS DIGITAL PORTAL NEED ANALYSIS DESIGNED FOR ABROAD STUDIES
I. Marin, D. Popovici

AN APPROACH TO MONITORING GENDER EQUALITY PLANS IMPLEMENTATION
R. Doneva, S. Gaftandzhieva, K. Boykova

TOWARDS MICRO-CREDENTIALING IN EUROPEAN HIGHER EDUCATION
S. Gaftandzhieva, R. Doneva, M. Stoeva

A DIGITAL STORYTELLING MOOC FOR FOREIGN LANGUAGE LEARNING WITH A FOCUS ON L2 SPEAKING AND WRITING
S. Maravelaki, P. Panagiotidis

QUESTION GENERATION FOR TEXTBOOK FLASHCARDS
S. Upadhyay, E. Ginsberg, L. Dugan, E. Miltsakaki, H. Gonzalez, D. Choi, C. Yuan, C. Callison-Burch

BLOCKCHAIN IN EDUCATION: THE CASE OF LANGUAGE LEARNING
P. Panagiotidis

USING WEB 2.0 AND SOCIAL NETWORKING IN EDUCATION: THEORETICAL INSIGHTS
T. Limba, L. Lelešienė, S. Novogreckas

MULTIPLE INTELLIGENCES AND ENTREPRENEURIAL SKILLS AMONG SUCCESSFUL HIGH-TECH ENTREPRENEURS
D. Kaspi-Tsahor, R. Yavich, N. Davidovich

EFFECT OF PROBLEM SOLVING TEACHING STRATEGY ON BIOLOGY STUDENTS’ ACQUISITION OF SCIENCE PROCESS SKILLS AND CRITICAL THINKING IN SECONDARY SCHOOLS IN TARABA STATE, NIGERIA
C. Audu

PROFESSIONAL DEVELOPMENT USING TRAUMA-INFORMED PRACTICES IN THE CLASSROOM

FROM PARAMETRIC TO NON-PARAMETRIC STATISTICS IN EDUCATION AND AGRICULTURAL EDUCATION RESEARCH
J. Silva-Lugo, L. Warner, S. Galindo

THE IMPORTANCE OF EMOTIONS IN THE TEXT RECEPTION IN LITERATURE CLASSES IN ELEMENTARY SCHOOLS
P. Bubeníčková

PECULIARITIES OF MATHEMATICAL REASONING: THE CASE OF 4TH GRADE STUDENTS OF PRIMARY SCHOOL
N. Cibužkaitaitė, V. Grabauskiene, O. Mockaitytė - Rastenienė

GROUPWORK ASSESSMENT AS A TEACHING STRATEGY IN UNIVERSITY CONTEXTS
O. Ortiz Aledoán, J. Meza, K. Mendoza, N. Caizaluisa

COMPUTATIONAL THINKING OLYMPIAD AS AN EXAMPLE OF SERVICE-LEARNING
R. Herrero-Álvarez, C. León, G. Miranda, C. Rodríguez-León, E. Segredo, L. García, Y. Díaz

COMMUNICATIVE COMPETENCE OF MEDIATION ASSESSMENT LANGUAGE LEARNING THROUGH THE USE OF CHATBOTS
T. Magal-Royo, J. García Laborda

VALIDATION OF AN INSTRUMENT TO RELATE THE LEARNING EXPERIENCE AND THE SATISFACTION OF THE TRAINING RECEIVED FROM THE MASTER’S GRADUATE
G. Zambrano

xli
THE LEARNING EXPERIENCE AND THE SATISFACTION OF THE TRAINING RECEIVED BY MASTER'S GRADUATES AT A PRIVATE UNIVERSITY IN METROPOLITAN LIMA

G. Zambrano

MOBILE LEARNING RESEARCH AT RCAAP: A LITERATURE REVIEW BASED ON THE APPLICATION OF THE MAECC® META-MODEL

M. Ferreira Marques, T.M. Loureiro Cardoso

EDUCATION OF NURSES IN THE REPUBLIC OF CROATIA IN THE FIELD OF COMPUTER AND INFORMATION LITERACY

B. Marković

THE TRAINING AND EDUCATION OF CIVIL ENGINEERING STUDENTS AT NEW ZEALAND’S LARGEST TECHNICAL INSTITUTE

L. Tuleasca, W. Loo

ADAPTING DIGITAL MATERIALS FOR REMOTE FLIPPED CLASSROOM TEACHING


A REMOTE COLLABORATIVE WORK EXPERIENCE: PRODUCTION AND PUBLICATION OF EDUCATIONAL MATERIALS ON THE WOLFRAM DEMONSTRATIONS SITE


EMOTIONAL INTELLIGENCE IN TEACHERS

S. Dobesová Cakirpaloglu, B. Kvapilová, S. Lemrová, I. Balaban Cakirpaloglu

A TRIAL OF ACTIVE LEARNING FOR BUSINESS MANAGEMENT EDUCATION IN A HYBRID LEARNING ENVIRONMENT

S. Baba, T. Uetake, A. Aoki, T. Matjma

THE RELATIONSHIP BETWEEN OCCUPATIONAL STRESS AND BURNOUT IN PRIMARY SCHOOL TEACHERS

L. Křeměnková, S. Dobesová Cakirpaloglu, I. Plevenová, M. Pugnerová, L. Hongyang

ONLINE LEARNING READINESS AND ATTITUDES TOWARDS DISTANCE EDUCATION

N. Dincer, A. Şimşek

LIBERATING RURAL WOMEN OF SOUTH AFRICA THROUGH SKILLS TRAINING FOR POVERTY ALLEVIATION

S. Tawiah, S.A. Tachie

A REFLECTIVE APPROACH IN INITIAL TEACHER TRAINING

I. Červenkovová, N. Porubová, I. Fialová

EVALUATION OF THE ACADEMIC ADVISING SYSTEM AND SUPPORT IN HONG KONG

V. Lee, J. Lee, A. Ho

CONTEXTS AND DYNAMICS OF INNOVATION FOR LEARNING

A. Magalhães, J. Matias Alves, A. Andrade

ANALYSIS OF STUDENTS’ OPINIONS ON BARRIERS LIMITING THEIR UNIVERSITY STUDIES

J. Komora, N. Kozárová

OCCUPATIONAL THERAPY IN CHILDREN WITH AUTISM SPECTRUM DISORDER

H. Kynštová, P. Pecharová

IMPLEMENTATION OF STEM APPROACH AND ITS VARIETIES IN BULGARIA - HISTORICAL OVERVIEW AND CURRENT SITUATION

E. Ivanova

TOWARDS A MULTICULTURAL AND GLOBAL EDUCATION: STUDENTS CREATING EDUCATIONAL BIOREFINERY VIDEOS WITH INTERNATIONAL COOPERATION

J. Remón, G.A. Hurst, J. Arauzo

PRACTICING CONFLICT RESOLUTION AND NEGOTIATION THROUGH GAME-BASED LEARNING AMONGST PSYCHOLOGY UNIVERSITY STUDENTS


STUDENT’S APPROACH TO LEARNING PER STUDENT BASIS IN TWO SUBJECTS OF BIOTECHNOLOGY DEGREE

J. Blanca, J. Cuñizares, M. Leiva-Brondo
ADAPTING THE METHOD OF LOCI IN VIRTUAL REALITY AS A TEACHING TOOL IN GENERAL EDUCATION  
A. Mainka, E. Ossovski, M. Brinkmeier, A. Hüwel, T. Kirmess, D. Kalbreyer

EMERGING DISTANCE LEARNING PROBLEMS AND STRUCTURED SOLUTIONS IN TIMES OF CRISIS  
V. Kesee

A SAFE LEARNING ENVIRONMENT FOR LIFE-SAVING SKILLS: HOW TO TRAIN FUTURE NURSES IN SUICIDE PREVENTION BY MEANS OF A VR-TOOL  
C. Baten, A. Watzele

PROMOTING INFORMAL LEARNING IN ROMANIA: EVALUATING THE SUCCESS OF "OLIMPIADELE KAUFLED" PROJECT IN A ROMANIAN HIGH SCHOOL  
N.M. Erchedi

INVESTIGATING THE MISTAKES OF STUDENTS WITH DYSLEXIA DURING SOLVING MATHEMATIC PROBLEMS  
V. Secha, F. Vlachos, M. Chalmpe

FROM TEACHER-CENTERED INSTRUCTION TO STUDENT-CENTERED LEARNING: THE CASE OF A 1ST YEAR DIGITAL SYSTEMS COURSE  
M. Gericota

KNOWLEDGE FOR RESILIENT SOCIETY (K-FORCE PROJECT)  
K. Mákka, K. Kampová, L. Mariš

PERSONALITY TRAITS OF WORKPLACE BULLYING VICTIMS  
S. Dobesova Cakirpaloglu, B. Kocaplovs, M. Pugnerová, I. Plevoval, L. Křeměnková, Š. Věvodová

IMPROVEMENT OF ACTIVE LEARNING PROCESSES AND IDENTIFICATION OF NEW STRATEGIES FOR THE BETTER DEVELOPMENT OF STUDENT SKILLS THROUGH COOPERATION BETWEEN INVOLVED AGENTS WITHIN THE ETHAZI TRAINING MODEL  
N. Lopez-Salas, A. Sarobe-Egiguren, A. Alijostes, I. Gorosmendi

HOW UNIVERSITY COURSE BECOMES SELF-DRIVEN: MOOC AS AN EXAMPLE  
H. Mokayed, S. Al-Azzawi, R. Saini, M. Liwicki

HOW DO TEACHERS NOTICE STUDENT'S MATHEMATICAL UNDERSTANDING ABOUT INTERPRETING OF SLOPE AND WRITING LINEAR EQUATION OF GRAPH?  
Z. Özel, R. Tekir-Sitrava, M. Işıksal-Bostan, S. Yemen-Karpuzçu

REDESIGNING THE PROCESS OF LEARNING IN A COLLABORATIVE VIRTUAL CLASSROOM  
D. Skokanova, P. Fanta, L. Cupal

COGNITIVE-PROFESSIONAL DEVELOPMENT STRATEGIES AS THE BASIS OF FORMATION OF SUCCESS TRAJECTORY OF SUBJECTS OF EDUCATIONAL PROCESS  
E. Luzik, N. Ladohubets, N. Komisarenko, T. Mikhayev

BLENDED LEARNING ON STUDENTS WITH SPECIAL EDUCATIONAL NEEDS IN HIGHER EDUCATION DURING COVID-19 PANDEMICS  
V. Lee, G. Chao

THE USE OF A MATRIX DESIGNED TO ENHANCE STUDENTS’ UNDERSTANDING OF MOLECULAR POLARITY  
H. Etxeberria, F.J. Juanes, M. Zubitur, M. Sánchez

A SCOPING REVIEW OF INTERCULTURAL COMPETENCE IN PRESERVICE TEACHER EDUCATION  
M.H. Su, M. Valcke, P.I. Chou

THE HOUSE OF LOST HILL: FOSTERING MINDFULNESS AND INNOVATION BEHAVIOUR THROUGH A GAME BASED LEARNING EXPERIENCE  

THE USE OF INTERACTIVE COMMANDS IN UNIVERSITY TEACHING: ANALYSIS FROM THE STUDENT'S PERSPECTIVE  
A. Martín García, I. Gil Saura, M.E. Ruiz Molina, R. Gil Saura, M. Bordian

PROFESSIONAL DEVELOPMENT FOR PRIMARY TEACHERS - FOSTERING CURIOSITY FOR LEARNING SCIENCE THROUGH INSPIRATIONAL SESSIONS!  
A. Mallaburn, L. Seton, V. Brennan

GAMIFICATION AND TRADITIONAL TEACHING IN UNIVERSITY CLASSROOMS: IS IT POSSIBLE?  
A. Martín García, I. Gil Saura, M.E. Ruiz Molina, M. Bordian, R. Gil Saura
“ALIMENTAL, QUERIDO WATSON”: SOLVING MYSTERIOUS CASES WHILE LEARNING NUTRITION – DEVELOPMENT AND RESULTS OF A DIGITAL EDUCATIONAL ESCAPE ROOM
G. Olaso-Gonzalez, C. Romá-Mateo, M. Piqueras-Franco

EVALUATION OF THE CHANGE IN THE ATTITUDES OF ECONOMICS STUDENTS TOWARDS ECONOMETRICS IN A FLIPPED CLASSROOM CONTEXT
M. Cladera

APPLICATION OF THE PROJECT MANAGEMENT METHODOLOGY AS A TOOL FOR EDUCATIONAL INNOVATION
A.M. Lara-Palma, B. Brotons-Cano

COMIC-BOOK CLUB OF GRAPHIC MEDICINE: USING COMICS TO BOOST EMPATHY IN THE TEACHING OF MEDICAL SCIENCES
C. Romá-Mateo, G. Olaso-Gonzalez

THE EFFECT ON FINAL COURSE GRADES WHEN ANALYZING DIFFERENT LEVELS OF ENGAGEMENT IN PREPARATION FOR SEMINARS
P. Perlman-Dee, C. Godfrey

STUDENT LEVELLING WEB-BASED SYSTEM
S. Ghareeb, A.J. Hussain, D. Al-Jumeily, R. Al-Jumeily

TRAINING TEACHING ASSISTANTS IN SCIENCE AND TECHNOLOGY: CAN WE INCLUDE COURSE-SPECIFIC CONTENT INTO A TRAINING PROGRAMME?
S. Loix, I. Peeters

EVALUATING A MIDTERM EXAM AS A PREDICTOR FOR PASSING THE MATHEMATICS COURSE
N. Kasprikovu

ADVANCING TOGETHER IN MANAGERIAL AND INTERNATIONAL MANAGERIAL SKILLS: A PILOT PROJECT BASED ON FLIPPED CLASSROOM, PERSONAL BRANDING AND DIGITAL COMPETENCES

WAVE ENERGY GENERATION: A STEM BACH EXPERIENCE WITH “IES AS LAGOAS (OURENSE)”
M. DeCastro, X. Costoya, S. Díaz-Vilela, M. Fernández, A. Gil-Pereiras, M. Gómez-Gesteira

ALTERNATIVE EDUCATIONAL MODELS – THE ROLE OF “LEARNING BY DOING” EDUCATIONAL APPROACH FOR ENHANCING THE UNIVERSITY IMAGE
D. Shtyanova, M. Pavlova, D. Ivanov

EÓLICE: A WAVE FLUME FOR TEACHING PURPOSES

EDUCATIONAL ACTIVITIES PROPOSAL TO MOTIVATE STUDENTS TO LEARN THE BASICS OF COMPUTER PROGRAMMING IN SECONDARY EDUCATION
J.R. Pérez Beltrán, R.P. Neico

THE NEUROCognitive NATURE OF DEVELOPMENTAL DYSLEXIA: EVIDENCE SUPPORTING THE MULTIPLE-DEFICIT MODELS
M. Chatimpe, V. Velches, I. Avramidis, S. Tsivinakou

DEVELOPING AN EARLY YEARS BASELINE ASSESSMENT DURING A PANDEMIC
C. Jellis

INTERNATIONAL MOBILITY – CASE OF STUDENT EXCHANGE MANAGEMENT
M. Tomčič Farjan, M. Kurešević, I. Oletić Tušek

AUDIOVISUAL RESOURCES TO ENHANCE PRACTICAL LEARNING IN THE SUBJECT “GENERAL PSYCHOPATHOLOGY” OF PSYCHOLOGY DEGREE

CHALLENGES AND OPPORTUNITIES IN INTEGRATING INTERACTIVE CHATBOTS INTO CODE REVIEW EXERCISES: A PILOT CASE STUDY
J.C. Farah, B. Spanhelbauer, K. Bergstrom, A. Hoelzer, D. Gillet

THE UNIVERSITY AS AN UNSAFE ENVIRONMENT FOR IDEAS: THE PROMOTION OF CRITICAL THINKING

THE APPLICATION OF DIGITAL SKILLS AND MULTIMEDIA TECHNOLOGIES IN EDUCATION AT THE UNIVERSITY OF CONSTANTINE THE PHILOSOPHER IN NITRA DURING THE CORONAVIRUS PANDEMIC
M. Šebo, P. Brečka, I. Tureková
APPLICATION OF INDIVIDUAL PROFILE TO ELECTRONIC HIGHER ENGINEERING AND SPECIALIZED CONTINUING EDUCATION
S. Toncheva-Pencheva, Y. Anastasova

PROBLEM TASKS AS A KEY TO A DEEPER UNDERSTANDING OF SCIENCE SUBJECTS
R. Maršálek, K. Trčková

EXAMINING STUDENTS’ TEST ANXIETY AND PRE-UNIVERSITY PROGRAMMING EDUCATION IN AN UNDERGRADUATE INTRODUCTORY PROGRAMMING COURSE
B. Tomić, T. Stojanović, I. Antović

LEARNING TO CHOOSE – PRESENTING THE RATIONALE FOR WHY EVERY CHILD NEEDS TO BE TAUGHT HOW TO MAKE BETTER CHOICES
J. Playfoot

LINEAR DIOPHANTINE EQUATIONS AS A CONTEXT FOR WOLFRAM CLOUD-ENHANCED TEACHING OF MATHEMATICS
D. Nocar, J. Vaško, T. Zdrrhal

EFFECTIVE LEARNING IN MATHEMATICS
P. Carvalho, L. Descalço

IMPORTANCE OF BLENDED LEARNING FOR CONSTRUCTION OCCUPATIONAL SAFETY PREVENTION
Z. Struková, A. Tažíková, M. Kozlovska, J. Čabala, R. Bašková

INTEGRATING THE EUROPEAN STRATEGY FOR SUSTAINABLE FINANCE AND THE SUSTAINABLE DEVELOPMENT GOALS IN BUSINESS MANAGEMENT AND FINANCE SUBJECTS

LESSONS LEARNED FROM WORK-BASED LEARNING AND INTENSIVE COURSES IN HIGHER EDUCATION
A. Kutnjak, I. Gregurec, K. Tomič-Paprek

AN EXPERIMENT WITH SERIOUS GAMES ON MATHEMATICS IN HIGHER EDUCATION
L. Descalço, P. Carvalho

IMPROVING THE PROFESSIONAL KNOWLEDGE OF CIVIL ENGINEERING STUDENTS BY USING MIXED REALITY
J. Čabala, Z. Struková, A. Tažíková, R. Bašková, M. Kozlovska

TEACHERS’ VIEW OF THE TEACHING PROFESSION AND ITS CHANGES IN CONNECTION WITH THE USE OF DIGITAL TECHNOLOGIES IN EDUCATION
L. Herout

INFLUENCE OF CONTEXTUAL AND PERSONAL FACTORS ON STUDENT’S APPROACH TO LEARNING AT UNIVERSITY DEGREES
E. Sales, S. Menal-Puey, C. Martí, O. Ortíz, R. López-Flores, P. Santolaria, M. Leiva-Brondo

SOCIAL COMPETENCES OF PUPILS WITH SPECIAL EDUCATIONAL NEEDS AND THEIR DEVELOPMENT THROUGH COOPERATIVE TEACHING METHODS
I. István

SOCIAL MEDIA TECHNOLOGIES AND BLENDED LEARNING: PROMOTING INTERACTIVITY AND COLLABORATIVE LEARNING IN EDUCATIONAL EMERGENCIES
A. Njuguna

GOAL ORIENTED AND INTERACTIVE ONLINE TEACHING. CASE STUDY ON AN IT APPLIED IN SOCIAL SCIENCES COURSE
A.B. Andreica

CONNECTIONS BETWEEN PARTICIPATION IN MINI-COMPANIES AT UPPER SECONDARY SCHOOL AND ENTREPRENEURIAL SKILLS
V. Johansen, T. Schanke

ONLINE SECURITY AS PART OF EDUCATIONAL CONTENT AT PRIMARY SCHOOLS IN THE CZECH REPUBLIC
L. Herout

THE USE OF COOPERATIVE METHODS TO DEVELOP STUDENTS’ CRITICAL THINKING IN TEACHING PROGRAMMES
I. István

DIGITIZATION AND ITS PLACE IN THE TRAINING CURRICULA OF FUTURE ARCHIVAL SPECIALISTS: THE EXPERIENCE OF ULSIT
S. Eftimova
CIRCULAR ECONOMY FOR PIGS: AN ACADEMIC RESEARCH PROPOSAL
G. Cervantes, G. Cuevas

A PROJECT-BASED LEARNING IMPLEMENTATION: AN EXAMPLE OF METHODOLOGY DESIGNED TO IMPROVE PHARMACY UNDERGRADUATE STUDENTS LEARNING
E. Pérez Izquierdo, B. Sáez Pizarro, A.M. Fernández Olleros, P. Ros Viñegla

STEP BY STEP WITH THE SCRATCHJr APP AS A TOOL FOR DEVELOPING DIGITAL COMPETENCES AND COMPUTATIONAL THINKING
K. Kilianova, P. Kockova, K. Kostolanyova

TRENDS IN THE CHOICE OF TOPICS FOR DIPLOMA THESIS IN THE SPECIALTY OF ARCHIVAL AND DOCUMENTARY STUDIES AT ULSIT
S. Efimova

"STAY SAFE ONLINE" - EDUCATIONAL MATERIAL FOR THE DEVELOPMENT OF DIGITAL SAFETY COMPETENCE FOR PUPILS AT 1ST GRADE PRIMARY SCHOOL
P. Kockova, K. Kilianova, K. Kostolanyova

THE EFFECTIVENESS OF DIRECT APPLICATION OF THEORY ON STUDENTS' PROGRESS AND UNDERSTANDING
P. van Duijzen, D. Zuidervliet, M. Dirksen

IMPLEMENTATION OF THE ODS THROUGH SERVICE LEARNING TECHNIQUES BASED ON PM2 (PROJECT MANAGEMENT METHODOLOGY)
L.I. Hojas Hojas, E.M. García Del Toro

PERCEPTIONS AND READINESS OF KING SAUD UNIVERSITY STUDENTS TOWARDS ONLINE LEARNING DURING THE COVID-19 PANDEMIC
N. Alazzazni

RDI - PART OF HIGHER EDUCATION STUDIES
T. Lintilä, S. Sivén

DEVELOPING THE MODEL OF HYBRID ORGANIZATION FOR COMPANIES OPERATING IN IT SPHERE IN THE CITY OF NEW YORK
A. Skvorcovs, A. Lavrenteva

STUDENT'S PERSPECTIVE ON THE IMPLEMENTATION OF MASTER FINAL PROJECT AS A CASE STUDY IN LEGAL AND FORENSIC PSYCHOLOGY
J. Sanmarco, V. Marcos, D. Seijo, M. Novo, R. Arce

THE INTEGRATED PERSONALISED ADAPTIVE LEARNING SYSTEM IN THE EDUCATIONAL PROCESS TRAJECTORY
A. Nurutdinova, E. Sabaeva, E. Dmitrieva

UNIVERSITY EDUCATION OF NATIONAL SECURITY - A MAJOR FACTOR FOR SUSTAINABILITY IN THE CONTEMPORARY SOCIETY
S. Denchev, I. Peteva, S. Yordanova

COPYRIGHT LITERACY FORMATION AMONG STUDENTS AT UNIVERSITY INFORMATION ENVIRONMENT: SURVEY RESULTS
E. Zdravkova-Velichkova, T. Trencheva

COMPARISON BETWEEN THE IMPORTANCE THAT STUDENTS GIVE TO ENVIRONMENTAL AWARENESS FOR THEIR PROFESSIONAL DEVELOPMENT AND THE WORK CARRIED OUT BY THE BILBAO SCHOOL OF ENGINEERING IN THIS FIELD
A. Sarriomandia-Ibarra, E. Madrazo, J.M. Blanco, I. Bidaguren, I. Albaina

AN INNOVATIVE ONLINE INDIVIDUALIZED TUTORING PROGRAM TO MINIMIZE EDUCATIONAL DISRUPTION AMONG RACIALIZED, INDIGENOUS AND IMMIGRANT STUDENTS DURING COVID-19
W. Cukier

JUPYTER NOTEBOOKS FOR THE TEACHING OF BUSINESS MANAGEMENT IN STEM DEGREES
A. Suárez-García, M.A. Álvarez-Feijoo, E. Arce, F. Zayas-Gato, M. Novo

"NEVER HAVE I EVER ..." - UNEXPECTED OUTCOMES OF TEACHING DURING COVID19
M. Menšík

PROMOTION AND ACTIVE VERIFICATION OF THE RESEARCH PROJECT "INFORMATION PORTAL FOR MOBILE LEARNING AND MOBILE ACCESS TO LIBRARY SERVICES AND RESOURCES"
E. Tsvetkova, I. Peteva, S. Denchev
INFLUENCE OF THE COVID-19 PANDEMIC ON THE STUDENTS FROM MEDICAL UNIVERSITY OF PLOVDIV

STUDENT ACTIVATION IN THE EDUCATION PROCESS: THE PESTLE ANALYSIS CREATION
L. Vartiak, G. Jaseckova, E. Capkova

ENVIRONMENTAL COMPETENCIES AS FUNDAMENTAL 21ST CENTURY SKILLS OF STUDENTS
L. Vartiak, G. Jaseckova

A VISION OF ESTABLISHING A COMPREHENSIVE SYSTEM OF UNIVERSITY TEACHER EDUCATION AT UNIVERSITY – A SYSTEMATIC SEARCH FOR ANSWERS
J. Trabalikova, L. Hreberiadová

WHAT DO WE NEED TO LEARN WHEN WE BECOME ADULTS?
K. Schneider

DEVELOPMENT OF MATHEMATICAL LITERACY IN THE TASKS OF THE NEW CONCEPT OF INFORMATICS FROM THE PERSPECTIVE OF FUTURE TEACHERS
J. Wossala, R. Dofkova, P. Seidlova

HYBRID CLASSROOM AND LEARNING SPACE DESIGN FOR PEDAGOGICAL INNOVATION
M. Lührer, J. Lemm

EXPRESSION IN DRAWING AS AN EVIDENCE OF ROMA PUPIL IDENTIFICATION WITH ENVIRONMENT IN WHICH THEY LIVE
L. Horák, M. Zbojan

TURNING PAGES, SCROLLING OR SWIPING: AN EVALUATION OF INTERACTIVE PICTURE BOOK APPLICATIONS FOR ELEMENTARY SCHOOL
M. Schalk, E. Schmidhalter, S. Hinterplattner, B. Sabitzer

CHANGES IN THE SOCIAL RESPONSIBILITY OF UNIVERSITY STUDENTS INVOLVED IN WIKIPEDIA ARTICLE EDITION
E. Madrazo, A. Sarriónandía-Ibarra, G.A. Esteban, A. Peña, U. Izquierdo

REMOTE LEARNING ADAPTATION ON THE PRACTICE OF HISTOLOGY AND ANATOMY OF THE SKELETAL AND NERVOUS SYSTEMS IN THE SUBJECT OF HUMAN PHYSIOLOGY FOR STUDENTS OF HUMAN NUTRITION AND DIETETICS
M.C. Morín, M. Riba, M.E. Juan

AUTISM AND MATHEMATICAL CREATIVITY IN CHILDHOOD FROM THE POINT OF VIEW OF KINDERGARTEN TEACHERS
M. Tzolar-Rozen, A. Kasirer

A SURVEY ON PRODUCTIVITY OF HIGHER EDUCATION AND TEACHING METHODS DURING THE PANDEMIC IN TURKEY
B. Bulunmaz, R. Bilge, B. Coban, F. B. Uysal

CURRICULUM DEVELOPMENT FOR CLOUD SERVICES: ANSWERING THE NEEDS OF THE JOB MARKET
L. Aunimo, M. Brkljacic, T. Lintilä, A. Camara, L. Mrsic

INFLUENCE OF THE COVID-19 PANDEMIC ON THE PHYSICAL ACTIVITY AND TRAINING OF STUDENTS AT MEDICAL UNIVERSITY OF PLOVDIV

ABOUT THE QUALITY AND SUSTAINABLE EDUCATION IN EUROPEAN COUNTRIES: A COMPARATIVE ECONOMETRIC ANALYSIS
K. Murillo, E. Rocha

PUTTING STUDENTS INTO TEAMS IS NOT ENOUGH TO DEVELOP THEIR TEAMWORKING SKILLS: HOW TO ENABLE, ENCOURAGE, OBSERVE AND ASSESS TEAMWORKING SKILLS
A. Frost
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMPARATIVE ANALYSIS OF CONCEPTUAL GUIDELINES FOR TRANSITION</td>
<td>4211</td>
</tr>
<tr>
<td>PRESCHOOL - PRIMARY SCHOOL</td>
<td></td>
</tr>
<tr>
<td>D. Bether, L. Pavitola, J. Grava</td>
<td></td>
</tr>
<tr>
<td>SCHOOLWORK ENGAGEMENT AND SCHOOL BURNOUT AMONG PRIMARY SCHOOL</td>
<td>4222</td>
</tr>
<tr>
<td>STUDENTS IN ESTONIA</td>
<td></td>
</tr>
<tr>
<td>A.M. Nääk, I. Timoštšuk</td>
<td></td>
</tr>
<tr>
<td>THE CHALLENGES AND DIRECTION OF PRIMARY AND SECONDARY SCHOOLS’</td>
<td>4227</td>
</tr>
<tr>
<td>ONLINE EDUCATION IN KOREA UNDER THE COVID-19 SITUATION</td>
<td></td>
</tr>
<tr>
<td>S. Hong, S.C. Yang</td>
<td></td>
</tr>
<tr>
<td>STUDENT’S DIGITAL TRANSFORMATION DURING HIGHER EDUCATION:</td>
<td>4234</td>
</tr>
<tr>
<td>ENTRANCE AND EXIT DIGITAL PROFILE</td>
<td></td>
</tr>
<tr>
<td>I. Messias, A. Loureiro</td>
<td></td>
</tr>
<tr>
<td>INTEGRATING PROBLEM-BASED LEARNING INTO TEACHING SUSTAINABLE</td>
<td>4243</td>
</tr>
<tr>
<td>DEVELOPMENT</td>
<td></td>
</tr>
<tr>
<td>A. Balžekienė, A. Daubarienė</td>
<td></td>
</tr>
<tr>
<td>APOLLONIUS’ PROBLEM PLC AND PCC IN PROSPECTIVE MATHEMATICS</td>
<td>4253</td>
</tr>
<tr>
<td>TEACHERS TRAINING USING ICT</td>
<td></td>
</tr>
<tr>
<td>D. Nocar, J. Vaško, T. Zdráhal</td>
<td></td>
</tr>
<tr>
<td>GENERATION OF PERSONALIZED ADVICE FOR LEARNERS FROM LOG FILES</td>
<td>4263</td>
</tr>
<tr>
<td>HEALTH GERONTECHNOLOGY IN AGEING: A QUANTITATIVE STUDY</td>
<td>4270</td>
</tr>
<tr>
<td>B.M. Gutiérrez-Pérez, A. Murciano-Hueso, J. Martín-Lucas, S.</td>
<td></td>
</tr>
<tr>
<td>Serrate-González, P. Torrijos-Fincias, A.V. Martín-García</td>
<td></td>
</tr>
<tr>
<td>OPEN SOURCE EXPERIMENTS IN QUANTUM PHOTONICS: AN AFFORDABLE APPROACH</td>
<td>4278</td>
</tr>
<tr>
<td>Eilenberger</td>
<td></td>
</tr>
<tr>
<td>VALIDATION OF A MEASUREMENT INSTRUMENT FOR AN E-LEARNING SYSTEM</td>
<td>4279</td>
</tr>
<tr>
<td>IN PROJECT MANAGEMENT AND TECHNOLOGY TRANSFER IN THE DIGITAL ERA</td>
<td></td>
</tr>
<tr>
<td>L. Babineau</td>
<td></td>
</tr>
<tr>
<td>HIGHER EDUCATION STUDENTS’ PERCEPTION TOWARDS THE PORTUGUESE AND</td>
<td>4283</td>
</tr>
<tr>
<td>FOREIGN MEDIA SECTOR</td>
<td></td>
</tr>
<tr>
<td>N.S. Morais, J. Martins, M. Midões</td>
<td></td>
</tr>
<tr>
<td>ENHANCING ENGAGEMENT AND INCLUSIVITY THROUGH ACTIVITIES CO-</td>
<td>4289</td>
</tr>
<tr>
<td>DESIGNED WITH UNDERGRADUATES - A CASE OF INDUCTION WEEK FOR</td>
<td></td>
</tr>
<tr>
<td>BUSINESS MANAGEMENT</td>
<td></td>
</tr>
<tr>
<td>L. Cunningham, C. Holtham</td>
<td></td>
</tr>
<tr>
<td>MAKING-UP FOR LOST CLINICAL TIME DURING COVID-19 BY MERGING</td>
<td>4297</td>
</tr>
<tr>
<td>UNDERGRADUATE NURSING FOUNDATIONS AND HEALTH ASSESSMENT CLASSES:</td>
<td></td>
</tr>
<tr>
<td>4 SIMINTENSIVES SESSIONS DELIVER A SEMESTER’S CURRICULUM FOR 2</td>
<td></td>
</tr>
<tr>
<td>COURSES</td>
<td></td>
</tr>
<tr>
<td>L. Cimino, M. Hickay</td>
<td></td>
</tr>
<tr>
<td>USEFULNESS OF THE PILOT PROJECT FOR THE IMPLEMENTATION OF THE</td>
<td>4301</td>
</tr>
<tr>
<td>FLIPPED CLASSROOM IN THE OFFICIAL MASTER’S DEGREE IN HUMAN</td>
<td></td>
</tr>
<tr>
<td>NUTRITION OF THE UNIVERSITY OF GRANADA DURING THE COVID 19 PANDEMIC</td>
<td></td>
</tr>
<tr>
<td>Aparicio, J.L. Quiles</td>
<td></td>
</tr>
<tr>
<td>TRANSITION OF EDUCATIONAL PARADIGMS</td>
<td>4305</td>
</tr>
<tr>
<td>M. Klekovska, C. Martinovska Bande, A. Kotevski</td>
<td></td>
</tr>
<tr>
<td>EPISTEMOLOGY AND EDUCATION IN THE DIGITAL AGE – A POSTPHENOMENOLOGICAL</td>
<td>4315</td>
</tr>
<tr>
<td>VIEW</td>
<td></td>
</tr>
<tr>
<td>M. Marom, G. Wellner, I. Levin</td>
<td></td>
</tr>
<tr>
<td>SOCIO-SPORTIVE EXPERIENCE AND INFORMAL EDUCATION OF CHILDREN AND</td>
<td>4316</td>
</tr>
<tr>
<td>YOUNG PEOPLE: CONTRIBUTIONS TO THE CITIZENSHIP OF NEW GENERATIONS</td>
<td></td>
</tr>
<tr>
<td>V. Ramalho, H. Belchior-Rocha</td>
<td></td>
</tr>
<tr>
<td>REIMAGINING LEARNING IN THE 21ST CENTURY-A CASE STUDY ON HYFLEX</td>
<td>4322</td>
</tr>
<tr>
<td>BASED APPROACH OF MIDDLE EAST COLLEGE, OMAN</td>
<td></td>
</tr>
<tr>
<td>K. Gopukumar Rajalekshmi, D. Bino, A. Srivastav</td>
<td></td>
</tr>
<tr>
<td>EXPLORING THE ‘THEATERS’ OF REMOTE DESIGN TEACHING</td>
<td>4331</td>
</tr>
<tr>
<td>N. Ceccarelli, F. Arras</td>
<td></td>
</tr>
<tr>
<td>INTEGRATING VIDEOGAME DEVELOPMENT AND SOFTWARE ENGINEERING IN A</td>
<td>4338</td>
</tr>
<tr>
<td>COLLEGE SENIOR ELECTIVE COURSE</td>
<td></td>
</tr>
<tr>
<td>J. Sung, K. Sung</td>
<td></td>
</tr>
</tbody>
</table>
APPROACHING NEW TECHNOLOGIES TO AGRONOMICAL SCIENCES DEGREE STUDENTS

