

Page:

37

EDULEARN²³

**15TH INTERNATIONAL CONFERENCE
ON EDUCATION AND NEW LEARNING
TECHNOLOGIES**

**PALMA (SPAIN)
3RD-5TH OF JULY, 2023**



CONFERENCE PROCEEDINGS



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Luis Gómez Chova, *University of Valencia, Spain*
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Preface

Welcome to the conference proceedings of EDULEARN23. This compilation of papers and research findings were written by a diverse array of education experts and scholars who participated in the 15th EDULEARN conference, held in Palma, Spain from the 3rd to the 5th of July 2023. The conference brought together academics and researchers from the field of education to exchange knowledge, inspire new ideas and share their insights.

The theme of EDULEARN23 covers the fields of education and educational research. EDULEARN23 provided different keynote speeches, parallel thematic sessions, networking activities, workshops, and interactive sessions. The extensive number of international experts who attended the conference allowed attendees to network and share innovative ideas, promoting cross-country collaboration. The keynote speeches are available at IATED Talks (iated.org/talks/).

The EDULEARN23 Proceedings, which are exclusively in English, include the accepted contributions presented at the EDULEARN Conference, which will be included in the IATED Digital Library (library.iated.org). They represent the collective efforts of the authors to advance knowledge in their field. The EDULEARN23 International Program Committee is composed of lecturers and researchers from many different countries. A blind peer review process was followed in order to guarantee the quality and relevance of the final publication. During this process, the following points were evaluated: information content, relevance to the educational field, general structure, clarity of contents, originality, and relation to the conference topics and disciplines.

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We extend our sincere gratitude to all the authors who submitted their valuable work to these EDULEARN23 Proceedings. We also wish to express our gratitude to all participants and attendees for their engagement, dedication, and passion for education.

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EDULEARN23 Keynote Speakers

Keynote Speakers

Ashok K. Goel – *Georgia Institute of Technology, United States*

Donald Clark – *Wildfire, United Kingdom*

Ashok K. Goel – Georgia Institute of Technology (USA)



Keynote speech:

Teaching and Learning in the Age of AI

Millions of adults of various ages need reskilling and upskilling in our technological society. These millions of adult learners offer a new, large, and diverse challenge to education. Given that many adult learners cannot leave their jobs or families, online education offers a medium for reaching them where they live and work. Online education also provides access to unprecedented amount of data on learners and learning. Our vision at the National AI Institute for Adult Learning and Online Education (AI-ALOE) is to develop novel AI cognitive assistants that work with this data to enhance the quality of adult online learning through personalization of learning. Successful realization of this vision requires progress on understanding the motivations, needs, and capacities of adult learners, participatory design of AI cognitive assistants, human-AI collaboration, large-scale learning analytics, and an infrastructure for deploying the AI cognitive assistants, collecting and analyzing the data on learning, and feeding the results to the cognitive assistants, teachers, and learners alike. I will describe the research program at AI-ALOE in some detail.

Biography:

Ashok K. Goel is a Professor of Computer Science and Human-Centered Computing in the School of Interactive Computing at Georgia Institute of Technology, and the Chief Scientist with Georgia Tech's Center for 21st Century Universities. For more than thirty-five years, he has conducted research into cognitive systems at the intersection of artificial intelligence and cognitive science with a focus on computational design and creativity. For the last decade or so, much of his research has focused on AI in education and education in AI. He is a Fellow of AAAI and the Cognitive Science Society, an editor emeritus of AAAI's AI Magazine, and a recipient of AAAI's Outstanding AI Educator Award. Ashok is the Executive Director of the recently established National AI Institute for Adult Learning and Online Education.

Donald Clark – Wildfire (UK)



Keynote speech: AI changes everything!

Generative AI will change the way we work, therefore what, why and how we learn. Its profound impact on both work and learning will be presented showing that the consequences are both profound and unexpected. The role of the teacher and upskilling will also be explored.

Biography:

Donald Clark is a Learning Tech Entrepreneur, CEO, Researcher, Blogger and Speaker. He was CEO and one of the original founders of Epic Group plc, which established itself as the leading company in the UK online learning market, floated on the Stock Market in 1996 and sold in 2005. He has been involved at all levels of investment – angel, VC, growth, PE and IPO. As well as being the CEO of Wildfire an AI learning company, he also invests in, and advises, EdTech companies.

An investor and board member of learning companies Cogbooks (sold in 2021 to Cambridge University) and Learning Pool (sold 2021 for \$200 million), he was also on the Boards of City & Guilds, Learn Direct, University for Industry and the Brighton Dome and Festival. Wildfire delivers AI products and consultancy. He has published 3 books, the first on AI, second on Design for technology and the third, published next month on Learning Technology. His fourth book on Learning in the Metaverse has just been commissioned.

Donald has over 37 years' experience in online learning, video, games, simulations, adaptive, chatbot, social media, mobile learning, virtual reality and AI projects. He has designed, delivered and advised on online learning for many global, public and private organisations. An evangelist for the use of technology in learning, he has won many awards, including the first 'Outstanding Achievement in E-learning Award' and 'Best AIM Stock Market Company', 'Most Innovative Online Product', 'Best Online Learning Project and 'JISC EdTech Award'.

An award winning speaker at national and international conferences, he has delivered keynotes in the UK, Europe, US, Africa, Australia, Middle and Far East.

..... also a regular blogger (15 years+) on learning technology.

Conference Tracks & Sessions

The EDULEARN23 conference program is available online at <https://iased.org/edulearn23>

ORAL SESSIONS MONDAY

Technology-enhanced Learning
Computational Thinking Skills for the Digital Age
Soft Skills & Socio-Emotional Learning
Adapting Education in the Post-Pandemic Era
Programming and Computer Science Education
Experiences in Primary & Secondary Education
Experiences in Tourism Education
Technology-Enhanced Mathematics Education
Virtual Reality in Education
Creativity & Critical Thinking
Assessment and Evaluation Strategies (1)
Impact of COVID-19 on Education
Integrating Robotics and Programming in Educational Settings
STEM Education in Schools (1)
Technology-enhanced Language Learning
Teaching STEM Subjects
Generative AI for Innovative Teaching and Learning
Game-Based Learning
e-Assessment
Innovative Tools for Learning
Experiences in Engineering Education
Inclusive Education
Language Teaching and Learning
Experiences and Innovations in Mathematics Education (1)
AI in Education
Project and Problem Based Learning
Assessment and Evaluation Strategies (2)
Videos for Learning
Digital and Media Literacy
Supporting Special Education
English for Special Purposes & English as a Medium of Instruction
Experiences and Innovations in Mathematics Education (2)

POSTER SESSIONS MONDAY

Pedagogical Innovations and Trends in Education
Emerging Technologies in Education

ORAL SESSIONS TUESDAY

Social Media & Digital Skills
Plagiarism and Academic Dishonesty
e-Portfolios & Reflective Assessment
Experiences in Higher and Further Education
Professional Development of Teachers (1)
Student and Teacher Wellbeing
Experiences in Business Education
Service Learning & Community Engagement
Integrating Virtual Reality in Education
Learning Analytics (1)

International Projects & Mobility Experiences
Workplace & Lifelong Learning
Professional Development of Teachers (2)
Student Support
Experiences in Health Sciences Education
Education for Sustainability (2)
Virtual & Augmented Reality
Learning Analytics (2)
Active and Experiential Learning
Internships and Work-integrated Learning
ICT Skills among Teachers
Educational Management (1)
New Technologies in Health Sciences Education
STEM Education in Schools (2)
m-Learning
e-Learning Experiences
Gamification and Game-Inspired Learning
Personalized and Self-Regulated Learning
Teacher Training
Educational Management (2)
English as a Foreign Language
Innovations in STEM Education
Chatbots & AI in Education
From Face-to-Face to Remote Learning
Blended & Hybrid Learning
Entrepreneurship Education
Pedagogical Innovations
University-Industry Cooperation
Education for Sustainability (1)
Professional Development of STEM Teachers

POSTER SESSIONS TUESDAY

Experiences in Education
New Challenges in Education and Research

VIRTUAL SESSIONS

DIGITAL TRANSFORMATION OF EDUCATION

Data Science & AI in Education
Learning Analytics & Educational Data Mining
Digital Transformation
Digital and Media Literacy
Educational Programming & Robotics
Computer Games and Educational Software

INNOVATIVE EDUCATIONAL TECHNOLOGIES

AI, Chatbots & Robots
Virtual & Augmented Reality
Social Media in Education
Technology Enhanced Learning
Videos for Learning
Simulation & 3D Technologies

DIGITAL & DISTANCE LEARNING

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

ACTIVE & STUDENT-CENTERED LEARNING

Gamification & Game-based Learning
Experiential & Cooperative Learning
Problem & Project-Based Learning
Flipped & Hybrid Learning
Pedagogical Innovations
Creativity & Critical Thinking

ASSESSMENT, MENTORING & STUDENT SUPPORT

Assessment & Evaluation
Mentoring & Tutoring
Student Support & Motivation
Developing Soft and Transversal Skills

TEACHER TRAINING & ED. MANAGEMENT

ICT & Digital Skills
Professional Development of Teachers
Educational Management

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

EDUCATIONAL STAGES & LIFE-LONG LEARNING

Early Childhood & Primary Education
Vocational Education
Transition to the Job Market & Entrepreneurship
Life-Long & Workplace Learning

MULTICULTURALITY & INCLUSION

Multicultural Education
Diversity Issues
Special Educational Needs
Inclusive Education

DISCIPLINE-ORIENTED SESSIONS

Architecture & Interior Design Education
Health Sciences Education
Computer Science Education
Business & Tourism Education

LANGUAGE LEARNING AND TEACHING

Foreign Languages
Language Learning & Translation Studies
New Technologies in Language Learning

STEM EDUCATION

Mathematics & Statistics
Engineering Education
STEM Experiences

Table of Contents

ANXIETY DISORDER IN STUDENTS WITH DYSCALCULIA <i>M.I. Garcia-Planas, M.V. García-Camba Vives</i>	1
KEY COMPETENCES OF A SECONDARY VOCATIONAL SCHOOL GRADUATE <i>I. Szókö, B. Pupa, O. Kováč</i>	7
DIGITAL LITERACY AND ARTIFICIAL INTELLIGENCE – DOES CHAT GPT INTRODUCE THE END OF CRITICAL THINKING IN HIGHER EDUCATION? <i>N. Weimann-Sandig</i>	16
CELEBRATING DIVERSITY AND CREATING COMMUNITY: GRAPHIC DESIGN WEEK <i>L. Frear</i>	22
PERCEIVED DISCRIMINATION IN MIGRANT SCHOOLCHILDREN IN NORTHERN CHILE <i>A. Caqueo-Urizar, J. Flores, M. Irarrázaval, N. Loo, J. Páez, G. Sepúlveda</i>	23
INTEGRATING BLENDED LEARNING IN A LAW CURRICULUM <i>S. Menis</i>	24
EMPOWERING STUDENT INNOVATION FOR CONTINUOUS IMPROVEMENT AT TRANSILVANIA UNIVERSITY OF BRASOV <i>D. Munteanu, A. Nechifor</i>	29
TEACHERS' PERSPECTIVES REGARDING THE UTILIZATION OF MULTIMEDIA DEVICES IN TEACHING AND LEARNING OF ECONOMICS IN NIGERIAN SECONDARY SCHOOLS <i>J. Ejimonye, C. Ugwuanyi</i>	39
EXTENT OF ACCESS TO AND UTILIZATION OF INFORMATION AND COMMUNICATION TECHNOLOGY FACILITIES IN TEACHING AND LEARNING OF ECONOMICS IN SECONDARY SCHOOLS IN NIGERIA <i>J. Ejimonye, C. Ugwuanyi</i>	46
THE DIGITAL DIVIDE: TEACHING BEYOND THE SCREEN <i>M. Sanesi</i>	52
ANALYSIS OF PAST AND PRESENT STUDENT'S PERCEPTIONS WHO RECEIVED POSITIVE INTELLIGENCE TRAINING VIA MECH 500 RESEARCH METHOD AND TECHNICAL COMMUNICATION COURSE FROM 2018-2022 AT THE UNIVERSITY OF THE DISTRICT OF COLUMBIA <i>P. Tyagi, O. Wilson</i>	59
HOW HAVING KNOWLEDGE OF POSITIVE INTELLIGENCE CAN HELP STUDENTS REACH THEIR FULL POTENTIAL: A STUDENT - ATHLETE PERSPECTIVE AT THE UNIVERSITY OF THE DISTRICT OF COLUMBIA <i>P. Tyagi, J. Alberti-Medrano</i>	65
VIRTUAL WELLBEING CAFE - INNOVATIVE PRACTICE SUPPORTING STUDENT WELL BEING DURING THE PANDEMIC AND BEYOND <i>A. Khan, R. Gurbutt</i>	66
EXPERIENCE IN TEACHING PHD STUDENTS HOW TO DO RESEARCH <i>F. Milano</i>	71
"THIS WAS AN ADVENTURE!" – DEVELOPING INTERCULTURAL COMPETENCE WITH FOREIGN LANGUAGE LEARNERS AT THE UNIVERSITY THROUGH COLLABORATIVE PROJECT WORK <i>A. Fidalgo das Neves</i>	80
USING AUDIO DIARIES TO REFLECT ON EMERGING SUBJECT KNOWLEDGE <i>P. Atherton</i>	89
EDPUZZLE: ONLINE VIDEO FOR LEARNING - QUESTIONING AND ONLINE ASSESSMENT <i>P. Atherton</i>	90
VARIATION OF STUDENTS' APPROACH TO LEARNING IN TWO DIFFERENT SUBJECTS IN THE SAME YEAR <i>M. Leiva-Brondo, N. Lajara-Camilleri</i>	91
OUTCOMES FROM AN EXPERIENCE OF GAMIFICATION IN HIGHER EDUCATION <i>N. Lajara-Camilleri, M. Leiva-Brondo, E. Meliá-Martí</i>	98
DIAGNOSTIC MODEL FOR EVALUATING KEY COMPETENCIES - A FOCUS ON MATHEMATICS AND MEDICINE WITH AN EMPHASIS ON "SIMILARITIES" <i>G. Nikolova, D. Vankova</i>	103

USING EDUCATIONAL NETWORKS TO PROMOTE INTERNATIONALIZATION EXPERIENCES IN PHYSIOTHERAPY EDUCATION	109
<i>A. Alves Lopes, A. Prado, A. Pereira, C. Leão, E. Martins, F. Valente, F. Mazzoli-Rocha, G. Pacheco, J. Luís Sousa, M. Pedro, S. Gagulic</i>	
AWARDING GAPS AND ASSESSMENT METHODS: AN ANALYSIS OF QUEEN MARY UNIVERSITY OF LONDON	115
<i>O. Popoola, D. Tavasci, L. Ventimiglia</i>	
EDUCATIONAL INNOVATION EXPERIENCE WITH ARCHITECTURE DEGREE STUDENTS, THROUGH A WORK BASED ON PARTICIPATION IN AN INTERNATIONAL CONTEST	124
<i>M.D. Palacios Diaz</i>	
PREDICT: JOBS OF THE FUTURE WITH AI 4 VET INCLUSION	128
<i>M. Potes Barbas, A. Teles Vieira, P. Duarte Branco</i>	
EDUCATIONAL MATRIX FOR ATTAINING PROFESSIONAL AND KEY COMPETENCIES IN THE FIELD OF INTEGRATIVE MEDICINE	134
<i>D. Vankova</i>	
DISTANCE LEARNING: JOB SATISFACTION AND WELL-BEING OF HIGH SCHOOL TEACHERS	141
<i>N. Grigutyte, G.S. Kremensaite</i>	
PRACTITIONERS' PERSPECTIVES ON THE CHALLENGES ENCOUNTERED IN MAINTAINING MOBILE EARLY CHILDHOOD CARE AND EDUCATION CENTRES	142
<i>C. Ugwuanyi, C. Okeke, C. Okeke</i>	
PERSPECTIVES OF EARLY CHILDHOOD EDUCATORS REGARDING PARENTAL INVOLVEMENT IN MOBILE EARLY CHILDHOOD CARE AND EDUCATION ACTIVITIES	147
<i>C. Okeke, C. Okeke, C. Ugwuanyi</i>	
IMPROVING ON DESIGN THINKING TO HELP SOLVE ENVIRONMENTAL PROBLEMS	153
<i>M. Léger, D. Pruneau, A. Khattabi, A. Laroche, V. Freiman, L. Dionne, N. Louis, V. Richard</i>	
THE TRIP AS AN EXTENSION OF THE LEARNING OF ARCHITECTURE	154
<i>M.D. Palacios Diaz</i>	
ENHANCING THE ACCEPTANCE OF TECHNOLOGY INTEGRATION USING INTERACTIVE VIDEOS IN HIGHER EDUCATION	155
<i>J. West, E. Swanepoel</i>	
LEARNING ELECTROSTATIC THROUGH HANDS-ON LABORATORY EXPERIMENTS: CONCEPTUAL CONFLICT APPROACH	156
<i>A. Métioui</i>	
SCIENCE GRADUATE STUDENTS' ATTITUDES ON SCIENCE CONCEPTUAL DEVELOPMENT THROUGH HISTORY	163
<i>A. Métioui</i>	
SURVEYING AND INVESTIGATION OF REMOTE LABORATORY CONCEPTS, TECHNOLOGIES, AND PLATFORMS FOR STEM PROGRAMS	170
<i>F. Yildiz, U. Dakeev, R. Pecen</i>	
INTEGRATING IMMERSIVE TECHNOLOGIES INTO CLINICAL SCIENCES CURRICULUM TO IMPROVE LEARNING AND THERAPEUTIC OUTCOMES	171
<i>R. Kalunga, F. Elshobokshy</i>	
21ST CENTURY SKILLS AND PARENTAL EXPECTATIONS IN LATVIAN PRIMARY SCHOOLS	175
<i>I. Barone</i>	
GENUINE READABILITY LEVEL OF ALLEGED ENGLISH CEFR B2 WRITTEN TEXTS AIMED FOR SECOND LANGUAGE LEARNING	182
<i>S. Rubesova</i>	
DESIGNING A FOREIGN LANGUAGE COURSE IN THE LEARNING MANAGEMENT SYSTEM MOODLE	189
<i>N. Antonenko</i>	
ONLINE TESTS WITH R/EXAMS: A FUNDAMENTAL TOOL FOR STEM (SCIENCE, TECHNOLOGY, ENGINEERING AND MATHEMATICS) TEACHERS	196
<i>M.C. Miranda, A. Zeileis</i>	
EDUCATION, LANGUAGE AND INTERNATIONALISATION: AN ONLINE COMMUNITY OF PRACTICE	202
<i>N. Galloway</i>	