USING AN UNDERGRADUATE DECISION SCIENCE COURSE TO PREPARE BUSINESS STUDENTS FOR THE LATER STUDY OF DATA SCIENCE AND ANALYTICS
M. Conyette

STIMULATING EDUCATIONAL INNOVATION IN STEAM HIGHER EDUCATION: AN INTERDISCIPLINARY COLLABORATIVE TRUE STORY
I. Peeters

PEDAGOGICAL COMPETENCY INNOVATION FOR ELEMENTARY SCHOOL TEACHERS: NEW MODELS FOR POST COVID-19
V. Yuli Erviana, A. Ghaftron, H. Haryanto, F.N. Mahmudah

THE USE OF SOCIAL NETWORKS AS AN ACTIVE LEARNING STRATEGY IN PHYSIOTHERAPY STUDENTS

POSSIBILITIES OF USING QR CODE CUBES IN PRIMARY MATHEMATICS TEACHING
R. Dofková, A. Najdek, J. Wossala

IMPROVING THE SCIENTIFIC SKILLS OF PHYSICAL THERAPY STUDENTS THROUGH COLLABORATIVE LEARNING

THE DISSEMINATION OF CULTURAL HERITAGE THROUGH THE CREATION OF AN INTERACTIVE WEB REPOSITORY
C. Ortiz, R. Ramírez Coromel, V. Noriega

EDUCATIONAL STRATEGIES FOR BEHAVIOURAL CHANGE FOR NEUROLOGICAL PATIENTS WITH MOTOR IMPAIRMENT

WHAT ARE SCIENCE PARKS? A REVIEW OF THE STATE OF ART, ADEQUATE TERMINOLOGY AND TYPOLOGIES
O. Frances, M. Palomar

EFFECTIVENESS OF PAIN NEUROSCIENCE EDUCATION (PNE) IN PATIENTS WITH PERSISTENT PAIN DUE TO FIBROMYALGIA

M-LEARNING AT DIFFERENT STAGES OF THE TEACHING PROCESS
L. Klubal, P. Bohackova, K. Kostolanyova

FROM FACE-TO-FACE TO REMOTE TEACHING OF 4IR CONCEPTS
M. Turpin, S. Kruger

MARKETING FOR HIGHER EDUCATION INSTITUTIONS: UNLEASHING THE POWER OF PART-TIME MARKETERS
S. Marques, A. Estima

MATHEMATICS TEACHING AND LEARNING PROCESS: THE EFFECT OF PROBLEM-BASED LEARNING
P.B. Teixeira, M.J. Rodrigues, A. Gonçalves

APP ROTEIRO ENTRE-MARES: A PEDAGOGICAL TOOL FOR OCEAN LITERACY IN AND OUT OF THE CLASSROOM
D. Pacheco, C. Faria

PERCEPTIONS OF VOCATIONAL TRAINING INSTITUTE STUDENTS TOWARDS E-LEARNING PLATFORMS DURING THE PANDEMIC
P. Anagnostou, N. Nikolova

ACTIVE AND HEALTHY AGEING MONITORING SYSTEM (AHAMS): AN INTEGRATED HEALTHCARE SYSTEM FOR SENIORS
A. Buffagni, M. Frausin

LOGIC CIRCUITS: FROM PAPER TO WEB
S. Kristofik, A. Langova, S. Rericha

TEACHERS’ TRAINING ON SOCIAL AND EMOTIONAL LEARNING (SEL): FOOD FOR THOUGHT STARTING FROM LITERATURE AT THE TIME OF COVID-19
L. Mortari, R. Bombieri
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>THE IMPACT OF PEER-TEACHING AT THE UNIVERSITY OF DERBY'S COVID-19</td>
<td>4445</td>
</tr>
<tr>
<td>ASYMPTOMATIC TEST CENTRE</td>
<td></td>
</tr>
<tr>
<td>L. Fretwell, N.T. Ekumah</td>
<td></td>
</tr>
<tr>
<td>COLLABORATION BETWEEN UNIVERSITY AND DUAL TRAINING CENTER: THE</td>
<td>4451</td>
</tr>
<tr>
<td>CASE OF PAPER MANUFACTURING AND RECYCLING PROCESSES</td>
<td></td>
</tr>
<tr>
<td>F. Serra-Parareda, H. Oliver, Q. Tarrés, M. Delgado-Aguilar, M. Alcalà</td>
<td></td>
</tr>
<tr>
<td>AN EXPERIENCE WITH DESMOS IN THE STUDY OF THE QUADRATIC FUNCTION</td>
<td>4456</td>
</tr>
<tr>
<td>L. Dias, M.P. Oliveira, N.R. O. Bastos</td>
<td></td>
</tr>
<tr>
<td>FUNCTIONAL, SOCIAL AND ENVIRONMENTAL PERFORMANCE OF PRIMARY SCHOOL</td>
<td>4465</td>
</tr>
<tr>
<td>OUTDOOR SPACES</td>
<td></td>
</tr>
<tr>
<td>S. Baptista Rosa, P. Lourenco, A. Alegre</td>
<td></td>
</tr>
<tr>
<td>HOW TO APPLY EXPERIENTIAL LEARNING IN DEVELOPING STUDENTS’ LEADERSHIP</td>
<td>4475</td>
</tr>
<tr>
<td>COMPETENCIES? CASE OF THE MILITARY ACADEMY OF LITHUANIA</td>
<td></td>
</tr>
<tr>
<td>V. Giedraityte, R. Kazlauskaitė Markeliene</td>
<td></td>
</tr>
<tr>
<td>UA INFORMA: EDUCATION FOR SUSTAINABILITY FROM THE ACADEMIA TO THE</td>
<td>4476</td>
</tr>
<tr>
<td>COMMUNITY</td>
<td></td>
</tr>
<tr>
<td>L. Pombo, M. M. Marques, F. Guimarães</td>
<td></td>
</tr>
<tr>
<td>INITIAL DIAGNOSTIC OF SUSTAINABLE DEVELOPMENT GOALS IN A MASTER</td>
<td>4485</td>
</tr>
<tr>
<td>DEGREE OF THE INDUSTRIAL ENGINEERING SCHOOL AT UNIVERSITAT</td>
<td></td>
</tr>
<tr>
<td>POLITÉCNICA DE VALÈNCIA</td>
<td></td>
</tr>
<tr>
<td>M.J. Verdecho, B. Andrés, J. Mula</td>
<td></td>
</tr>
<tr>
<td>THE IMPACT OF ONLINE PEER ASSESSMENT ON STUDENT LEARNING IN HIGHER</td>
<td>4490</td>
</tr>
<tr>
<td>EDUCATION: A SYSTEMATIC REVIEW OF LITERATURE</td>
<td></td>
</tr>
<tr>
<td>P. Loureiro, M.J. Gomes</td>
<td></td>
</tr>
<tr>
<td>ADDRESSING THE NEED FOR A MORE GENDER BALANCED PARTICIPATION IN</td>
<td>4497</td>
</tr>
<tr>
<td>ENGINEERING EDUCATION</td>
<td></td>
</tr>
<tr>
<td>C. Cassidy, K. O’Sullivan, N. Fitzgerald, I. Morris, F. Boyle, G. Corkery, J. Walsh</td>
<td></td>
</tr>
<tr>
<td>ECOFORMATION AND CREATIVITY IN THE EDUCATION OF BRAZILIAN YOUTH IN</td>
<td>4507</td>
</tr>
<tr>
<td>SOCIAL VULNERABILITY</td>
<td></td>
</tr>
<tr>
<td>V. Simão, S.M. Andrade, V.L. Silva</td>
<td></td>
</tr>
<tr>
<td>IMPACT OF EDUCATION EXPENDITURE ON ECONOMIC DEVELOPMENT IN THE</td>
<td>4515</td>
</tr>
<tr>
<td>BALTIC STATES</td>
<td></td>
</tr>
<tr>
<td>G. Dudaševićité</td>
<td></td>
</tr>
<tr>
<td>OPENNESS IN EDUCATION: A TECHNOLOGICAL AND CONCEPTUAL FRAMEWORK</td>
<td>4521</td>
</tr>
<tr>
<td>T. Minerov, M. Jana, C. Bellini, A. De Santis, K. Sanmicanidro</td>
<td></td>
</tr>
<tr>
<td>ME&amp;MYCITY LEARNING ENVIRONMENT AND ENTREPRENEURSHIP EDUCATION</td>
<td>4527</td>
</tr>
<tr>
<td>A. Ojala</td>
<td></td>
</tr>
<tr>
<td>FEEDBACK CHALLENGES IN SPRINT-BASED ASSESSMENTS</td>
<td>4534</td>
</tr>
<tr>
<td>S. Cox</td>
<td></td>
</tr>
<tr>
<td>A LOGIC BASED AFFECTIVE TUTORING SYSTEM THAT USES REINFORCEMENT</td>
<td>4535</td>
</tr>
<tr>
<td>LEARNING FOR DISCOVERING TEACHING STRATEGIES</td>
<td></td>
</tr>
<tr>
<td>A. Dougalis, D. Plexousakis</td>
<td></td>
</tr>
<tr>
<td>FOSTERING STUDENT ENTREPRENEURSHIP MINDSET THROUGH THE EMBEDDING OF</td>
<td>4544</td>
</tr>
<tr>
<td>INTERNATIONAL STUDENT TEAMS INTO START-UPS AND THE STUDY OF COMPANY-</td>
<td></td>
</tr>
<tr>
<td>DRIVEN OPEN QUESTIONS</td>
<td></td>
</tr>
<tr>
<td>THE PHOTODENTRO LEARNING SCENARIO REPOSITORY AND LEARNING SCENARIO</td>
<td>4550</td>
</tr>
<tr>
<td>DESIGNER TOOL: AN ONLINE ENVIRONMENT FOR CREATING, ORGANIZING, AND</td>
<td></td>
</tr>
<tr>
<td>SHARING STRUCTURED LEARNING SCENARIOS AND CUSTOMIZABLE TEMPLATES</td>
<td></td>
</tr>
<tr>
<td>E. Megalou, K. Alexandris, E. Oikonomidou</td>
<td></td>
</tr>
<tr>
<td>EFFECTIVENESS OF 360° IMMERSIVE VIRTUAL REALITY FOR THE ACQUISITION</td>
<td>4561</td>
</tr>
<tr>
<td>OF SKILLS RELATED WITH EMPATHY IN PHYSIOTHERAPY STUDENTS: A PILOT</td>
<td></td>
</tr>
<tr>
<td>STUDY</td>
<td></td>
</tr>
<tr>
<td>L. Rubio-Martínez, A. Bermejo-Franco, L. Martínez-Caro, M. Medina-Sampedro, M.I. Gaviña-Barroso, R. Ucero-Lozano</td>
<td></td>
</tr>
<tr>
<td>A PRELIMINARY USER INTERFACE DESIGN FOR A RHEUMATOID ARTHRITIS</td>
<td>4567</td>
</tr>
<tr>
<td>VIRTUAL REALITY EXPERIENCE</td>
<td></td>
</tr>
<tr>
<td>A. Richardson, C. Seals, K. Garza, T. Xie, S. Kim, S. Akula</td>
<td></td>
</tr>
<tr>
<td>Title</td>
<td>Page</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>LMOOC INTRODUCTION TO PORTUGUESE: DESIGN, IMPLEMENTATION, EVALUATION</td>
<td>4575</td>
</tr>
<tr>
<td>F. Silva, J. Veloso, A.I. Fernandes, I. Martins, N. Regadas, A. Seixas</td>
<td></td>
</tr>
<tr>
<td>STUDENT GUIDELINES TO DO RESEARCH PROJECTS IN COLLABORATION WITH COMPANIES</td>
<td>4584</td>
</tr>
<tr>
<td>M. Maruri, M. Barturen, J. Madariaga, J. Sanchez-Bastarrechea, I. Bastarreche, I. Sotes</td>
<td></td>
</tr>
<tr>
<td>THE ROLE OF THE PEER-ASSESSMENT IN TEACHERS’ EDUCATION</td>
<td>4593</td>
</tr>
<tr>
<td>N. Nikolova, S. Ivanov</td>
<td></td>
</tr>
<tr>
<td>DIFFERENTIATED TEACHING - AN EFFECTIVE WAY PROMOTING STUDENTS’ POTENTIAL</td>
<td>4602</td>
</tr>
<tr>
<td>L. Tavadgiridze, N. Sherozia, I. Khasaia, D. Doborjginidze</td>
<td></td>
</tr>
<tr>
<td>POSSIBILITIES OF DEVELOPING READING LITERACY IN CONNECTION WITH THE SUBJECT OF PHYSICAL EDUCATION</td>
<td>4606</td>
</tr>
<tr>
<td>K. Barancová</td>
<td></td>
</tr>
<tr>
<td>PLAY IN THE EARLY EDUCATION CURRICULUM</td>
<td>4611</td>
</tr>
<tr>
<td>L. Tavadgiridze, N. Sherozia, M. Bolkvadze, K. Shotadze, D. Doborjginidze</td>
<td></td>
</tr>
<tr>
<td>USE OF THE KALDOR SQUARE IN WORLD ECONOMICS COURSES</td>
<td>4615</td>
</tr>
<tr>
<td>F. El Ghali Ghorafi, M.M. Capobianco Uriarte, M.P. Casado Belmonte, E. Besorabova</td>
<td></td>
</tr>
<tr>
<td>LEARNING AND TEACHING EXPERIENCE THROUGH TOURISM ECONOMIC BLOGS</td>
<td>4623</td>
</tr>
<tr>
<td>F. El Ghali Ghorafi, M.M. Capobianco Uriarte, G.M. Marin Carrillo, E. Besorabova</td>
<td></td>
</tr>
<tr>
<td>EMERGENCY ADAPTATION TO DISTANCE LEARNING: NO MAGIC BULLET, BUT WHERE THERE’S A WILL, THERE’S A WAY</td>
<td>4627</td>
</tr>
<tr>
<td>C. Pulfrey</td>
<td></td>
</tr>
<tr>
<td>INVESTIGATING PREDICTORS OF ADOLESCENTS’ INTENTION TO DONATE STEM CELLS TO LEUKAEMIA PATIENTS: A STUDY BASED ON THE THEORY OF PLANNED BEHAVIOUR</td>
<td>4634</td>
</tr>
<tr>
<td>J. Holzer, D. Elster</td>
<td></td>
</tr>
<tr>
<td>RISK FACTORS IN THE RELATIONSHIPS BETWEEN PARENTS OF CHILDREN WITH DISABILITIES AND EDUCATORS</td>
<td>4645</td>
</tr>
<tr>
<td>J. Michalík, I. Hrubešová, Z. Haiclová, L. Nováková, P. Tomalová</td>
<td></td>
</tr>
<tr>
<td>DEVELOPING A TRANSFORMATIVE MODEL FOR SCHOOL LEVEL DATA COMPLEX ANALYSIS TO IMPROVE STUDENT ACHIEVEMENTS</td>
<td>4651</td>
</tr>
<tr>
<td>P. Pestovs, D. Namsone</td>
<td></td>
</tr>
<tr>
<td>INNOVATIVE CLASSROOM AND INFORMAL LEARNING SPACE: THE SENSE OF BELONGING AND POSITIVE LEARNING EXPERIENCE</td>
<td>4656</td>
</tr>
<tr>
<td>L. Collina, G. Gerosa, A.G. Manciaracina</td>
<td></td>
</tr>
<tr>
<td>A LEXICAL ANALYSIS OF THE LANGUAGE OF SECONDARY SCHOOL EDUCATION IN NIGERIA</td>
<td>4664</td>
</tr>
<tr>
<td>O. Bello, C. Ogbulogo</td>
<td></td>
</tr>
<tr>
<td>THE PIVOT ONLINE AND ITS IMPLICATIONS: A CASE STUDY FROM HOSPITALITY MANAGEMENT EDUCATION PRIORITISING THE PART-TIME LEARNER</td>
<td>4673</td>
</tr>
<tr>
<td>A. Contway, J. Hussey, D. Melia, R. Burbach</td>
<td></td>
</tr>
<tr>
<td>TEACH PROGRAMMING IN MS TEAMS</td>
<td>4683</td>
</tr>
<tr>
<td>V. Stoffová, V. Gabalová, R. Horváth</td>
<td></td>
</tr>
<tr>
<td>AUGMENTED AND VIRTUAL REALITY IN SCIENCE LAB TRAINING</td>
<td>4690</td>
</tr>
<tr>
<td>T. Kaiser, J. Kretzschmar, C. Helgert, R. Geiss, T. Pertsch, A. Tünnermann</td>
<td></td>
</tr>
<tr>
<td>EXPLORING STUDENT ENGAGEMENT IN MUSICAL ACTIVITIES THROUGH COLLAGE</td>
<td>4691</td>
</tr>
<tr>
<td>R. Girdzijauskiene</td>
<td></td>
</tr>
<tr>
<td>EMBODIED COGNITION AND MANAGEMENT LEARNING: THE NEED FOR SENSORY, EMOTIONAL, AND SPIRITUAL SKILLS FOR SOLVING COMPLEX MANAGERIAL PROBLEMS</td>
<td>4698</td>
</tr>
<tr>
<td>I. Sluška, I. Ludviga</td>
<td></td>
</tr>
<tr>
<td>ENABLING ADAPTIVE COURSES IN MOODLE</td>
<td>4707</td>
</tr>
<tr>
<td>BLENDED TEACHING DESIGNS BASED ON BOPPPS MODEL IN MULTICULTURAL CLASSROOM</td>
<td>4714</td>
</tr>
<tr>
<td>Y.F. Yue, Y.Y. Chen</td>
<td></td>
</tr>
<tr>
<td>CITIZENSHIP EDUCATION TO PROMOTE INCLUSION</td>
<td>4721</td>
</tr>
<tr>
<td>D. Chiusaroli</td>
<td></td>
</tr>
</tbody>
</table>
WELCOME TO UR, ATHENS AND POMPEII: A TRAVEL TIME AS AN EDUCATIONAL INNOVATION TO TRANSFORM CITIZENSHIP AND DEMOCRACY LEARNING
G. Gándara, A.G. Rodríguez, P. Aldape

INCLUSION BEYOND PREJUDICE
D. Chiusaroli

DIDACTICAL STRUCTURAL TEMPLATES ENABLING LEARNER ADAPTIVE FLOW
M. Winterhagen, S. Wetzel, R. Srbecky, D. Heutelbeck, B. Wallenborn, M. Hemmje

GAMIFICATION AND AUGMENTED REALITY IN EDUCATIONAL RESEARCH
G. Arduini

REDESIGNING FASHION DESIGN IN HIGHER EDUCATION PROGRAMS: THE STUDENT'S ROLE IN IMPROVING DIDACTIC APPROACHES
G. Fabro Cardoso, A. Spagnoli

HARMONY IN DIVERSITY: MANAGING A MULTICULTURAL LEARNER GROUP
Y.F. Yue, Y.Y. Chen, Z.H. Xie

IMPLEMENTING A COMPETENCE AND QUALIFICATIONS PROFILE COMPONENT TO SUPPORT COMPETENCE AND QUALIFICATION BASED LEARNING IN HIGHER EDUCATIONAL INSTITUTIONS

CONCEPT FOR A SYSTEM ARCHITECTURE FOR AN APPLIED LEARNING GAME FOR A WORK TASK SIMULATION SUPPORTING TRAINING OF WORK DESIGN SKILLS DURING QUALIFICATION-BASED LEARNING

DROPOUT PHENOMENON IN A HIGHER EDUCATION INSTITUTION IN THE NORTH OF PORTUGAL, AND THE REASONS BEHIND IT
M. Santos Lopes, P. Sismeiro Pereira, P. Fortunato Vaz

INDIVIDUALIZED BOTTOM-UP LISTENING SKILLS TRAINING THROUGH SELF-ACCESS MATERIALS AND REAL-TIME INSTRUCTIONS
M. Yamauchi

“THEME HAVE LITERALLY NEVER THOUGHT ABOUT THE PRIVACY OF MY ACADEMIC INFORMATION LIKE THIS”: PERCEPTIONS OF DATA PRIVACY IN LEARNING MANAGEMENT SYSTEMS
J.A. Jiang, F. Robledo Yamamoto, V. Nagy, M. Zander, L. Barker

MUSIC AS AN ENHANCER OF WELL-BEING IN EARLY CHILDHOOD

EXPLORING CRITICAL THINKING, MORAL REASONING AND ACADEMIC SUCCESS AS IMPORTANT COMPONENTS OF PERSONAL AND SOCIAL LIFE
J. Knapík, M. Kosturková

MUSIC IN KINDERGARTEN: ERADICATING STRESS AND ENHANCING DEVELOPMENT
A. Costa, D. Noronha-Sousa, A. Noronha, S. Sá

CYBERSECURITY AWARENESS IN SAUDI ARABIA: A SYSTEMATIC LITERATURE REVIEW
R. Hamdi

LEGAL CHANGES IN THE REGULATIONS OF SOCIAL SERVICES IN BULGARIA AND THE REFLECTION ON THE SOCIAL WORK EDUCATION
L. Vekova

THE NATURE: THE EMPOWERMENT OF CHILDREN IN EARLY CHILDHOOD
M. Moura, S. Sá, D. Noronha-Sousa, E. Paulo, R. Martins, J. Torres

THE UNITED NATIONS SUSTAINABLE DEVELOPMENT GOAL OF SMES FINANCING: DOES FINANCIAL RATIOS ANALYSIS HELP?
A. Lucas, A. Ramires, D. Monteiro

SELECTED TENDENCIES OF PROSOCIAL BEHAVIOUR OF TEACHER STUDENTS MEASURED BY PTM-R METHODOLOGY
J. Knapík, M. Kosturková

CHILDREN'S FEARS IN EARLY CHILDHOOD: A PROJECT WITH PARENTS AND EDUCATORS
A. Xavier, S. Sá, D. Noronha-Sousa, A. Noronha, P. Silva, E. Paulo, R. Martins

AN ANALYSIS OF A NATIONAL PROFESSIONAL DEVELOPMENT PROGRAM FOR DEVELOPING CYBERSECURITY AWARENESS EDUCATORS
M. Ahmad, R.S. Ab Hamid, N. Razali
A SYSTEMATIC LITERATURE REVIEW ON INTEGRATING COMPUTATIONAL THINKING INTO ENGLISH LANGUAGE COURSES LEARNING AND TEACHING IN K-12 EDUCATION
X. Li, J. van Braak, M. Valcke, G. Sang

TRAINING OF REMOTE EMPLOYEES AND LABOR LAW
P. Sládek, T. Sigmond

EXPLORING THE COLLABORATIVE POTENTIAL OF TABLET DEVICES IN HOME AND SCHOOL SETTINGS
L. Morgan

THE EFFECT OF EMPATHY ON THE SELF-EFFICACY OF PRIMARY EDUCATION TEACHERS DEPENDING ON THE YEARS OF EXPERIENCE IN THE NECESSARY INSTRUCTIONAL TECHNOLOGY CONTEXT
M. Tapaskou, A. Papadopoulou, A. Giannakoulopoulos

MEASURING THE EFFECTIVENESS OF IN-SERVICE TEACHER TRAINING THROUGH AN INTERNATIONAL ENGLISH LANGUAGE TEACHING QUALIFICATION
H.Y. Su, J.C. Chang

THE NARRATIVE OF THE GAME SPACE: A PLAYER’S LEARNING JOURNEY
A. Papavlasopoulos, A. Papadopoulou, A. Giannakoulopoulos

USE OF THE QUIZIZZ CELL PHONE APPLICATION IN MATHEMATICS BY 5TH GRADE STUDENTS
E. Sacramento, A. Soares, P. Catarino, M. Reis

ANALYSIS OF INTEGRATION STRATEGIES AND TACTICS OF TECHNOLOGY AND TECHNOCAL RESOURCES IN THE EDUCATIONAL MODEL IN SPAIN (SECONDARY EDUCATION AND BACCALAUREATE)
J. García Alonso

TECHNOLOGY INTEGRATION MODELS IN MATHEMATICS TEACHING: ANALYSIS OF QUALITY CRITERIA
M. Carneiro, A. Soares, P. Catarino, M. Reis

CURRICULAR PROPOSAL FOR THE INTEGRATION OF THE EDUCATIONAL TECHNOLOGY AREA IN PROGRAMS RELATED TO TEACHER TRAINING
J.C. Castellanos-Ramírez, S.A. Niño Carrasco, K.L. Parra Encinas

I CAN SEE CLEARLY NOW: A PEER-REVIEW POSING PROBLEMS TASK WITH FUTURE ELEMENTARY TEACHERS
A.P. Aires, M.M. Nascimento, P. Catarino

PROMOTING QUALITY CAREER PATHS: MPLSAP A SUCCESS STORY IN HIGHER EDUCATION
C. De-Pablos-Heredero, M. De-Pablos-Heredero

DEVELOPMENT OF TWO DECISION AIDS TO EDUCATE PATIENTS WITH CHRONIC KIDNEY DISEASE: A PATIENT ACCEPTABILITY SURVEY
R. Allen, F. Saeed

CONNECTING WOMEN WITH RESOURCES TO THRIVE: CREATING A DIGITAL APP TO EMPOWER WOMEN TO SUPPORT HEALTHY INFANTS
R. Allen, B. Batch, J. Roberts, A. Nakonechnyi

MAKING BY IMAGINING: PRODUCING AN EXPERIENCED BASED ARCHITECTURE IN THE ARCHITECTURAL DESIGN STUDIO
J. Gordon

PUBLIC HEALTH PROGRAMS IN HIGHER EDUCATION: AN ANALYSIS OF GRADUATE PUBLIC HEALTH PROGRAMS AT HISTORICALLY BLACK COLLEGES AND UNIVERSITIES

OCCUPATION REFUGE: AN EXPERIENCE IN NON-FORMAL EDUCATION FROM INTERSECTIONS BETWEEN ART, SCIENCE AND TECHNOLOGY
R. Nobrega, A.C. Cunha

DESIGN AND DEVELOPMENT OF AN APP TO SUPPORT THERAPISTS TEACHING TAIWANESE CHILDREN WITH WRITTEN DISORDER TO LEARN CHINESE CHARACTERS HANDWRITING
K.H. Lin, S.S.C. Young, C.N. Lan, T.S. Lin

IEEE STANDARDS: COVID-ERA LEARNING TECHNOLOGIES POWERING INNOVATION AND STANDARDS EDUCATION PROGRAMS
E. Vega Janica
INDUCTION OF NOVICE HOMEROOM TEACHERS IN CHILE: CHARACTERIZATION OF THE SUPPORT THEY RECEIVE DURING THEIR FIRST YEAR OF WORK FOR LEARNING THE PROFESSION
K. Moreno, R. Colomina, T. Mauri

STAYING OFF-CAMPUS AMONG PUBLIC UNIVERSITY STUDENTS IN MALAYSIA: CHALLENGES AND MOTIVATION

PREPARING FUTURE SOCIAL WORKERS (STUDENTS) TO WORK WITH FORCED MIGRANTS, USING EXPERIENTIAL EDUCATION METHODS
V. Demidenko, V. Kondratawiciene

FOSTERING CREATIVITY IN EDUCATION WITH THE DESIGN OF ANIMATED SHOWS FOR CHILDREN
B. Hasirci, D. Hasirci

SOCIO-PEDAGOGICAL APPROACH FOR REAL INCLUSION IN THE EDUCATIONAL PROCESS OF CHILDREN WITH SPECIAL EDUCATIONAL NEEDS (SEN) IN BULGARIA
D. Spasova, T. Gerganova

THE PEER-TUTORING ACTIVITIES DURING THE COVID-19 PANDEMIC: HOW TECHNOLOGY, E-LEARNING, AND ONLINE ACTIVITIES PROMOTED SOCIALIZATION AND WELLBEING IN THE ACADEMIC CONTEXT
C. Annovazzi, D. Meneghetti, R. Rella, F. Zuculì

DIGITALIZATION IN THE EDUCATION OF CHILDREN WITH SPECIAL EDUCATIONAL NEEDS (SEN) IN SUPPORT OF THEIR PERSONAL DEVELOPMENT
D. Spasova, T. Gerganova

PSYCHOMOTOR EDUCATION AS A SUPPORT FOR MATHEMATICS ACQUISITION IN PRESCHOOL EDUCATION
M. Bodart, M. Brauninckx, M. Vandecasseye

IS SMALL THE NEXT BIG THING IN HIGHER EDUCATION? KEY FINDINGS FROM THE IMPLEMENTATION OF A SPECIFIC MICRO-CREDENTIAL APPROACH
C. Friedl, S. Meier, C. Maierhofer

DEVELOPMENT OF UNIVERSITY TEACHERS' PROFESSIONAL COMPETENCIES
M. Sirotova, T. Šeben Zatková

APPLICATION OF PELTIER ELEMENTS AS RENEWABLE ENERGY SOURCES
D. Srpak, I. Šumiga, T. Horvat, J. Nađ

A MOBILE TREASURE HUNT GAME FOR LANGUAGE LEARNING
B. Boras, T. Jagušt

TEACHING STATISTICS IN AGRICULTURAL ENGINEERING: PROMOTING SELF-LEARNING FOR COMPETENCY ACQUISITION
M. Llompart, J. Cifre, P. Martí, F. Sanfèlix

STUDY ON THE PROFESSIONAL DEVELOPMENT OF PRIMARY SCHOOL TEACHERS
R.S. Kiru, L. Maftei

PROJECT BASED LEARNING FROM K12 TO UNIVERSITY EDUCATION
F. Sanfèlix, P. Martí, J. Cifre, M. Llompart

THE INTEGRATION OF A ROBOT INTO AN AUTOMATED ENVIRONMENT AT UNIVERSITY NORTH
Z. Basića, J. Srpak, S. Svogetto, D. Srpak

AN APPROACH TO FIGHTING DISINFORMATION USING A PEER TO PEER EDUCATIONAL MODEL OF MEDIA EDUCATION: INVESTMENTS IN A SAFER FUTURE
I. Rotaru, I. Dragomir, L. Drinc, G. Scutaru, I. Selim

ADAPTIVE E-LEARNING AND ADAPTIVE ALGORITHMS FROM THE PERSPECTIVE OF M-LEARNING
L. Klubal, V. Gybas

THE USE OF COLLABORATIVE VIRTUAL ENVIRONMENTS (CVEs) FOR ENGINEERING EDUCATION IN HIGHER EDUCATION INSTITUTIONS
J. Moodman, G. Corkery, J. Walsh, S. Morrissey-Tucker

ASSESSMENT OF TEACHERS' SUBJECT DIFFICULTIES AS AN IMPORTANT SOURCE OF INFORMATION ABOUT POSSIBLE BARRIERS IN THE EDUCATION QUALITY MANAGEMENT SYSTEM
B. Ilyukhin, N. Serbina, E. Benks, E. Lepustina

WHICH LECTURER TOOL IS MORE EFFECTIVE– A TABLET OR A REGULAR WHITEBOARD?
E. Trotskovsky
VIDEOS AND MATLAB FOR TEACHING CONIC SECTIONS
C. Solares, R. Blanco

A GAMEFUL DIGITAL LEARNING TOOL TO REFLECT GENDER ISSUES AND GENDERED IDENTITIES FOR MIGRANTS OF THE MENA REGION IN AUSTRIA
C. Schlembach, B. Krucsay, U. Schäfer, B. Bienzle, U. Röhsser

MUSICAL BIOGRAPHY OF SLOVAK TEACHERS AND EDUCATORS
P. Kusý

INFLUENCE OF VARIABLES ON THE ACADEMIC SUCCESS OF HEALTH SCIENCE STUDENTS DURING ORAL AND WRITTEN EXAMS
G. Esquiva Sobrino, M.C. Griñoa Martínez, A. Cifuentes Martínez, V. Gómez Vicente, V. García Sousa, J.V. García Velasco, E. Ausó Monreal

IMPACT OF LOCATION AND SPATIAL CONDITIONS ON STUDYING FROM HOME DURING THE COVID-19 PANDEMIC - A CASE STUDY OF SLOVENIA
J. Breznik, M. Foški, G. Čok, G. Mrak, A. Zavođnik Lamovšek

USING AN ENSEMBLE OF TRANSFORMER-BASED MODELS FOR AUTOMATED WRITING EVALUATION OF ESSAYS
A. Stanciu, I. Cristescu, E.M. Ciuperca, C.E. Cirnu

FACE-TO-FACE VERSUS ONLINE ASSESSMENT: STUDENT ACADEMIC OUTCOMES IN HEALTH SCIENCES
E. Ausó Monreal, R. Pérez Rodríguez, V. Gómez Vicente, G. Esquiva Sobrino