"MYTHS AND LEGENDS" ABOUT AUTISM SPECTRUM DISORDER <i>M. de-la-Iglesia, J.S. Olivar</i>	203
EASY-TO-LEARN CARD GAME TO TEACH PROCESSES OF ENVIRONMENTAL TECHNOLOGY, INCLUDING SOIL FLUSHING/WASHING, REMOVAL OF PARTICLES, AND SELECTIVE CATALYTIC REDUCTION <i>R.J. Aguado, Q. Tarrés, J.L. Sánchez-Salvador, G.A. Bastida, M. Delgado-Aguilar</i>	209
GAMIFICATION IN EDUCATION: THE CASE STUDY OF THE USE OF IDEACHEF AS A LEARNING STRATEGY IN THE HOSPITALITY MASTER'S DEGREE <i>A.E. Sousa, S. Pais, A.S. Viana</i>	215
DISRUPTING STEM EDUCATION: THE GAME-CHANGING IMPACT OF CHATGPT AND CHATGPT CODEX <i>K. Quibeldey-Cirkel</i>	220
WOMEN WITH AUTISM SPECTRUM DISORDER AND REFERENTIAL COMMUNICATION: A CASE STUDY-BASED APPROACH <i>M. de-la-Iglesia, J.S. Olivar</i>	229
DEVELOPING INTERACTIVE LANGUAGE AND GRAMMAR LESSONS USING STREAM, MS FORMS, SWAY AND PODCASTS <i>P. Koayess, J. Althawahrih, M. Massara</i>	236
EMPOWERING TEACHERS, STUDENTS AND RURAL SCHOOLS IN LEARNING STEM DISCIPLINES THROUGH THE USE OF REMOTE LABS: THE R3 PROJECT EXPERIENCE <i>U. Hernandez Jayo, J. Garcia Zubia, V. Canivell</i>	237
CONSTITUTING COMMUNITY: A HEURISTIC EXAMINATION OF TOOLS AND OPPORTUNITIES FOR DEEPENING CONNECTIVITY AND ENGAGEMENT FOR ASYNCHRONOUS DOCTORAL STUDENTS <i>S. Melideo</i>	245
SUPPLEMENTARY VR TOOL FOR STUDENT ENGAGEMENT <i>U. Dakeev, F. Yildiz, R. Pecan</i>	246
FAMILY ENVIRONMENTS AND ANDRAGOGICAL STRATEGIES FOR ENHANCING MEANINGFUL LEARNING IN UNIVERSITY STUDENTS <i>T. Paredes, A. Espín, S. Torres, V. Valencia</i>	247
ART MUSEUMS DISTANT ACTIVITIES IN THE COVID-19 TIME <i>E. Polyudova</i>	253
CHATBOTS ON MS TEAMS: A REVIEW OF THEIR CREATION AND USE IN A TERTIARY EDUCATION SETTING <i>A. Forrester</i>	254
ATTITUDES TO TECHNOLOGIES IN HEALTHCARE TRAINING BEFORE AND AFTER THE PANDEMIC AT MEDICAL UNIVERSITY – PLOVDIV, BULGARIA <i>A. Kirkova-Bogdanova, D. Taneva, M. Vakrilova Becheva</i>	255
'GETTING THE BALANCE RIGHT': RECONCEPTUALISING EFFECTIVE ONLINE WORK-INTEGRATED LEARNING <i>C. Winberg</i>	259
TOWARDS A NEW NORMAL: THE EVOLUTION OF AN UNDERGRADUATE ENGINEERING COURSE <i>S. Winberg</i>	266
ANALYZING LEARNING EFFECTIVENESS AND SENSE OF FLOW FROM A VIRTUAL EDUCATIONAL ESCAPE ROOM IN BIOMIMCRY <i>V. Yeflach-Wishkerman</i>	273
VALUE ADDED? – ANALYSING PRE-SERVICE LANGUAGES TEACHERS' APPLICATION OF PEDAGOGICAL FRAMEWORKS TO THEIR DESIGNS OF E-RESOURCES FOR LANGUAGES CLASSROOMS <i>L. Morgan</i>	274
GAME-BASED PEDAGOGICAL APPROACH TO IMPROVE LEARNING IN MATHEMATICS <i>A. Lertxundi-Artetxe, P. Sarriugarte-Onandia, A. Picallo-Perez</i>	279
NEW YORK CITY AND PARIS COLLEGE STUDENTS PARTNER TO SOLVE PROBLEMS OF SUSTAINABILITY COLLABORATIVELY THROUGH A GLOBAL ONLINE LEARNING EXCHANGE PROGRAM <i>M. Dono-Koulouris</i>	280
THE PROBLEMS AND EXPECTATIONS OF THE STUDENTS GETTING INFORMAL RELIGIOUS EDUCATION FOR THE HEARING AND VISUALLY IMPAIRED PEOPLE (CASE OF ISTANBUL) <i>B. Güirer, E. Kaya</i>	289

SUSTAINABILITY OF INDEPENDENT CAMPUS POLICY IN INDONESIA: IS HIGHER EDUCATION MORE EFFICIENT AND EFFECTIVE?	293
<i>F.V. Arie, A. Nagy</i>	
CREATING A SENSE OF BELONGING THROUGH A COMMUNITY OF PRACTICE	301
<i>L. Ludwig</i>	
DECISION-MAKING PROCESS OF SECONDARY VOCATIONAL SCHOOL GRADUATES WHEN CHOOSING COLLEGE	302
<i>C. Serafin</i>	
THE CHEAT-PROOF CALCULUS TEST	312
<i>L. Ludwig</i>	
THE EFFECT OF SEX ON EMERGENCE OF WRITTEN LANGUAGE IN PRESCHOOL CHILDREN EXPOSED TO TWO LEARNING MODELS	313
<i>K. Marinova, C. Dumais, A. Niyubahwe, R. Nolin</i>	
THE VALUE OF HIGHER EDUCATION PERCEIVED BY EMPLOYERS: LATVIAN SURVEY RESULTS	319
<i>I. Mietule, M. Lescevic, S. Lems, Z. Gusta, V. Melbarde, I. Kotane</i>	
TEACHING ENGLISH BY GAMES FOR INCLUSIVE LEARNERS	325
<i>N. Dvalidze</i>	
THE IMPACT OF GLOBALIZATION ON THE GREEK EDUCATIONAL SYSTEM	331
<i>K. Papaioannou</i>	
THE SPANISH EDUCATIONAL SYSTEM AND THE TEACHING OF HISTORY. THE IMPACT OF HISTORY COURSE ON THE CONFIGURATION OF NATIONAL IDENTITY	336
<i>K. Papaioannou</i>	
LESSON PLANNING BASED ON FINDINGS FROM THE PSYCHOLOGY OF LEARNING	340
<i>B. Greimel-Fuhrmann, R. Fortmüller</i>	
EXPERIENCE SHARING OF USING INQUIRY BASED LEARNING TO TEACH A STATISTICS COURSE TO SENIOR MECHANICAL ENGINEERING STUDENTS	346
<i>A.S. Mohammed</i>	
CONCEPTUALISING THE RELATIONSHIP BETWEEN STUDENT ENGAGEMENT AND MOTIVATION: TEACHER REPORTS FROM THE ORRSEM PROJECT	356
<i>K. Skilling</i>	
NON-TRADITIONAL STUDENTS IN HIGHER EDUCATION. CHALLENGES FOR THE TERTIARY LIFELONG PROGRAMS DURING COVID-19	363
<i>M.E. Samoila</i>	
GAMIFYING THE STUDENT LEARNING PROCESS: ENHANCING COLLABORATIVE EXPERIENCES WITHIN A CONNECTIVIST LEARNING ENVIRONMENT	372
<i>M. Neo, Z. Ismat</i>	
ENHANCING STUDENT LEARNING OUTCOMES THROUGH COMMUNITY-BASED PROBLEM SOLVING AND CRITICAL THINKING GAME-BASED PRACTICES	379
<i>Z. Ismat, M. Neo</i>	
PROJECT-BASED LEARNING WITHIN A TECHNOLOGY-BACKED AUTHENTIC LEARNING ENVIRONMENT: ITS EFFECT ON STUDENT LEARNING EXPERIENCES	386
<i>M. Neo, M.G.R. Pandin, Y.Y. Tan, P.H. Siew, S.N. Kew</i>	
LEVERAGING AUGMENTED REALITY FOR ENHANCED STUDENT ENGAGEMENT & COLLABORATION IN AN EXPERIENTIAL LEARNING CLASSROOM	392
<i>N. Mahendru, M. Neo</i>	
BLENDED LEARNING APPROACHES IN THE 21ST CENTURY CLASSROOMS: ITS IMPACT ON THE STUDENT, TEACHER AND TECHNOLOGY	399
<i>M. Neo, A.R. Adriyanto, A.N. Fadilla, B. Prabawa, W. Swasty</i>	
DESIGNING MICROLEARNING ENVIRONMENTS TO ENHANCE STUDENTS' MOTIVATION AND RETENTION LEVELS IN THE CLASSROOM: MALAYSIAN STUDENTS' PERSPECTIVE	405
<i>M. Neo, N. Ludin</i>	
PRESS START TO BEGIN. BENEFITS AND ISSUES OF GAMIFICATION	412
<i>M. Sanesi</i>	
EFFECT OF COLLABORATIVE LEARNING INSTRUCTIONAL STRATEGY ON SOCIAL SKILL DEVELOPMENT OF PRIMARY SCHOOL PUPILS	419
<i>C. Okeke, T. Akobi</i>	
EFFECT OF EDUTAINMENT VIDEOS ON COGNITIVE AND SOCIAL SKILLS DEVELOPMENT OF PRESCHOOL CHILDREN	426
<i>T. Akobi, C. Okeke</i>	