AN EXPERIMENTAL LESSON OF NEAPOLITAN CULTURE FOR A FOREIGN STUDENTS’ CLASS
P. Pardi

BIBLIOMETRIC STUDY OF MOTIVATION FACTORS IN HIGHER EDUCATION
L. Canós-Darós, E. Babiloni, C. García Gallego, M. García Gallego, C. Santandreu-Mascarell, E. Guijarro

THE INSPIRATION IN FOREIGN LANGUAGE CONVERSATION ACTIVITIES
P. Pardi

TEACHING EMBEDDED/IOT TO ALL ENGINEERS

TRAINING FUTURE IT LEADERS IN A COLLABORATIVE AND MULTICULTURAL SETTING

OVERCOMING DIGITAL DIVIDE – A TALE OF TWO COHORTS
P.B. Patil, Basawaraj, M. Vijayalakshmi

THE EPS@ISEP PROGRAMME: A GLOBALISATION AND INTERNATIONALISATION EXPERIENCE

A SYSTEMATIC LITERATURE REVIEW OF LEARNING ASSESSMENT MATERIAL AUTHORIZING SYSTEMS
A. Cannavò, F. De Lorenzis, F. Lamberti, C. Demartini

PERCEPTION OF WOMEN IN SOCIETY GIVEN THROUGH PROVERBS AND SAYINGS
D. Kuzmanovska, V. Koceva, A. Vitanova Ringaceva, S. Kirova, B. Ivanova, I. Koteva, M. Todorova

DIMENDX - DIGITAL MEDIA NETWORK FOR DOCTORAL STUDIES EXPERIENCES
R. Raposo

OPEN SCIENCE AND OPEN DATA TOWARDS OPEN EDUCATION — PORTLINGUE: A DIGITAL HUMANITIES RESEARCH PROJECT
S. Aratój, M. Aguiar

COIL: WORKING WITH JAPANESE PARTNERS POST-PANDEMIC
S.L. Birchley, M. Takeuchi, J. Durand

COMPARISON OF PROFESSIONAL DEVELOPMENT PERSPECTIVE OF TEACHERS FROM TURKEY AND LATVIA
F. Uğurlu, F.E. Acar, G. Strods

COMPARING VIDEO AND INTERACTIVE LEARNING MATERIAL STYLES FOR PROGRAMMING
E. Ossovski, M. Brinkmeier

AN EXPERIENCE OF IMPLEMENTING AGILE PROJECT MANAGEMENT PRACTICE IN PBL COURSE AT FIRST-YEAR ENGINEERING COURSE
J. Gadad, V. Talageri, M. Kaushik, M. Assundi
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>MODE EFFECT AND ITEM EQUIVALENCE IN LARGE-SCALE INTERNATIONAL STUDENT ASSESSMENTS - A SYSTEMATIC LITERATURE REVIEW</td>
<td>5399</td>
</tr>
<tr>
<td>FOSTERING PRE-SERVICE SCIENCE TEACHERS' ENACTED TPACK. PRESENTATION OF A COMPREHENSIVE INTERVENTION IN TERMS OF A SPECIFIC MEDIA USE</td>
<td>5400</td>
</tr>
<tr>
<td>DEVELOPING STRATEGIES FOR TEACHING CRITICAL THINKING IN PHYSICAL SCIENCES LEARNERS AT SELECTED SCHOOLS IN MASHISHILA CIRCUIT IN MPUMALANGA PROVINCE, SOUTH AFRICA</td>
<td>5407</td>
</tr>
<tr>
<td>PERSPECTIVES OF PREP SCHOOL STUDENTS AND TEACHERS ON HYBRID EDUCATION DURING COVID-19</td>
<td>5408</td>
</tr>
<tr>
<td>EDUCATIONAL ASPECTS OF MUSEUM EXHIBITION DESIGN</td>
<td>5416</td>
</tr>
<tr>
<td>RECOGNISING POSSIBILITIES THROUGH THE &quot;VIP-TECH-JOB: TIME 2 ACT!&quot; PROJECT RESULTS: VISUALLY IMPAIRED PEOPLE, WORKPLACE TRAINING AND THE ENRICHMENT OF THE CURRENT LABOR MARKET</td>
<td>5423</td>
</tr>
<tr>
<td>CLOSED FORMULA OF REQUIRED ITEM NUMBER FOR ADAPTIVE TESTING WITH MEDIUM PROBABILITY OF ITEM SOLUTION</td>
<td>5432</td>
</tr>
<tr>
<td>LEARNING EXPERIENCES OF GRADES 10 AND 11 PHYSICAL SCIENCES LEARNERS IN THE LEJWELEPUTSWA DISTRICT, FREE STATE, SOUTH AFRICA</td>
<td>5433</td>
</tr>
<tr>
<td>TRAINING PILLS TO IMPROVE ANALYTICAL CHEMISTRY LABORATORY COMPETENCES IN NUTRITION AND FOOD MASTER'S DEGREE</td>
<td>5434</td>
</tr>
<tr>
<td>STUDENT-CENTRED DESIGN OF LEARNING DASHBOARDS</td>
<td>5441</td>
</tr>
<tr>
<td>E-LEARNING OF ANATOMY: VIRTUAL PLATFORMS AS A SURROGATE FOR THE IN-PERSON ANATOMY LABORATORY CLASSROOM</td>
<td>5451</td>
</tr>
<tr>
<td>TWO GENERATIONS' VIEWS ON BEHAVIOUR IN A VIRTUAL ENVIRONMENT</td>
<td>5458</td>
</tr>
<tr>
<td>IS THE DIGITAL DIVIDE WIDENING OR NARROWING AMONG ROMANIAN YOUTH?</td>
<td>5465</td>
</tr>
<tr>
<td>RESULTS OF THE EVALUATION OF CURRICULAR UNITS IN THE AREA OF MATHEMATICS IN HIGHER EDUCATION COURSES: A PRE AND POST- COVID-19 COMPARATIVE STUDY</td>
<td>5473</td>
</tr>
<tr>
<td>INTERNATIONALIZING THE CAMPUS: LEVERAGING TECHNOLOGY, ACADEMIC DEVELOPMENT, AND AUBURN UNIVERSITY'S INTERNATIONAL PERSPECTIVES ON TEACHING AND LEARNING INITIATIVE</td>
<td>5478</td>
</tr>
<tr>
<td>INTERACTIVE ANIMATIONS OF MECHANISM SIMULATIONS FOR THE MECHANICAL ENGINEERING AREA: THE MECAPEDIA WEBSITE</td>
<td>5479</td>
</tr>
<tr>
<td>VIRTUAL DIDACTIC GAME IN TEACHING CHEMISTRY</td>
<td>5485</td>
</tr>
<tr>
<td>THE IMPORTANCE OF INTERNATIONAL INTER-DISCIPLINARY LECTURES: AN EDUCATIONAL INNOVATION SYSTEM FOR ENHANCING STUDENTS' JOB HUNTING</td>
<td>5493</td>
</tr>
<tr>
<td>TRACES FROM CONSTRUCTION KITS TO EDUCATIONAL ROBOTICS IN TECHNOLOGY EDUCATION</td>
<td>5502</td>
</tr>
</tbody>
</table>
DISPERSED ASSESSMENT IN REMOTE LEARNING TO INCREASE STUDENT ENGAGEMENT IN TIMES OF CRISIS
Z. Thompson, H. Yoon, P. Booth

A BIBLIOMETRIC ANALYSIS OF ARTIFICIAL INTELLIGENCE (AI) IN EDUCATION RESEARCH
A. Nastasa

INTENTIONAL DEVELOPMENT OF COGNITIVE FUNCTIONS OF PRESCHOOL-AGED CHILDREN
Z. Babulicová

GAME-BASED LEARNING TO HELP STUDENTS TO STUDY THE MOST TYPICAL TREES AND SHRUBS SPECIES IN GARDENS, PARKS AND GREEN AREAS

SATISFACTION WITH REMOTE TEACHING AND THE RETURN TO IN-PERSON TEACHING: PERCEPTION OF HIGHER EDUCATION STUDENTS
C. Martinho, A. Cardoso, V. Manteigas, R. Pereira Rodrigues, R. Abreu, M.J. Escudeiro

REDEFINING THE E-SCHOOLS CONCEPT OF TEACHING SCENARIOS FOR INTERDISCIPLINARY TOPICS
G. Hajdin, D. Plantak Vukovac, D. Oreski

MODELLING TEACHERS’ INTENTION TO RE-USE DIGITAL EDUCATIONAL CONTENT
D. Oreski, G. Hajdin, D. Plantak Vukovac

A DECADE OF EXPERIENCE IN THE ORIENTATION TO THE STUDENTS AT THE FACULTY OF SCIENCES IN THE UNIVERSITY OF CÁDIZ, WITHIN THE EUROPEAN HIGHER EDUCATION AREA

ATTRIBUTES OF PHYSICAL COMPUTING SYSTEMS – THE PERSPECTIVE OF PEDAGOGY
E. Schätz, A. Martens

RELIABILITY OF THE SELF-ASSESSMENT TOOL WITH STUDENTS OF THE FIRST YEAR OF THE DEGREE IN FOOD SCIENCE AND TECHNOLOGY
M. Ortega-Heras, I. Gómez, M.D. Rivero-Pérez, M. Cavia-Saiz, M.G. Gerardi, P. Muñiz

THE PERKS AND PERILS OF LEARNING PROGRAMMING ONLINE: THE CASE OF TEACHER TRAINING
A. Fuentes Martinez

PUBLISH YOUR GEO-DATA AS PROFESSIONALS!
O. Cerba, K. Charvatí, F. Zadražil, R. Berzins, I. Košková, M. Šplíchal

INTERACTIVE PROGRAMMING TOOLS FOR BEGINNERS IN ELEMENTARY SCHOOL INFORMATICS
K. Czakóová, O. Takač

CRITICAL THINKING OF HIGH SCHOOL STUDENTS: CASE STUDY OF THE SLOVAK REPUBLIC
E. Madudova, M. Majerčáková, J. Tengler

“WITH HANDS IN SCIENCE” EXPERIENCES FOR SECONDARY SCHOOL STUDENTS
I. Gómez, M. Ortega-Heras, M. Cavia-Saiz, M.D. Rivero-Pérez, M.G. Gerardi, P. Muñiz

EXPANDING STUDENT ENGAGEMENT IN SDG 13 ‘CLIMATE ACTION’
C. Lull, J.V. Llinares, M.D. Soriano

METHODOLOGY FOR DEVELOPING A FRAMEWORK FOR DIGITAL COMPETENCIES OF SCHOOL PRINCIPALS IN CROATIA
N. Žajdela Hrustek, V. Kirunic, R. Mekovec

AN EXPLORATION OF GENDER ROLES BASED ON THE CONTENTS IN TAIWANESE AND KOREAN HISTORY TEXTBOOKS: FROM CROSS-CULTURAL PERSPECTIVES
M.H. Su, P.I. Chou, M. Valcke

HOW DO WE SOLVE THE CURRENT PROBLEMS OF STUDENTS WITH SPECIAL EDUCATIONAL NEEDS AT UNIVERSITY THROUGH THE COUNSELING?
D. Janderková

SELF-ASSESSMENT OF DIGITAL LITERACY SKILLS IN MICROLEARNING COURSE
T. Javorčík
AN EXAMPLE OF USING A PROJECT-BASED DESIGN IN SOLVING INTERDISCIPLINARY DESIGN PROBLEMS

THE USE OF DIGITAL TECHNOLOGY TO IMPROVE PEDAGOGICAL PRACTICES: A CASE STUDY FROM AN INNOVATIVE PREPARATORY SCHOOL
V. Johansen, T. Schanke

DEVELOPMENTAL TRAUMA AND NEUROCOGNITION IN YOUNG ADULTS: A SYSTEMATIC REVIEW
E. Gkintoni, B. Boutsinas, E. Kourkoutas

TEACHER ASSESSMENT AND EVALUATION – WHY SHOULD WE CARE?
R. Mekovec, V. Kirinić

DEVELOPING LEADERSHIP IN EDUCATION
K. Buckley

COMPUTATIONAL THINKING TEST ADAPTATION IN GREEK CULTURE: ENSURING ITS CONTENT VALIDITY
P. Kakavas, F.C. Ugolini

THE ADVANTAGES OF TESTING HIGHER-ORDER THINKING IN ONLINE OPEN BOOK ASSESSMENTS
P. Holland, L. Mason

INSIGHTS TO SOCIAL AND DIGITAL MEDIA KNOWLEDGE OF TECHNICAL STUDENTS
V. Koch, E. Medic

VIRTUAL REALITY IN EDUCATION AND TRAINING WITH A FOCUS ON SAFETY AND HEALTH AT WORK
A. Cidlínová, M. Bárdy, A. Dadová

AN OVERVIEW OF COGNITIVE NEUROSCIENCE IN EDUCATION
E. Gkintoni, I. Dimakos

INCREASING ENVIRONMENTAL SCIENCES STUDENTS’ AWARENESS OF THE LINK BETWEEN SOIL AND SUSTAINABLE DEVELOPMENT GOALS
C. Lull, J.V. Llinares, I. Batista, A. Lidón

DESIGN OF AN EXCEL-RECORDED MACROS CURRICULUM FOR THE DEVELOPMENT OF COMPUTATIONAL THINKING SKILLS BY PRIMARY SCHOOL STUDENTS
P. Kakavas, F.C. Ugolini

ADAPTATION TO ONLINE EDUCATION DURING THE COVID-19 LOCKDOWN: ANALYSIS FROM THE PERSPECTIVE OF THE UNIVERSITY STUDENT IN EDUCATION DEGREES
C. Ferragut, H. Vila, A. Pérez-López, D. Valades, A. Abralde

COMPARING STUDENTS’ PERCEPTION OF DISTANCE AND FACE-TO-FACE LEARNING
A. Mezeiová, A. Bencsik

EXPERIENCE OF UNDERGRADUATE AND POSTGRADUATE STUDENTS WITH AN EDUCATIONAL GAME APP FOR SMARTPHONES FOR LEARNING DIAGNOSIS OF MALARIA
A. Peña-Ferrándiz, R. Marchón, G. Torrado, M.D. Evans, M.A. Peña

EDUCATIONAL LEARNING METHODS WITH GAMIFICATION ASPECTS FOR INMATES DURING PANDEMIC
A. Giannoulis, H. Antonopoulou, C. Halkiopoulos

THE IMPACT OF STRESS ON THE PERSONAL AND PROFESSIONAL LIFE OF ACADEMIC STAFF TODAY
D. Janderková

IMPLEMENTATION OF LASER NAVIGATION WITHIN COMPUTER SCIENCE LESSONS
O. Takač, K. Czakóová

INVESTIGATING SCHOOL ADMINISTRATION PERCEPTIONS THROUGH THE HOLISTIC LEADERSHIP MODEL TOWARD THE INCLUSION AND INTEGRATION PROCESS OF REFUGEE STUDENTS IN THE GREEK EDUCATIONAL SYSTEM
V. Charisi, A. Zafeiroudi, C. Kouthouris, A. Kafa

DEVELOPMENT OF COMPUTATIONAL THINKING: GOALS AND STRATEGIES
T.L. da Silva, L.M. Rockenbach Tarouco
RESULTS OF AND EVALUATION OF A NOVEL SMARTPHONE APP FOR LEARNING MEDICAL PARASITOLOGY
A. Peña-Ferrándiz, M.A. Peña, G. Torrado, L. Acosta

BLOCKCHAIN TECHNOLOGY AS AN ASSET FOR INNOVATIVE EDUCATIONAL APPLICATIONS: A SYSTEMATIC REVIEW
N. Kostopoulou, H. Antonopoulou, C. Halkiooulos

THE EFFECT OF PROVIDING OR NOT PROVIDING SLIDES ON ACADEMIC PERFORMANCE
A. Perez-Lopez, H. Vila, C. Ferragut, D. Valades

SOCIAL NETWORKS AS ADDITIONAL TEACHING TOOL
K. Aleksic-Maslacic, Z. Biochina, B. Sinkovic

ENHANCING STATISTICAL CONCEPTS TEACHING THROUGH INNOVATIVE INTERACTIVE APPLICATIONS
E.L. Cano, C. Alfaro, M.J. Algar, A. Alonso-Ayuso, J.M. Moguerza, F. Ortega

THE IPPOG RESOURCE DATABASE: SUPPORTING GLOBAL PARTICLE PHYSICS OUTREACH & EDUCATION
I. Melo

AN OVERVIEW OF MODERN METHODOLOGICAL APPROACHES OF IT EDUCATION
D. Paksi, M. Csoka, N. Annuš

CREATING A PRODUCTION PIPELINE FOR 360° LEARNING ENVIRONMENTS
D. Dericha, S. Sevou, T. Votkin, T. Kauppinen

STUDENT-CENTERED DESIGN AND IMPLEMENTATION OF A NEW CLINIC PRACTICE FOR LOGOPEDICS
M. Luoto-Ellai, L. Lintula, J. Virkki

RE-INVENTING HEIS TO ENHANCE STUDENT INNOVATION AND ENTREPRENEURSHIP SKILLS

QUESTIONING THE ASSUMPTIONS UNDERLYING PERSONALISED EDUCATION TECHNOLOGY: OVERVIEW OF CURRENT LITERATURE
K.J. Laak, J. Aru

STUDY OF PLANTS THROUGH LABORATORY TEACHING BASED ON THE SCIENTIFIC METHOD WITH PRIMARY SCHOOL CHILDREN
F. Bolzon, M. Bellio, E. Pietropoli, G. Santovito, P. Irato

SPREADSHEETS FEASIBILITY FOR MODELING IN EDUCATION
D. Paksi, M. Csoka, SZ. Svitok

PRESENTATION OF PROGRAMMING ELEMENTS USING MODERN BOARD GAMES
D. Solymos

VALIDATION OF THE READING COMPREHENSION INTERVENTION PROGRAM FOR THE ENGLISH LANGUAGE
M. Hornickova, E. Szabo, R. Hatvetova, L. Adlerova

AN INVESTIGATION ON THE POSITIVE ASPECTS OF THE CONTACT WITH NATURE IN DEVELOPING-AGE CHILDREN. A REVIEW OF FORMAL AND NON-FORMAL EDUCATIONAL REALITIES IN THE VENETO REGION
M. De Rossi, M. Bellio, E. Pietropoli, E. Piva, G. Santovito, S. Schumann, P. Irato

ONLINE STORIES OF INCLUSION AND EXCLUSION OF LEARNERS WITH DISABILITIES IN SOUTH AFRICA
L. Dalvit

A TEACHING GUIDE TO READING MARGINAL NOTES
K. Hristov-Yordanova

PSYCHOLOGICAL DISTRESS IN SOUTHERN ITALIAN STUDENTS DURING THE PANDEMIC AGE
M. Cerasuolo, F. Ciaramella, R. Nappo, R. Simeoli, A. Rega

REMOTE LEARNING IN A PANDEMIC: EXPERIENCES OF TEACHERS AND LEARNERS IN NIGERIA’S PUBLIC AND PRIVATE UNIVERSITIES
D. Adelovu, T. Allo, O. Amoo

THE SUPPORT OF DIGITAL TECHNOLOGY ON EDUCATION DURING THE COVID-19 PANDEMIC
P. Petrușcu, I.C. Buță, E. Șuşnea
DIGIPHOTON – THE DIGITALIZATION OF THE INTERNATIONAL MASTER OF PHOTONICS COURSE
F. Sojka, J. Kretzschmar, J. Domke, C. Henkel, T. Kaiser, F. Lukas, R. Geiss, C. Helgert, T. Pertsch

GEOMETRICAL MODELLING IN ARCHITECTURE BETWEEN ORIGAMI, LASER CUT, 3D PRINT AND DIGITAL TOOLS
M. Pavignano, M.L. Spreafico, A. Tomalini, U. Zich

QUANTITATIVE ANALYSIS OF THE PERCEPTION AND IMPACT ON LEARNING WITH THE USE OF VIRTUAL SIMULATION PLATFORMS IN UNDERGRADUATE STUDENTS
B. Sáez Pizarro, E. Pérez Izquierdo, C. Andreu Vázquez, M.M. Alonso Cascón, V. Negri

TERMOLABO PROJECT: A THERMOFLUID SYSTEMS REMOTE LAB
S. Sanchez, J. Muñoz, A. Vanegas, F. Varela

RADIUM, AN EDUCATIONAL PROJECT IN NUCLEAR AND RADIATION SCIENCES
D. Mostacci, T. Savitskaya, I. Kimlenka, S. Vashenko, S. Schreurs, U. Scherer, S. Carlos, S. Compagno

EFFECT OF ANONYMOUS PARTICIPATION IN ONLINE CLASSES ON UNIVERSITY STUDENTS LEARNING
H. Gutiérrez Pablo, R. Lafuente Ureta, M. Francín Gallego, V. Barrachina Aguerri, M. San Miguel-Pagola

HIGHER EDUCATION INSTITUTIONS ACCESSIBILITY: A COMPARATIVE ANALYSIS OF ACCESS TO CONTENT ON INSTITUTIONAL SITES
N. Neves, S. Sá, J.C. Monteiro, J. Santos, J. Lourenço, J.C. Morais

THE EFFECT OF INFLUENCE-EMBEDDED PHYSICS INSTRUCTION ON STUDENT ATTITUDE, MOTIVATION, AND PERFORMANCE
D.A. Duque, L. Roleda

ANALYSIS OF EMOTIONAL COMPETENCES IN STUDENTS’ CAREERS SUCCESS: EVIDENCES FROM HUMAN RESOURCE MASTER PROGRAM
J. Barrena-Martínez, M. López-Fernández, P.M. Romero-Fernández, M. Ruiz-Rodriguez, M. Ulrrera-Aragon

TEACHING CODING IN SCHOOLS
B. Mannova

HANDS-ON LEARNING PLATFORM FOR TEACHING POPULATION MODELS IN HIGHER EDUCATION
D. Pakst, N. Annuš

APPLICATION OF BUSINESS PROCESS MODELING AND NOTATION METHODOLOGY IN EDUCATION - CASE OF LECTURES IN CRISIS MANAGEMENT COURSE
Z. Dobrovic, I. Milić

TEACHING IN LIFE AND HEALTH COURSES DURING THE COVID-19 PANDEMIC
A. Velás, V. Sollés

DEVELOPING A MOBILE LEARNING APP FOR DIGITAL LITERACIES WITH THE USER GROUP IN ONLINE ENVIRONMENTS: METHODS AND LESSONS LEARNED
F. Günther, R. Lorenz, N. Filz, A. Umlauft

DEVELOPING ONLINE INTERACTION AND SHARED COMMITMENT IN VIRTUAL PROJECT TEAMS
T. Vesala-Varttala, M. Morgado

ENGAGING LEARNING STYLES BY USING A CONFIDENCE ASSESSMENT SURVEY TO ENHANCE UNDERGRADUATE NURSING STUDENTS’ PREPARATION FOR COMPREHENSIVE PHYSICAL ASSESSMENT PERFORMANCE EVALUATION
L. Cimino, A. Martino, T. Ocallaghant

INTERNSHIPS IN HIGHER EDUCATION: FROM FACE-TO-FACE TO VIRTUAL REALITY EXPERIENCES (THE TPM JOURNEY)

PARENTS’ PREPAREDNESS FOR EARLY CHILDHOOD UPBRINGING, EDUCATION, AND CARE
S. Barnová, Z. Geršicová, S. Krášna, B. Mačová, M. Masáriková

FAMILY BUSINESS OR NONE OF MY BUSINESS: FACTORS INFLUENCING THE EMPLOYER ATTRACTIVENESS OF FAMILY BUSINESSES FOR THE GENERATION Y
T. Spiess, V. Voelckel, S. Kruschel

LAB BUDDY SYSTEM FOR HYBRID PRACTICAL TRAINING AND THE INTEGRATION OF ONLINE STUDENTS INTO THE STUDENT COMMUNITY
F. Sojka, J. Domke, C. Henkel, F. Lukas, J. Kretzschmar, R. Ackermann, C. Helgert, T. Pertsch
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>STUDENT-CENTRED LEARNING: EFFECTS ON GRADUATES’ SATISFACTION WITH STUDY PROGRAMMES</td>
<td>6020</td>
</tr>
<tr>
<td>STUDY REGARDING THE IMPROVEMENT OF SERVICES IN PRESCHOOL INSTITUTIONS IN SIBIU COUNTY</td>
<td>6027</td>
</tr>
<tr>
<td>IDENTITY, CONTEXT AND MOBILE MEDIA: A CRITICAL DIGITAL LITERACY SERVICE LEARNING COURSE IN A SOUTH AFRICAN TOWNSHIP</td>
<td>6034</td>
</tr>
<tr>
<td>HOW TO TEACH STATISTICS</td>
<td>6035</td>
</tr>
<tr>
<td>LITERATURE REVIEW ON ASSESSMENT MODELS AND THEIR RELATIONSHIP TO LEARNING ANALYTICS</td>
<td>6036</td>
</tr>
<tr>
<td>CONTINUOUS ASSESSMENT OF STUDENT’S KNOWLEDGE USING LMS PLATFORM MOODLE</td>
<td>6043</td>
</tr>
<tr>
<td>GENDER-SENSITIVE PEDAGOGY FOR STEM DISCIPLINES</td>
<td>6047</td>
</tr>
<tr>
<td>IMPROVING THE QUALITY MANAGEMENT SYSTEM IN A UNIVERSITY CULTURAL CENTER IN ROMANIA</td>
<td>6063</td>
</tr>
<tr>
<td>INNOVATIVE CONCEPT OF MEDICAL BIOPHYSICS AT THE FM CU IN BRATISLAVA</td>
<td>6069</td>
</tr>
<tr>
<td>CURRICULAR GUIDELINES FOR ICT AND TEACHERS’ DIGITAL COMPETENCE: AN EXPLORATORY STUDY IN PORTUGAL</td>
<td>6073</td>
</tr>
<tr>
<td>CONCEPTUAL DIMENSIONS IN TECHNOLOGY USE AND ACCEPTANCE MODELS</td>
<td>6078</td>
</tr>
<tr>
<td>FACTOR ANALYSIS OF INDONESIAN EARLY CHILDHOOD EDUCATORS’ DIGITAL COMPETENCE THROUGH ONLINE LEARNING</td>
<td>6086</td>
</tr>
<tr>
<td>LEARNING REINFORCEMENT ACTIVITIES APPLIED TO THE SUBJECT PHYSIOLOGY AND PATHOPHYSIOLOGY III IN THE PHARMACY DEGREE OF THE UNIVERSITAT DE BARCELONA: THE OPINION OF THE STUDENTS</td>
<td>6094</td>
</tr>
<tr>
<td>BUSINESS SCHOOL SERVICE-LEARNING: PROFIT AND NON-PROFIT COMMUNITY PARTNERS’ PERCEPTIONS OF BENEFITS</td>
<td>6102</td>
</tr>
<tr>
<td>LEARNING SCENARIOS EXPERIENCES: A CASE STUDY</td>
<td>6103</td>
</tr>
<tr>
<td>DISTANCE TEACHING DURING THE COVID-19 PANDEMIC IN SLOVAKIA AND ITS EVALUATION BY PARENTS</td>
<td>6107</td>
</tr>
<tr>
<td>IS INTENSIVE BLOCK TEACHING SUCCESSFUL?</td>
<td>6112</td>
</tr>
<tr>
<td>HISTOZOOMER: AN INTERACTIVE TOOL TO VISUALIZE MICROSCOPIC TISSUE SECTIONS</td>
<td>6120</td>
</tr>
<tr>
<td>FROM DIGITAL LITERACY TO DIGITAL LITERACIES: MAPPING CONSENTS AND DISSENTS WITHIN THE SCHOOL LIBRARY</td>
<td>6125</td>
</tr>
<tr>
<td>BRINGING INDUSTRIAL INTERNATIONAL STANDARDS TO ICT HIGHER UNIVERSITY EDUCATION</td>
<td>6131</td>
</tr>
</tbody>
</table>
TOWARDS A EUROPEAN IDENTITY: YOUNG PEOPLE'S VIEWS ON IDENTITY FORMATION IN THE CONTEXT OF FORMAL AND INFORMAL EDUCATION

A. Romanovska

3D GREEK SIGN LANGUAGE CLASSIFIERS AS A LEARNING OBJECT IN THE SL-REDU ONLINE EDUCATION PLATFORM

G. Sapountzaki, E. Efthimiou, S.E. Fotinea, K. Papadimitriou, G. Potamianos

ONLINE SELF-CHECKERS OF KNOWLEDGE FROM THE INTRODUCTORY MATHEMATICAL SUBJECT IN THE 1ST SEMESTER OF UNDERGRADUATE PROFESSIONAL STUDIES IN ELECTRICAL AND CIVIL ENGINEERING

M. Orlić Bachler, L. Marošnič, B. Kovačić

VIDEO LECTURE IN DISTANCE LEARNING DURING COVID-19 PANDEMIC

D. Kurtić

TANGIBLE MODELS FOR SCIENTIFIC DISSEMINATION AND PUBLIC ENGAGEMENT: FROM THEORY TO PRODUCTION (ERN AND TORINO SHARPER 2020-2021)

U. Zich, M. Pavignano, M. Di Salvo

THE GENRE OF PARODY IN LITERATURE IN PUBLIC AND HIGHER EDUCATION

A. Tárkányi

EARLY STUDENT DETECTION FOR IMPROVEMENT OF ACADEMIC RESULTS USING MACHINE LEARNING MODELS

C. Lanchó, M. Cuesta, I. Martín de Diego, E.L. Cano, A. Fernández-Isabel, J. Gómez Miguel

THE NEXT GENERATION CLASSROOM RE-CONCEIVED

P. Lane, R. Lafferty

THE PROFESSIONAL PORTFOLIO AS A LEARNING STRATEGY - PREPARATION FOR SELECTIVE RECRUITMENT PROCESSES

D. Baptista, S. Pita

USING VIDEOS TO ENHANCE FOREIGN LANGUAGE COMMUNICATIVE COMPETENCE

S. Pita, D. Baptista

PROMOTING SUSTAINABLE DEVELOPMENT IN CHEMISTRY DEGREE: IMPLEMENTATION OF AN E-LEARNING PLATFORM


THE FINANCIAL LITERACY COMPETENCY MAP OF LIBRARIANS

P. Kiszl


R. Kazlauskaitė Markeliene, V. Giedraitytė

SOCIAL AND DIGITAL MEDIA IN EDUCATION

T. Limba, L. Lelešienė, S. Novogrečkas

ATTITUDES OF PRESCHOOL TEACHERS AND ASSISTANTS TOWARDS INCLUSIVE EDUCATION IN SLOVAKIA

V. Kušnirová, I. Rochovska, M. Čarnická

SELECTED FAMILY CHARACTERISTICS IN RELATION TO THE CHOICE OF THE CHILD’S PRESCHOOL EDUCATION

L. Kremenková, J. Kvitílová, J.S. Novotný, R. Čuberek, J. Petrová

IMPLICATIONS ON STUDENT TRAINING AND DEVELOPMENT AS A RESULT OF MULTIGRADE SCHOOLING

I. Acatrinei, D. Opriș

VIRTUAL IMMERSIVE SIMULATIONS TO PROMOTE PRACTICE READINESS TO FULL SCOPE FOR PHARMACY AND PHARMACY TECHNICIAN STUDENTS: A COLLABORATIVE APPROACH