COMMUNICATION BETWEEN TEACHERS AND PARENTS OF CHILDREN LEARNING IN ELEMENTARY SCHOOL IN A SPECIAL EDUCATION CLASS USING THE WHATSAPP APPLICATION <i>E. Wasserman, T. Asraf</i>	436
SCHOOL LEADERS AND PROFESSIONAL DIGITAL COMPETENCE FOR TEACHERS <i>C.E. Tømte</i>	437
TEACHING FRENCH LITERATURE ONLINE: CHALLENGES CAUSED BY THE MOVE FROM FACE-TO-FACE TO REMOTE LEARNING <i>L. Lutas</i>	438
DEVELOPED LECTURE VIDEOS AND PRACTICES QUESTIONS TO AID TEACHING UNDERGRADUATE PROGRAMING LANGUAGES COURSES ONLINE <i>H. Yu</i>	446
IMPROVING MOTIVATION IN STATISTICS THROUGH COMPETITION <i>O. Trull, N. Martínez-Alzamora, F. Sempere-Ferre, J.M. Soler-Torró</i>	450
THE DEBATE AS A TOOL FOR LEARNING STATISTICS: APPLICATION TO THE TEACHING OF AEROSPACE ENGINEERING <i>N. Martínez-Alzamora, F. Sempere-Ferre, O. Trull, J.M. Soler-Torró</i>	457
SOCIAL WORK EDUCATION, SOCIAL MEDIA AND ONLINE ABUSE: RESPONDING TO SERVICE LEARNERS' NEEDS AND EXPERIENCES <i>F. Ó Súilleabháin, O. Halvey, K. Burns, E. O'Callaghan</i>	463
THE EDUCATIONAL STOPLIGHT, AN EDUCATIONAL INTERVENTION PROGRAM FOCUSED ON THE COMMITMENT OF EDUCATIONAL ACTORS <i>L. Sanabria</i>	464
LEARNING ANALYTICS AS A TRANSFORMATION TOOL IN HIGHER EDUCATION OF SUB-SAHARAN AFRICA: A LITERATURE ANALYSIS <i>O. Ogundaini, N. Mlitwa</i>	471
SCHOOL BELONGING AS A PREDICTOR OF PSYCHOLOGICAL AND ACADEMIC FUNCTIONING OF SECONDARY SCHOOL STUDENTS DURING THE COVID-19 PANDEMIC <i>K. Hlúpiková, J. Uhláriková</i>	479
DESIGNING AND IMPLEMENTING A FRAMEWORK TO BUILD EFFECTIVE LEARNING-COMMUNITIES IN DISTANCE LEARNING PROGRAMMES <i>N. Anderson, A. McGowan, D. Cutting, L. Galway, M. Collins</i>	485
TOWARD A MATRIX OF COMPETENCES FOR RESPECTFUL COMMUNICATION IN THE UNIVERSITY-CIVIL SOCIETY CONTEXT <i>D. Robescu, S. Reiner, A. Trunk, A. Draghici</i>	486
INNOVATIVE PEDAGOGICAL SOLUTIONS FOR ENGINEERING EDUCATION - BEST PRACTICES FOR EDUCATION 4.0 <i>D. Robescu, M.E. Boatca, A. Draghici, A. Mazilescu</i>	496
INTERDISCIPLINARY LEARNING AND AWARENESSES FOR TEACHING <i>S. Rodney, A. Mamolo, D. Tepylo</i>	506
LEADERSHIP IN EDUCATION: THE IMPACT OF LEADERSHIP ON THE SUCCESSFUL IMPLEMENTATION AND SUPPORT OF REMOTE TEACHING, LEARNING AND ASSESSMENT <i>J. Stoltenkamp, P. Dankers</i>	507
BECOMING A TEACHER THROUGH A SALARIED EMPLOYMENT-BASED ROUTE <i>T. Wallis</i>	517
JOB CONDITIONS AND EXPECTATIONS OF YOUNG GRADUATES IN COVID-19 CONTEXTS <i>L.N. Sousa, M.J. Sousa Pinto dos Santos</i>	518
WORK RISKS IN PANDEMIC TIMES <i>L.N. Sousa, T. Paiva</i>	526
USE OF NUTRITIONAL EDUCATION TO PROMOTE WELL-BEING FOR ALL PEOPLE OF ALL AGES: "NUTRIEDUCAR@PRENDIENDO" SERVICE-LEARNING PROJECT <i>V. Loria-Kohen, M.C. Lozano-Estevan, L.M. Bermejo, B. López-Plaza, L.G. González-Rodríguez, M.D. Salas-González, A.M. Lorenzo Mora, M. Larrosa, S. Martínez-López, R.M. Ortega Anta, A.M. López-Sobaler, A. Aparicio</i>	536
LEARNING ANALYTICS DASHBOARD FOR SELF-REGULATION LEARNING: STUDENTS' PERCEPTIONS OF LEARNING AND SATISFACTION <i>L. Martins, L. Lluch, E. Cano, E. Puertas</i>	544

METACOGNITIVE AWARENESS AND SELF-DIRECTED LEARNING SKILLS OF PARTICIPANTS IN ACADEMIC COMPETITIONS: A CASE STUDY WITH ROMANIAN STUDENTS IN COMPUTER SCIENCE	552
<i>S. Susnea, E. Pecheanu, V. Jascanu, A. Cocu, I. Susnea</i>	
CONTENT KNOWLEDGE MASTERY AND GAPS OF TECHNICAL SCIENCES TEACHERS. A CASE OF ONE EDUCATION DISTRICT IN SOUTH AFRICA	558
<i>S. Sibanyoni, M.P. Rankhumise, T.M. Moagi</i>	
"CHECK IT YOURSELF": AN ONLINE CROWDSOURCING-BASED APPLICATION FOR CHECKING NEWS VALIDITY EXPLOITING SOCIAL CHOICE THEORY AND INFOVIS	559
<i>A. Stefanopoulos, E. Papaioannou, N. Karanikolas, G. Moisiadis, C. Kaklamanis</i>	
THE APPLICATION OF TPACK IN THE METHODOLOGY OF THE FLIPPED CLASSROOM AND WITH THE EVALUATION OF THE UTAUT TO MEASURE THE IMPACT OF STEM ACTIVITIES IN IMPROVING THE UNDERSTANDING OF CONCEPTS OF APPLIED SCIENCES	569
<i>A. Plageras, K. Kalovrektis, A. Xenakis, D. Vavougiou</i>	
SELF-ASSESSMENT QUESTIONNAIRES FOR THE SUBJECT BIOLOGY OF THE DEGREE IN BIOCHEMISTRY AND MOLECULAR BIOLOGY ARE A USEFUL TOOL TO ASSIST STUDENTS IN THEIR LEARNING	576
<i>S. I Zandalinas, V. Vives-Peris, R.M. Pérez-Clemente, A. Gómez-Cadenas, M.F. López-Climent</i>	
EMBRACING TECHNOLOGY TO ENHANCE TEACHING AND LEARNING: A LOVE/HATE RELATIONSHIP IN HIGHER EDUCATION INSTITUTIONS	581
<i>L. Zizka, G. Probst</i>	
THE PEDAGOGY OF AN INTRODUCTORY UNIVERSITY-LEVEL MAYA COURSE	589
<i>J. O'Brien</i>	
A PROPOSAL FOR A VIRTUAL REALITY METHOD IN LANGUAGE LEARNING	596
<i>M. Vallarino, G. Vercelli</i>	
AUTOMATING THE ASSESSMENT OF CREATIVITY IN CLASSROOMS	601
<i>D. Cropley</i>	
GENERATIVE AI AND CREATIVITY: HOW CHATGPT CAN ENHANCE STUDENT CREATIVITY	602
<i>D. Cropley</i>	
HOW TO MAKE BIOLOGY FUN WITH VIRTUAL REALITY – CASE STUDY FROM ALIVE PILOT EVALUATION	603
<i>Z. Palkova, P. Palko, E. Berešová, D. Viskupová Srnková</i>	
PEDAGOGY IN DIGITAL AGE AFTER THE COVID-19 PANDEMIC – A CASE STUDY WITH UNDERGRADUATE LIFE SCIENCE STUDENTS	610
<i>S. Pais, S. Bernardino, A. Pires</i>	
WHY DOES THE ROBOT GO TO HIGHSCHOOL? TO LEARN ITS FUTURE SKILLS! – FUTURE SKILLS – THE FUTURE OF HIGHER EDUCATION	611
<i>J. Kleppsch</i>	
NARROWING THE GAP BETWEEN THE CLASSROOM AND THE CAPITAL MARKETS: THE USE OF REAL-LIFE CONTEXT IN A FINANCIAL MATHEMATICS COURSE	616
<i>F. Sánchez Coll, C. Donaldson, J. Villagrasa</i>	
IMPLEMENTATION OF A FLIPPED CLASSROOM MODEL IN THE PROBLEM SESSIONS OF THE SUBJECT CROP PROTECTION OF THE DEGREE IN AGRIFOOD AND RURAL ENGINEERING	626
<i>V. Vives-Peris, S.I. Zandalinas, M.F. López-Climent, A. Gómez-Cadenas, R.M. Pérez-Clemente</i>	
FROM THE UNIVERSITY TO THE WORKPLACE – LOVE AT FIRST SIGHT OR DELIBERATE CHOICE?	630
<i>D. Taneva, M. Vladimirova, A. Kirkova-Bogdanova</i>	
MATHEMATICAL JOURNEY ON A DESERT ISLAND OR EXPERIENCING THE MATHEMATICIAN'S CRAFT	634
<i>M. Abrate, F. Ceragioli, L. Damonte, L. Lussardi</i>	
CAN WE QUANTIFY THE AFFORDANCE OF DIGITAL TOOLS? INTRODUCING A NEW METHODOLOGY DESIGNED TO ALIGN PEDAGOGY AND TECHNOLOGY	639
<i>R. Osborne</i>	
HEALTH SECTOR SKILL ALLIANCE FOR CREATING INNOVATIVE AND EFFICIENT VET PROGRAMMES AND IMPROVING THE DIGITAL SKILLS OF MEDICAL PHYSICS AND HEALTH PROFESSIONALS	640
<i>I. Marin, A. Conci, D. Popovici</i>	

MODERN AND FRIENDLY DIGITAL PORTAL FOR TEACHERS, STUDENTS AND PARENTS: "E-PREP" FOR EDUCATION IN THE EUROPEAN UNION	651
<i>I. Marin, M. Fragkaki, D. Popovici, A. Erbil, E. Voyiatzaki</i>	
RELIGIOUS PUBLICATIONS AND YOUTH IN THE CONTEXT OF RELIGIOUS EDUCATION: THE CASE OF HIGH SCHOOL STUDENTS IN İSTANBUL	661
<i>B. Gürer</i>	
STRATEGIC RISK MANAGEMENT IN HIGHER EDUCATION INSTITUTIONS: INTEGRATED RISK ANALYSIS AND THE AHP APPROACH	665
<i>I. Dvorski Lacković, N. Begičević Redep, D. Miloš Sprčić</i>	
A LEADER'S SELF-EFFICACY THROUGH THE EYES OF THEIR FOLLOWERS	671
<i>L. Paskova</i>	
AN IDEAL LEADER THROUGH THE EYES OF THEIR FOLLOWERS	676
<i>L. Paskova</i>	
A REVIEW OF MULTIDISCIPLINARY COLLABORATION IN AEC EDUCATION	684
<i>N.S. Tadesse, H.B. Cavka</i>	
ETHICS IN COLLABORATIVE EDUCATIONAL ENVIRONMENTS: A REFLECTION PAPER	693
<i>M. Simonette, V. Queiroz, E. Spina</i>	
HOW CAN AI BE USED TO ENHANCE CASE SIMULATIONS?	699
<i>R. Babin</i>	
TEACHER TRAINING ON MOBILE AND GAME-BASED LEARNING: LITERATURE REVIEW AND TRAINING PROGRAM PROPOSAL	707
<i>M. Marques, L. Pombo</i>	
IMMERSIVE READING AS A CONTEMPORARY TECHNIQUE IN LIFELONG LEARNING	716
<i>E. Kudryavtseva, R. Kuzminov, D. Abuzyarova</i>	
THE REALITY OF RESEARCH IN VIRTUAL AND GLOBALIZING WORLDS: DIGITAL GAMES AS A PETRI DISH FOR LEARNING, TECHNOLOGY AND METHODOLOGY	723
<i>P.G. Schrader, M. Carroll</i>	
DEVELOPMENT AND EVALUATION OF THE SCIENTIFIC RESEARCH ACTIVITY OF STUDENTS IN MATHEMATICS IN LATVIA	724
<i>S. Cernajeva, I. Volodko</i>	
A MICROSCOPIC ADVENTURE: UNITY BETWEEN TWO MICROSCOPIC DATA	730
<i>S. Tanabashi</i>	
USE OF ENGLISH LANGUAGE LEVELS TO ENHANCE THE UNDERSTANDING OF CAMBRIDGE CENTRE FOR EVALUATION AND MONITORING (CEM) ASSESSMENT OUTCOMES FOR STUDENTS WHO DO NOT HAVE ENGLISH AS THEIR FIRST LANGUAGE	735
<i>C. Jellis</i>	
COMPARISON OF DISTANCE, HYBRID AND FACE-TO-FACE LEARNING PROCESS USING GITHUB AND GITHUB CLASSROOM	742
<i>M. Turčić, D. Čutić, M. Rudolf, T. Bogović</i>	
BURNOUT SYNDROME IN UNDERGRADUATE STUDENTS AND TEACHING MEDICAL PROFESSIONALS	751
<i>M.P. Rubiano Varela, L. Martinez, S. Perez, C. Agudelo, M. Zuluaga, I. Luna, L. Jaramillo, K. Marisancen</i>	
FINANCIAL EDUCATION USING DECISION SOFTWARE SOLUTION	752
<i>D. Oprea, E. Tundrea</i>	
LET'S TALK MOM: THE USE OF NARRATIVES IN COMMUNICATING NEUROSCIENCE TO LOW-INCOME STATUS PREGNANT MOTHERS	762
<i>A. Negrete, R. Rosenblatt</i>	
AGNOSTIC DATA ACQUISITION AND INTERPRETATION FROM NOVEL CONTEXTS: EDUCATIONAL DATA MINING FOR ONLINE GAMES	769
<i>M. Carroll, P.G. Schrader</i>	
COMMUNITY GENERATED, SOCIALLY VALIDATED HYPOTHESIS TESTING WITH LEARNING ANALYTICS	775
<i>P.G. Schrader, M. Carroll, S.A. Shaw</i>	
THE DISCUSSIÃO PROJECT: DESIGN OF DIGITAL RESOURCES TO ADDRESS CONTROVERSIAL ISSUES	783
<i>A. Almeida, A. Cardoso, J. Souza</i>	

PEER FEEDBACK AND PEER REVIEW IN HIGHER EDUCATION: MIRRORING AND TRANSFORMATIVE PRACTICES IN ACTIVE LEARNING PROCESSES <i>M. Pentucci, C. Laici</i>	790
ISSUES OF ORGANIZING COOPERATIVE LEARNING IN HIGHER EDUCATION <i>E. Nazmieva, N. Pershina</i>	800
FOREIGN LANGUAGE ACQUISITION OF UNIVERSITY STUDENTS IN THE CONTEXT OF A COOPERATIVE APPROACH TO TEACHING <i>E. Nazmieva, V. Tarasova</i>	804
LEARNING OUTSIDE SCHOOL: ACTIVITY PLANNING STRATEGIES AND IMPLEMENTATION <i>I. Tandzegolskiene-Bielaglove, S. Remeikiene</i>	808
SEARCHING OF NON-STANDARD SOLUTIONS FOR ESTABLISHMENT OF EDUCATIONAL ENVIRONMENT FAVOURABLE FOR INTERNATIONAL STUDENTS <i>R. Pocevicene</i>	818
THE ASSESSMENT PROCESS IN THE DEVELOPMENT OF SKILLS OF RESIDENTS IN MULTIPROFESSIONAL HEALTH RESIDENCE PROGRAMS <i>M.F. Alves, L.P. Figueredo, G.M. Guerra</i>	825
LEARNING FROM LINGUISTIC LANDSCAPES - PRACTICAL ENGLISH LANGUAGE LEARNING AND AWARENESS OF TRADITIONAL CULTURE <i>Y. Hiramatsu, M. Morishita</i>	838
WORKING TOGETHER TOWARDS LEARNING - AN EXAMPLE OF USING PEER TEACHING IN HIGHER EDUCATION <i>A. Sivonen, K. Heikkinen</i>	845
IMPROVED LEARNING OUTCOMES AND STUDENT ENGAGEMENT THROUGH FLIPPED LESSONS <i>K. Heikkinen, A. Sivonen</i>	851
TAKING DIFFERENT PLAYER TYPES INTO CONSIDERATION WHILE IMPLEMENTING EDUCATIONAL GAME - EFFECT ON STUDENT EXPERIENCE AND ACADEMIC RESULTS <i>A. Sivonen, K. Heikkinen</i>	858
LONGITUDINAL ANALYSIS OF PRODUCTION IN SEEDBED RESEARCH: A CASE STUDY <i>B. Naranjo Sánchez, J. Peñafiel Rosado</i>	865
INNOVATIVE TRANSNATIONAL / INTERNATIONAL HIGHER EDUCATION PROGRAMS <i>M. Bernal, A. Apa</i>	874
A COLLABORATIVE AND PROBLEM-BASED LEARNING CASE INTO A MECHANICAL ENGINEERING SUBJECT: OPTIMAL DESIGN FROM CHARACTERISTIC CURVES OF INTERNAL COMBUSTION ENGINES <i>F. Cruz-Peragón, A.J. Extremera-Jiménez, A. Palomar-Torres, E. Torres-Jiménez, F.J. Gómez-de la Cruz</i>	880
CALCULATION TOOLS FOR FAST ASSESSMENT OF EXPERIMENTS IN SHORT LAB SESSIONS WITH THERMAL MACHINES <i>F. Cruz-Peragón, A. Palomar-Torres, A.J. Extremera-Jiménez, F.J. Gómez-de la Cruz, E. Torres-Jiménez</i>	888
"CLASS+CLASSICS" AS THE FIRST INFORMAL EDUCATIONAL PROGRAM IN THEATRES OF ARMENIA <i>M. Mkrtchyan</i>	896
PHYSICAL SCIENCE EDUCATORS' TEACHING APPROACHES FOR FACILITATING CONCEPTUAL UNDERSTANDING OF STOICHIOMETRY <i>K. Booi</i>	902
EXPLORING INCLUSIVE ASSESSMENT TO EMPOWER LEARNERS WITH DIVERSE INTELLECTUAL NEEDS <i>N.I. Shabalala, K. Booi</i>	906
STEM PROBLEM SOLVING USING THE ARONSON'S JIGSAW COOPERATIVE TEACHING APPROACH <i>M. Garmendia, K. Zuza, J. Guisasola, X. Garikano, J. Gutierrez-Berraondo, P. Sarriugarte-Onandia</i>	911
INTERDISCIPLINARY WORKSHOPS IN THE EDUCATION OF ARCHITECTS <i>J. Illes, K. Kristianova</i>	918
ARCHITECTURAL EDUCATION - EXPERIENCES WITH DESIGN STUDIO ASSIGNMENTS LINKED TO STUDENT COMPETITIONS <i>J. Illes, K. Kristianova</i>	922