A. Bjelajac Mejia, L. Singh, F. Fan, R. Keay

COORDINATED DIDACTIC APPROACH FOR THE DISCIPLINES OF ARCHITECTURE

R. Franchino, C. Frettoloso, N. Pisacane

THE ROLE OF ENVIRONMENTAL DESIGN FOR THE RESILIENT CITY: EDUCATIONAL EXPERIENCES

R. Franchino, C. Frettoloso, S. Rinaldi

REFLECTIONS ON ONLINE TEACHING IN CZECH SCHOOLS DURING THE COVID-19 PANDEMIC

A. Jávořová, O. Duda
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>INNOVATION IN TOURISM HIGHER EDUCATION: A PROJECT-BASED APPROACH</td>
<td>6283</td>
</tr>
<tr>
<td>TO VILLAGE TOURISM</td>
<td></td>
</tr>
<tr>
<td>C. Melo, C. Mouta, P. Pereira</td>
<td></td>
</tr>
<tr>
<td>ONLINE TEACHER TRAINING AND SUPPORT: LESSONS LEARNT FROM A</td>
<td>6289</td>
</tr>
<tr>
<td>COLLABORATIVE DIGITAL LEARNING PROJECT</td>
<td></td>
</tr>
<tr>
<td>N. Nguyen Thi Hong</td>
<td></td>
</tr>
<tr>
<td>PROMOTING ORAL INTERACTION OF YOUNG LEARNERS: A TASK-BASED APPROACH</td>
<td>6293</td>
</tr>
<tr>
<td>I. Ferreira, M. Morgado, C. Guimaraã</td>
<td></td>
</tr>
<tr>
<td>USE OF CLOUD SERVICES IN THE EDUCATION PROCESS AT THE UNIVERSITY OF</td>
<td>6302</td>
</tr>
<tr>
<td>ZILINA</td>
<td></td>
</tr>
<tr>
<td>J. Tengler, E. Maitudova, M. Müller, A. Kostal</td>
<td></td>
</tr>
<tr>
<td>ANALYSING INCLUSIVE GROUPS’ PEER INTERACTIONS USING MOBILE EYE</td>
<td>6303</td>
</tr>
<tr>
<td>TRACKING IN EDUCATIONAL CONTEXT</td>
<td></td>
</tr>
<tr>
<td>Pihlainen, A. Kääriäinen</td>
<td></td>
</tr>
<tr>
<td>GLOBAL OPPORTUNITIES FOR ACADEMIC COOPERATION: PRACTICAL ASPECTS</td>
<td>6313</td>
</tr>
<tr>
<td>E. Zdravkova-Velichkova, T. Trencheva, S. Denchev, E. Nencheva</td>
<td></td>
</tr>
<tr>
<td>EMERGING ADULthood IN THE LIFE OF YOUNG PEOPLE</td>
<td>6319</td>
</tr>
<tr>
<td>T. Hormandlová</td>
<td></td>
</tr>
<tr>
<td>THE TRIPLE HELIX MODEL IN SPAIN: RELATIONSHIPS BETWEEN UNIVERSITY,</td>
<td>6324</td>
</tr>
<tr>
<td>INDUSTRY AND GOVERNMENT</td>
<td></td>
</tr>
<tr>
<td>E.C. Dittmar, D. López Jiménez</td>
<td></td>
</tr>
<tr>
<td>KEEPING STUDENTS ENGAGED – FINDING TECHNIQUES TO KEEP STUDENTS’</td>
<td>6325</td>
</tr>
<tr>
<td>ATTENTION DURING ONLINE LEARNING</td>
<td></td>
</tr>
<tr>
<td>N. Stalmasekova, J. Fabus</td>
<td></td>
</tr>
<tr>
<td>ANALYSIS OF TEACHING AND LEARNING RESOURCES USED BY TERTIARY</td>
<td>6331</td>
</tr>
<tr>
<td>EDUCATION STUDENTS AND CHARACTERISTICS LEADING TO THE</td>
<td></td>
</tr>
<tr>
<td>DEVELOPMENT OF THE STUDENTS’ CRITICAL THINKING SKILLS</td>
<td></td>
</tr>
<tr>
<td>J. Kojdecká, A. Hrušková, I. Cervenková, M. Václavík</td>
<td></td>
</tr>
<tr>
<td>TEACHING MICRO-ARCHITECTURE</td>
<td>6332</td>
</tr>
<tr>
<td>D.S. Opincaru, A. Pop, A.E. Voinea</td>
<td></td>
</tr>
<tr>
<td>WORKPLACE ETHICS AND EQUALITY WITHIN THE ACADEMIA: THE #METOO STORIES</td>
<td>6340</td>
</tr>
<tr>
<td>FROM ICELAND</td>
<td></td>
</tr>
<tr>
<td>ORGANIZATIONAL LEARNING STRUCTURES CONTRIBUTING TO SUCCESSION</td>
<td>6341</td>
</tr>
<tr>
<td>PLANNING: ACTION RESEARCH IN FAGOR AUTOMATION S.COOP</td>
<td></td>
</tr>
<tr>
<td>N. Sánchez Urrien, J.L. Alonso Andreano, U. Castaño Benito</td>
<td></td>
</tr>
<tr>
<td>MONDRAGON ZTIM-HUB: THE COLLABORATIVE NETWORK FOR THE DEVELOPMENT</td>
<td>6351</td>
</tr>
<tr>
<td>OF STEM VOCATIONS</td>
<td></td>
</tr>
<tr>
<td>M. Anaya, J. Iriondo, M. Vivar, M. Otaegi, P. González, A. Bilbao,</td>
<td></td>
</tr>
<tr>
<td>M. Errasti</td>
<td></td>
</tr>
<tr>
<td>SPECIAL NEEDS TEACHERS AND THEIR PERSPECTIVE OF INCLUSIVE EDUCATION</td>
<td>6359</td>
</tr>
<tr>
<td>T. Hormandlová, T. Čech, S. Dobešová Cakirpaloglu</td>
<td></td>
</tr>
<tr>
<td>ARCHITECTURE EDUCATION: A PLACE OF IDENTITY TRANSITION AND</td>
<td>6363</td>
</tr>
<tr>
<td>PROFESSIONAL TRANSFORMATION</td>
<td></td>
</tr>
<tr>
<td>A.E. Voinea</td>
<td></td>
</tr>
<tr>
<td>FORMATIVE EVALUATION FOR IMPROVING DEEP LEARNING ON SOCIAL AND</td>
<td>6371</td>
</tr>
<tr>
<td>EMOTIONAL COMPETENCES: A CASE STUDY OF AN IN-SERVICE TEACHER TRAINING</td>
<td></td>
</tr>
<tr>
<td>S. Patera</td>
<td></td>
</tr>
<tr>
<td>WE WANT TO BE ENGINEERS: EARLY STAGE STEM MOTIVATING ACTIONS</td>
<td>6381</td>
</tr>
<tr>
<td>R. Vilanova, C. Fernández-Córdoba, J. Lopez Vicario, A. Espinosa</td>
<td></td>
</tr>
<tr>
<td>Morales</td>
<td></td>
</tr>
<tr>
<td>ACADEMIA-INDUSTRY COOPERATION FOR THE THERAPY OF ALZHEIMER AND</td>
<td>6389</td>
</tr>
<tr>
<td>MILD DEMENTIA: A SHARED TRAINING AND RESEARCH PROJECT</td>
<td></td>
</tr>
<tr>
<td>M.E. Romero, G. Borga, M. Bresciani</td>
<td></td>
</tr>
<tr>
<td>USAGE OF DIGITAL PLATFORMS FOR E-LEARNING DURING THE COVID-19</td>
<td>6396</td>
</tr>
<tr>
<td>PANDEMIC: THE CASE OF ECUADOR</td>
<td></td>
</tr>
<tr>
<td>A. Pérez Avellaneda, D. Cueva, M. Martínez-Gómez</td>
<td></td>
</tr>
<tr>
<td>DESIGN THINKING AND CREATIVITY IN DEVELOPING DIGITAL COMPETENCIES</td>
<td>6401</td>
</tr>
<tr>
<td>IN PUBLIC ADMINISTRATION</td>
<td></td>
</tr>
<tr>
<td>M. Bogdanova, E. Parashkevova</td>
<td></td>
</tr>
</tbody>
</table>
REMOTE WEB CONTROL OF AC MOTOR BY ESP8622
D. Zlatanski, N. Vakrilov 6410

SERVICE-LEARNING IN PHARMACOLOGY AND TOXICOLOGY AS A STRATEGY FOR THE SELF-PROCESS OF LEARNING ABOUT THE KNOWLEDGE OF MEDICINES AND DRUGS OF ABUSE

DESIGN RESEARCH METHODOLOGY: INNOVATION FROM ACADEMY TO MARKET
S. Testa, A. Cappellieri, L. Tenuta, B. Rossato, F. Antinarelli Freitas 6422

APPLIED SYSTEMS THINKING AS A LEVER TO IMPROVE LEARNING IN THE COMPLEX SYSTEMS AND COMPLEXITY STUDIES FIELDS
G.L. Dugarte-Peña, E. Muñoz-García, C.G. García-Rodríguez 6428

ADVERSE IMPACT OF DISTANCE LEARNING ON STUDENTS’ ACHIEVEMENT DURING THE COVID-19 PANDEMICS
E. Turska, M. Kowalski 6434

VIRTUAL EXCHANGE AS AN INSTRUCTIONAL DESIGN APPROACH TO PROMOTING CRITICAL SKILLS IN HIGHER EDUCATION: A CASE STUDY OF PROJECT-BASED COLLABORATION ON “SOCIAL ROBOTS IN EDUCATION”
I. Buchen, M. Leiba 6435

CRITICAL THINKING: AN EXPERIENCE WITH PRE-SERVICE TEACHERS
L. Fonseca 6441

EDUCATIONAL TOOLS FOR BIBLIOGRAPHICAL RESEARCH IN COLLABORATION WITH STUDENTS
P. Mukanova 6447

THE IMPACT OF LEARNING MANAGEMENT SYSTEMS ON STUDENT ACHIEVEMENT AND ENGAGEMENT IN ONLINE CLASSROOMS
I. Pesovski, A. Klasniknovski, A.M. Makeška, V. Trajkovik 6451

FOSTERING STUDENT AGENCY IN TOURISM EDUCATION: EXAMPLES FROM THE TOURISM AND HOSPITALITY FIELD
S. Vasconcelos, A. Melo, C. Melo, C. Mouta 6457

PYTHAGOREAN THEOREM IN CLASSROOM THROUGH A LEARNING OBJECT
M. Teixeira, A.P. Aires, H. Campos 6462

GENDERED CAREER PATHWAYS OF DOCTORATE HOLDERS: A SYSTEMATIC LITERATURE REVIEW
C. Soares, T. Carvalho 6469

USUAL OR VIRTUAL PROTRACTOR? A STUDY WITH 5TH GRADE STUDENTS
E. Sacramento, H. Campos, A.P. Aires 6480

ANALYSIS OF THE USEFULNESS OF PHARMACOLOGY VIDEOS TO ENCOURAGE ACTIVE LEARNING AND KNOWLEDGE TRANSFER

THE CONTINUING PROFESSIONAL DEVELOPMENT OF TEACHER-EDUCATORS AS RESEARCHERS
N. Chamo, D. Patkin 6490

VIRTUAL PATIENT: A WEB-BASED PLATFORM FOR THE TRAINING OF MEDICAL STUDENTS IN PATIENT CONSULTATION DURING A LOCKDOWN
I.A. Awada, A. Sorici, M. Drăgoi, A.M. Florea, A. Scalfi-Udriște 6491

ADAPTATION OF THE RESEARCH TOOL MEASURING CRITICAL THINKING IN UNIVERSITY ENVIRONMENT
I. Koriščanska, Š. Chudý, J. Pichtšhe 6498

ESCAPE GAME AS A METHODOLOGICAL TOOL FOR TRAINING THE LAY POPULATION IN FIRST AID
C. Nóvo Fernandes, L. Vasconcelos Barreto de Carvalho, J. Teixeira Nicolosi, A. Bongiovanni, N. Alencar Salmeron 6499

TESLA COIL – CONSTRUCTION PROJECT – EDUCATIONAL APPLICATION
S. Skok, L. Havaš, T. Horvat, A. Šumiga 6504

SOLIDS AR VERSUS GEOMETRY AR: AUGMENTED REALITY TO TEACH GEOMETRY
C. Fernandes, H. Campos, A.P. Aires 6511

EMPLOYABILITY SKILLS: ENHANCING THE KNOWLEDGE ABOUT MARKETING JOB ADVERTISEMENTS POSTED ON LINKEDIN
I. Machado, C. Neves, M. Ferreira 6520
DESMOS A DIGITAL RESOURCE TO LEARN LINEAR FUNCTION
M. Carneiro, A.P. Aires, H. Campos

THE EFFICIENCY OF USING GAMES IN THE TEACHING AND LEARNING PROCESS ABOUT BURN VICTIMS
C. Nóvoa Fernandes, L. Ferreira Marcolan, S. Rodrigues Rosado

CITATION USAGE AS A PREDICTOR OF ACADEMIC PERFORMANCE IN STUDENT ACADEMIC WRITING
E. Walsh, E. Nikolaou

THE RELATIONSHIP BETWEEN PARENTS AND OLDER ADOLESCENTS: A PARENTAL VIEW
R. Petani

WEARING NATURE'S COLORS: FROM RESEARCH TO EDUCATIONAL EXPERIMENTATION
A. Violano, M. Cannavaiolo, M. Merola

SOLVING PROBLEMS USING THE ENGINEERING DESIGN PROCESS THROUGH A STEAM PERSPECTIVE
I. Vale, A. Barbosa, A. Peixoto, F. Fernandes

MEASURING THE EFFECT OF USING PSEINT AS A TOOL TO IMPROVE THE INTRODUCTION OF STUDENTS TO PROGRAMMING: TWO COMPARATIVE SCENARIOS
C.G. García-Rodríguez, G.L. Dugarte-Peña

AWARENESS RAISING THROUGH THE USE OF TECHNOLOGICAL MEDIA IN HIGHER EDUCATION
S. Montañez, E. Flores

THE BIG FIVE AND TEACHING PREFERENCES IN NATURE-HUMAN-SOCIETY
R. Tschiesner, A. Puhl

HOW STUDENTS’ LEARNING STYLES AFFECT THEIR PERCEPTIONS ON THE ASYNCHRONOUS MODE OF A MECHANICAL ENGINEERING COURSE
P. Zalimidis, K. Papantikolaou, V. Spitas, L. Gomatos, G. Vasilieou

OPEN DISTANCE TEACHING PRACTICES IN PANDEMIC TIMES: DEVISING A SIMPLIFIED VIRTUAL PEDAGOGIC MODEL FOR THE UNIVERSITY OF SAINT JOSEPH IN MACAU, CHINA
A. Fernandes-Marcos

QUALITY ASSURANCE AS A TOOL TO ENHANCE STUDENT-CENTRED LEARNING IN MILITARY HIGHER EDUCATION – CASE STUDY IN PORTUGUESE NAVAL ACADEMY
J. Ricardo, I. Soares

SENSATION SEEKING AND COPING IN YOUNG ADULTS
R. Tschiesner, M.E. Moretti, J. Happacher

DISTANCE LEARNING. FRIEND OR FOE?
R. Tammaro, A. Notti, I. Stasio, R. Scarano

THE EVOLUTION OF E-ME DIGITAL EDUCATIONAL PLATFORM AND EXPERIENCES FROM ITS NATION-WIDE USE IN SCHOOLS DURING COVID-19 PANDEMIC
E. Megalou, Y. Tsilivigos, C. Kaklamannis, A. Polití

EDUCATION AS AN AVENUE FOR STUDENTS' ETHICAL BEHAVIOR
S. Gomes, M. Nogueira, C. Neves, F. Pinto dos Santos

LOOKING FOR THE ADDED VALUE OF VAR FOR TEACHERS' LEARNING GOALS
A. Weizman

DEVELOPMENT OF DIGITAL COMPETENCES IN BIOLOGY EDUCATION IN PRIMARY AND SECONDARY SCHOOLS
A. Mišaniková, A. Lešková, Z. Bobrová, I. Slepkoová, K. Kináková

EXPLORING THE POTENTIAL OF EDUCATIONAL ANIMATION TO IMPROVE THE LEARNING PROCESS IN MECHANICAL ENGINEERING COURSES
P. Zalimidis, K. Papantikolaou, L. Gomatos, V. Spitas, G. Vasilieou

INSTRUCTIONAL DESIGN FOR HIGH SECURE SOFTWARE
A. Aleksieva-Petrova, M. Petrov

EXPERIENTIAL LEARNING OF CROATIAN PUBLIC RELATIONS' GRADUATE STUDENTS BY DOING ETHNOGRAPHIC RESEARCH IN THE HELPING PROFESSIONS
I. Ivancevic, K. Samec, Z. Bagaric
GOOD PRACTISE OF EDUCATION IN THE FIELD OF CLIMATE CHANGE
M. Titko, J. Studená

THE ART OF TEACHING AND THE METHODOLOGICAL EXPERTISE OF TEACHERS AND TRAINERS
R. Tammaro, A. Notti, I. Stasio, D. Gragnaniello

MODELING COMPUTATIONAL THINKING TEACHING THROUGH CREATIVE LEARNING
A. Weizman

ANALYSIS OF THE POSSIBILITIES OF IMPLEMENTING THE RESULTS OF RESEARCH ACTIVITIES INTO THE TEACHING OF THE MODERNIZED STUDY PROGRAM
CRISIS MANAGEMENT
S. Strelcová, A. Keltšek, M. Titko, V. Mróková

SCHOOL SPEECH AS A SPECIFIC COMMUNICATION DISCOURSE IN THE OPTICS OF CORPUS LINGUISTICS
K. Rysová

LEADERSHIP AND COMMUNICATION DEVELOPMENT IN ACADEMIC CONTEXT: CASE STUDY AT PORTUGUESE NAVAL ACADEMY
F. Rodrigues, I. Soares

ALGORITHMIC THINKING AND CREATIVITY: A DECK OF CARDS FOR EARLY CHILDHOOD EDUCATION

FOSTERING AUTONOMY OF UNIVERSITY STUDENTS IN THE ACQUISITION OF FRENCH LANGUAGE SKILLS THROUGH ASSESSMENT AND PERSONALISED TUTORING
A. Ruyffelaert

DETERMINING THE LEVEL OF READING LITERACY OF PRIMARY SCHOOL PUPILS IN THE CONTEXT OF THE CURRICULUM IN THE CZECH REPUBLIC
M. Fasnerová, J. Petrová

MIDDLE SCHOOL MATHEMATICS TEACHERS’ PROFESSIONAL NOTICING: THE CASE OF REPRESENTATION OF FRACTIONS ON THE NUMBER LINE
F.I. Karatær Aydin, M. Işıksal-Bostan, R. Tekin-Sıtravu, S. Yemen-Karpuzcu

HIGH-TECH AUGMENTATIVE AND ALTERNATIVE COMMUNICATION (AAC): A LONGITUDINAL STUDY ON THE USING VERSUS ABANDONMENT OF AN AAC SYSTEM
S. Vita, J. Peluso, A. Mennitto, L. Iovino

UNIVERSITY STUDENTS’ PREFERENCES OF USING VERBAL AND NONVERBAL COMPONENTS WHEN LEARNING FROM TEXT
I. Červenková, J. Kojidecká, A. Hrušková, Z. Síkorová

EXPERIENCES TO KEEP UNIVERSITY STUDENTS ENGAGED AND AVOID STUDENT DROP-OUT: SOME BEST PRACTICE EXAMPLES FOR FRENCH STUDIES
A. Ruyffelaert

AI LITERACY IN K-12 INFORMATICS EDUCATION
S. Mladenovic, B. Linskic, D. Krysan

SUPPORT FOR SCHOOL LEADERS AND DIGITAL COORDINATORS IN THE FIELD OF LEADERSHIP AND PERSONAL DEVELOPMENT
A. Miššianková, V. Hubešková, V. Grňová, D. Šveda, M. Kířeš

EXPERIMENTING WITH FORM. TEACHING ARCHITECTURE STUDENTS DESIGN BASICS THROUGH A REAL PROJECT
L. Patachi, A.E. Voinea, L. Vartic

AXT@TEEN: EVOLVING AN IT LOCAL SUMMER CAMP INTO A NATION-WIDE TECHNOLOGY AND ASPIRATIONAL TRAINING DURING COVID 19 PANDEMIC, A MEXICAN CASE OF STUDY FOR DIGITAL TRANSFORMATION IN EDUCATION
S. Ramírez-Ramírez, O.M. Barron-Canov, P. Zambrano-Robledo, L.R. Salgado-Garza, S. Barrera-Aldana

SUCCESSFUL E-TEACHING: INSIDERS’ VIEWPOINTS
M. Petrova, A. Zhuchenko

LEARNING FROM THE STUDENTS. AN ANALYSIS OF THE FEEDBACK ON OUTGOING ERASMUS MOBILITIES
L. Patachi
THE TAXONOMY OF INFORMATICS TEACHERS COMPETENCIES
S. Mladenovic, A. Granic, M. Mladenovic

AI IN DEVELOPING THE METACOGNITIVE SKILLS IN ENGINEERING EDUCATION - A LITERATURE REVIEW
J. Gadad, M. Vijayalakshmi

ONE SIZE FITS ALL? FUTURE SKILLS IN HIGHER EDUCATION – LESSONS LEARNED
Y. Sedelmaier, E. Erculei, D. Landes

PROGRAMME FOR NUTRITION EDUCATION: DEVELOPMENT OF SCIENTIFIC COMPETENCE BY HIGH SCHOOL STUDENTS

THE PEDAGOGICAL VARIATION MODEL (PVM, ROGERS, 2013): OVERCOMING ATTRITION RATES BY INCREASING RETENTION OF AN ORGANIC CHEMISTRY CLASS BY REMOTE LEARNING IN POST-PANDEMIC TIMES
M.S. Rogers, A. Grunewald Nichele

JUST BEFORE INTERNSHIP PRE-SERVICE TEACHER PEDAGOGICAL ISSUES
R. Peled, S. Hardof-Jaffe

APPLYING ITIL PRINCIPLES AT UNIVERSITY
K. Kaloyanova

COMPUTATIONAL THINKING AND MATHEMATICS LEARNING: AN EXPERIENCE IN A PRE-SERVICE TEACHERS COURSE
S. Martins

CASE STUDY ON STUDENTS’ PERCEPTION OF ONLINE LEARNING DURING THE COVID-19 PANDEMIC: CHALLENGES AND INTERFERENCES
A. Zhuchenko

PERSONALITY DEVELOPMENT BY IMPLEMENTING THE PHILOSOPHY FOR CHILDREN PROGRAMME
S. Borisová, G. Pintes

REMOTE SCHOOLING AND DISABILITIES: PERCEPTION AND ROLE OF THE FAMILIES DURING THE COVID-19 PANDEMIC EMERGENCY
V. Benigno, M. Allegra, G.P. Caruso, A. Chifari, M. Gentile, G. Fulantelli, L. Fertino

DESIGNING AN INNOVATIVE MOBILE-ENABLED CONTINUOUS PROFESSIONAL DEVELOPMENT SOLUTION FOR TEACHERS
A. Gohar

IMPACT OF COVID-19 ON LEARNING IN HIGHER EDUCATION ACCORDING TO TEACHING MODALITY
J. Palací López, M.I. López Rodríguez, D. Palací-López

COMPETENCY BASED AND TECHNOLOGICALLY ENHANCED TEACHING AND LEARNING: COLLABORATIVE VIRTUAL ENVIRONMENT AND TUNING METHODOLOGY
G. Zakirova, S. Rakhmetulayeva, Y. Daineko

MILAGE LEARN+: PERSPECTIVE OF TEACHERS
L. Almeida, M. Figueiredo, M.H. Martinho

IMPACT OF THE HEALTH ALARM ON THE TEACHING-LEARNING PROCESS IN UNDERGRADUATE AND POSTGRADUATE STUDIES
M.I. López Rodríguez, J. Palací López, D. Palací-López

TRANSFORMATION OF FAMILY EDUCATION AND PARENT EDUCATION IN SLOVAKIA
D. Dvořská, S. Dončevová, Z. Hrčán, J. Melvedová, S. Barnová

DYNAMIC E-SKILLS DEVELOPMENT FOR FOREIGN LANGUAGES EDUCATION IN THE EMERGENCY DIGITIZATION PARADIGM
R. Makhachashvili, I. Semenist

PRACTICAL TRAINING IN COMMUNICATION SCIENCES - AN IMPORTANT FACTOR IN EXPANDING THE COMMUNICATION CAPACITY OF STUDENTS
M. Atanasova

DEVELOPING FOREIGN-LANGUAGE SOCIOCULTURAL COMPETENCE OF LEARNERS: POSSIBILITIES OF INTERDISCIPLINARY STUDY COURSES
I. Dvorecká, A. Stankeviča

EVOLUTION OF CORPORATE SOCIAL RESPONSIBILITY IN SPAIN: CONNECTION WITH THE EDUCATION SECTOR
D. López Jiménez, E.C. Dittmar
A CURRENT LOOK AT THE PLANNING OF THE 1978-1979 SCHOOL YEAR OF A PRIMARY SCHOOL TEACHER
P. Catarino, A. Soares, A. Andrade

RESHAPING NARRATIVE OF SCHOOLING IN PAKISTAN THROUGH TECHNOCENTRIC DISCOURSE: AN ANECDOTAL THOUGHT
A. Gohar

ADAPTATION PROCESS OF PUPILS AFTER STARTING PRIMARY SCHOOL
J. Petrová, M. Fasnerová, J. Kvintová, L. Křeménková

THE RELATIONSHIP BETWEEN CRITICAL THINKING AND MORAL REASONING IN THE CONTEXT OF THE ‘PHILOSOPHY FOR CHILDREN’ PROGRAMME
S. Borisová, G. Pintes

CREATIVITY IN THE COMMUNITY FOR HEALTH AND WELL-BEING: SOCIAL PRESCRIBING “ART-ON-PRESCRIPTION”
M.S. Rogers, J.P.D. Rogers, H. Tilley

ADULT EDUCATION AS A POSSIBLE DIRECTION FOR THE DEVELOPMENT OF SOCIAL WORK EDUCATION
L. Vekova

EDUCATIONAL AND TECHNOLOGICAL SOLUTIONS TO SUPPORT "SMALL SCHOOLS" IN DISTANCE LEARNING SETTINGS: EVIDENCE FROM THE ITALIAN CONTEXT
E. Dalla Mutta, V. Benigno, C. Fante, G. Mangione

LEARNING WITH MOOCS: LEARNERS’ EXPERIENCE IN A BLENDED MASTER’S PROGRAM USING MITX MICROMASTERS COURSES
G. Stump, N. Castro, B. Muramatsu

INTEGRA BIOFIS 5.0, A COLLABORATIVE, PARTICIPATORY AND INTERDISCIPLINARY EXPERIENCE FOR UNDERGRADUATES IN NURSING
N. Rodríguez-Henche, L. Callero, M. Saura, I.D. Román, L. Muñoz- Moreno, A.M. Bajo

VIRTUALIZED LABS WITH XR ENDPOINTS FOR PRACTICAL TRAINING IN PHOTONICS
J. Kretzschmar, F. Sajka, J. Domke, C. Henkel, C. Helgert, T. Pertsch

PROPOSAL OF METHODOLOGY FOR TEACHING SUBJECTS RELATED TO PROGRAMMING SKILLS IN THE CASE OF ONLINE TEACHING
A. Radovanov, J. Mihaljević, D. Petrović, M. Piškor

ADAPTING COLLABORATIVE HANDS-ON ACTIVITIES FOR REMOTE LEARNING
J. Mullen, L. Milechin

ANALYSIS AND COMPARISON OF THE EFFICIENCY OF THE HIGHER EDUCATION SYSTEM OF EUROPEAN COUNTRIES USING DATA ENVELOPMENT ANALYSIS
A. Marčík Horvat, B. Radovanov, O. Sedlak, Z. Ciric, R. Korhec

EDUCATION FOR THE VALUE OF RULE OF LAW IN THE EUROPEAN UNION
M.M. Silva, D. Alves

VIRTUALIZATION OF COMPUTER NETWORK LAB EXPERIMENTS TO OVERCOME LIMITATIONS OF SOCIAL DISTANCE
R. Silveira, G. Bressan, C. Margi

HERBARIUM AS EDUCATIONAL AND INTERDISCIPLINARY RESOURCES: UTAD BOTANICAL GARDEN
A. Andrade, P. Catarino, A. Soares

DEMOCRATIZATION OF KNOWLEDGE IN SOCIAL WORK EDUCATION WHILE EMBEDDING SERVICE-LEARNING
M. Grislytė

ON THE USE OF REALISTIC ENVIRONMENTS BASED ON LOW-COST HARDWARE DEVICES FOR LABORATORY PRACTICES
Y. Blanco Archilla, A. Pérez Yuste, D. Luengo García, J.D. Oses Del Campo

CREATION OF A SERIOUS VIDEOGAME PROTOTYPE “THE ENGINEER” IN THE DIGITAL AGE TO PROMOTE ENGINEERING ENGLISH IN HIGHER EDUCATION
C. Girón-García, R. Casañ-Pitarch, C. Holgado-Sáez, J. Haba-Osca

COMPARISON OF WEB ACCESSIBILITY TEACHING IN DIFFERENT HIGHER EDUCATION INSTITUTIONS
S. Luján-Mora, C. Cachero, S. Meliá

THE NEED FOR TRAINING IN TRACKING AND LOCALIZATION SYSTEMS FROM A SECURITY PERSPECTIVE
M. Boroš, A. Velis, Z. Zoukova
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>VISUAL LITERACY IN PRESCHOOL</td>
<td>7067</td>
</tr>
<tr>
<td>P. Josefsson</td>
<td></td>
</tr>
<tr>
<td>EMOTONGUE, AN APPLICATION FOR SMARTPHONES DESIGNED TO MEASURE EMOTIONS IN NATURAL CONTEXTS</td>
<td>7072</td>
</tr>
<tr>
<td>L. Bruno, A. Iborra Cuéllar</td>
<td></td>
</tr>
<tr>
<td>TEACHING SOFTWARE SKILLS USING A FREELY ACCESSIBLE LEARNING SPACE - AN OER APPROACH</td>
<td>7073</td>
</tr>
<tr>
<td>THE INTRODUCTION OF DIDACTIC MATERIALS FOR PHILOSOPHY TEACHING AIMED AT THE STUDENT'S UNDERSTANDING AND CRITICAL THINKING DEVELOPMENT</td>
<td>7082</td>
</tr>
<tr>
<td>Z. Cieslarová, M. Číhalová, T. Hubálek</td>
<td></td>
</tr>
<tr>
<td>STUDY OF THE IMPACT OF TECHNOLOGY IN PRIMARY AND LOWER SECONDARY SCHOOL</td>
<td>7089</td>
</tr>
<tr>
<td>T. Tonova, S. Ivanov</td>
<td></td>
</tr>
<tr>
<td>TEACHING ‘SEXUALITY, CONSENT AND RELATIONSHIP’ IN BIOLOGY CLASS - SWEDISH TEACHER EDUCATION, YEARS 4-6</td>
<td>7096</td>
</tr>
<tr>
<td>A. Didon, P. Josefsson</td>
<td></td>
</tr>
<tr>
<td>BUILDING OUR FUTURE, A COLLABORATIVE, PARTICIPATORY AND MOTIVATING EXPERIENCE FOR UNDERGRADUATES IN CHEMISTRY</td>
<td>7097</td>
</tr>
<tr>
<td>I.D. Román, A. Domingo, C. Menor-Salván, L. Muñoz-Moreno, A.M. Bajo</td>
<td></td>
</tr>
<tr>
<td>STEM STUDENTS SOLVING ACTUAL PROBLEMS FROM BUSINESS, INDUSTRY, AND GOVERNMENT</td>
<td>7102</td>
</tr>
<tr>
<td>M. Dorff, S. Weekes</td>
<td></td>
</tr>
<tr>
<td>SOCIAL REPRESENTATION ON ENGLISH, RUSSIAN AND NATIVE LANGUAGES IN INTERNATIONAL UNIVERSITY STUDENTS</td>
<td>7103</td>
</tr>
<tr>
<td>A. Berisha, N. Berisha, I. Novikova, A. Novikov, A. Barkhudarov</td>
<td></td>
</tr>
<tr>
<td>PUPILS WITH DYSLEXIA IN THE EDUCATIONAL PROCESS</td>
<td>7109</td>
</tr>
<tr>
<td>J. Petrovi, M. Fasnerov</td>
<td></td>
</tr>
<tr>
<td>THE AMAZING RACE TO KNOWLEDGE: TEAM-BASED GAMES AND CREATIVITY IN THE CURRICULUM OF MEDICINE STUDIES</td>
<td>7117</td>
</tr>
<tr>
<td>M. Gouzman Allouche</td>
<td></td>
</tr>
<tr>
<td>THE SOUND OF SCIENCE(S): A SOUND-BASED PROJECT FOR INCLUSIVE STEAM EDUCATION AND SCIENCE COMMUNICATION</td>
<td>7130</td>
</tr>
<tr>
<td>G. Eramo, V. Rossini, S. Pastore, A. Muschitiello, A. Monno, E. Mesto, V. Tomaselli, R. Wagensommer, M. De Tullio</td>
<td></td>
</tr>
<tr>
<td>A SKETCH TO STIMULATE THE MIND: EDUCATIONAL EXPERIMENTATION FOR THE AWARE DESIGN</td>
<td>7135</td>
</tr>
<tr>
<td>A. Violano, A. Maieo, C. Tosato</td>
<td></td>
</tr>
<tr>
<td>CRITICAL AREAS IN THE TEACHING OF PHILOSOPHY – THEIR CAUSES AND OPTIONS OF SOLUTION</td>
<td>7142</td>
</tr>
<tr>
<td>Z. Cieslarová, M. Číhalová, T. Hubálek</td>
<td></td>
</tr>
<tr>
<td>USING EDUCATIONAL NEUROSCIENCE AND CULTURALLY RELEVANT TEACHING PRACTICES IN STEM EDUCATION: CASE STUDY ON BRIDGING THEORETICAL LECTURES TO EXPERIENTIAL EXPERIENCE</td>
<td>7149</td>
</tr>
<tr>
<td>R. Darville, S. Doukakis, S. Nikiforos, M. Magioliditis, M. Niari</td>
<td></td>
</tr>
<tr>
<td>DYNAMIC ASSESSMENT OF VOCABULARY DEVELOPMENT THROUGH INTERACTIVE BOOK READING IN LOWER ELEMENTARY SCHOOL GRADES</td>
<td>7157</td>
</tr>
<tr>
<td>S. Vamparys, H. Van Keer</td>
<td></td>
</tr>
<tr>
<td>EMPOWERING THE EUROPEAN WORKFORCE THROUGH VIRTUAL SKILLS TRAINING ON INDUSTRIAL IOT: THE SKOPS PROJECT</td>
<td>7165</td>
</tr>
<tr>
<td>A. Behravan, N. Bogonikolos, M. Bohloulí, C. Cachero, P. Kaklatzis, B. Kiamaní-Mora, S. Melíá, M. Mirhaj, R. Obermaisser</td>
<td></td>
</tr>
<tr>
<td>A GENRE-BASED APPROACH TO SPECIALIZED TRANSLATION TRAINING: THE CASE OF A WINE-FOCUSED WORKSHOP</td>
<td>7175</td>
</tr>
<tr>
<td>M. Pascual Cabrerozno</td>
<td></td>
</tr>
<tr>
<td>AN EE SENIOR DESIGN LAB PROJECT WITH A FULL PRODUCT CYCLE AMID THE COVID-19 PANDEMIC</td>
<td>7176</td>
</tr>
<tr>
<td>L. Lam</td>
<td></td>
</tr>
</tbody>
</table>
GAMIFICATION IN HIGHER EDUCATION - BECAUSE GAMES KNOW NO AGE LIMIT!
M. Pascual Cabrero

PROBLEM OF USING AUGMENTED REALITY IN SELECTED TASK IN MONGE PROJECTION
V. Ferdiánová, J. Poruba, M. Procházková

TRANSITIONING E-LEARNING PLATFORM SUBSCRIPTION MODEL TO FLEXIBILITY – SPLIT TEST ANALYSIS ON A NORWEGIAN E-LEARNING PLATFORM
D. Petrović, B. Mihaljević, M. Žagar, A. Radovan

EMPTY SPAIN AND VERNACULAR ARCHITECTURE. AWARENESS AND CONSERVATION FROM THE TEACHING OF ARCHITECTURAL RESTORATION

FEEDBACK AND WRITTEN MATHEMATICS COMMUNICATION – A PEN PAL EXCHANGE
A. Barbosa, I. Vale

AN E-TRAINING PLATFORM DEVELOPED TO IMPROVE SKILLS AND KNOWLEDGE OF ELDERLY WITH REDUCED MOBILITY IN USING ASSISTIVE TECHNOLOGIES
C. Ciobanu, J. Wiełga, D. Mantziari, M. Karagianni, N. Samar Brečić

DIGITAL TRANSFORMATION OF HIGHER EDUCATION INSTITUTIONS - APPLYING MODELS FROM ENTERPRISES
I. Ogrizek Bioškupić, M. Banek Zorica, K. Šiber Makar

USE OF COMPUTATIONAL SIMULATION AND LABORATORY EXPERIENCE ON LEARNING THE PHOTOELECTRIC EFFECT – 12TH CLASS
E. Macuácuca, P. Catarino, A. Soares