IMPROVING LEARNING CONTENT AND ENGAGING LEARNERS THROUGH THE REVISED COMMUNITY OF INQUIRY (RCOI) FRAMEWORK: INDONESIAN DESIGN STUDENTS' PERSPECTIVES	927
<i>L. Indriati, M. Neo, H.Y.J. Tan</i>	
FROM THEORY TO PRACTICE: IMPLEMENTING AUTHENTIC LEARNING ACTIVITIES IN AN INDONESIAN DESIGN MANAGEMENT CLASS	934
<i>L. Indriati, M. Neo, H.Y.J. Tan</i>	
THE ACADEMIC PERFORMANCE OF CIVIL ENGINEERING STUDENTS UNDER COVID-19 DISRUPTIONS	938
<i>W. Loo, L. Tuleasca</i>	
MAXIMIZING LEARNING EFFICIENCY WITH CHATGPT: WAYS TO INTEGRATE ARTIFICIAL INTELLIGENCE INTO EDUCATION	946
<i>I. Lera, G. Moyà-Alcover, C. Guerrero, A. Jaume-I-Capó</i>	
ARTIFICIAL INTELLIGENCE AND EDUCATIONAL ASSESSMENT SYSTEM LANDSCAPE, CHALLENGES AND WAYS TO TACKLE AI BASED PLAGIARISM	953
<i>D. Lukac, A. Lazareva</i>	
THE IMPACT OF HIGHER EDUCATION STUDENTS' MEANINGS ON UNIVERSITY QUALITY PERCEPTION IN PORTUGAL	963
<i>M.L. Neves, M. Varela, R. Fragoso</i>	
IMPROVING THE QUALITY AND ATTRACTIVENESS OF UNIVERSITY EDUCATION WITH THE PRACTICAL USE OF THE INTERNET OF THINGS	969
<i>J. Pillár</i>	
PARENTAL ENGAGEMENT IN DISTANCE LEARNING: FORMS OF CAPITAL, PEDAGOGICAL ASPECTS, AND FAMILY CHARACTERISTICS	976
<i>I. Sasson, Y. Grinshtain, N. Okavi</i>	
50% FOR THE FUTURE: ADDRESSING THE UNDERREPRESENTATION OF FEMALE STUDENTS STUDYING MECHANICAL ENGINEERING	977
<i>A. Rees, J. Thompson</i>	
BARRIERS TO IMPLEMENT ADVANCED ANALYTICS IN LATVIA'S EDUCATION INDUSTRY	978
<i>S. Lemsä</i>	
MICROLEARNING FOR GENERATION Z IN THE FOREIGN LANGUAGE CLASSROOM	987
<i>T. Krasnova, A. Kouznetsova, M. Ovsyannikova, A. Loginova</i>	
SCILAB FREE SOFTWARE FOR NUMERICAL COMPUTATION: A WIND ENERGY EDUCATIONAL TOOL	997
<i>J. Ureña Jorquera, I.C. Gil García, A. Molina García</i>	
INTEGRATION OF SUSTAINABLE DEVELOPMENT GOALS IN PROJECT BASED LEARNING THROUGH FLIPPED CLASSROOM	1004
<i>J. Requies, L. Barrio, E. Acha, I. Agirre, N. Viar, I. Gandarias</i>	
DEVELOPING CREATIVE DIGITAL EDUCATION FOR SUSTAINABLE AIR TRANSPORT AND LOGISTICS	1011
<i>T. Patala, A. Ketola</i>	
ALGIARISM: ARTIFICIAL INTELLIGENCE-ASSISTED PLAGIARISM	1018
<i>C. Halupa</i>	
STRUCTURAL-FUNCTIONAL MODEL OF FORMING THE TEACHERS' READINESS TO MANAGE THE DEVELOPMENT OF INTELLECTUALLY GIFTED STUDENTS	1025
<i>G. Ereemeeva, N. Sigacheva, R. Bikbulatov</i>	
INTERDISCIPLINARY INTEGRATION AT THE UNIVERSITY: DEVELOPMENT OF A NEW DISCIPLINE	1033
<i>N. Sigacheva, G. Ereemeeva</i>	
EXPERIENTIAL LEARNING APPLIED TO SOLID URBAN WASTE MANAGEMENT: LEARNING WHILE WALKING AROUND THE CITY	1040
<i>L.M. Ruiz</i>	
DEVELOPMENT OF MEDIA LITERACY IN TEACHING ENGLISH AS A FOREIGN LANGUAGE: AN INTERACTIVE ASPECT	1046
<i>E. Bystray, E. Chelpanova, F. Zakirova, V. Moshkovich, A. Shabalina</i>	
HOW TO MAKE LEARNING A PLEASURE? REFLECTIONS ON EMOTION, COGNITION AND EDUCATIONAL STRATEGIES	1051
<i>E. Palomba</i>	
HOW DOES ART EXPRESS COMMUNICATION?	1060
<i>S. Veinberg</i>	

TELECOLLABORATION SUPPORTED BY THE COMBINATION OF COMPUTER AND MOBILE ASSISTED FOREIGN LANGUAGE TEACHING AND LEARNING FOR SPECIFIC PURPOSES <i>E. Mavropoulou</i>	1065
DIGITAL STORYTELLING IN THE TEACHING AND LEARNING OF FRENCH AS A FOREIGN LANGUAGE: DESIGN AND CREATION OF AN E-BOOK <i>E. Mavropoulou</i>	1073
MATH PATHWAYS EMERGING FROM DESIGN THINKING METHODOLOGY <i>H. Costa, A. Breda, T. Neto</i>	1082
USE OF TECHNOLOGY, AS A TOOL TO IMPROVE ACADEMIC AND SOCIAL FUNCTIONING, AMONG STUDENTS WITH VISUAL IMPAIRMENTS OF ELEMENTARY SCHOOL AGE <i>E. Wasserman, N. Alfasi</i>	1091
PERCEIVING NEEDS FELT BY THE PORTUGUESE COMMUNITY WITH VISION IMPAIRMENT <i>I. Monteiro, A. Breda, R. Duarte</i>	1092
TECHNOLOGY FOR DEVELOPING STUDENTS' CRITICAL THINKING BASED ON WORKING WITH MEDIA TEXT IN ENGLISH <i>E. Chelpanova, E. Bystray, V. Moshkovich, A. Shabalina, F. Zakirova</i>	1100
PYRAMID OF SELF-ACTUALIZATION AS A LIFELONG LEARNING MODEL <i>E. Kudryavtseva, R. Kuzminov, O. Plyaskina</i>	1107
INSTAGRAM IS A RELIABLE LEARNING TOOL FOR INCREASING STUDENTS' COMPETENCIES IN USING APA GUIDELINES <i>S. Collado, R. Rodríguez-Rey, C. Fidalgo, M. Sorrel, M. Sánchez-Izquierdo, E. Santaolalla, H. Garrido-Hernansaiz</i>	1113
THE TEACHING AND RESEARCH LABORATORY - AN OPPORTUNITY FOR INTELLECTUAL AND CREATIVE EXPRESSION IN THE EDUCATIONAL PROCESS <i>R. Lebedova, M. Sapundzhiev</i>	1114
PROFESSIONAL COMPETENCE OF TEACHING FOREIGN LANGUAGES AT UNIVERSITIES IN THE CONTEXT OF DIGITAL EDUCATION (EXAMPLE OF RUSSIAN AND CHINESE UNIVERSITY TEACHERS) <i>R. Meng, A. Boltaeva</i>	1119
THE EFFICIENCY OF INTERACTIVE VIDEOS IN EVOLVING VOCABULARY AND THE SPEAKING SKILLS OF UNIVERSITY STUDENTS WHILE TEACHING ENGLISH AND CHINESE <i>A. Boltaeva, R. Meng</i>	1127
FLIPPED VERSUS TRADITIONAL CLASSROOM AND STUDENT ACHIEVEMENT IN ENGINEERING: THE INFLUENCE OF GENDER <i>Z. Azkorra-Larrinaga, I. Gómez-Arriaran, K. Martín-Escudero, E. Perez-Iribarren, N. Romero-Antón</i>	1135
PERCEPTION AND ATTITUDES TOWARD EMERGING TECHNOLOGY OF BIOMETRICS AMONG CROATIAN STUDENTS <i>A. Papić, D. Szombathelyi</i>	1140
A NEW METHODOLOGY FOR THE LABORATORY SESSIONS IN A SCIENCE DEGREE <i>R. Niclòs, E. Valor, L. Pérez-Planells, V. García-Santos, I. Gómez, V. Estellés, G. Soria, C. Coll</i>	1144
SCHOOL MANAGEMENT AND LEADERSHIP IN UNCERTAIN TIMES: VIEWS FROM THE UAE <i>Z. Hojeij</i>	1150
DESIGNING REGULATION IN ACTION TO MANAGE THE UNFORESEEN IN TEACHING-LEARNING CONTEXTS <i>M. Pentucci, P.G. Rossi, L. Capolla</i>	1151
CAREER FOCUSED CURRICULUM DESIGN IN ENGINEERING <i>C. Geary, P. Kelly, F. Boyle, J. Walsh</i>	1159
EU3DIGITAL - ENSURING THE SUCCESS AND SUSTAINABILITY OF THIRD SECTOR ORGANISATIONS AND SOCIAL ENTERPRISES BY BOOSTING DIGITAL SKILLS AND COMPETENCES USING TRAINING RESOURCES <i>A. Aguiar, A. Soeiro, C. Jacklin-Jarvis, T. Foster</i>	1160
DIGITAL STORYTELLING FOR THE DEVELOPMENT OF 21ST CENTURY SKILLS IN THE SECONDARY EFL CLASSROOM <i>S. Maravelaki</i>	1169
TAKING SCHOOL OUTDOORS: MATHEMATICAL TRAILS AS A TEACHING RESOURCE <i>H. Ambrósio, A. Hall, S. Pais</i>	1184