PROBLEM SOLVING SKILL: THE ROLE OF ACTIVE TEACHING METHODOLOGIES
G. Vincenti

CONTRIBUTION OF PARTICIPATION IN EDUCATIONAL SIMULATION WORKSHOPS FOR DEVELOPING OPTIMAL COMMUNICATION SKILLS AND SOCIO-EMOTIONAL AWARENESS AMONG PRE-SERVICE ENGLISH AND MATH TEACHERS
A. Fattum, A. Rasslan-Sharif, J. Musa, E. Salman

THE PERSONHEART PROJECT, A LEARNING EXPERIENCE FOR BOTH END-USERS AND DEVELOPERS
K. Bierwirth, I. Mocanu, O. Cramariuc

CORPORATE SOCIAL RESPONSIBILITY IN EDUCATIONAL PROCESS OF STUDY PROGRAM AT THE UNIVERSITY OF NOVI SAD
S. Štefanović, O. Sedlak, Z. Ćirić, D. Stojac, R. Krtuc

IMPACT OF COVID-19 PANDEMIC ON LEARNING AND TEACHING: A COMPARATIVE STUDY IN A PORTUGUESE ENGINEERING DEGREE COURSE
P. Carvalho

INTEGRATING ONLINE TECHNOLOGY AND TRADITIONAL PEDAGOGY: CHALLENGES AND SOLUTIONS DURING THE COVID19 LOCKDOWN
C. Gurau

RESEARCH ON FLT UNDER THE MOBILE LEARNING AND TASK-DRIVEN MODE OF SMARTPHONE
Y.X. Sun

TRAINING THE TRainers IN WATER SPORTS TOURISM FOR SUSTAINABLE DEVELOPMENT AND RESILIENCE IN COASTAL REGIONS
F. Galatsopoulou, C. Kenterelidou

DIGITAL TECHNOLOGIES IN THE PERFORMANCE OF THE TEACHER’S WORK – INNOVATION AND FLEXIBILITY IN THE TEACHING PROFESSION
S. Trellov, E. Bežová, A. Kačmariková

USE OF EMBEDDED SYSTEMS IN INDUCTION HEATING
M. Knedlík, P. Kucera

THE USE OF TEACHING AND LEARNING RESOURCES IN ENGLISH LANGUAGE AT LOWER SECONDARY SCHOOLS
I. Červenková, N. Porubová, Z. Šikorová

UNIVERSITY/COLLEGE STUDENTS’ CHOICE: HYFLEX LEARNING
S. Laurian Fitzgerald, C. Fitzgerald
STUDENT ONLINE ASSESSMENT: A QUANTITATIVE SNAPSHOT OF TEACHERS’ CHALLENGES AND VIEWPOINTS IN THE CONTEXT OF DIGITALISATION
O. Mosoiu, L. Popa

ANALYSIS OF BIOLOGY TEXTBOOKS FOR LOWER SECONDARY SCHOOL PUPILS IN RELATION TO THE INCLUDED SCAFFOLDING COMPONENTS
N. Porubová, I. Cervenková

MAKING IDEAS VISIBLE: DESIGN APPROACH IN TEACHING ABSTRACT CONCEPTS THROUGH HANDS-ON ACTIVITIES
V.M. Iannilli, M. Di Iorio

REMOTE LEARNING EXPERIENCE OF HIGH-SCHOOL STUDENTS DURING COVID-19
M. Činjarević, L. Turulja, A. Kapo, A. Alić

PERCEPTION OF GAME-BASED LEARNING: EXAMINING ESCAPE ROOM EDUCATION IN HIGHER EDUCATION
A. Daunoriene, A. Daubariene

THE RELATIONSHIP BETWEEN MATHEMATICS AND MUSIC EDUCATION – PRACTICAL EXPERIENCES
P. Otilová, S. Svetk

A CALCULUS COREQUISITE DESIGNED TO INCREASE EQUITY AND INCLUSION
J. Ross, N. Spear

SEARCHING FOR ARGUMENTS TO CONFRONT FAKE NEWS
M. Minguela, N. Castells, E. Nadal

DEVELOPMENT OF SECONDARY SCHOOL STUDENTS’ ATTITUDES TOWARDS DISTANCE LEARNING DURING THE COVID-19 PANDEMIC
S. Barnová, S. Krášna, G. Gabrhelová, D. Petršková, S. Brunovský

THE APPLICATION OF ICT TECHNOLOGY IN FOREIGN LANGUAGE ONLINE TEACHING MODE
Y.X. Sun

TRANSITIONING FROM ONLINE TO CLASSROOM LEARNING - DIGITAL EDUCATION IMPACT ON FUTURE EDUCATION
R. Kulhánek, S. Trelíková, M. Kavšík

TEACHING AND LEARNING IN A PANDEMIC
S. Laurian Fitzgerald, C. Fitzgerald

REFLECTIONS OF REMOTE LEARNING IN HIGHER EDUCATION – A CASE STUDY FROM A UK UNIVERSITY
N. Ratnayake

CHILDREN’S LITERATURE, FAMILIES AND EARLY CHILDHOOD EDUCATION: WAYS OF EXPERIENCING THE COVID-19 PANDEMIC
M. Figueiredo, M. Alves, I.A. Matos

ENHANCING TRANSDISCIPLINARITY IN HIGHER EDUCATION PROBLEM-BASED LEARNING: THREATS AND OPPORTUNITIES FROM THE VIEWPOINT OF FACULTY MEMBERS
F. Pinto dos Santos, C. Neves, S. Gomes, P. Oliveira, M. Nogueira

DIGITALIZATION OF TEACHING AT VOCATIONAL SCHOOLS: WHAT REQUIREMENTS ARE PLACED ON TEACHERS?
N. Lemke, J. Siemon, A. Augsdörfer

EDUCATIONAL EXPERIENCES OF STUDENTS DEVELOPED STREAM PROJECTS
N. Cibulškaitė, A. Augustinović

THE EVOLUTION OF CYBER-BULLYING DURING THE COVID-19 PANDEMICS IN HUNGARIAN SCHOOLS IN SLOVAKIA
Z. Arki, T. Berta, G. Kiss

3D PRINTERS IMPACT ON THE FUTURE OF CONSTRUCTION
A. Javaherikhah, M. Valiente Lopez, M. Fernandez Alvarez

E-LEARNING SUCCESS DURING COVID TIME: ORGANIZATIONAL, INSTRUCTOR AND STUDENT PERSPECTIVES
A. Šemić, A. Kapo, M. Činjarević, L. Turulja, A. Alić

GENDER AND REPRESENTATIONS OF THE VETERINARY PROFESSION DURING EDUCATION. AN EXPLORATORY STUDY AMONG UNIVERSITY STUDENTS
A. Ricci
OVERCOMING TECHNOLOGICAL AND CULTURAL CHALLENGES OF INTERNATIONAL STUDENTS IN HYBRID ONLINE CLASSES FOR QUALITY EDUCATION
G. Tusch
7423

DESIGN OF AN ANDROID APP TO ADAPT PRACTICAL LABORATORY ACTIVITIES TO A REMOTE MODALITY
M. García-Bosque, A. Naya, C. Sánchez-Azqueta
7430

THE EFFICIENCY OF ALBANIAN ONLINE LEARNING
D. Shoraj, E. Kadiu
7435

THE LMOOC4SLAV PROJECT: ACADEMIC DISCOURSE FOR ACADEMIC MOBILITY
F. Silva, I.M. Duarte, B. Samu, Â. Carvalho
7442

AN EXPERIENCE OF BLENDED LEARNING IN MARKETING: THE EFFECT OF ALUMNI TESTIMONIALS ON STUDENT MOTIVATION
A. Estima
7450

DESIGN AND IMPLEMENTATION OF A WORKSHOP FOR THE LEARNING OF NUMERICAL SERIES BASED ON COMPETENCE ASSESSMENT THROUGH THE USE OF TECHNOLOGICAL APPLICATIONS AND COMPUTATIONAL MATHEMATICS
M. Dádamo, S. de Federico
7455

SOCIOECONOMIC AND CULTURAL CONDITION TO ACCESS HIGHER EDUCATION IN MOZAMBIQUE: THE POTENTIAL OF DISTANCE EDUCATION IN RURAL AREAS
P. Cuamba, A. Moreira, A.C. Amaro
7463

ADOPTING BEST PRACTICES FOR BUSINESS COURSES IN TIMES OF CRISIS: AN EXPLORATORY CASE STUDY IN LA RIOJA, SPAIN
L.M. Cerdá Suárez
7469

SOCIAL AND ECOLOGICAL SUSTAINABILITY IN SOCIAL WORK TRAINING
H. Belchior-Rocha, I. Casquilho-Martins, J. Ferreira
7476

SELF ASSESSMENT METHOD FOR PRODUCT DESIGN STUDENTS
M.E. Romero, M. Frausin, G. Borga, M. Bresciani
7484

MORE ACCESSIBLE E-LEARNING: ADAPTING E-LEARNING MATERIALS FOR STUDENTS WITH SPECIAL NEEDS
N. Lazić, M. Banek Zorica, J. Klindžić
7490

TEACHING ARCHITECTURAL DRAWING AT THE ETSEM ESCUELA TÉCNICA SUPERIOR DE LA EDIFICACIÓN, UNIVERSIDAD POLITÉCNICA DE MADRID
M. Valiente Lopez, S. Diez Sanz, M.C. Sanz Contreras
7494

ASSESSMENT OF THE IMPACT OF RESOURCE MANAGEMENT MECHANISMS ON THE EDUCATIONAL RESULTS OF THE SCHOOL
I. Khudorozhkov, B. Ilyukhin, E. Benks, N. Serbina
7504

IMPROVING DIGITAL SKILLS IN THE TEXTILE AND CLOTHING INDUSTRY THROUGH ONLINE COURSES
C. Hertleer, A. Terziev, B. Malengier, H. Saeed, S. Ercegovic Razic, A. Dimov
7511

VIRTUAL LABORATORY OF COMPUTER SCIENCE AT PRIMARY SCHOOL
V. Stoffová, M. Zboran
7516

STEM IN CHILDHOOD EDUCATION: A LITERATURE REVIEW
M. Azevedo, C. Ribeiro, C. Mesquita, M. Vara Pires
7522

RIGHTS-BASED PEDAGOGY AND EARLY CHILDHOOD EDUCATION PRACTICES
C. Ribeiro, C. Mesquita, J.C. Hernández Beltrán
7530

CHANGES IN THE TEACHING LEARNING PROCESS AFTER COVID: WHAT ARE THE CHALLENGES FOR STUDENTS AND TEACHERS IN RETURNING TO A “NEW NORMALITY”?
M. Ferreira, S. Bandeira, I. Machado, C. Nieves, A. Vieira, A. Aragonez
7539

CODEVAL: IMPROVING STUDENT SUCCESS IN PROGRAMMING ASSIGNMENTS
A. Agrawal, A. Jain, B. Reed
7546

ACTIVITIES WITH DESMOS AND GEOGEBRA FOR FORMATIVE AND AUTOMATIC FEEDBACK
V. Santos, N.R. O. Bastos
7555

PEDAGOGICAL DOCUMENTATION IN CHILDHOOD EDUCATION: A REVIEW OF CONCEPTS
M. Azevedo, C. Mesquita, I. Mociño-González
7560

THE IMPACT OF ONLINE ASSESSMENT ON THE PERFORMANCE OF BUSINESS SCIENCE COURSES’ HIGHER EDUCATION STUDENTS
C. Martins, J. Caldeira
7568
TEACHING BUSINESS INFORMATICS AT HIGHER EDUCATIONAL LEVEL TO DIGITAL NATIVES: HAS COVID-19 CAUSED CHANGES IN THE PERCEIVED USEFULNESS AND THE RESULT OF TEACHING?
D. Suša Vugec, A.M. Stjepić

ASSESSING THE LEVEL OF SLOVAK UNIVERSITY STUDENTS’ INTERPRETATIVE SKILLS
Z. Sucháňová

SPIKE UP PRIME INTEREST IN MATHEMATICS
P. Petrovič

DEVELOPMENT OF GRADUATE EMPLOYABILITY SKILLS WITH REGARDS TO DREAM JOB USING MOBILE APP
M. Iqbal, A. Abbas, S.A. Petersen

EARLY IMITATION AND FOREIGN LANGUAGE LEARNING
A. Frolli, F. Cerciello, S. Ciotola, B. Bertin, C. Esposito, M.C. Ricci

STUDENTS’ ENGAGEMENT IN SOLVING MATHEMATICAL TASKS INVOLVING CONNECTIONS: AN OUTDOOR EXPERIENCE IN PRIMARY EDUCATION
F. Fernandes, I. Vale

FOOD SUSTAINABLE EDUCATION: A SYSTEMATIC LITERATURE REVIEW
C. Ribeiro, M. Azevedo, C. Mesquita, M.J. Rodrigues, M. Vara Pires

USING MICROCONTROLLERS FOR EDUCATIONAL ROBOTICS IN UNDERGRADUATE UNIVERSITY STUDY PROGRAM
P. Petrovič

SYSTEMS FOR KNOWLEDGE TESTING AND ASSESSMENT
V. Stoffová, O. Horváthné Habodás

MAPPING THE SLOVAK UNIVERSITY STUDENTS’ ATTITUDES TOWARDS LITERATURE COURSES AND EXTENSIVE READING IN ENGLISH
Z. Sucháňová

IMMERSIVE AND INTERACTIVE DIGITAL NARRATIVES AND THE SOCIAL APPROPRIATION OF SCIENCE: COCREATIVE PROCESSES TO CREATE AN OPEN-AIR SCIENCE PARK THAT ADDRESSES EVOLUTIONARY BIOLOGY
R. Nóbrega, C.A.M. Russo

STUDENT SELF-EFFICACY AND IMPACT OF COVID-19 ON ACTIVE LEARNING IN COLLEGE ALGEBRA THROUGH CALCULUS COURSES
M. Bode, S. Devi, J. Ross, A. El Sabbagh, K. Pooler

CURRICULAR ARTICULATION IN HIGHER EDUCATION: AN EXPERIENCE IN INITIAL TEACHER EDUCATION
A.R. Aguiar, F. Fernandes

ENHANCING LEARNING OF INTERACTION DESIGN AND WEB APP DEVELOPMENT THROUGH INTERDISCIPLINARITY: A PEDAGOGICAL EXPERIMENT
R. Hernández-Ramírez, J. Estima, M. Boavida

AN AWARENESS-RAISING PINBALL: DESIGNING AND PROTOTYPING A SERIOUS GAME WITH PRODUCT DESIGN STUDENTS
M.E. Romero, M. Frausin, G. Borga, M. Bresciani

TEACHING MATHEMATICS TO ADULT STUDENTS TO PROMOTE HIGHER EDUCATION ACCESS
H. Belchior-Rocha, R. Mauritti, J. Monteiro, L. Carneiro, J. Mendes

EDUCATIONAL SYSTEM FOR LEARNING SPECIFIC AND ATTITUDINAL COMPETENCES THROUGH HYBRID EDUCATION STRATEGIES WITH INTERACTIVE COLLOQUIUM CHALLENGES AND USE OF BRAINSTORMING
S. de Federico, M. Dadamo

DEVELOPMENT OF ONE GAME IN SCRATCH TO ASSIST IN TEACHING COMPUTATIONAL THINKING
T.L. da Silva, G.S. dos Santos

SOUND ENGINEERING IN INFORMAL LEARNING ENVIRONMENT - SOUND EXPERIMENTS IN AN IMPROVED RECORDING STUDIO
P. Stefanova, P. Stefanov

THE SPANISH POPULATION UNDER THE FRAMEWORK OF FINANCIAL COMPETENCE FOR ADULTS SET BY THE EU/OECD IN 2022
M. Bosch-Princep, M.A. Pons Cardell, J. Sarrasí Vizcarraga

DIGITAL TRANSFORMATION AS UNIVERSITY COURSE - DEVELOPMENT AND IMPLEMENTATION
I. Pihir
BLEND MOBILITY IN JEU: AN EVALUATION

IDENTIFYING RISK IN READING AND WRITING IN THE 2ND YEAR OF SCHOOLING: A STUDY IN NORTHERN PORTUGAL IN THE CONTEXT OF THE COVID-19 PANDEMIC
P. Fortunato Vaz, V. Gonçalves, C. Teixeira

STARTING OVER THROUGH DIFFERENT LEARNING AREAS
H. Belchior-Rocha, M. Sampayo, R. Mauri, M. Granjo, M. Rodrigues

BREAKOUT ROOMS: A COLLABORATIVE SPACE THAT WORKS
N.R. O. Bastos

CULTURAL HERITAGE AND EDUCATION: WHAT RELATIONSHIP?
M. Louro Felgueiras, O. Tymoshchuk, S. Saborano, I. Breia, M. Resende

USING CANVAS LMS ANALYTICS AS A MEANS TO SUPPORT ALL STUDENTS
C. Prado, T. Barros

COLLABORATION BETWEEN EDUCATIONAL INSTITUTIONS: INTERINSTITUTIONAL CREATIVE MUSIC ELABORATION OF PEDAGOGICAL RESOURCE
P. Stefanova, P. Stefanov

FOREIGN STUDENTS IN HIGHER EDUCATION INSTITUTIONS IN PORTUGAL, EXPECTATIONS AND REALITY - A CASE STUDY
R. Mauri, S. Pintassilgo, H. Belchior-Rocha, J. Mendes, D. Ramos

EDUCATIONAL CASE STUDIES FOR DIGITAL TRANSFORMATION
I. Pihir

CULTURAL HERITAGE AND EDUCATION: WHAT RELATIONSHIP?
M. Louro Felgueiras, O. Tymoshchuk, S. Saborano, I. Breia, M. Resende

USING CANVAS LMS ANALYTICS AS A MEANS TO SUPPORT ALL STUDENTS
C. Prado, T. Barros

COLLABORATION BETWEEN EDUCATIONAL INSTITUTIONS: INTERINSTITUTIONAL CREATIVE MUSIC ELABORATION OF PEDAGOGICAL RESOURCE
P. Stefanova, P. Stefanov

FOREIGN STUDENTS IN HIGHER EDUCATION INSTITUTIONS IN PORTUGAL, EXPECTATIONS AND REALITY - A CASE STUDY
R. Mauri, S. Pintassilgo, H. Belchior-Rocha, J. Mendes, D. Ramos

EDUCATIONAL CASE STUDIES FOR DIGITAL TRANSFORMATION
I. Pihir

CREATING CRISIS READJUSTMENT BEST PRACTICES (CRBP): STRATEGIES FOR DEVELOPING EDUCATIONAL TRANSITIONAL PRACTICES DURING ENVIRONMENTAL READAPTATION OF HUMAN CAPITAL
B. Barrett

IMPACT OF SOCIAL MEDIA PLATFORMS IN ENHANCING ACADEMIC LEARNING
S. Shaaban-Nejad

PREPARING FOR THE FUTURE FOR ALL: THE STATE OF ACCESSIBILITY EDUCATION AT TECHNICAL UNIVERSITIES
H. Snarberg, A. Pantigoso Velasquez, K. Falkenberg, S. Johansson

ANGLOPHONE LITERATURE AND CULTURE IN LITERARY EDUCATION OF FUTURE TEACHERS
J. Hrinak

USING THE UNESCO 2030 SUSTAINABLE DEVELOPMENT GOALS FOR A FOUR COURSE SEQUENCE
P. Lane, R. Lafferty

SOCIAL ENTREPRENEURSHIP AND INCLUSIVE ENTREPRENEURSHIP RESEARCH: EXPLORING UNDERSTANDING OF BUSINESS AND MANAGEMENT STUDENTS
A. Mirakyan

INCREASING SOCIETY 5.0 SKILLS ELEMENTARY SCHOOL STUDENTS BY GAWI MANUNTUNG LEARNING MODEL
A.R. Agusta, A. Suriarsyah, D.A. Pratiwi, N. Noorhapi, S. Hussin

SUSTAINABILITY COMPETENCE-BASED ENGINEERING EDUCATION AT HIGHER EDUCATION INSTITUTIONS: INTRODUCING THE DESIGN FOR A MODULARIZED “SUSTAINABILITY BUSINESS ECONOMICS LAB”
A. Omazic, B. Zunk, C. Pacher

VIDEOS TO REPLACE FACE-TO-FACE CLASSES
A.A. Mendoza-Amador, M.A. Carballo-Ontiveros, A.N. Castañeda-Sortibrán

A SPANISH PROJECT BASED ON THE CONCEPT OF CULTURAL HERITAGE
C. Silva

THE EFFECTIVENESS OF ELEMENTARY SCHOOL LEARNING MATERIAL BASED ON SOUTH KALIMANTAN LOCAL WISDOM TO INCREASE STUDENTS HIGH ORDER THINKING SKILLS AND GAWI MANUNTUNG CHARACTER
A.R. Agusta, A. Suriarsyah, D.A. Pratiwi, N. Noorhapi, S. Hussin, I. Sin
REMOTE ACCOMPANIMENT AND EDUCATIONAL HELP AMONG UNIVERSITY STUDENTS: THE CASE OF A PEER TUTORING PROGRAM DURING COVID-19 TO KEEP STUDENTS ENGAGED
S.A. Niño Carrasco, J.C. Castellanos-Ramírez, E. Viloria

INNOVATIVE WAYS TO COMMUNICATE RESEARCH IN THE HUMANITIES: COMIC STRIPS
K. Salvador-Cisneros, W. Wonsang

INNOVATIVE ASSESSMENT TOOLS AND THE USE OF THE PROJECT METHOD IN TEACHING SCIENCES AND MATHEMATICS IN PRIMARY SCHOOLS
Z. Arki, T. Berta, L. Jaruska

FORMATION OF COMMUNICATIVE COMPETENCE AT EDUCATIONAL PRACTICE OF PEDAGOGICAL UNIVERSITY STUDENTS
I. Balandina, L. Yuzdova, T. Moskvetina, N. Parshukova, I. Kozlovi, L. Makhmutova

HOW COVID-19 PANDEMIC AFFECTED THE EDUCATIONAL DECISIONS? CASE STUDY ON ROMANIAN YOUTH
C. Mocanu, A.M. Zamfir

YOUTH EMPLOYABILITY DURING COVID-19 PANDEMIC IN CENTRAL AND EASTERN EUROPE
C. Mocanu, R.M. Molea

AGENDA 2030 FOR SUSTAINABLE DEVELOPMENT AND THE FUTURE OF ADULT LEARNING IN EUROPE
F. Rebelo, A. Gunnarès

POTENTIAL EFFECTS OF AN ACTIVE VIDEO GAME ON PHYSICAL EDUCATION AND ON MATHEMATICAL LEARNINGS
P. Fargier, V. Cece, N. Burel, C. Roure, V. Lentillon-Kaestner

EXPLORING SELF-REGULATION IN MALAYSIAN REMOTE LEARNING ENVIRONMENT: A CASE STUDY
A.A. Mohd Kasim

DIGITAL TRANSFORMATION AND INNOVATION IN THE EDUCATION INDUSTRY: DEMOCRACY VERSUS POLITICAL ECONOMY
P. Ray

COMPUTATIONAL THINKING FROM EARLY CHILDHOOD EDUCATION
J. Casas

CRITERIA FOR DEVELOPING EDUCATIONAL DIGITAL GAMES
P. Hitkova, P. Hitka

CREATING A BETTER FUTURE FOR MEDICINE: DEVELOPING A MEDICAL/HEALTH HUMANITIES LEARNING COMMUNITY IN UNDERGRADUATE MEDICAL EDUCATION
P. Brett-MacLean

SOCIAL MEDIA AS A TEACHING RESOURCE AND STRATEGIC COMMUNICATION TOOL DURING AN ERASMUS+ MISSION
J. Gonçalves, F. Rodrigues, F. Gonçalves, A. Pissarra, H. Engrácio

NEW PATHS OF TEACHING AND LEARNING – HOW COVID 19 E-LEARNING EXPERIENCE SHAPED THE LEARNING PROCESS AND COMPETENCES OF COMMUNICATION STUDENTS IN POLYTECHNIC OF GUARDA
J. Gonçalves, H. Engrácio, F. Rodrigues, J. Bragas, F. Gonçalves

LEVERAGING STEM CAREER PATHS THROUGH ROLE MODEL INTERACTION
D. Kilian, P. Mirski, S. Kruschel, A. Rottensteiner

THE INFLUENCE OF GENDER COMPOSITION OF MENTORING RELATIONSHIPS ON MENTORS’ AND MENTEES’ EXPECTATIONS TOWARDS ACADEMIC MENTORING PROGRAMS
P. Mirski, D. Kilian, S. Kruschel, A. Rottensteiner

“ENTREPRENEURIAL STUDY TOURS RETHOUGHT” A FRAMEWORK FOR DESIGNING VIRTUAL STUDY TOUR EXPERIENCES
P. Mirski, S. Kruschel, A. Rottensteiner

SCHOOL PREVENTION METHODOLOGISTS AND THEIR WORK WITH STUDENTS DURING DISTANCE EDUCATION
D. Čibáková, M. Kraňšková, T. Čech

CREATION OF AN APP PROTOTYPE FOR THE RÚTA’S CHOCOLATE MUSEUM
P. Cantante, R. Pocevičienė, M. Carvalho, S. Martins

DISTANCE LEARNING DURING PANDEMIC: WAS IT REALLY SO BAD?
A. Molinari, P. Bouquet
CREATING A DIGITAL COMMUNITY OF PRACTICE
A. Cardoso, J. Souza

COMPARISON OF IMPACTS OF THE COVID-19 PANDEMIC ON COMMUNICATION AND RESPIRATION OF CHILDREN BETWEEN SELECTED REGIONS OF THE CZECH REPUBLIC
E. Šlesingrová, K. Vitásková

DIGITAL LITERACY DURING REMOTE TEACHING IN PUBLIC SCHOOL – NATAL/RN, BRAZIL

CHINESE AND EUROPEAN STUDENTS IN THE EUROPEAN HIGHER EDUCATION AREA: ACCOUNTS OF SOCIAL AND ACADEMIC EXPERIENCES
M. Fuentes Agustí, M. Plans Ponsa, M.C. Espín García

THE PRESENCE OF CHINESE INTERNATIONAL STUDENTS IN EUROPEAN UNIVERSITIES
E. Doval Dieguez, A. Gutierrez Marcenaro, N. Mayer

PROPOSAL OF IMAGINED INTERVIEW SCRIPT CONSTRUCTION METHOD THAT ENHANCES EMPATHIC UNDERSTANDING OF HOSTILE STAKEHOLDERS IN GENERATION OF PERSUASIVE MESSAGES
H. Suzuki, H. Furaoi, Y. Kubota, H. Kato

CONTRIBUTIONS OF A SPECIFIC TUTORIAL ACTION PLAN FOR CHINESE INTERNATIONAL STUDENTS IN THE EUROPEAN HIGHER EDUCATION AREA
M.C. Espín García, I. Kaur, M.E. Suarez Ojeda

FUSE STUDIOS: A NEW, SCALABLE MODEL FOR LEARNING AND TEACHING IN SCHOOLS
R. Stevens

THE IMPACT OF CULTURAL SENSITIVITY AND EMOTIONAL SELF-CONCEPT ON THE ACADEMIC SUCCESS OF CHINESE INTERNATIONAL STUDENTS
N. Mayer, S. Kammler, P. Valdivia Vizarreta

REAL ENTREPRENEURIAL PRACTICES TO SUPPORT MULTI-LINGUAL LEARNERS
C. Prado, C. Gomes

IMPORTANCE OF TEACHING PRACTICE AND EDUCATIONAL RESOURCES FOR THE INCLUSION AND ACADEMIC SUCCESS OF CHINESE INTERNATIONAL STUDENTS IN HIGHER EDUCATION
N. Gomes, M.P. Cardinal Cruz Días Neves, E. Batoco Constante de Brito, M. Fuentes Agustí

DATA VISUALISATION FOR TEACHERS: HOW TO READ, INTERPRET AND SHOW DATA CORRECTLY
F. Ramos, D. Iskandaryan, I. Koribska

THE COMMUNICATIONS OF ‘GERTRUDES’ WITH RURAL-GEOGRAPHICALLY-LOCATED STUDENTS DURING COVID-19 NEW NORMAL IN SOUTH AFRICA AND NIGERIA
O. Ige, T. Wale-Fadairo

REPRESENTATION OF ALUMNI ENGAGEMENT IN UNIVERSITY COMMUNITY ON HOMEPAGES OF BALTIC UNIVERSITIES: VISIBILITY AND FORMS
M. Burima

PROCESSES, INTERACTIONS AND DEVELOPMENT IN A PROFESSIONAL LEARNING COMMUNITY OF SCIENCE AND TECHNOLOGY TEACHERS DURING COVID-19 PANDEMIC
Y. Shwartz, A. Salman, Z. Scherz

CASE-BASED TEACHING IN AN INTRODUCTORY EXCEPTIONAL CHILD COURSE: GETTING STUDENTS TO THINK CRITICALLY ABOUT TEACHING AND LEARNING
T. Herring

PERCEPTIONS OF LEARNERS REGARDING FACTORS THAT PROMOTE SUSTAINABLE LEARNING ENVIRONMENT IN GRADE 12 PHYSICAL SCIENCE CLASSROOMS IN NORTH WEST PROVINCE
M. Senoelo, A.C. Olufemi, M. Rankhumise, O.N. Mafu-Theledi

LEARNING DIARY AS A TOOL FOR DEVELOPING UNIVERSITY EDUCATION PROCESS: INTEGRATIVE EVALUATION AND ASSESSMENT OF STUDENTS’ LEARNING
P. Lopez-Fresno, T. Sutivalainen, L. González-Díaz

THE ROLE OF E-LEARNING FOR THE FUTURE HEALTH CARE: METACOGNITION OR CRITICAL THINKING
P. Lopez-Fresno, F. Fernández-González
STAY HOME, STAY SAFE: UNDERGRADUATE STUDENTS’ PERCEPTIONS OF ENGAGEMENT AND ADAPTABILITY TO ONLINE LEARNING AND ASSESSMENT DURING THE COVID-19 PANDEMIC
A. Alsagoafi

SCHOOL ONLINE IMAGE CONSTRUCTION DURING COVID-19 LOCKDOWN
J. Kasperieniene, Z. Bastiene, D. Bocullo

COLEARNITT: A MODEL FOR INITIAL TEACHER TRAINING
G.E. Petre

EMPATHY IN THE DESIGN PROCESS: A WORKSHOP EXPERIENCE ON TEMPORARY AND SITUATIONAL DISABILITIES WITH DESIGN STUDENTS
M. Frausin

USE OF UNCONVENTIONAL ELEMENTS IN HIGH JUMP PRACTISING DURING PHYSICAL EDUCATION IN SCHOOLS
V. Salcman, J. Moudrá

THE EFFECT OF THE QUALITY OF VISUAL FUNCTIONS ON CO-ORDINATION ABILITIES OF UPPER LIMBS IN PRIMARY SCHOOL-AGED CHILDREN
V. Salcman, P. Šíma

THREE PROGRAMMING ENvironments FRIENDLY TO BLIND STUDENTS IN LOWER SECONDARY EDUCATION
L. Jašková

CONTRASTIVE STUDY OF LAWS AND REGULATIONS ORGANIZING THE EDUCATIONAL SYSTEMS IN ROMANIA AND REPUBLIC OF MOLDOVA
A. Nastas, G.A. Necula

FOUNDATION PHASE TEACHERS’ BELIEFS ABOUT THE VIABILITY OF RESPONSE TO INTERVENTION IN THE SOUTH AFRICAN CONTEXT
S. Bester, M. Graham, M. Gardner

LEARNING ANALYTICS FOR CORRELATION BETWEEN GAMIFICATION AND STUDENT ENGAGEMENT ON MASSIVE OPEN ONLINE COURSE ENVIRONMENT
S. Sulaiman, E. Yunus, Y.L. Wong, N. A. Shukor, N. Md Noor

STUDY COUNSELLING AND SOCIAL SUPPORT IN HIGHER EDUCATION - A CASE STUDY FROM SLOVAKIA
T. Šeben Zafková, V. Michvocíková

KÖZ-DILAN-P1: IMPLEMENTATION OF DIGITAL COMPETENCIES IN PHYSICS TEACHER TRAINING COURSES
E. Kremser, C. Thyssen, J. Huwer

TEACHING LAB ACTIVITIES EFFECTIVELY DURING TIMES OF DISRUPTION BY FOSTERING ADAPTIVE AND DIGITAL RESILIENCE: THE CASE OF COLLEGE-LEVEL INTRODUCTORY BIOLOGY DURING THE COVID-19 PANDEMIC
P. Papadopoulou

TEACHING ARTIFICIAL INTELLIGENCE TO LIFELONG LEARNERS USING GAMES AND DIALECTICS
J. Loeckx

MYTHESIS: AN ONLINE SYSTEM FOR THE MANAGEMENT OF UNIVERSITY DIPLOMA THESESES
S. Kolovos, E. Papaioannou, C. Kaklamanis

THE BOLOGNA REFORM: NATIONAL STUDY ON THE PERCEPTION AND OPINION OF PORTUGUESE HIGHER EDUCATION TEACHERS
S. Antunes, A. Guedes, J.P. Lousado, P. Santos

EXPLORING THE SUSTAINABLE EDUCATION THROUGH MOOCs: TO 21ST-CENTURY ONLINE LEARNER
N. Samaranayake

HARNESSING THE POTENTIAL OF MICRO LEARNING - AN INNOVATIVE APPROACH TOWARDS CONTINUOUS PROFESSIONAL DEVELOPMENT
L. Göttschling-Knudsen, M.H. Dahm

ISRAELI PRESCHOOL TEACHERS’ ATTITUDES TOWARD THE ROLE OF PARENTS OF CHILDREN WITH AUTISM SPECTRUM DISORDER
B. Gavish, A. Fleischmann

IMPLICATIONS OF THE PANDEMIC ON THE TRANSITION TO ADULT LIFE: AN EXPLORATORY STUDY OF YOUNG ADULTS’ OPINIONS
V. Vamvoura, G. Diamantopoulou, E. Kyriakidou, L. Kartasidou
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMPUTER-AIDED QUANTITATIVE CONTENT ANALYSIS IN THE ASSESSMENT OF</td>
<td>8213</td>
</tr>
<tr>
<td>THE COGNITIVE DEMAND LEVEL OF DIGITAL MATHEMATICS TEXTBOOKS</td>
<td></td>
</tr>
<tr>
<td>H. Silfverberg</td>
<td></td>
</tr>
<tr>
<td>FORMATIVE ASSESSMENT AS AN INSTRUMENT TO IMPROVE STUDENT LEARNING</td>
<td>8221</td>
</tr>
<tr>
<td>J. Flores, M. Alcivar</td>
<td></td>
</tr>
<tr>
<td>THE EDUCATION IN GEOMATICS: DESIRABILITY OF VIRTUAL FORMAT</td>
<td>8226</td>
</tr>
<tr>
<td>L. Kukliene, D. Jankauskiene, I. Kuklys, B. Rudziene</td>
<td></td>
</tr>
<tr>
<td>A LITERATURE REVIEW ON OPEN-WORLD GAMES TO METAVERSE TRANSITION</td>
<td>8234</td>
</tr>
<tr>
<td>FROM MORAL EDUCATION ANALYSING PERSPECTIVE</td>
<td></td>
</tr>
<tr>
<td>S. Li, M. Valcke, X. Li</td>
<td></td>
</tr>
<tr>
<td>IMMERSIVE VIRTUAL TECHNOLOGIES FOR LEARNING PHYSICS IN HIGHER EDUCATION</td>
<td>8240</td>
</tr>
<tr>
<td>D. Olmedo, T. Tene, A. León, C. Chamba-Chamba, P. Santillán, V.F. Proaño, C. Vacacela Gomez</td>
<td></td>
</tr>
<tr>
<td>THE EFFECT OF UNIVERSITY STUDENTS’ ATTITUDES TOWARDS INFORMATION AND COMMUNICATION TECHNOLOGIES ON THEIR TENDENCY TOWARDS INNOVATION</td>
<td>8248</td>
</tr>
<tr>
<td>G. Sart, H.F. Sezgin</td>
<td></td>
</tr>
<tr>
<td>STATISTICAL EVALUATION OF UNIVERSITY STUDENTS’ ATTITUDES AND OPINIONS TOWARDS DISTANCE EDUCATION CARRIED OUT DURING THE COVID-19 PANDEMIC</td>
<td>8256</td>
</tr>
<tr>
<td>G. Sart, H.F. Sezgin</td>
<td></td>
</tr>
<tr>
<td>DIGITAL TEAMWORK AND PROTOTYPING IN THE VIRTUAL FAB LAB</td>
<td>8263</td>
</tr>
<tr>
<td>A. Mihai, R. Souto, C. Vaz de Carvalho, A. Seul</td>
<td></td>
</tr>
<tr>
<td>AMBIDEXTROUS LEADERSHIP IN THE MOBILE GAMING INDUSTRY</td>
<td>8273</td>
</tr>
<tr>
<td>F. Sánchez Coll, C. Donaldson, J. Villagrasa</td>
<td></td>
</tr>
<tr>
<td>PEDAGOGICAL AND TECHNICAL FACTORS THAT INFLUENCE THE DESIGN AND EDUCATIONAL ADOPTION OF A GAMIFIED APP IN PRIMARY EDUCATION</td>
<td>8282</td>
</tr>
<tr>
<td>E. Vázquez-Cano</td>
<td></td>
</tr>
<tr>
<td>ANALYSIS OF THE SOCIO-EDUCATIONAL PROFILE OF THE PRIMARY EDUCATION STUDENTS ACCORDING TO THE POSSESSION AND USE OF VIDEO GAMES</td>
<td>8283</td>
</tr>
<tr>
<td>E. Vázquez-Cano</td>
<td></td>
</tr>
<tr>
<td>SOME ASPECTS OF GEOMETRY EDUCATION DURING THE PANDEMIC SITUATION</td>
<td>8284</td>
</tr>
<tr>
<td>V. Ferdianová, J. Guncaga, Y. Ashimov</td>
<td></td>
</tr>
<tr>
<td>RETHINKING DATA SCIENCE PEDAGOGY WITH EMBEDDED ETHICAL CONSIDERATIONS</td>
<td>8292</td>
</tr>
<tr>
<td>V. Janeja, M. Sanchez</td>
<td></td>
</tr>
<tr>
<td>ENGAGING INDIGENOUS LEARNERS IN EXPERIENTIAL LEARNING: VIRTUAL REALITY AS A LEARNING STRATEGY FOR MALAYSIAN ORANG ASLI STUDENTS</td>
<td>8299</td>
</tr>
<tr>
<td>L.S. Ng, M. Neo</td>
<td></td>
</tr>
<tr>
<td>DESIGNING A BLENDED LEARNING ENVIRONMENT FOR ENHANCED LEARNER ENGAGEMENT: THE EQAUD FRAMEWORK</td>
<td>8304</td>
</tr>
<tr>
<td>M. Neo</td>
<td></td>
</tr>
<tr>
<td>VALIDATING THE SFUMATO METHOD FOR THE TEACHING OF READING TO DYSLEXIC PRIMARY SCHOOL PUPILS</td>
<td>8310</td>
</tr>
<tr>
<td>I. Simkova, H. Havlisova, J. Jost</td>
<td></td>
</tr>
<tr>
<td>ENHANCING HEALTH AND WELL-BEING WITH BUDDHISM YOGA PROGRAM FOR AUTISTIC'S STUDENTS: A CASE STUDY OF RAMKHAMHAENG UNIVERSITY DEMONSTRATION SCHOOL (SECONDARY EDUCATION)</td>
<td>8316</td>
</tr>
<tr>
<td>W. Bootpo, P. Putsorn, C. Gethmaro, W. Bhungob</td>
<td></td>
</tr>
<tr>
<td>IDENTIFICATION OF STUDENT MISTAKES AS A FUNDAMENTAL INFORMATION IN THE CREATION OF MASTERY LEARNING MODULES</td>
<td>8324</td>
</tr>
<tr>
<td>V. Ďuriš, D. Gonda, G. Patelovičová, A. Tírlíková</td>
<td></td>
</tr>
<tr>
<td>GAMIFICATION ACTIVITIES FOR THE CONTINUOUS EVALUATION OF THE SUBJECT AERONAUTICAL TECHNOLOGY</td>
<td>8332</td>
</tr>
<tr>
<td>A. Sánchez-Carmona, R. Martínez-Val Peñalosa, E. Pérez Cobo, C. Cuerno Rejado</td>
<td></td>
</tr>
<tr>
<td>STUDENTS’ SATISFACTION WITH DISTANCE LEARNING: INFLUENCE OF TECHNOLOGICAL SKILLS, ACADEMIC INVOLVEMENT AND RESISTANCE TO CHANGE</td>
<td>8339</td>
</tr>
<tr>
<td>A. Monteiro, C. Pereira, R. Bertuzi, R. Soares</td>
<td></td>
</tr>
<tr>
<td>Title</td>
<td>Page</td>
</tr>
<tr>
<td>---------------------------------------------------------------------------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>THE IMPACT OF UTILIZING CNC ON ARCHITECTURAL ENGINEERING AND INTERIOR DESIGN PEDAGOGIES</td>
<td>8348</td>
</tr>
<tr>
<td>I. Alhoutary, H. Karoui</td>
<td></td>
</tr>
<tr>
<td>INTERACTIVE CONTENT DELIVERY IN ENGLISH-MEDIUM UNIVERSITIES: IMPLICATIONS FOR NON-NATIVE SPEAKING LECTURERS AND STUDENTS</td>
<td>8358</td>
</tr>
<tr>
<td>M. Ismailov</td>
<td></td>
</tr>
<tr>
<td>WHY ARE OUR TEACHERS SILENT? EXPLORING SELF-DETERMINATION IN POST-GLASGOW SUSTAINABILITY AND CLIMATE CHANGE EDUCATION</td>
<td>8363</td>
</tr>
<tr>
<td>M. Ismailov</td>
<td></td>
</tr>
<tr>
<td>A VIRTUAL EXCHANGE PROJECT ENHANCES DIGITAL LITERACIES AND INTERCULTURAL COMPETENCE</td>
<td>8368</td>
</tr>
<tr>
<td>K. Korkealehto</td>
<td></td>
</tr>
<tr>
<td>STUDENT ENGAGEMENT IS ESSENTIAL IN BLENDED AND ONLINE LANGUAGE LEARNING</td>
<td>8373</td>
</tr>
<tr>
<td>K. Korkealehto</td>
<td></td>
</tr>
<tr>
<td>PERSUADING THE READER - A CASE STUDY OF INSIGHTS INTO EFL WRITING</td>
<td>8377</td>
</tr>
<tr>
<td>K. Yambay de Armijos</td>
<td></td>
</tr>
<tr>
<td>IMMERSIVE TEACHING IN INTERCULTURAL NEGOTIATIONS FOR SALES PERSONNEL IN MANAGEMENT STUDIES – THE CASE OF GLOBAL AUTOMOTIVE DISTRIBUTOR APPOINTMENT</td>
<td>8387</td>
</tr>
<tr>
<td>M. Stirzel</td>
<td></td>
</tr>
<tr>
<td>AN ITALIAN UNIVERSITY DASHBOARD: A TOOL FOR MONITORING LEARNING</td>
<td>8393</td>
</tr>
<tr>
<td>E. Bortolotti, G. Paoletti</td>
<td></td>
</tr>
<tr>
<td>LABORATORY VIRTUALIZATION DURING THE COVID19 PANDEMIC AT THE NATIONAL UNIVERSITY OF COLOMBIA</td>
<td>8399</td>
</tr>
<tr>
<td>F. Olarte, L.K. Herrera-Quintero</td>
<td></td>
</tr>
<tr>
<td>SCAFFOLDING VOCATIONAL STUDENT TEACHERS' COMPETENCE DEMONSTRATION ON THEIR EPORTFOLIOS</td>
<td>8400</td>
</tr>
<tr>
<td>A.M. Korhonen</td>
<td></td>
</tr>
<tr>
<td>‘LOCKDOWN’ AGILITY OF ACADEMIC STAFF: EXPERIENCES AND PERSPECTIVES</td>
<td>8405</td>
</tr>
<tr>
<td>D. Cranfield, I. Venter, R.J. Blignaut, A. Tick</td>
<td></td>
</tr>
<tr>
<td>COMPLIANCE AND STRATEGIES FOR THE DEVELOPMENT OF CRITICAL THINKING AS PREDICTORS OF LEARNING OUTCOMES OF UNIVERSITY STUDENTS</td>
<td>8415</td>
</tr>
<tr>
<td>M. Bernšterová, M. Kosturková, J. Kapová</td>
<td></td>
</tr>
<tr>
<td>A LEARNING-PHYSICAL ENVIRONMENT AND LEARNING FUNCTIONS AMONG STUDENTS FROM THE POINT OF VIEW OF TEACHERS</td>
<td>8421</td>
</tr>
<tr>
<td>J. Abu Hussain</td>
<td></td>
</tr>
<tr>
<td>AN INTERNATIONAL COLLABORATION IN A DESIGN POSTGRADUATE</td>
<td>8422</td>
</tr>
<tr>
<td>M. Alcalà, F. Séculi, F. Julián, F.X. Espinach</td>
<td></td>
</tr>
<tr>
<td>KITCHENS UTENSILS FOR GIRLS, CARS FOR BOYS? GENDER STEREOTYPES IN PRESCHOOL EDUCATION IN LITHUANIA</td>
<td>8428</td>
</tr>
<tr>
<td>I. Stonkuviene, G. Purvaneckiene</td>
<td></td>
</tr>
<tr>
<td>CHALLENGES EXPERIENCED BY TECHNICAL AND VOCATIONAL EDUCATION AND TRAINING COLLEGES IN PRODUCING SKILLED WORKFORCES IN SOUTH AFRICA: IMPLICATIONS FOR CONTINUOUS PROFESSIONAL DEVELOPMENT</td>
<td>8429</td>
</tr>
<tr>
<td>M. Makgato</td>
<td></td>
</tr>
<tr>
<td>LEARNING ABOUT COMPUTER PROGRAMMING WITH COMPUTER GAMES</td>
<td>8436</td>
</tr>
<tr>
<td>C. Angeli, K. Tortouri</td>
<td></td>
</tr>
<tr>
<td>NEUROMARKETING AND BUSINESS: A MATTER OF INVESTMENT IN THE IBERIAN PENINSULA</td>
<td>8437</td>
</tr>
<tr>
<td>A. Costa, J. Pires, M. Mendes, A. Vazzoler-Mendonca, V. Capellini, C. Costa-Lobo</td>
<td></td>
</tr>
<tr>
<td>PROPOSAL OF AN AGILE METHOD FOR THE DESIGN OF THEMED HIGH EDUCATION PRACTICAL ACTIVITIES</td>
<td>8446</td>
</tr>
<tr>
<td>F. Pernías Peco, M. Marco Such, A. Sanchez Díaz, D. Tomá Díaz, F.B. Navarro Colorado, G. Candela Romero</td>
<td></td>
</tr>
<tr>
<td>FORMATIVE DIALOGUE (HYBRID) FOSTERS ACTIVE LEARNING? TWO CASE STUDIES</td>
<td>8452</td>
</tr>
<tr>
<td>A. Soeiro</td>
<td></td>
</tr>
<tr>
<td>EDUCATION IN CROATIA DURING A COVID-19 LOCKDOWN</td>
<td>8457</td>
</tr>
<tr>
<td>M. Mladenović</td>
<td></td>
</tr>
</tbody>
</table>
IMPLEMENTING QUALITY STEM EDUCATION IN TIMES OF SOCIAL DISTANCING
M. Caplan
8463

EXPERIENCE-BASED METHODOLOGY: AN APPLICATION IN A LEADERSHIP COURSE IN A HUMAN RESOURCES MASTER'S PROGRAM
H. Torrez Meruvia, M. Vilà, J. Azcue
8473

SOFTWARE DEVELOPMENT PROCESS IN HEALTHCARE INFORMATICS – A DIGITAL EDUCATION EXPERIENCE
K. Stoeckelmayer, M. Tesar
8474

THE STUDIO-BASED APPROACH TO SUSTAINABLE FASHION: PRACTICES OF FASHION DESIGN STUDENTS IN THE INDIAN CLASSROOM
X. Lin, M. O. Ingaramo
8480

A COMPARATIVE ANALYSIS OF STUDENT PERFORMANCE BETWEEN THE PRE AND POST-COVID DELIVERY OF THE PROGRAMMING MODULES
J. Adhikari, A. McGowan, P. Sage
8490

A PROFESSIONAL DEVELOPMENT TEACHER TRAINING IN DESIGN THINKING APPROACH FOR HIGHER STUDENTS' ACADEMIC SUCCESS
M. Tramonti, A. M. Dochshanov
8495

DIGITAL STORYTELLING AND GAMES TO STEM SKILLS DEVELOPMENT
A. M. Dochshanov, M. Tramonti
8503

STAFF PERCEPTION OF ISO 9001 STANDARD BASED QUALITY MANAGEMENT SYSTEM AT A HIGHER EDUCATION INSTITUTION
M. Seppälä
8512

MEASURING THE EFFECTS OF A DYNAMIC SENTIMENT ANALYZER WITHIN ONLINE SOCIAL NETWORKING SOFTWARE DURING COVID-19
B. Thomas, E. Ergünlüz
8521

THE EFFECT OF PANDEMIC ON THE TEACHERS' PERCEPTION OF TEACHING AND LEARNING IN ONLINE ENVIRONMENT
S. Kučina Softić, J. Lastić-Lazić, V. Tropša
8531

TIME TO DEGREE AND COMPLETION RATE IN GRADUATE STUDY PROGRAMMES ON FACULTY OF INFORMATICS AND STATISTICS - PRAGUE UNIVERSITY OF ECONOMICS AND BUSINESS
M. Maryska, P. Doucek, L. Nedomova
8538

AN ACTIVE LEARNING METHOD BASED ON PEER ASSESSMENT EXPERIENCE WITH FEEDBACK PROCESS
A. Nardi-Ricart, M. Oliva Herrera, R. M. Aparicio Pelegrín, A. Viscasillas Clerch, E. Cano García, L. Halbaut Bellova
8545

EVALUATION OF DIGITAL SKILLS FOR MARITIME STUDENTS
A. Sharma
8552

DEVELOPMENT OF RESOURCES FOR BLENDED LEARNING: DESIGN OF SIMULATORS IN SCIENTIFIC-TECHNICAL EDUCATION
M. T. García, M. S. Carmona, J. Frades, M. A. Alonso, A. Carrióner, M. C. López, C. M. Fernandez Marchante, L. Rodríguez-Benítez
8560

MOTOR SKILLS IN RELATION WITH PERCEPTUAL MATURITY IN FIRST GRADERS
Z. Rechtik, L. Miklánková, M. Pugnerová, A. Navrátilová
8567

AGILE METHODOLOGY IN THE DIGITISATION PROCESS OF EDUCATIONAL ACTIVITIES
M. Rettichioni, G. Racinelli
8573

INITIATIVES TO PROMOTE SCIENCE CAPITAL AMONG SECONDARY EDUCATION STUDENTS
A. Picallo-Perez, P. Sarriugarte, J. M. Sala-Lizarra, D. Solabarria
8593

LEVEL OF READINESS TO READ IN CHILDREN AFTER STARTING COMPULSORY SCHOOL ATTENDANCE
M. Otavová, M. Pugnerová, Z. Rechtik, M. Skoupilová
8599
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>INSPIRE: FOURTH INDUSTRIAL REVOLUTION TEACHING IN THE CLASSROOM A</td>
<td>8604</td>
</tr>
<tr>
<td>MULTI-DISCIPLINARY COLLABORATIVELY DESIGNED PILOT PROJECT</td>
<td></td>
</tr>
<tr>
<td>O. Howson, P. Charlton, F. Iniesto, W. Holmes</td>
<td></td>
</tr>
<tr>
<td>VIRTUALLY LEARNING... OR NOT?</td>
<td>8614</td>
</tr>
<tr>
<td>O. Howson</td>
<td></td>
</tr>
<tr>
<td>RECONSIDERING WHAT IS 'ACADEMIC' IN THE ACADEMIC WORD LIST</td>
<td>8621</td>
</tr>
<tr>
<td>J. Noguchi, N. Kumioishi, K. Tojo</td>
<td></td>
</tr>
<tr>
<td>MATCH OR MISMATCH? LESSONS LEARNT FROM USING THIRD-PARTY E-</td>
<td>8628</td>
</tr>
<tr>
<td>LEARNING ONLINE PLATFORMS ALONGSIDE EXISTING VIRTUAL LEARNING</td>
<td></td>
</tr>
<tr>
<td>ENVIRONMENT IN THE DELIVERY OF A FIRST-YEAR UNDERGRADUATE COURSE</td>
<td></td>
</tr>
<tr>
<td>C. Ciachir, A. Holland</td>
<td></td>
</tr>
<tr>
<td>BUILDING ABSTRACTION LAYERS FOR MACHINE SUPPORTED TEACHING</td>
<td>8636</td>
</tr>
<tr>
<td>E.G. Haffner</td>
<td></td>
</tr>
<tr>
<td>SERVICE-LEARNING FOR UNIVERSITY STUDENTS: A MINING EDUCATION</td>
<td>8642</td>
</tr>
<tr>
<td>PROPOSAL FOR THE COMMUNITY</td>
<td></td>
</tr>
<tr>
<td>INCLUSION OF STUDENTS WITH SPECIAL EDUCATIONAL NEEDS WITHIN HIGHER</td>
<td>8650</td>
</tr>
<tr>
<td>EDUCATION IN HONG KONG: CHALLENGES AND ACCOMMODATIONS DURING COVID-19</td>
<td></td>
</tr>
<tr>
<td>PANDEMICS</td>
<td></td>
</tr>
<tr>
<td>V. Lee, G. Chao</td>
<td></td>
</tr>
<tr>
<td>APPLICATION OF THE SPC MODEL FOR THE DEVELOPMENT OF EMPATHY IN</td>
<td>8651</td>
</tr>
<tr>
<td>UNIVERSITY CLASSROOMS</td>
<td></td>
</tr>
<tr>
<td>A. Agüelo, C. Sanz, T. Coma, P. Álvarez, S. Baldassarri</td>
<td></td>
</tr>
<tr>
<td>THE RC CIRCUIT AS A BRIDGE FOR LEARNING THE ELECTROTOMIC</td>
<td>8655</td>
</tr>
<tr>
<td>CONDUCTION IN AXONS</td>
<td></td>
</tr>
<tr>
<td>J.M. Bergues, D. Acebes de la Arada</td>
<td></td>
</tr>
<tr>
<td>PEDAGOGICAL APPROACHES TO SUPPORTING MULTILINGUALISM IN THE FIRST-</td>
<td>8660</td>
</tr>
<tr>
<td>YEAR WRITING CLASSROOM</td>
<td></td>
</tr>
<tr>
<td>A. Emmanuel Smith, A. Chang, E.R. Smith</td>
<td></td>
</tr>
<tr>
<td>ZERO WASTE PROJECT: CIRCULARITY IN ARCHITECTURAL DESIGN</td>
<td>8666</td>
</tr>
<tr>
<td>DIGITAL STRATEGIES IN HIGHER EDUCATION – FROM DIGITAL COMPETENCES</td>
<td>8675</td>
</tr>
<tr>
<td>TO DIGITAL TRANSFORMATION</td>
<td></td>
</tr>
<tr>
<td>I. Ogrizek Biškupićić</td>
<td></td>
</tr>
<tr>
<td>THE CHALLENGES AND BENEFITS OF INSIDER RESEARCH WITHIN A</td>
<td>8685</td>
</tr>
<tr>
<td>PROFESSIONAL DOCTORAL STUDY – AN EXPLORATION OF EXPERIENCE AND</td>
<td></td>
</tr>
<tr>
<td>REVIEW OF CURRENT LITERATURE</td>
<td></td>
</tr>
<tr>
<td>D. Bell</td>
<td></td>
</tr>
<tr>
<td>METHODOLOGY FOR THE DESIGN OF SOCALLY RESPONSIBLE CURRICULUM</td>
<td>8691</td>
</tr>
<tr>
<td>A. José, L. Cardoso, G. Marques, M.J. Varadinov, M.C. Guerra, J. Swietoniowska, M. Vignoli, E. Guerci</td>
<td></td>
</tr>
<tr>
<td>ACHIEVE SUSTAINABILITY GOALS THROUGH INNOVATIVE TEACHING AND</td>
<td>8692</td>
</tr>
<tr>
<td>LEARNING PRACTICES IN SHORT-CYCLE HIGHER TECHNICAL COURSES: THE</td>
<td></td>
</tr>
<tr>
<td>CASE OF THE MARKETING DISCIPLINE</td>
<td></td>
</tr>
<tr>
<td>S. Filipi</td>
<td></td>
</tr>
<tr>
<td>THE CHALLENGE OF TRANSITION FROM FACE-TO-FACE TO REMOTE LEARNING</td>
<td>8693</td>
</tr>
<tr>
<td>IN MOROCCAN RURAL SCHOOLS</td>
<td></td>
</tr>
<tr>
<td>J. Alladatin, I. Al-Chikh</td>
<td></td>
</tr>
<tr>
<td>TYPOLOGY OF HEADTEACHER’S INITIAL TRAINING</td>
<td>8694</td>
</tr>
<tr>
<td>J. Alladatin, I. Al-Chikh</td>
<td></td>
</tr>
<tr>
<td>EVALUATION OF THE DIGITAL SKILLS OF MOROCCAN RURAL FAMILIES</td>
<td>8695</td>
</tr>
<tr>
<td>I. Al-Chikh, J. Alladatin, A.K. Toko</td>
<td></td>
</tr>
<tr>
<td>FROM FACE-TO-FACE TO REMOTE LEARNING CHALLENGES</td>
<td>8696</td>
</tr>
<tr>
<td>I. Pkhakadze, T. Kordzadze</td>
<td></td>
</tr>
<tr>
<td>IMPLEMENTATION OF SERVICE LEARNING AND &quot;LIVING LIBRARIES&quot; CONCEPTS</td>
<td>8697</td>
</tr>
<tr>
<td>AS A KEEPING OF STUDENTS IN CAREER EDUCATION OF SOCIAL PEDAGOGY</td>
<td></td>
</tr>
<tr>
<td>THROUGH DISTANCE TEACHING DURING THE PANDEMIC COVID-19 PERIOD</td>
<td></td>
</tr>
<tr>
<td>K. Liberčanov</td>
<td></td>
</tr>
<tr>
<td>A FRAMEWORK FOR APPROACHING CHATBOTS IN PROJECT-BASED LEARNING</td>
<td>8707</td>
</tr>
<tr>
<td>A. Sanchez Diaz, M. Marco Such, M.D. Sáez, M.P. Escobar, A. Mate, J.L. Vicedo, J.C. Trujillo</td>
<td></td>
</tr>
<tr>
<td>Title</td>
<td>Page</td>
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<tr>
<td>----------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>GROUP WORK ON MIDTERM AND FINAL EXAMS IN THE REMOTE TEACHING AND</td>
<td>8715</td>
</tr>
<tr>
<td>LEARNING CONTEXT AND BEYOND</td>
<td></td>
</tr>
<tr>
<td>L. Chen</td>
<td></td>
</tr>
<tr>
<td>THE RELATIONSHIP BETWEEN THE TEACHER'S SENSE OF SELF-EFFICACY AND</td>
<td>8724</td>
</tr>
<tr>
<td>THE ASSIMILATION OF INNOVATIVE TECHNOLOGY AMONG TEACHERS IN SECONDARY</td>
<td></td>
</tr>
<tr>
<td>SCHOOLS</td>
<td></td>
</tr>
<tr>
<td>E. Wasserman, H. Nizan</td>
<td></td>
</tr>
<tr>
<td>UNLEARNING LEARNING: A 5TH GRADER’S PERSPECTIVE OF LEARNING DURING</td>
<td>8725</td>
</tr>
<tr>
<td>THE PANDEMIC</td>
<td></td>
</tr>
<tr>
<td>S. Abdul-Aziz, L. Adams</td>
<td></td>
</tr>
<tr>
<td>BENEFITS OF THE IMPLEMENTATION OF A LEARNING-TEACHING PROCESS</td>
<td>8732</td>
</tr>
<tr>
<td>BASED ON THE WEBQUEST IN OCCUPATIONAL THERAPY STUDENTS: A</td>
<td></td>
</tr>
<tr>
<td>RANDOMIZED CONTROLLED TRIAL</td>
<td></td>
</tr>
<tr>
<td>F. Artacho-Cordón, M.I. Núñez</td>
<td></td>
</tr>
<tr>
<td>THE APPLICATION OF NEW METHODOLOGIES IN HYBRID TEACHING: LEARNING</td>
<td>8738</td>
</tr>
<tr>
<td>FROM COVID-19</td>
<td></td>
</tr>
<tr>
<td>J. Vena-Oya, A. Calahorro-López, A.B. Mudarra-Fernández, D.</td>
<td></td>
</tr>
<tr>
<td>Fernández-Uclés</td>
<td></td>
</tr>
<tr>
<td>AUGMENTED REALITY FOR IMMERSIVE UNIVERSITY LEARNING</td>
<td>8739</td>
</tr>
<tr>
<td>A.B. Mudarra-Fernández, D. Fernández-Uclés, J. Vena-Oya, A.</td>
<td></td>
</tr>
<tr>
<td>Calahorro-López</td>
<td></td>
</tr>
<tr>
<td>IMPLEMENTATION OF VIRTUAL LABORATORIES WITH JUPYTER NOTEBOOKS:</td>
<td>8746</td>
</tr>
<tr>
<td>PRACTICAL EXPERIENCES IN COMPUTER SCIENCE AND MATHEMATICS</td>
<td></td>
</tr>
<tr>
<td>A. Cobo, R. Rocha, M. Collantes, J.E. Espinola, E. Mora</td>
<td></td>
</tr>
<tr>
<td>DESKTOP VIRTUAL REALITY ENVIRONMENTS FOR SPATIAL ORIENTATION SKILL</td>
<td>8754</td>
</tr>
<tr>
<td>TRAINING</td>
<td></td>
</tr>
<tr>
<td>C. Carbonell-Carrera</td>
<td></td>
</tr>
<tr>
<td>IRRATIONAL AND RATIONAL FOOD BELIEFS AND THE BENEFITS OF A CROSS-</td>
<td>8759</td>
</tr>
<tr>
<td>CUTTING ACTIVITY IN UNDERGRADUATE STUDENTS: A PILOT STUDY IN</td>
<td></td>
</tr>
<tr>
<td>OCCUPATIONAL THERAPY STUDENTS</td>
<td></td>
</tr>
<tr>
<td>F. Artacho-Cordón, M.I. Núñez</td>
<td></td>
</tr>
<tr>
<td>CREATING PEDAGOGICAL MATERIAL FOR THE 21ST CENTURY: ANALYSIS OF AN</td>
<td>8765</td>
</tr>
<tr>
<td>INTERDISCIPLINARY COURSE WITHIN THE SCOPE OF THE ERASMUS+</td>
<td></td>
</tr>
<tr>
<td>PROGRAMME</td>
<td></td>
</tr>
<tr>
<td>L. Cántaras, D. Franco, I. Canhoto, E. Estrela, M. Calvet-Ricardo, M.</td>
<td></td>
</tr>
<tr>
<td>Gonçalves, O. Sousa, J. Brás, B. Koppe</td>
<td></td>
</tr>
<tr>
<td>TO END GLOBAL EDUCATION CRISIS, GOVERNMENTS HAVE TO BECOME AWARE</td>
<td>8766</td>
</tr>
<tr>
<td>AND SENSITIVE TO WHAT STOPS ABOUT 50% OF THE GLOBAL STUDENTS</td>
<td></td>
</tr>
<tr>
<td>POPULATION FROM GOING TO SCHOOL: A SNAPSHOT OF A REPLICABLE MODEL</td>
<td></td>
</tr>
<tr>
<td>IN INDIA</td>
<td></td>
</tr>
<tr>
<td>S. Bose</td>
<td></td>
</tr>
<tr>
<td>INSTITUTIONAL ACCREDITATION ACROSS EUROPE: DO ASSESSMENT CRITERIA</td>
<td>8776</td>
</tr>
<tr>
<td>MIRROR HIGHER EDUCATION’S MISSIONS?</td>
<td></td>
</tr>
<tr>
<td>O. Tavares, C. Sin</td>
<td></td>
</tr>
<tr>
<td>NAVIGATION USER EXPERIENCE IN A 3D VIRTUAL ENVIRONMENT</td>
<td>8781</td>
</tr>
<tr>
<td>C. Carbonell-Carrera</td>
<td></td>
</tr>
<tr>
<td>EXPLORATORY FACTOR ANALYSIS OF THE SPANISH VERSION OF THE BELIEFS</td>
<td>8787</td>
</tr>
<tr>
<td>ABOUT PEER-FEEDBACK QUESTIONNAIRE</td>
<td></td>
</tr>
<tr>
<td>N. Ruiz-Robledillo, N. Albaladego-Blázquez, V. Clement-Carbonell, J.</td>
<td></td>
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<tr>
<td>Vela-Bermejo, M. Rubio-Aparicio, I. Portilla-Tamarit, B. Costa-</td>
<td></td>
</tr>
<tr>
<td>López, R. Ferrer-Cascales</td>
<td></td>
</tr>
<tr>
<td>EMPOWERING TEACHERS WHILE ENGAGING STUDENTS</td>
<td>8794</td>
</tr>
<tr>
<td>K. Eini</td>
<td></td>
</tr>
<tr>
<td>FROM BLENDED TO REMOTE AND BACK TO HYBRID: A NEW LANGUAGE</td>
<td>8795</td>
</tr>
<tr>
<td>TEACHING PARADIGM</td>
<td></td>
</tr>
<tr>
<td>N. Radić</td>
<td></td>
</tr>
<tr>
<td>A CONVERSATION WITH MY PEERS ON LEARNING AND TEACHING PROGRAMMING</td>
<td>8796</td>
</tr>
<tr>
<td>T. Tran, G. Torrisi-Steele</td>
<td></td>
</tr>
<tr>
<td>VOCATIONAL EDUCATION &amp; TRAINING (VET) AND THE FOURTH INDUSTRIAL</td>
<td>8803</td>
</tr>
<tr>
<td>REVOLUTION (4IR): SUGGESTIONS TOWARDS A SUCCESSFUL EMBRACEMENT</td>
<td></td>
</tr>
<tr>
<td>S. Pitsikalis, C. Vitsilaki, D. Gouvias</td>
<td></td>
</tr>
<tr>
<td>OPPORTUNITIES AND CHALLENGES FOR VR-MEDIATED EDUCATIONAL RESOURCES:</td>
<td>8810</td>
</tr>
<tr>
<td>AN EDUCATORS’ PERSPECTIVE</td>
<td></td>
</tr>
<tr>
<td>R. Sims, A. Karnič</td>
<td></td>
</tr>
<tr>
<td>Title</td>
<td>Page</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>HOW TO EFFECTIVELY INTEGRATE AUGMENTED REALITY IN SECONDARY EDUCATION IN THE FIELDS OF STEM</td>
<td>8820</td>
</tr>
<tr>
<td>I.E. Lasica, M. Meletiou-Macrotheris, K. Katzis</td>
<td></td>
</tr>
<tr>
<td>LEARNING BY DOING: PROMOTING ENVIRONMENTAL AND SUSTAINABLE EDUCATION THROUGH GAME-CREATION ACTIVITIES</td>
<td>8825</td>
</tr>
<tr>
<td>P. Beça, M. Aresta</td>
<td></td>
</tr>
<tr>
<td>THE IMPORTANCE OF THE EXPERIMENTAL METHOD IN BIOLOGY TEACHING IN THE HIGH SCHOOL - APPLICATION ASPECT</td>
<td>8832</td>
</tr>
<tr>
<td>V. Županec, T. Lazarević, T. Pribićević</td>
<td></td>
</tr>
<tr>
<td>INCLUSION OF ADULTS IN LEARNING BIOLOGY THROUGH APPLICATION OF PROBLEM-BASED LEARNING</td>
<td>8838</td>
</tr>
<tr>
<td>V. Županec, A. Bakić, T. Lazarević, T. Pribićević</td>
<td></td>
</tr>
<tr>
<td>NEW FORMS OF PRESENTING ASSIGNMENTS: PRE-RECORDED VIDEOS AS AN ALTERNATIVE TO ORAL PRESENTATIONS IN THE “ANIMAL BREEDING” COURSE</td>
<td>8847</td>
</tr>
<tr>
<td>A. Suárez-Vega, H. Marinia, L.F. de la Fuente, Y. Bayón, J.J. Arranz, B. Gutiérrez Gil</td>
<td></td>
</tr>
<tr>
<td>INVESTIGATING THE EFFICACY OF RETRIEVAL PRACTICE: A STUDY WITH UNDERGRADUATE NURSING STUDENTS</td>
<td>8851</td>
</tr>
<tr>
<td>L. Messineo, M. Gentile, M. Allegra</td>
<td></td>
</tr>
<tr>
<td>IMPROVING ACADEMIC PERFORMANCE THROUGH THE COMBINATION OF CANVAS AND BLACKBOARD LEARN PLATFORMS IN MASTER'S DEGREE STUDENTS</td>
<td>8856</td>
</tr>
<tr>
<td>S. Rubio-Arraez</td>
<td></td>
</tr>
<tr>
<td>GAME-BASED LEARNING THROUGH THE SOCRATIVE DIGITAL TOOL TO IMPROVE THE MOTIVATION OF POSTGRADUATE STUDENTS</td>
<td>8863</td>
</tr>
<tr>
<td>S. Rubio-Arraez</td>
<td></td>
</tr>
<tr>
<td>MEDIA LITERACY IN ELT PRE-SERVICE TEACHER TRAINING</td>
<td>8870</td>
</tr>
<tr>
<td>T. Harakchiyska</td>
<td></td>
</tr>
<tr>
<td>PERTUS - A SOFTWARE SYSTEM FOR PERSONALIZED TEACHING AND ASSESSMENT</td>
<td>8878</td>
</tr>
<tr>
<td>J. Fonseca</td>
<td></td>
</tr>
<tr>
<td>INCREASING STUDENT ENGAGEMENT IN TURBULENT TIMES: TWO MINI-CASES FROM ICELAND</td>
<td>8883</td>
</tr>
<tr>
<td>G. Oskarsson, E. Svansson</td>
<td></td>
</tr>
<tr>
<td>BARRIERS THAT HINDER INCLUSIVE ONLINE EDUCATION AND THE GOOD PRACTICES IN DIGITAL PEDAGOGY</td>
<td>8884</td>
</tr>
<tr>
<td>A. Samarakkody, C. Malalgoda, D. Amarathunga, R. Haigh</td>
<td></td>
</tr>
<tr>
<td>TEACHING HEALTH, NOT DISEASE, TO STUDENTS IN THE HEALTH CARE PROFESSIONS</td>
<td>8892</td>
</tr>
<tr>
<td>S. Elgelid</td>
<td></td>
</tr>
<tr>
<td>COMBINING PROBLEM-BASED LEARNING AND ROLE-PLAY TO TEACH INTERNATIONAL ECONOMIC POLICY</td>
<td>8893</td>
</tr>
<tr>
<td>J.C. Palacios Cívico</td>
<td></td>
</tr>
<tr>
<td>APPLICATION OF AN ONLINE INTERACTION MODEL IN WIDE GROUPS BASED ON COLLECTIVE INTELLIGENCE MODELS TO IMPROVE LEARNING THROUGH THE THINK-UP PLATFORM</td>
<td>8897</td>
</tr>
<tr>
<td>M.P. García Pardo, S. Orejudo Hernández, B. Mashuk, F. Eguinoa, P. Villarrocha</td>
<td></td>
</tr>
<tr>
<td>HOW DO SCHOOL LEADERS ENGAGE WITH AND INFLUENCE THEIR STAFF TO MAXIMISE THE IMPACT OF LEARNING NETWORKS?</td>
<td>8898</td>
</tr>
<tr>
<td>L. Devlin, R. Morgan-Guthrie, T. Wallis</td>
<td></td>
</tr>
<tr>
<td>ABILITY TO READ AND INTERPRET FOOD LABELS: TRAINING PROJECT IN A HIGH SCHOOL IN THE CITY OF TURIN, ITALY</td>
<td>8906</td>
</tr>
<tr>
<td>D.M. Bianchi, C. Ferraris, C. Tramuta, L. Decastelli</td>
<td></td>
</tr>
<tr>
<td>ANALYSIS OF STUDENT PERFORMANCE IN FACE-TO-FACE VERSUS STIMULATED ONLINE LEARNING</td>
<td>8907</td>
</tr>
<tr>
<td>O. Andjelic, P. Lukecovic, Z. Rakicic, M. Radojic</td>
<td></td>
</tr>
<tr>
<td>DISCOVER AND EXPERIENCE MATH, DYNAMIC CLASSROOM MODEL APPLICATION IN TEACHING AND LEARNING PRIMARY SCHOOL MATH</td>
<td>8913</td>
</tr>
<tr>
<td>R. Papancheva</td>
<td></td>
</tr>
<tr>
<td>DESIGNING LEARNING ENVIRONMENTS IN EARLY CHILDHOOD: EDUCATIONAL PRINCIPLES AND PEDAGOGICAL CRITERIA IN REGGIO CHILDREN APPROACH</td>
<td>8923</td>
</tr>
<tr>
<td>E. Palomba</td>
<td></td>
</tr>
</tbody>
</table>
HOW TO BEAT GENDER STEREOTYPES IN EARLY CHILDHOOD EDUCATION: GUIDELINES ON TEACHING PRACTICES
E. Palomba