THE SYNERGY BETWEEN EDUCATION, PRACTICE AND RESEARCH IN SOCIAL WORK	1191
<i>Y. Marti Haidar</i>	
REPRESENTATION OF KNOWLEDGE EXTRACTED FROM THE DIGITAL BOOKLET DATA FOR THE WORK-STUDY PROGRAM	1192
<i>B. Mbaye</i>	
HYBRID TEACHING AND LEARNING: VISION AND REALITY	1197
<i>D. MacKevett, P. Feubli</i>	
DIGITAL NATIVES IN HIGHER EDUCATION: LESSONS LEARNED FROM THE COVID-19 PANDEMIC	1207
<i>M.E. Samoila</i>	
ACADEMIC RESEARCH IN BETWEEN USER NEEDS AND INDUSTRY DEMANDS IN THE CONTEXT OF THE SILVER ECONOMY	1213
<i>S. Palmieri, M. Bisson, A. Ianniello, R. Palomba</i>	
ASSESSING LEARNER PROFILES TO INCREASE LEARNING GAINS IN CONTINUING EDUCATION	1221
<i>L. Paz, B. Dörr, K. Altmeyer, N. Peters, D. Werth</i>	
THE USE OF DIVERSIFIED ACTIVE LEARNING METHODOLOGIES IN MATHEMATICS CLASSES – A CASE STUDY WITH PRE-SERVICE TEACHERS	1229
<i>A. Hall, S. Pais</i>	
ADULT EDUCATION AND DIFFERENT CONCEPTS	1236
<i>D. Krystof</i>	
MANAGEMENT OF SCIENTIFIC INFORMATION, A KEY SUBJECT TO MASTER EVIDENCE-BASED HEALTH CARE IN THE MEDICAL DEGREE	1242
<i>S. Díaz de Castellví</i>	
AREAS OF EVALUATION OF VOCATIONAL HIGH SCHOOL TEACHERS	1247
<i>D. Krystof, P. Adamec</i>	
IMPLEMENTING AN ANDON CORD IN HIGHER EDUCATION	1252
<i>K. Khawaja</i>	
TECHVETLAB: TURNING THE VET CLASSROOM INTO A VIRTUAL DEPARTMENT OF A TECHNOLOGY COMPANY	1257
<i>L. Gómez Estrada, L. Pietra, L. Gómez Estrada, S. Randaccio, C. Zoli, R. Sixto Iglesias, R. Navarro Cerveró, J. Nunes, P. Carrolaggi, P. Karampelas, J. Tormos Capilla, J.L. Gómez Ribelles</i>	
LEARNING HELPING: INCLUSIVE EDUCATION OF ADULTS THROUGH VIRTUAL VOLUNTEERING	1265
<i>R. Sixto Iglesias, P. Carrolaggi, S. Randaccio, L. Pietra, C. Zoli, D. Didane, S. Kolsi, G. Massari, S. Tumino, M. Strimpel, S. Nabi, R. Navarro Cerveró</i>	
ECONOMIC CONSTRAINTS, CAREER ADAPTABILITY AND PERCEPTION OF FUTURE DECENT WORK AMONGST UNDERGRADUATE STUDENTS	1273
<i>L. Faria, C. Gouveia, L. Florêncio</i>	
SEEING THE INVISIBLE: INCLUSIVE DIGITALIZATION OF LOW VISION STUDENTS IN SCHOOL EDUCATION	1283
<i>R. Navarro Cerveró, R. Sixto Iglesias, P. Carrolaggi, S. Randaccio, L. Pietra, C. Zoli, T. Hauge, S. Orstenvik, M. Castelnuovo, B. Poli, C. Teofili, M. Pellegrino, G. Gening, L. Mosquera, O. Sinerea, M. Rafecas, M. Puerto</i>	
MERLIN'S PLAYGROUND: STUDENTS' ATTITUDES AND PERCEPTIONS OF SOLVING ELECTROMAGNETISM PROBLEMS IN A VIRTUAL REALITY ENVIRONMENT	1288
<i>T.K. Neo, A. Amphawan, K. Hamidani</i>	
IMPLEMENTATION OF PBL TO ELICIT STUDENT ENGAGEMENT OF UNDERGRADUATE CREATIVE MULTIMEDIA STUDENTS DEVELOPING XR APPLICATIONS	1296
<i>K. Hamidani, T.K. Neo, A. Amphawan, A.I. Susanti, M. Pradana, S. Artadita</i>	
GENDER DIFFERENCES IN TOURISM STUDENTS' PERCEPTIONS OF DECENT WORK	1305
<i>L. Faria, C. Gouveia, L. Florêncio</i>	
CLASSROOM MANAGEMENT IN INCLUSIVE SCHOOLS (INCLASS) – DEVELOPMENT OF AN ASSESSMENT TOOL FOR TEACHER EDUCATION	1313
<i>S. Lutz, M. Gebhardt</i>	
COMPLEX STUDENT PATHWAYS: EXPLORING THE TIME TO DEGREE	1318
<i>V. Miguéis, J.P. Pêgo, A. Soeiro</i>	
EFFECTIVENESS OF THE E-LEARNING EDUCATION BASED ON PJAIT EXPERIENCE	1319
<i>A. Drabik, J.P. Nowacki, L. Banachowski, P. Lenkiewicz</i>	