THROUGH THE EYES OF AN INTERN: REFLECTING THE ROLES OF LEARNING DESIGNER IN THE TRANSITION FROM FACE-TO-FACE TO ONLINE LEARNING
W. Prasetyawati, D. Gannaway

AN EXPLORATORY STUDY ON THE PROMOTION OF INFORMATION LITERACY AMONG SECONDARY SCHOOL PUPILS IN THE CONTEXT OF THEIR FIRST CONTACT WITH SCIENTIFIC RESEARCH
P. Druschke, S. Al-Diban

A NEW ONLINE DOCTORAL DEGREE FOR WORKING ENGINEERING PROFESSIONALS
T. Mazzuchi, S. Sarkani

A SURVEY RESEARCH ON THE MORAL JUDGMENT OF PRE-SERVICE TEACHERS IN TAIWAN: A PILOT STUDY
T.H. Peng, T.H. Wang

FROM BLOCKS TO SCRIPT. SOME ACCENTS AND EXAMPLES OF CODING COMPETENCIES DEVELOPMENT AT SCHOOL LEVEL
R. Papancheva, T. Glushkova

CHALLENGES IN TEACHERS’ WORK IN FACILITATING THE LEARNING OF THE LATVIAN LANGUAGE DURING COVID-19 RESTRICTIONS
D. Markus, A. Tauriņa, T. Zirīņa

VIRTUAL INTERNSHIPS: CHANGING THE CAREER TRAJECTORY OF UNDERREPRESENTED POPULATIONS
M. Dugo

TEACHERS’ PERCEPTIONS ON IMPLEMENTING MOBILE AR FOR THE TEACHING OF ITALIAN AS ANOTHER LANGUAGE
M. Manna

DEVELOPING STUDENTS’ DIGITAL COMPETENCIES - 21ST CENTURY TEACHING SKILLS: BASED ON SELF-ASSESSMENT OF HIGHER EDUCATION TEACHERS
L. Luć

INTEGRATING SUSTAINABILITY DEVELOPMENT OBJECTIVES IN A UNIVERSITY SUBJECT
R. Chalmeta, M. Palop-Belloch, J. González-Darder

EXPERIENCES IN THE DEVELOPMENT OF A GENDER AND HUMAN RIGHTS COURSE
M. Palop-Belloch, R. Chalmeta, J. González-Darder

DISTANCE NOT DISTANT – AN EXPLORATION OF EXPERIENCES AND STUDENT PERCEPTIONS OF PERSONAL ACADEMIC TUTORS FOR INDEPENDENT DISTANCE LEARNING TRAINEE TEACHERS
D. Ross, D. Bell

A COMPARATIVE ANALYSIS ON TWO DIFFERENT DIDACTICAL APPROACHES TO THE REMOTE TEACHING EXPERIENCE
F. Brezi, K. Bettin

TEENAGERS INSTAGRAM USE AND ITS RELATIONSHIP WITH ANXIETY LEVELS AND EMOTIONAL REGULATION, DIFFERENCES BY SEX

PROFESSIONAL AND PEDAGOGICAL LEARNING ABOUT VIRTUAL TEACHING DEVELOPED BY PRE-SERVICE TEACHERS DURING THE PANDEMIC
J.M. Garrido-Miranda, G. Contrustas-Perez, S. Catalan-Henriquez

SHADOWS AND MARKS: THE POTENTIAL NARRATIVE OF CHILDREN ABOUT WAR
A. Pereira, I. Freire-Ribeiro, E. Mesquita

INCLUSION OF ICT SKILLS, DIGITAL LITERACY AND OPEN SOURCE PLATFORMS IN THE TEACHING OF INDUSTRIAL DESIGN APPLIED TO SMART AGRICULTURE
A. Faoro, M.E. Romero, M. Frausin

INTEGRATED SCIENCE (IS) FOR MIDDLE SCHOOL VIA INTERACTIVE DIGITAL BOOK
K. Imitiaz, N. Mahmood

A TRANSCRIPTION-BASED LEARNING ENVIRONMENT FOR A TONE LANGUAGE
P. Zongo, T.F. Ouedraogo, L. Capus
INTERGENERATIONAL CHALLENGES: A CASE STUDY ON THE AUTOMOTIVE INDUSTRY
M. Amorim, M. Ferreira Dias, M. Almeida

INTERNATIONAL EXPERT COURSE AS AN EXAMPLE OF COLLABORATION BETWEEN EUROPEAN UNIVERSITIES, RESEARCH CENTERS AND THE INDUSTRY FOR THE DEVELOPMENT OF THE ESSENTIAL OILS SECTOR AND ENTREPRENEURSHIP
C. Calderón-Guerrero, J.L. García, M.C. Giménez, C. Cordón

APPLICATION OF NATURE-BASED SOLUTIONS AND USE OF MONITORING AIR&WATER POLLUTION SENSORS THROUGH LOW-COST MINI-PORTABLE MEASUREMENT STATIONS TO PROMOTE ENVIRONMENTAL AWARENESS IN SECONDARY EDUCATION
C. Calderón-Guerrero, M. Almestar, M. Marchamalo, S. Sastre, M. Martínez

MINDFULNESS AND TECHNOLOGY: CAN THEY BE TWO SIDES OF THE SAME COIN?
K. Karadjova-Kozhuharova, R. Baker

INTEGRATION OF EDUCATIONAL RESOURCES FOR ELECTRICAL CIRCUITS
G. Mata Hernández

CMU CS ACADEMY: A TEXT-BASED PROGRAMMING LANGUAGE APPROACH FOR HIGH SCHOOL COMPUTER SCIENCE EDUCATION
M. Taylor, E. Cawley, S. De Jesus, M. Stehlik, D. Kosbie

AWARENESS OF ACADEMIC INTEGRITY IN SOCIAL SCIENCE STUDENTS AT REGIONAL HIGHER EDUCATION INSTITUTIONS IN LATVIA
A. Pipere, S. Zarina, D. Iliška, I. Kokina, J. Davudova

SPATIAL MOBILITY AND ACCESS TO SPECIALIZED EDUCATIONAL SERVICE: STUDENTS WITH DISABILITIES IN THE NORTHEAST REGION OF BRAZIL
A.T. Araújo de Almeida, W. Fasço, J. Campos, A.A. Sousa Fontoura, M. Calle Aguirre

THE CELL COLLECTIVE EXPERIENCE: BUILDING COMPUTATIONAL MODELS TO UNDERSTAND BIOLOGICAL SYSTEMS
C. Tang, Z.Z. Lieu

WHAT DO SYSTEMATIC LARGE SCALE ASSESSMENT TESTS ANALYSIS IN MATHEMATICS SHOW?
M. Mikite, G. Burgmanis, J. France, D. Namsone

TEACHERS' BELIEFS ABOUT MEDIA LITERACY AS A COMPONENT OF AGENCY
L. Valdmane, S. Zarina

MUSEUM AS AN IMPORTANT EDUCATIONAL RESOURCE FOR STUDENTS OF HISTORY AND CULTURAL HERITAGE IN RUSSIA AND SPAIN
M. Moseykina, K. Filimonova, E. Kargovskaya, V. Kuznetsova

E-LEARNING IN ORTHOPAEDIC SURGERY POSTGRADUATE TRAINING
P. Molchovski, K. Tokmakova

EDUCATIONAL PROGRAMS OF THE COLLECTION OF THE RUSSIAN MUSEUM IN MALAGA AS A WAY OF BILATERAL INTERCULTURAL DIALOGUE IN THE NEW CENTURY
K. Filimonova, M. Moseykina, E. Kargovskaya, V. Kuznetsova

HOW CAN ROBOTICS AND PROGRAMMING AFFECT CHILDREN’S COMPUTATIONAL THINKING SKILLS THROUGH REAL LIFE SCENARIOS?
E. Xerou, C. Angeli

POST-STROKE REHABILITATION THROUGH FUNCTIONAL ELECTROSTIMULATION: PATIENT EXPERIENCE AS THE FOCUS OF DESIGN PROCESS
G.F. Patellaro, M.E. Romero, M. Frausin

A CONCEPT OF A DIGITAL ASSISTANT TO SUPPORT PRACTICAL PHASES IN (COOPERATIVE) STUDIES: HOW DIGITALIZATION AND PERSONALIZATION STRENGTHEN THE LINK BETWEEN THEORY AND PRACTICE
O. Resch, A. Yankova

USING EXCEL FOR CREATING MULTIPLE VERSIONS OF AN EXAM
N. Carson

NURSES’ ATTITUDES TOWARDS ACADEMIC DISHONESTY
U. Kõrgemaa

WILLING SUSPENSION OF SCHIZOPHRENIA: LEARNING FROM LUDO-NARRATIVE DISSONANCE IN COMPUTER GAMES
B. Kampmann Walther
SURVEY FINDINGS ON THE SPREAD OF DESIGN THINKING IN ARAB COUNTRIES: THE EDUCATIONAL SECTOR AS A DRIVING FORCE, AND ITS CURRENT CHALLENGES
H. Traifeh, J. von Theinin, R. Abou Refaei, C. Meinel

THE IMPACT OF VIRTUAL REALITY (VR), SOCIAL MEDIA AND GAMIFICATION ON LEARNER ENGAGEMENT: RE-IMAGINING AN ONLINE STUDY SPACE FOR UNIVERSITY STUDENTS
D. Degiorgis, D.T. Ivan, S. Mudgal, I. Oosterloo, H. Pouranian, P. Prabhav, D. Vlachopoulos

CURRENT STATE OF INITIAL PRESCHOOL TEACHER TRAINING IN BULGARIA AND THE BALKAN REGION COUNTRIES
G. Georgieva

KEY COMPETENCES IN INITIAL PRESCHOOL TEACHER TRAINING - THE ROLE OF ETWINNING AND ERASMUS+  
G. Georgieva

HIGHER EDUCATION STRATEGY TO REDUCE AN ORGANIZATION’S DIGITAL CARBON FOOTPRINT DERIVED FROM CYBERSECURITY POLICIES
I. Bandara, F. Ioras

LECTURERS’ PERSPECTIVES ON FIRST-YEAR ACCOUNTING STUDENTS’ ADJUSTMENT TO UNIVERSITY LIFE AT A SOUTH AFRICAN UNIVERSITY OF TECHNOLOGY
M. Mokhampanyane

WEEKLY PREDICTION OF AT-RISK STUDENTS USING DATA MINING
M. Jawathari, V. Stoffova

SPACED REPETITION SYSTEM FOR LEARNING MATLAB IN ENGINEERING
I. Bailera, M. Bailera, B. Peña

CONSEQUENCES OF SOCIAL MEDIA USE ON PSYCHOLOGICAL WELLBEING IN YOUNG ADULTS OVER THE LAST 10 YEARS: A SYSTEMATIC REVIEW
C. Sisó

LEARNING AND OCCUPATION OF CHILDREN’S LEISURE TIME: CRISSCROSSING SCHOOL AND NON-SCHOOL EDUCATION
E. Mesquita, I. Freire-Ribeiro, A. Sanches, C. Carlos

WHAT CAN WE LEARN FROM THE COVID-19 EXPERIENCES OF ONLINE LEARNING IN VOCATIONAL EDUCATION FROM THE BRITISH ISLES?
D. Dabbous, K. Emms, A. Laczik, H. Henderson

AN EXPLORATORY STUDY ON SUPPORTING COLLABORATIVE KNOWLEDGE CREATION ONLINE
E. Siu, S. Wong

CHATBOT AS A TOOL TO CONNECT SOCIAL NEEDS WITH LEARNING FOR PHYSICAL THERAPY STUDENTS
M. San Miguel-Pagola, A. Buesa-Estévez, J. Echeverría, P. Roldán-Pérez

SCHOLARLY PAPERS AS A TEACHING TOOL IN COMMUNICATION DESIGN EDUCATION
M. Quaggiotto, C.S. Galasso

EVALUATION OF GAMIFICATION APPROACH USING VAR FOR DIGITAL CULTURAL HERITAGE
D. De Luca, N. Rimella, E. Bussi, M. Del Giudice, A. Osella

FORESIGHT AND SUSTAINABLE FUTURES IN LIFELONG LEARNING - PROFESSIONAL DEVELOPMENT IN ADULT EDUCATION
C. Siödin, M. Riska, K. Westerén, P. Linderbäck

NOVEL DISTANCE-LEARNING METHODS TO OVERCOME CHALLENGES CAUSED BY COVID-19 IN UNDERGRADUATE PROGRAMMING COURSES

ONLINE EVALUATION OF REGULATED EDUCATION IN FINANCE AFTER THE COVID PANDEMIC
M. Vercher-Ferrandiz, F. Salas-Molina, D. Pla-Santamaría, A. Garcia-Bernabeu

USING EEG TO EXPLORE THE COGNITIVE LOAD OF STUDENTS WITH DIFFERENT MATHEMATICAL ABILITIES INVOLVED IN ANSWERING MATHEMATICS QUESTIONS
S.W. Chen, J.F. Wang, T.H. Wang

TEACHING OPERATIONS MANAGEMENT TO LAWYERS
F. Salas-Molina, M. Vercher-Ferrandiz, D. Pla-Santamaría, A. Garcia-Bernabeu
LESSONS LEARNED FROM COVID-19 PANDEMIC REMOTE TEACHING: A CASE STUDY OF THE IMPROVEMENT AND ADJUSTMENT OF THE EDUCATION PROCESS DURING AND AFTER PANDEMIC AT FM TUL
L. Kosková, I. Vranyj, I. Kopetschke

A TRAINING FRAMEWORK FOR CYBERSECURITY
E. Mitani

DEVELOPING COMPUTATIONAL THINKING AND PROBLEM-SOLVING SKILLS IN EARLY CHILDHOOD AND PRIMARY SCHOOL
F. Casasso, C. Fissore, V. Fradiante, M. Marchisio

DATA DRIVEN LEARNING ACTIVITIES IN ENGLISH ON THE SPECIALIZED LANGUAGE OF MATHEMATICS IN SECONDARY SCHOOL
C. Fissore

ACADEMIC RESEARCH PROJECTS AS A VEHICLE FOR SUSTAINABILITY
M.L. Lara Ortiz

ENHANCING DIGITAL ASSESSMENT THROUGH ARTIFICIAL INTELLIGENCE
S. Bezzina, A. Pfeiffer, A. Dingli, T. Wernbacher

OPEN SOURCE PLATFORM ENRICHMENT FOR IMPROVING THE LEARNING PROCESS IN DRUG DISSOLUTION MODELS AND DISSOLUTION PROFILES COMPARISON
V. Mangas Sanjuan, I. Usach, R. Talens, A. Nacher, V. Merino-Sanjuan, M. Merino-Sanjuan

ENHANCING ENGLISH LEARNING MOTIVATION THROUGH THE USE OF ROBOT AND VIRTUAL REALITY TECHNOLOGIES
Y.L. Chen, C.C. Hsu, H.H. Hsu, W.C. Lien, C.Y. Lin

INTERDISCIPLINARY RESEARCH OF GLAGOLITIC MANUSCRIPTS – NEW APPROACHES TO CULTURAL HERITAGE STUDIES PROJECT KTI-06-H60-09/2021: “INTERDISCIPLINARY METHODS AND TOOLS FOR RESEARCH OF MANUSCRIPT HERITAGE”
I. Dimitrova

POST PANDEMIC LEARNING: WHAT ABOUT HYFLEX APPROACH?
J. Juhary

COMPARING THE COGNITIVE LOAD OF FIELD-DEPENDENCE AND FIELD-INDEPENDENCE STUDENTS IN ANSWERING MATHEMATICS QUESTIONS: FROM THE BEHAVIOR AND EEG EVIDENCE
S.W. Chen, J.F. Wang, T.H. Wang

APPLICATION OF THE FINITE ELEMENT METHOD TO THE UNDERSTANDING OF A NON-STeady state HEAT TRANSPORT PROBLEM
D. Tarrazó-Serrano, S. Castiñeira-Ibáñez, E. Sánchez-García, M. Gasque, A. Uris, C. Rubio

SUSTAINABLE DEVELOPMENT GOALS AND THEIR IMPLEMENTATION IN PHYSICS
S. Castiñeira-Ibáñez, D. Tarrazó-Serrano, M. Gasque, C. Rubio, A. Uris

EDUCATION AND PLAY IN OUTDOOR ENVIRONMENT - PRESCHOOL TEACHERS’ VIEWS
T. Bahchevanova, E. Kamenova

INTRODUCING MASTER’S STUDENTS INTO GENOMIC SCIENTIFIC REASONING THROUGH AN INTERACTIVE PROBLEM-BASED LEARNING LANDSCAPE: THE CHALLENGE OF IDENTIFYING THE CAUSAL MUTATION OF A SHEEP HEREDITARY DISEASE

COMPARING LEARNERS’ MOTIVATIONAL LEVELS FOR TRADITIONAL READING AND ONLINE READING
N. Bowke

IMPROVING SKILLS OF PROCESSING AND MAPPING CADASTRAL INFORMATION BY AN INNOVATIVE QGIS PLUGIN WITH TEACHING PURPOSES

ADDRESSING THE “LEAKY PIPELINE”: A REVIEW AND CATEGORIZATION OF ACTIONS TO RECRUIT AND RETAIN WOMEN IN COMPUTING EDUCATION
A. Berry, S. McKeever, B. Murphy, S.J. Delany

COMMUNICATION DESIGN AND COMPUTATIONAL APPROACHES: OPPORTUNITIES AND CRITICALITIES IN A DISCIPLINARY TRANSFORMATION
M. Quaggiotto
DEVELOPMENT OF A TEACHING VIDEO GAME: REVIEWING THROUGH NUMERICAL EXERCISES

GAME-BASED LEARNING AND CHEMICAL ANALYSIS: AN EXAMPLE FOR ANALYTICAL PRACTICES

EMERGING FROM THE BLACK BOX: THE TRANSITION FROM ONLINE TO IN-PERSON STUDENT ATTENDANCE
E. Spender, S. Evans

ITALIAN UNIVERSITY STUDENTS AND DISTANCE LEARNING CAUSED BY THE PANDEMIC, AN OVERVIEW
E. Mattarelli

UPDATE OF THEORY ASSIGNMENT: ENGAGING STUDENTS IN COURSE DEVELOPMENT
G. Oskarsson

ENHANCEMENTS FOR DIGITAL TEACHING - PREPARATION AND ADAPTATION OF COURSES FOR DIGITAL TEACHING AND LEARNING BASED ON THE MODULE "DIGITAL MEDIA IN SCHOOL"
F. Funke, S. Hofmann

TEACHING ADMINISTRATIVE LAW FOR SUSTAINABILITY
M.L. Lara Ortiz

THE RELATIONSHIP BETWEEN TEACHERS' AUTONOMY SUPPORT AND STUDENTS' MOTIVATION, ACHIEVEMENT AND WELL-BEING
S. Germani, T. Palombi, M. D’Amico

INTERACTIVE MATH CLASS APPLICATION - BRIDGE BETWEEN TEACHER AND STUDENTS
P. Vondráková, P. Beremlijski

THE USE OF AUGMENTED REALITY APPLICATIONS IN PORTUGUESE SHOPPING CENTRES: A DOCTORAL THESIS BRIDGING UNIVERSITY AND INDUSTRY
F. Oliveira, R. Raposo

THE ANALYSIS OF INTERCONNECTIONS BETWEEN SCHOOL CULTURE FEATURES AND TEACHER JOB SATISFACTION
V. Daciene, R. Bulysys, A. Kazlauskiene

STUDY ABOUT METHODS AND IMPACT OF INNER DIFFERENTIATION IN BIOLOGY LESSONS OF 9TH GRADERS
M. Ternieten, D. Elster

PEER MENTORING MODEL IN SAPIENZA UNIVERSITY OF ROME: FIRST RESULTS
P. Sposetti, G. Szpunar, G. Vincenti, E. Mattarelli, S. Gabrielli, M.G. Rionero

DEVELOPING COHERENT BEHAVIOR THROUGH HUMANOID ROBOT NAO IN PRESCHOOL EDUCATION
K. Liberčanová

SAVE DR. ARNOLD: A LAB-BASED CHEMICAL ENGINEERING ESCAPE ROOM

PROFESSIONAL DEVELOPMENT OF UNIVERSITY TEACHERS AS A RESULT OF CAPACITY BUILDING IN THE MACICT PROJECT OF THE ERASMUS+ PROGRAMME
S. Piashkun, J. Mäkiö

TOWARDS A TRANSITION FROM EMERGENCY REMOTE TEACHING TO ONLINE LEARNING IN THE NEW NORMAL
M. León-Urrutia, S. White, M. Eradze

THE VALIDATION OF A TIME-EFFICIENT MEASURE FOR ASSESSING CHILDREN’S SOCIAL ISOLATION AT SCHOOL

TEACHING CYBER-PHYSICAL-SOCIAL-SYSTEMS THROUGH PROJECTS BASED LEARNING
D. Kataria, G. Sanchez, J.P. Naidu

LOOKING FOR ARGUMENTS TO PROMOTE CRITICAL THINKING IN SECONDARY EDUCATION STUDENTS
N. Castells, J. Luna, M. Minguela, E. Pérez
PHOTOGRAMMETRY WITH LIDAR IPAD PRO
A. Vlachos, A. Polyzou, A. Economides

CHALLENGE-BASED LEARNING: A PROFESSIONAL EXPERIENCE THROUGH BUILDING MONITORING
C. Morón, D. Ferrándiz, A. Zaragoza, M. Álvarez

SMART GLASS APPLICATION TESTING FOR AUGMENTED REALITY
A. Vlachos, A. Economides, M. Perifanou

BLOCKCHAINS IN TOURISM – CASE STUDY
M. Cerna, A. Borkovcová

FREE SOFTWARE FOR APPLICATION IN TEACHING: SMATH STUDIO AS A TOOL FOR ENGINEERING STUDENTS
J.P. Díaz, D. Ferrández, E. Yedra, C. Morón

WHERE ARE MY STUDENTS? DISTANCE LEARNING AND DROP-OUT DURING THE FIRST ITALIAN LOCKDOWN DUE TO THE COVID-19 PANDEMIC
A. Ricci, A. Ciani

CHANGING PRACTICES FOLLOWING THE COVID-19 PANDEMIC: A NEW ERA IN ACADEMIA
V. Kalogerou

FOSTERING THE DEVELOPMENT OF TEACHERS’ DIGITAL LITERACY WHILST PROMOTING NEW PEDAGOGICAL STRATEGIES: CREATING TANGIBLE EDUCATIONAL RESOURCES
S. Riberto, P. Beça, M. Aresta

METACOGNITIVE STRATEGIES - OPPORTUNITY IN CURRICULUM DEVELOPMENT
D. Mara

ENHANCING STUDENT-TEACHER INTERACTION IN ONLINE CLASS: THE ROLE OF TEACHER AND VISUALISATION
S. Gopinathan

RECONFIGURING PEDAGOGICAL PRACTICE IN INITIAL TEACHER TRAINING
L. Mara

USING SPANISH VERSION OF MATH4U PORTAL FOR CZECH-Spanish BILINGUAL MATHEMATICS EDUCATION
P. Beremlijski, P. Vondráková, I. Skybová

LACK OF INFORMATION ABOUT CAREER OPTIONS FOR CAREER DECISIONS DURING THE ERA OF TECHNOLOGY AND DIGITALIZATION
G. Sart, A.E. Aslan

COMMUNICATION SKILLS IMPROVEMENT FOR CHEMICAL ENGINEERING MASTER’S STUDENTS

LEARNING FROM THE PATIENTS
A.V. Penati, C.E. Standoli

DEVELOPMENT OF AUDIOVISUAL RESOURCES FOR PRACTICAL ACTIVITIES IN PILOT PLANT IN THE SUBJECT OF INTEGRATED PROCESS AND PRODUCT LABORATORY IN THE CHEMICAL ENGINEERING DEGREE

MULTIMODALITY AND TECHNICAL COMMUNICATION IN THE ENGLISH FOR SPECIFIC PURPOSES CLASSROOM
S. Vasconcelos, A. Balula

SELF-EFFICACY IN THE CREATIVE APPROACH OF THE RESOLUTIVE DESIGN AS A WAY TO IMPROVE THE ACADEMIC PERFORMANCE IN MATHEMATICS
G. Havârneanu

USING THE COACHING APPROACH IN DEVELOPING STUDENTS’ ENTREPRENEURIAL COMPETENCIES IN A TECHNICAL UNIVERSITY
A. Constantinescu-Dobra, V. Măier, M.A. Cotiu

COVID-19 PANDEMIC: THE E-LEARNING EXPERIENCES OF FIRST YEAR UNIVERSITY OF TECHNOLOGY STUDENTS IN SOUTH AFRICA
M.S. Msomoeng

EXPERIENCES IN EDUCATION: BETTER UNDERSTANDING HOW TO PREDICT THE OUTCOMES OF ADULT LEARNERS ON RESKILLING INITIATIVES
S. Creaner, G. Creaner, C. Creaner
HIGHER PROFESSIONAL TECHNICAL COURSES: STUDENTS’ PROFILE AND MATHEMATICS SELF-CONCEPT
J. Mendonça, C. Pinto, L. Babo

9695

GAMIFICATION OF CHILDREN’S ACQUAINTANCE WITH THE PROFESSIONS OF THE FUTURE
L. Kudinova, R. Chumicheva

9703

FUTURE TEACHERS’ VISION TOWARDS TECHNOLOGIES IN EDUCATION
M.R. Patrício

9711

THE COMPETENCY FOR FAMILY ASSESSMENT IN PRE-SERVICE TEACHER EDUCATION
T. Turzak, V. Kurincova

9716

PREPARING FOR (FUTURE) WORK? SUPPORTING SOFT SKILL DEVELOPMENT IN THE CONTEXT OF HIGHER EDUCATION WITH A DIGITAL INSTRUMENT FOR 360° FEEDBACK
S. Chaoui, P. David, E. De Bruyne, S. Goovaerts, A. Hoefkens, E. Van Den Broeck, G. Vanthournout

9724

DEVELOPING GAMIFIED ACTIVITIES FOR IMPROVING ONLINE TEACHING-LEARNING PROCESSES OF THE SECURITY IN COMPUTER SYSTEMS AND RISK ANALYSIS AND MANAGEMENT SUBJECTS
J. Boubeta-Puig, K.J. Valle-Gómez, A. Estero-Botaro

9733

COMPLEX ASSESSMENT OF SIMILAR OBJECTS IN THE EUROPEAN HIGHER EDUCATION AREA
H. Kostadinova, G. Totkov

9742

INTENTIONAL ERRORS AND GAME-BASED PLATFORMS AS MECHANISMS TO IMPROVE LEARNING AMONG UNIVERSITY STUDENTS: A PILOT STUDY CARRIED OUT IN THE DEGREE IN NUTRITION

9751

A MODEL FOR THE INTEGRATION OF PROJECT-BASED LEARNING AND TEAM-TEACHING IN AN ENGINEERING HIGHER EDUCATION CONTEXT
A. Barrera Puerto, R. Seiz Ortiz

9756

LEARNING FROM MENTOR-TEACHERS’ AND STUDENT-TEACHERS’ EXPERIENCES IN PRACTICUM IN TEACHER EDUCATION IN PALESTINE
A. A Rezeqallah, A. Aljanazrah, M. Vivitsou, H. Janhonen-Abruquah, A. Bsharat, R. Al-Ramahi, A. Fteih

9764

QUIZ MAKER TOOLS: ANALYSIS AND PEDagogICAL APPLICATIONS

9765

ENTREPRENEURIAL EDUCATION IN A TECHNICAL UNIVERSITY POST THE COVID 19 PANDEMIC
V. Maier, A. Constantinescu-Debra, M.A. Cotiu

9775

WHY EVERY CHILD SHOULD LEARN TO CODE
O. Herden

9782

MENTORING AND PRACTICUM AT BIRZEIT UNIVERSITY AS PERCEIVED BY MENTORS AND STUDENT TEACHERS
A. Bsharat, R. Al-Ramahi, A. Fteih, A. A Rezeqallah, A. Aljanazrah, H. Janhonen-Abruquah, M. Vivitsou

9790

REALIZATION OF REMOTE EDUCATIONAL PRACTICAL ACTIVITIES OF DIGITAL ELECTRONICS FOR ENGINEERING STUDENTS
J. Ramirez Ortega

9791

THE DESIGN AND EVALUATION OF A VIGNETTE-BASED COURSE FOR ENHANCING PRE-SERVICE TEACHERS’ NOTICING OF STUDENTS’ GEOMETRICAL THINKING

9796

COLLABORATION AND PEER FEEDBACK IN PRONUNCIATION TRAINING
H. Vancova

9803

THE DESIGN OF A TRAINING PROGRAM ON IMMERSIVE TECHNOLOGIES IN TRANSDISCIPLINARY STEAM EDUCATION
I. Vekiri, M. Meletiou-Mavrotberis, E. Mavrotberis, C. Rodosthenous

9804

NEUROSCIENCE IN EDUCATION - NEUROMIL: FROM TRAINING TO COMBAT
C. Novikoff, C.A. Schettini, T. Pergentino de Sant’ana, M. Vieira Xavier, S. Pavanzelli

9810
APPLYING GAMIFICATION MECHANICS IN AN ENVIRONMENTAL EDUCATION SPOC  
C. Rodosthenous, E. Mavrotheris  

VIRTUAL AND HYBRID TEACHING DURING THE PANDEMIC: CONVERTING PANIC INTO DISCOVERY  
M. Obadat, E. Alqusaireen  

EMPLOYABILITY TRENDS OF HARAMAYA UNIVERSITY GRADUATES WITHIN ONE YEAR AFTER GRADUATION  
E. Gebregiorgis  

A SURVEY OF HUMAN RESOURCES COMPETENCIES IN DIGITAL SKILLS IN THE DIGITAL ECONOMY AND SOCIETY  
K. Repkova Stofkova, M. Krejnus  

STE(A)M APPROACH: DISTINGUISHING AND DISCUSSING MEANINGS  
P.B. Teixeira, C. Martins, H. Rocha  

THE CONTRIBUTION OF DIGITAL SYSTEMS TO DENTAL MEDICAL EDUCATION PERFORMANCE  
M.E. Antohe, C.G. Dascalu, I. Gradinaru  

PARTICULAR FEATURES OF DENTAL MEDICAL EDUCATION IN THE PERIOD OF THE SARS-COV-2 PANDEMIC  
I. Gradinaru, C.G. Dascalu, M.E. Antohe  

IMPROVEMENT OF TEACHERS REFLECTION SKILLS IN SUPERVISION  
L. Rutka, L. Trupa  

INTERACTIVE TUTORING AGENT GENERATION FOR STUDENT ASSISTANCE IN HIGHER EDUCATION  
U.U. Shegupta, G.V.P. Gowthaman Malarvizhi, M. Jose, T.S. Kumar, W. Hardt  

USERS’ EXPERIENCES AND PERCEPTIONS ABOUT TELEPRESENCE ROBOTS IN EDUCATION  
M. Perifanou, P. Häfner, A. Economides  

CHALLENGE-PROJECT AS A SUPERVISED LEARNING ACTIVITY WITHIN A TRAINING UNIT  

THE IMPACT OF UNIVERSITY ONLINE TEACHING ON THE DIGITAL LITERACY OF DIGITAL NATIVES AND THEIR ATTITUDES TOWARDS IT  
D. Suša Vugec  

DESIGN EDUCATION IN BUSINESS INNOVATION  
S. Palmieri, M. Bisson, R. Palomba, G. Rubino, A. Ianniello  

REFLECTION OF DIVERSITY IN THE OBJECT OF SOCIAL WORK. STUDENT’S VIEWS AND PRACTICAL EXPERIENCES  
E. Raya Díez, A.B. Cuesta Ruíz-Clavijo, C. Serrano Martínez  

(H)OLD ON PROJECT – EDUCATION AND PARTICIPATION IN THE COMMUNITY FROM THE PERSPECTIVE OF LEADERS  
S. Bergano, G. Santos, L. Cramês  

OVERCOMING EARLY ABUSE AND NEGLECT AND BUILDING RESILIENCE AND HARDINESS IN INDIVIDUALS GROWING UP IN INSTITUTIONAL CARE  
L. Myňářková, L. Dobrnčak  

COMPETENCE OF VOCATIONAL SCHOOL TEACHERS UNDER THE CONDITIONS OF COVID-19 RESTRICTIONS: THE CASE OF LATVIA  
L. Rutka, M. Dubickis, A.M. Reidzane  

EDUCATIONAL DESIGN APPROACHES AND THEIR CONTRIBUTION TO THE REFLECTION OF TEACHERS’ PEDAGOGICAL PRACTICES  
P. Carolei  

MIGRATION PROJECTS FOR HIGHER EDUCATION: A PERSPECTIVE FROM WOMEN’S VOICES  
S. Bergano, M.J. Rodrigues, B. Moreira, C. Martins  

INNOVATIONS IN EDUCATION RELATED TO SUSTAINABLE DEVELOPMENT THROUGH EDUCATIONAL LABORATORY  
Z. Konecna  

A FOCUS GROUP STUDY ON TELEPRESENCE ROBOTS IN EDUCATION  
M. Perifanou, M. Galea, A. Economides, T. Wernbacher, P. Häfner
STUDENT DRIVEN DESIGN AND TESTING OF A MOBILE EXPERIMENTAL DEVICE IN THERMAL SCIENCE
E. Glakpe, S. Franco, C. Badiane

ANIMATED PRESENTATIONS USING POWTOON AND ITS APPLICABILITY IN PEDAGOGICAL PRACTICE: PERSPECTIVES OF HIGHER EDUCATION PROFESSORS AND FUTURE BASIC EDUCATION TEACHERS
M. Castellano, D. Pedrosa, T. Pessoa

TEACHING FOREIGNER LANGUAGES IN HIGHER EDUCATION: CHALLENGES IN TIMES OF THE PANDEMIC
D. Ramalho Alves, H. Belchior-Rocha, I. Casquilho-Martins

BE AWARE OF THE SPECIFICATIONS THAT CAN BE CHANGED IN AN APPRENTICESHIP MANAGEMENT SYSTEM: THE CASE STUDY OF MATHITEIA
S. Christodoulou, I. Christodoulopoulos, K. Togias, M. Paraskevas, P. Ntentopoulos

CAN MICROSERVICES BE THE ANSWER TO EVER-CHANGING REQUIREMENTS OF A 10-YEARS OLD LEGACY TRAINING MANAGEMENT SYSTEM?
P. Ntentopoulos, K. Togias, I. Christodoulopoulos, M. Paraskevas, S. Christodoulou

INTRODUCTION TO SUSTAINABILITY AS A TRANSVERSAL COMPETENCE IN HIGHER EDUCATION
H. Belchior-Rocha, V. Ramalho, C. Roseta-Palma

OVERCOMING THE HORSELESS CARRIAGE SYNDROME: METHODS TO ENCOURAGE PEDAGOGICAL RE-ENGINEERING
G. Salter

PROFILING PROGRAM DECOMPOSITION IN CS1
C. Charitis

FIRST: FINDING INTERESTING STORIES ABOUT STUDENTS - AN INTERACTIVE NARRATIVE APPROACH TO EXPLAINABLE LEARNING ANALYTICS
A. Al Doutiat, M.L. Maher

THE IMPACT OF IMMERSIVE CONTENT VIEWING ON MOVEMENT LEARNING: FOCUSING ON EDUCATIONAL GYMNASTICS
N. Suzuki, T. Fujimoto, Y. Sawa

ON COMING TOGETHER AS KNOWLEDGE BUILDERS ONLINE: A COLLABORATIVE AUTOETHNOGRAPHY
L. Yearwood, P. Raman, A. Sevsek

THE ONLINE MATH INTERVIEW: BEGINNING ELEMENTARY TEACHERS ASSESSING MATHEMATICAL LEARNING IN THE VIRTUAL SPACE
H. Haydar

READING, WRITING AND RACISM: EXPLORING THE IMPACT OF RACIAL DISCRIMINATION ON THE COGNITIVE AND SOCIAL-EMOTIONAL GAINS OF DEVELOPING YOUTH
R. Johnson-McCurry

FACULTY/LIBRARIAN OER PARTNERSHIP
J. Meloun, B. Digiallonardo

TOWARDS CO-DESIGN AND USE OF LEARNING ANALYTICS IN HIGHER EDUCATION ONLINE COURSES
P. Raman

PREPARATORY DISCUSSION AND PROJECT AUGMENTED STUDENT LEARNING VIA STUDENT PRESENTATION BASED EFFECTIVE TEACHING (SPET) APPROACH
P. Tyagi

STUDENT PRESENTATION-BASED TEACHING TO PROVIDE TRANSACTIONAL ANALYSIS TRAINING TO PRODUCE EMOTIONALLY INTELLIGENT ENGINEERING GRADUATE STUDENTS
P. Tyagi, S. Addo

NONLINEAR EQUATION SYSTEM PROBLEM GENERATOR WITH GAMIFICATION
H.P. Leyva, R.B. Silva

FROM THE PHYSICAL CLASSROOM TO THE DIGITAL CLASSROOM IN TIMES OF CRISIS: COVID-19
R.B. Silva, H.P. Leyva

STRATEGIES FOR EFFECTIVE COMPUTER SCIENCES TEACHING TO STUDENTS WITH DIFFERENT PRELIMINARY RESULTS
R. Kararusinov

CREATING A MULTI-ACCESS LEARNING COMMUNITY IN THE CIS SANDBOX
M. Frydenberg
THE EXPERIENTIAL LEARNING IN MICROBIOLOGY LABORATORY CLASS APPLIED IN SOCIAL ASSISTANCE FOUNDATIONS
J. Castillo Reyna, C.D. Gonzalez Barriga, G.A. Silveyra Sáenz

TRANSVERSAL APPROACH TO CURRICULUM DESIGN - HUMAN-CENTERED ARTIFICIAL INTELLIGENCE
E. Valveny, R. Vilanova

EXPERIENCES WITH THE USE OF VIRTUAL REALITY ENVIRONMENTS IN EDUCATION – IDENTIFYING DIFFICULTIES AND POSSIBLE SOLUTIONS DURING THESIS WORK
G. Bujdosó, C.M. Novac, O.C. Novac, T. Roskó, K. Teperics

HOW TO GET REAL IN THE CLASSROOM: USING AUTHENTIC MATERIALS IN LANGUAGE TEACHING
AM. Toma

SELF-REGULATED LEARNER IN THE LIGHT OF DISTANCE LEARNING CAUSED BY PANDEMIC: ESTONIAN 12TH GRADE STUDENTS’ VIEWS AS AN EXAMPLE
T. Kraav, K. Oras, K. Orav-Puurand, H. Jukk, S. Pihlap

SMALL-SCALE HORIZONTAL AXIS WIND TURBINE (HAWT) MODEL AS AN EDUCATIONAL TOOL
F. Zabihian, A. Ingraffia, E. Quintero, K. Lee, V. Quijas

FLIPPED LEARNING IN CORPORATE TRAINING TO SUPPORT INDUSTRY 4.0
V. Rossano, P. Plantamura, E. Gentile, T. Roselli

CREATING EFFECTIVE LEARNING AND WORKING IN STUDENT TEAMS
K.Z. Tang

LEVERAGING GAMING TRENDS TO FOSTER ENGAGEMENT IN REMOTE DELIVERY OF GAME DEVELOPMENT / SOFTWARE ENGINEERING COURSES
B. Cassidy

DIGITASK: AN OPEN-ACCESS AND USER-FRIENDLY PLATFORM TO DESIGN DIGITAL PEDAGOGICAL TASKS FOR THE FOREIGN LANGUAGE CLASSROOM
D. Masats, C. Pratginestós

STUDENT LEARNING PERFORMANCE BEFORE AND DURING THE PANDEMIC
H. El-Sadi, S. Shady, G. Ma

IMPACT OF PRACTICAL SKILLS REQUIRED BY LECTURERS OF ECDE SUBJECTS AT TECHNICAL AND VOCATIONAL EDUCATION AND TRAINING COLLEGES IN MPUMALANGA PROVINCE
S.T. Mashika, O. Moila, S. Maile

AUTOBIOGRAPHY AS A RE-CONSTRUCTION OF SELF-IDENTITY IN THE PERSPECTIVE OF LIFELONG LEARNING. AN EXPLORATORY RESEARCH ON EDUCATORS
G. Aleandri, A. Colantonio

SIMUDATA: NEW DIGITAL MODELS AS ACTIVE METHODOLOGIES FOR ACCOUNTING EDUCATION

FACE-TO-FACE TO MASK-TO-MASK AND BACK AGAIN: A LOOK AT TEACHING LARGE PHYSICS CLASSES PRE- AND POST- COVID19
C. Rodriguez, A. Kolomenski, H. Schuessler

A SHORT-STORY APPROACH TO COMPLEX MICROLECTURES
M.C. Dal Pian, M. Dal Pian, L.F. Dal Pian

ASSESS-IMPROVE-ASSESS: CONTINUOUS IMPROVEMENT IN THE CLASSROOM
N. Rodriguez

EXPLAINABLE AI FOR DATA DRIVEN LEARNING ANALYTICS: A HOLISTIC APPROACH TO ENGAGE ADVISORS IN KNOWLEDGE DISCOVERY

PECULARITIES OF ASSESSMENT OF PRE-SCHOOL AGE CHILDREN’S ACHIEVEMENTS: THE CONTEXT OF DISTANCE LEARNING
R. Bilbokaitė, I. Bilbokaitė-Skauiakerienė

QUALITY ASPECTS OF STUDENTS’ LEARNING THROUGH FILMS
R. Bilbokaitė, I. Bilbokaitė-Skauiakerienė, M. Marmokaitė

EVALUATION OF PROFESSIONAL COMPETENCE DEVELOPMENT OF NOVICE TEACHERS DURING THE INDUCTION PERIOD AT SCHOOL
R. Bubnys, A. Meškauskienė, A. Zemgulienė
FACT-CHECKING AS AN EMERGING PROPOSAL FOR MEDIA EDUCATION WITH ECUADORIAN TEACHERS
R. Elizalde-Robles, C. Rodríguez-Hidalgo, G. Coronel-Salas, C. Mier-Sanmartín

CLASSROOM MANAGEMENT: EVALUATION OF INSTRUCTIONAL MANAGEMENT FROM THE PERSPECTIVE OF UNIVERSITY STUDENTS
K. Němejc, K. Tomšíková

DASHBOARD FOR STATISTICAL ANALYSIS OF QUALIFICATIONS: A CASE STUDY IN A DISTANCE-LEARNING SECONDARY SCHOOL
J. Jiménez, C. Guerrero

HOW DOES A THIRD-PARTY PLATFORM AFFECT PROJECT-BASED LEARNING OBJECTIVES FOR FACULTY AND STUDENTS?
B. Bengler, L. Rowland

FROM CONCEPTS TO DETAILS: THE ROLE OF MOODBOARDS IN THE NEW PRODUCT DEVELOPMENT PROCESS
C.E. Standoli, G. Galán Jurado

SCHOOL SUCCESS: CONCEPT, FACTORS AND STRATEGIES
C. Martins, A. Sanches, I. Freire-Ribeiro

BELIEFS ABOUT SCHOOL: MULTIPLE PERSPECTIVES
C. Martins, C. Ribeiro, J. Carvalho Sousa, R. Novo

PSYCHOSOCIAL DEVELOPMENT OF DHH CHILDREN: OBSTACLES AND STRATEGIES FOR PROMOTING SELF-CONCEPT AND SOCIALIZATION
A. van Staden

ACHIEVEMENTS IN READING AND WRITING AMONG DEAF AND HARD-OF-HEARING CHILDREN: THE IMPACT OF LANGUAGE PROFICIENCY ON LITERACY ABILITIES
A. van Staden

TRANSFORMING THE PEDAGOGICAL LANDSCAPE IN EDUCATION: THE TEACHING OF CLIMATE CHANGE IN SECONDARY SCHOOLS
N.P. Caga, M. Steloki

EFFECTS OF COVID 19 PANDEMIC ON LEARNERS WITH DISABILITIES IN KENYA
M. Kavua

OPPORTUNITIES AND CHALLENGES OF METAVERSE FOR EDUCATION: A LITERATURE REVIEW
K. Stanoevska-Slabeva

THE EFFECT OF PEER FEEDBACK ORIENTATION ON HIGHER EDUCATION STUDENTS’ PERCEPTION OF COMMUNITY OF INQUIRY AND POSITIVE EMOTIONS
M. Yang, M. Deng

LEADERS’ VOICES ON CURRICULUM AND CURRICULAR FLEXIBILITY
C. Martins, C. Mesquita, G. Santos, M.R. Patrício

TELECOMMUTING BEFORE, DURING AND AFTER COVID-19: EFFECTS ON UAE HIGHER EDUCATION WORKFORCE
R. Zein, H. Abduljaber

IDENTIFYING THE DIGITAL ACADEMIC PROFILE OF UNIVERSITY DROPOUTS WITH INTELLIGENT PREDICTIVE MODELS
J.L. Peñaloza Figueroa, AD. Hernández Estrada, C.G. Vargas Pérez, M. Martin Santiago, M.S. Aparicio Sánchez

EFFECT OF UNIVERSITY ENVIRONMENT ON STUDENTS’ PERCEPTION OF THE UTILITY OF ICT-ENABLED FEEDBACK
M. Yang, C.Y. Hou

GENDER MARKING AND THE PAREMILOGICAL REPRESENTATION OF WOMEN IN ENGLISH AND GREEK POLITICAL EDUCATION
M. Loikov, E. Theodoridou

NEW FORMS OF TRAINING IN THE FIELD OF SECURITY EQUIPMENT
M. Boroš, Z. Zvukova

ENHANCING AVIATION ENGLISH COURSE THROUGH SIMULATION-BASED INSTRUCTION
N. Dincer, R. Dincer

PUTTING LEARNING INTO PRACTICE. CASE STUDY: PREVENTION AND COEXISTENCE WITH COVID-19
C. Ortiz, M. Gonzáles, C. Valdiviezo-Abad
CAREER DEVELOPMENT AND AGEING OF PERSONNEL IN THE PUBLIC ADMINISTRATION
S. Blumberga, I. Danovska

INVESTIGATING PRE-SERVICE SCIENCE TEACHERS ICT INTEGRATION COMPETENCIES IN GHANA
M.J. Ofori, N. Caga

VIDEO GAMING AND YOUTH THEMATIC ON CROATIAN NEWS PORTALS
M. Ražnjević Zdrilić, V. Kalajžić

MODERN MULTIMEDIA TECHNOLOGY AS A MEANS OF TEACHING FOREIGN LANGUAGES
E. Andreeva, I. Korneva

THE TRAINING OF EDUCATORS AND TEACHERS, BETWEEN PRESENCE AND DISTANCE
F. Zuccoli

COVID-19 AND THE APPLICATION OF THE BLENDED LEARNING MODEL IN HIGHER EDUCATION
D. López Jiménez, E.C. Dittmar

THE IMPORTANCE OF CSR INSIDE UNIVERSITIES
E.C. Dittmar, D. López Jiménez

PERGAMEX: PERVERSIVE GAMING EXPERIENCES FOR ALL
S. Baldassarri, F.J. Perales, E. Cerezo, F. Gutiérrez, C. González

LACK OF INFORMATION ABOUT THE SELF IN CAREER DECISIONS OF UNIVERSITY STUDENTS
G. Sart, A.E. Aslan

EFFECTIVE ASSESSMENT OF 21ST CENTURY SKILLS IN A COMPUTING PROGRAM IN A FULLY ONLINE ENVIRONMENT
M. Danaher, A. Rhodes, A. Ater Kranov

A BIBLIOGRAPHIC REVIEW ON WORK GAMIFICATION
R. Encarnação, M. Ferreira Dias, J. Reuter, M. Amorim

MINI-VIDEOS FOR TEACHING PLANNING IN THE MASTER'S DEGREE IN INSURANCE LAW
M. Hernández Solís

EFFECTICITY OF PEER TUTORING ON TUTEES' ATTITUDE AND RETENTION IN FINANCIAL ACCOUNTING
T. Wale-Fadairo, O.A. Ige

INTEGRATING STUDENT-FOCUSED SUPPORT MODELS TO ENHANCE STUDENT ATHLETES' EXPERIENTIAL LEARNING AND ENGAGEMENT
E. O’Connor

REFLECTIONS ON RESPONDING TO THE INFLUX OF NEW STUDENTS DURING THE COVID-19 PANDEMIC AT AN E-LEARNING UNIVERSITY CAMPUS IN QUEBEC, CANADA
R. Tremblay

HEY, THIS IS WHAT A TEACHER NEEDS TO KEEP IN MIND TO RETAIN E-LEARNERS ENGAGED DURING VIDEO LECTURES!
A. Gorbunov

LOOKING BACK TO MOVE FORWARD: EXPERIENTIAL LEARNING IN HIGHER EDUCATION DURING AND FOLLOWING THE COVID-19 PANDEMIC
E. Marcogliese, E. O’Connor

STUDY OF PERCEPTION OF THE USE OF HAPTIC 3D SIMULATORS FOR LEARNING IN THE DEGREE OF DENTISTRY, THEIR STRENGTHS AND WEAKNESSES
DYNAMIC E-SKILLS DEVELOPMENT FOR FOREIGN LANGUAGES EDUCATION IN THE EMERGENCY DIGITIZATION PARADIGM

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Abstract

The COVID-19 pandemic induced amplified digitalization measures in the higher education sphere, informed by the need to take quick comprehensive action in order to achieve the overarching result to transform educational scenarios into interdisciplinary digital, blended, and hybrid frameworks. Taking into account the context of the erupted military intervention on Ukraine in February 2022, and the ensuing information warfare in various digital environments (social media, news coverage, digital communications), the specific value of the learning outcomes and outputs is allocated to the digitally enhanced foreign languages education as a tool of the internationally broadcast strife of Ukraine for freedom and sovereignty. The study results disclose the comprehensive review of dynamics of the digital skills development and application to construe interdisciplinary competencies of students of European (English, Spanish, French, Italian, German) and Asian (Mandarin Chinese, Japanese) Languages major programs in Ukraine through the span of educational activities in the time-frame of COVID-19 emergency digitization measures of 2021 and wartime emergency digitization measures of 2022 in Ukraine.

Keywords: E-skills, digital literacy, dynamics, foreign languages education (FLE).

1 INTRODUCTION

Transformative shifts in the knowledge economy of the XXI century, Industry 4.0 development [17] and elaboration of networked society, emergency digitization due to quarantine measures has imposed pressing revisions onto interdisciplinary and cross-sectorial job market demands of Liberal Arts university graduates’ skillsets, upon entering the workforce. This, in turn, stipulates reevaluation of the interdisciplinary approaches to comprehensive professional competences in foreign languages acquisition, education, and application [15].

The COVID-19 pandemic induced amplified digitalization measures in the higher education sphere [13; 14; 16], informed by the need to take quick comprehensive action in order to achieve the overarching result to transform educational scenarios into interdisciplinary digital, blended, and hybrid frameworks. Taking into account the context of the erupted military intervention on Ukraine in February 2022, and the ensuing information warfare in varying digital environments (social media, news coverage, digital communications), the specific value of the learning outcomes and outputs is allocated to the digitally enhanced foreign languages education as a tool of the internationally broadcast strife of Ukraine for freedom and sovereignty.

The consequent functional tasks to meet this challenge in the educational sphere are estimated as 1) adapt the existent educational scenarios to digital, remote and hybrid formats; 2) to upgrade ICT competence and digital literacy of all participants of the educational process under extreme duress; 3) to activate complex interdisciplinary (soft and hard) skillsets, otherwise latent or underutilized in the educational process.

The study objective is to diagnose and critically review the dynamics of digital skills development and application to construe interdisciplinary competencies of students of European (English, Spanish, French, Italian, German) and Asian (Mandarin Chinese, Japanese) Languages major programs in Ukraine through the span of educational activities in the time-frame of COVID-19 emergency digitization measures of 2021 and wartime emergency digitization measures of 2022 in Ukraine.

2 METHODOLOGY

The study methodological design includes the following steps:
1 The modelling of interoperability between various competency principles, derivative of twenty-
first-century skills [1; 3; 4; 22] and projected digital literacy requirements for Foreign Languages
Education (FLE) across core digital literacy frameworks (European e-Competence Framework
[7], UNESCO ICT Competence framework for educators [20] and European Commission Digital
Competence Framework: DigComp 2020 [6]);

2 The survey method application for diagnostic analysis of different digital literacy [5] components
and dimensions, as well as digital skills implementation, used to assess the parameters of
efficiency of transforming real-life linguistic education practices into the emergency digital and
hybrid format.

3 The identification of the correlation between various groups of applied digital skills and soft skills,
instrumental to develop interdisciplinary professional competence of FLE students.

3 RESULTS

3.1 E-skills development modelling
The following grid of groundwork concepts is applied to profile the Foreign Languages Education (FLE)
in the study:

- INTERDISCIPLINARITY;
- INTEROPERABILITY;
- COMPLEX SKILLS;
- VIRAL DIGITAL SKILLS.

The meaning of INTERDISCIPLINARITY is synthesized for the purpose of this study as an
agglomeration of two or more fields of knowledge into one scope/goal of study, inquiry or activity [2; 8;
9; 12; 13].

The concept of INTEROPERABILITY is disclosed across different lens [11; 18] as a characteristic of an
object, product or system, that allows its interface to be comprehensible, to work with other objects,
products or systems.

As applied to Foreign Languages Education, the concept of interoperability represents the property of
functional, dynamic interconnectivity between the source and target domains of linguistic content,
linguistic theory content, related areas of scientific and universal knowledge, and domains of
professional and social application.

Interoperability for FLE skills is ensured by the communicative nature [1] of interdisciplinary skills. The
core cross-sectorial domain that is referential for primary skills (social skills, emotional intellect,
collaboration, communication, ICT-literacy), necessary for educational goals achievement, is estimated
to be COMMUNICATION.

A COMPLEX SKILL is defined as a skill requiring to process lots of information and make lots of
decisions simultaneously [21].

VIRAL DIGITAL SKILLS for the purpose of this study are defined as rhizomatic capabilities of
interoperable manipulation of digital data, tools, and communication formats, acquired institutionally,
intuitively or on the peer-to-peer basis.

Given the nature of increasingly digitalized context of foreign languages education and communicative
application (“the Technospheric shift” [16], it is suggested to consider the different types of information
source and information destination (human and machine/computer/program, accordingly) in the
structure of the groundwork Communication Model [19], when communication is approached as the core
factor of interoperability of source and target knowledge and application domains in FLE.

Subsequently, a model of soft skills paradigms and digital literacy frameworks INTEROPERABILITY in
FLE is suggested:
1 European E-competence Framework Guideline (European Commission, 2020 [7]), customized according to European Professional Competence Framework, accommodates the following soft skills in terms of digital competence requirements for vocational activity in FLE: service orientation; attention to detail, learning strategies, leadership and social influence, cognitive creativity and flexibility, coordination and time-management; human resources management;

2 UNESCO ICT Competence framework (UNESCO, 2018 [20]), customized for pre-service teachers of foreign languages, accommodates the following types of soft skills in terms of digital competence requirements: collaboration, team-work, problem-solving, reasoning and ideation.

3 Digital Competence 2020 framework (European Commission, 2020 [6]) for general public, accommodates the following soft skills in terms of digital competence requirements for efficient digital citizenship: Communication and collaboration, creativity and adaptability, learning and innovation, trustworthiness, emotional intelligence, complex problem solving.

3.2 E-skills dynamics in Foreign Languages Education: Survey results

The survey analysis is further applied for in-depth, comprehensive diagnostics of interoperable digital literacy components, used to assess the parameters of efficiency of transforming real-life FLE education practices into the digital and hybrid format in the COVID-19 timeframe (March 2020 – January 2021) for students of Asian languages and European languages major programs.

The survey sample consists of 552 respondents of 7 Foreign Languages Programs (Italian, Spanish, French, English, German, Mandarin Chinese and Japanese) across 3 tiers of FLE study (Bachelor’s, Master’s, Graduate) in the universities of the capital city (Kyiv, Ukraine) in the timeframe of COVID-19 emergency digitization measures of 2021 and wartime emergency digitization measures of 2022 in Ukraine.

The survey structure comprised of 16 complex diagnostic questions (multiple choice, criteria comparison and Likert scale score types), divided into the following categories:

1 Questions on overall assessment of digital literacy level in the framework of COVID-19 lockdown and quarantine measures for university programs of Asian and European languages;

2 Questions on diagnostics of future specialists in FLE according to the established frameworks of digital competencies in the professional field;

3 Questions on diagnostics of interoperability of linguistic/communicative/soft professional and e-skills for university programs of European and Asian languages

The study results disclose the following interoperable dimensions of dynamic e-skills development, instrumental for the efficiency of Foreign Languages Education:

1 Estimation of overall digital literacy level in the framework of emergency digitization for university programs of Asian and European languages;
   o Comparative evaluation of individual digital literacy level for university programs of Asian and European languages during and prior to the framework of emergency digitization measures (in peacetime and in wartime);

2 Diagnostics of future specialists in FLE according to European e-Competence Framework and estimation of digital skills of FLE for professional application:
   o The evaluation of the dominant professional e-competence dimensions for FLE students being to PLAN; to RUN; to ENABLE professional processes in FLE.
   o The corresponding dominant professional goals for FLE students are measured to be: Planning of professional processes (in the field of foreign languages); Monitoring of professional activity (in the field of foreign languages); Provision (facilitation) of professional activity (in the field of foreign languages).
   o General types of dominant digital skills for professional application of FLE students according to the European e-competence framework - ICT practitioner skills and ICT user skills
   o Comparative assessment of general types of digital skills for professional application of FLE students (pre- and Covid-19 timeframe).
3 Diagnostics of digital skills of FLE for pre-service and in-service teachers according to UNESCO ICT Competence Framework:

- **Priority professional activity goals of FLE pre-service teachers** for digital skills application are estimated as:
  - To develop curricula using digital tools;
  - To develop learning materials using digital tools;
  - To understand the role of digital technologies in language education;
  - To organize and administer the learning process using digital tools;
  - To improve your own teaching skills with digital tools.

- **Priority student oriented goals of FLE pre-service teachers** for digital skills application are estimated as:
  - Teach to implement different types of speech activities (oral, written, listening, dialogue, monologue);
  - Teach to work in a team / organize collaboration;
  - Teach to think critically using digital tools;
  - Teach to solve problems with digital tools;
  - Help learn independently via digital tools;
  - Help to become effective participants in civil society through digital tools.

4 Diagnostics of future specialists in FLE according to European Commission DigComp 2020 Framework ensured assessment of digital skills of FLE for digital citizenship:

- **Key digital competence dimensions for digital citizenship, enhanced by FLE (foreign languages education)** are estimated as:
  - Information and data literacy;
  - Communication and collaboration;
  - Problem solving;

- **Digital activities mastery in FLE, enhanced through COVID-19 timeframe:** to articulate information needs, to locate and retrieve digital data, information and content; to judge the relevance of the source and its content; to store, manage, and organize digital data, information and content; to interact, communicate and collaborate through digital technologies while being aware of cultural and generational diversity; to keep up-to-date with the digital evolution.

5 Diagnostics of interoperability of linguistic / communicative / soft professional and digital skills for university programs of FLE:

- **Dominant combinations of digital communication elements, instrumental for professional linguistic competence formation** are estimated as follows (Fig.1):
  - Semiotic competence is enhanced by such elements of digital communication as creation of e-learning content, systemic use of ICT;
  - Sociolinguistic competence is enhanced by such elements of digital communication as participation in group ICT initiatives, systemic use of ICT;
  - Discoursive competence is enhanced by such elements of digital communication as systemic use of ICT, presentation to the community of the results of one’s activity via ICT;
  - Strategic competence is enhanced by such elements of digital communication as creation of e-learning content, presentation to the community of the results of one’s activity via ICT.
Dominant linguistic competence elements, instrumental for digital communication are evaluated as follows (Fig.2):

- Discoursive competence is estimated as dominant for participation in group ICT initiatives;
- Semiotic competence is estimated as dominant for creation of e-learning content;
- Sociolinguistic competence and strategic competence are estimated as dominant for systemic use of ICT;
- Strategic competence is estimated as dominant for presentation to the community of the results of one's activity via ICT.

Key digital competencies, effective for the implementation of foreign language acquisition activities are evaluated and estimated as follows:

- For Oral speech activities the dominant digital competences are Information and data literacy, Communication and collaboration;
- For Written speech activities the dominant digital competences are Communication and collaboration, Digital content creation, Safety;
For Audial activities the dominant digital competences are Information and data literacy, Communication and collaboration, Digital content creation;

For Vocabulary acquisition activities the dominant digital competences are Information and data literacy, Digital content creation, Communication and collaboration;

For Stylistic acquisition activities the dominant digital competences in equal measures are Information and data literacy, Communication and collaboration, Digital content creation, Problem solving.

4 CONCLUSIONS

The study findings allow to estimate as well the interoperability of soft skills and digital competence dimensions in Foreign Languages Education, and to detect challenges for actual and underdeveloped skills (hard, technical, and soft), that stakeholders of the European and Asian languages education encountered through digital format adaptation in the emergency digitization timeframes in peacetime and in wartime. These challenges include the following types:

1 Digital literacy challenges: Lack of proficiency in the use of LMS tools for specific purposes (tests, test results export, essay question randomizer); Lack of proficiency in use of specific communicative interface options (for e.g. screen sharing, separate rooms division, individual and public chats); Lack of proficiency in use of Google Suite tools; Lack of proficiency in the use of mobile versions and Android/iOS app versions of platforms, tools and services, used in FLE workflow;

2 Digital divide in accessibility of computer and Web technologies, necessary for all stages of Foreign Languages Education: Internet bandwidth and stability of connection; Update of PC hardware and software for all participants of the FLE process (out of date software impaired videoconferencing possibilities, for e.g.); Access to back-up smart devices to carry out the FLE procedures.

3 Soft skills and emotional challenges: Learning and innovation (professional activity outside of the comfort zone); Entrepreneurial outlook; Time-management; Collaboration and networking via digital media in the lockdown framework; Emotional intelligence and awareness; Critical thinking and decision making;

The comprehensive study results inform the derivation of the following recommendations for Foreign Languages Education in emergency digitization paradigms:

• To critical review of the curriculum content to accommodate the dynamics of multi-disciplinary digital input expectations of the FLE stakeholders;

• To review and update of the FLE curriculum content interconnectivity and learning outcomes to accommodate the interoperable interface of skills, customized to facilitate professional activity and language application in the intensely digitized world (especially under extreme duress);

• To devise a flexible model of FLE content upgrade to meet the dynamic transdisciplinary requirements of the job market in the digital economy of the post-pandemic / post-war timespans and to enhance universal employability of professional application for foreign languages majors in the digital age.

The study results have a potential to be furthered and elaborated in assessment of interdisciplinary and interoperable digital skills adaptability for separate groups FLE stakeholders, according to roles and tasks performed in the language acquisition workflow, as well as according to age and entry digital literacy level. The perspective of the study is in scaling the inquiry to estimate the parameters of digital literacy formation for separate groups of source and target languages acquired, as well as to diagnose interdisciplinary digitization trends of FLE across countries of Asia and countries of Europe.

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