NEW ONLINE MASTERS DEGREES TO MEET THE NEED FOR CYBER PROFESSIONALS <i>S. Sarkani, T. Mazzuchi</i>	1324
PARENTS AND SCHOOL INTERVENTIONS IN PROTECTING CHILDREN AND YOUTH IN ONLINE SPACE: BEST PRACTICES FROM A EUROPEAN PROJECT <i>M. Tomita, G. Grosseck, R. Ungureanu</i>	1325
ICT AND SATISFACTION: ANALYSIS OF THE CHARACTERISTICS OF UNIVERSITY STUDENTS <i>A. Marín García, I. Gil Saura, M.E. Ruiz Molina, R. Gil Saura, M.S. Moise</i>	1331
HOW TO BOOST STUDENT SATISFACTION THROUGH ICT?: ANALYSIS OF A CASE IN UNIVERSITY CLASSROOMS <i>A. Marín García, I. Gil Saura, M.E. Ruiz Molina, M.S. Moise, R. Gil Saura</i>	1332
ACTIVE LEARNING OF GENETICS STUDENTS THROUGH THE STUDY OF PLUMAGE COLORATION IN DUCKS (MULTIPLE ALLELES) <i>H.V. Bárcenas-Rodríguez, V. Martínez-Toledo, M.A. Carballo-Ontiveros, A.A. Mendoza-Amador, A.N. Castañeda-Sortibrán</i>	1333
ACADEMIC, SOCIAL AND CULTURAL EXPERIENCES OF STUDENTS IN A UNIVERSITY OUTSIDE THEIR ETHNIC SOCIETIES <i>A. Kuranchie, I.J. Obeng</i>	1339
UNIVERSITY OF SOUTH AUSTRALIA STUDENT UNION (USASA) FINANCIAL WELLBEING PROGRAM: EMPOWERING STUDENTS THROUGH FINANCIAL LITERACY <i>L.F. Gardeazabal Penuela</i>	1346
FOSTERING INNOVATION IN EDUCATION THROUGH PEDAGOGICAL PRACTICE AND RESEARCH IN THE COMPUTER SCIENCE TEACHING CURRICULUM: A COMPARATIVE ANALYSIS <i>I.C. Muñoz</i>	1352
READILY AVAILABLE FREE MOBILE AND TABLET APPLICATIONS TO HELP THE INCLUSION OF BLIND AND VISUALLY IMPAIRED PUPILS IN THE SCIENCE LABORATORIES <i>A. Herrero, C. Reguera, S. Sanllorente, S. Palmero, M. Ciulea, T. Osorio, J. Muñoz, G. Stojanovic, A. Jakovchevska</i>	1358
METHODOLOGICAL PROPOSAL FOR THE INCORPORATION OF ICT IN THE MATHEMATICS CURRICULUM IN RURAL CONTEXT <i>J.C. Giraldo</i>	1368
THE PARADOXICAL LIFE OF ANDRAGOGUES <i>R. Zhang, R. de Villiers, J. Scott-Kennel</i>	1378
THE EFFECT OF ONLINE LEARNING TASK DESIGN ON THE TRAJECTORY OF LEARNER AUTONOMY: A CASE STUDY IN A NEW ZEALAND CONTEXT <i>Q.M. Zhong</i>	1387
A NEW INFORMATION TECHNOLOGY EDUCATION METHOD REQUIRING STUDENTS TO ANSWER ICT NATIONAL EXAM QUESTIONS WRITTEN IN A FOREIGN LANGUAGE <i>Y. Miyamoto</i>	1392
THE DEVELOPMENT OF ASYNCHRONOUS MICRO-TRAINING VIDEOS PRE AND POST COVID-19 <i>S. Thomas, C. Mathew</i>	1397
FOSTERING SELF-REGULATED LEARNING IN AN AUTHENTIC DIGITAL LEARNING ENVIRONMENT: AN EXPLORATIVE ANALYSIS <i>R. Pape</i>	1403
EXPERIENTIAL LEARNING USING AUGMENTED REALITY IN ENGINEERING EDUCATION <i>C. Geary, J. Moolman, C. Mbabazi, F. Boyle, J. Walsh</i>	1404
BLENDED, REMOTE AND HYBRID MODES IN LANGUAGE TEACHING <i>N. Radic</i>	1413
ASSESSMENT OF THE INCLUSION OF EVALUATION RUBRICS IN THE PRACTICAL UNITS OF TELEMATICS AND TELECOMMUNICATION ENGINEERING DEGREES SUBJECTS <i>J.M. Perez-Lorenzo, J.C. Cuevas-Martínez, A.J. Yuste-Delgado, R. Viciano-Abad, P.J. Reche-Lopez, F. Rivas-Peña</i>	1414
ESCAPE ROOMS AS AN INNOVATIVE LANGUAGE LEARNING TOOL IN HIGHER EDUCATION TOURISM DEGREES <i>A. Pires, S. Pais, A.E. Sousa</i>	1420

3DCHEMMOL: WEB-BASED MOLECULAR MODELING INTERFACE SUPPORTING TECHNOLOGY-BASED LEARNING	1426
<i>D. Dolničar, B. Boh Podgornik</i>	
ASSESSMENT IN THE CONTEXT OF COLLABORATIVE LEARNING IN MATHEMATICS	1436
<i>P. Carvalho, L. Descalço, H.F. Gonçalves</i>	
CONFLICTING PERCEPTIONS OF FLIPPING TEACHING BY DENTISTRY STUDENTS	1443
<i>M.P. Álvarez Vázquez, T. Angulo Carrere, E. Lozano Pérez, C. Bravo-Llatas, L. Del Campo Milán</i>	
INTERDISCIPLINARY APPROACHES: EXPLORING THE FUSION OF MATHEMATICS, ART, AND CULTURE IN A PROFESSIONAL DEVELOPMENT COURSE FOR MATHEMATICS TEACHERS	1449
<i>A. Breda, P. Carvalho, A. Hall</i>	
AUTARKYO: INTERACTIVE APP FOR THE PLANNING AND EVALUATION OF ENERGY SELF-SUFFICIENT HOUSES	1458
<i>A.L. Ehrhardt, H.J. Rzepus, C. Griehl, D. Broneske, N. Vorhauer-Huget</i>	
INTERACTIVE RESOURCES TO ENHANCE SELF-LEARNING IN HIGHER EDUCATION	1468
<i>S. Muñoz San Martín, J.L. Imaña Pascual, F. Herrera Fernández, G. Susi, J.C. Jiménez Saéz, P. Palacios Clemente, M. Barragán García</i>	
OPTIMAL VIRTUAL REALITY EXPERIENCE FOR CULTURAL HERITAGE EDUCATION	1473
<i>O. Nakov, O. Harizanova, M. Lazarova, V. Mladenov</i>	
DEVELOPING UNDERGRADUATE STUDENTS' LEARNING TO LEARN ABILITIES THROUGH BLENDED LEARNING: A CASE IN HONG KONG	1482
<i>E.W.K. Yeung, P. Hui, J. Xiao, C.P. Chung</i>	
RELEVANCE OF A MASTER'S PROGRAM IN ADMINISTRATION IN EDUCATIONAL MANAGEMENT	1487
<i>R.A. Gómez Ortiz, V. Cruz Morales</i>	
INTERACTIVE LEARNING ENVIRONMENTS FOR ENHANCING THE ROLE OF HUMAN RESOURCE MANAGEMENT PRACTICES IN IMPROVING ORGANIZATIONAL PERFORMANCE	1495
<i>F. Ceresia</i>	
RECOMMENDER SYSTEMS IN THE LEARNING FIELD: A SYSTEMATIC REVIEW	1501
<i>F. Norouzinia, N.C. Peters, L. Paz, M. Joergens, D. Werth</i>	
COOPERATION OF A TEACHER WITH A TEACHING ASSISTANT	1509
<i>J. Vítová, J. Wolf, M. Maněnová, M. Skutil</i>	
ANALYSIS OF INTERACTION BETWEEN TEACHER AND TEACHING ASSISTANT IN CZECH CLASSROOMS	1516
<i>J. Vítová, J. Wolf, M. Maněnová, M. Skutil, A. Vaněčková, S. Růžicková, A. Jirešová, A. Hejná</i>	
SOCIAL MEDIA AND LEARNING: HAVE THE TENDENCIES CHANGED? EVIDENCE FROM THE UNIVERSITY OF CANTABRIA	1524
<i>M. Obeso, M.C. López-Fernández, M. Pérez-Pérez, G. García-Piqueres</i>	
EXAMINING THE METACOGNITIVE ABILITIES OF FUTURE TEACHERS AT THE FACULTY OF EDUCATION IN BELGRADE - A LONGITUDINAL STUDY	1525
<i>B. Radulović, M. Stojanović, O. Zajkov, R. Gabdrakhmanova, M. Džinović, D. Mandić, I. Nikolić, S. Šehović, F. Prušević Sadović, J. Radojičić</i>	
AN EVALUATION OF REQUIREMENTS FOR A MENTORSHIP FRAMEWORK INCORPORATING FEEDBACK FROM INDUSTRY	1529
<i>I. Morris, K. O'Sullivan, N. Fitzgerald, J. Walsh, E. O Connell, F. Boyle</i>	
ASSESSMENT THE IMPACT OF RISK FACTORS ON TEACHERS' HEALTH DURING THE PANDEMIC	1534
<i>N. Koshkina, G. Popova</i>	
HOW TO MEASURE THE DIFFUSION COEFFICIENT WITH THE HELP OF LASER?	1542
<i>V. Sebelik</i>	
APPROACHING MUSIC LISTENING IN HIGH SCHOOL: IMPLEMENTATION OF THE COGNITIVE-EMOTIONAL LISTENING TO MUSIC	1548
<i>S. Vidulin</i>	
COMPARATIVE ANALYSIS OF INTERNATIONALIZATION POLICIES OF LEADING OPEN UNIVERSITIES IN EUROPE	1549
<i>S. Celikbas, E. Toprak</i>	
DIGITAL MATHS PREPARATION COURSE IN MASTER CRAFTSMAN TRAINING - A PSEUDONYMOUS MULTIMETHOD EXPERIMENTAL STUDY	1555
<i>D. Zaglmann, M. Haack, J. Mägdefrau</i>	

A CASE STUDY OF LEADING AND SUPPORTING TEACHING TEAMS AT A PROGRAMME MANAGEMENT LEVEL FOR A 600+ STUDENT MSC MANAGEMENT PROGRAMME <i>S. Buxton, T. Malik</i>	1565
VIRTUAL REALITY AS A STRATEGY TO REDUCE EXAM ANXIETY - WHAT THE EVIDENCE TELLS US <i>S. Mulholland, K. Werther, B. Concannon, S. Esmail</i>	1570
TEACHING LANGUAGES VIA CLIL METHODOLOGY - ONLINE TRAINING OF PRIMARY SCHOOL TEACHERS HOW TO USE IT <i>D. Hanesová</i>	1571
SIMPLIFYING THE COURSE EVALUATION PROCESS: THE NET PROMOTER SCORE FOR USE IN ACADEMIA <i>J. Schoenfeld</i>	1578
PERCEPTIONS OF MENTORS AMONG MENTEES IN POSTGRADUATE PROGRAMMES FOR INTERNATIONAL STUDENTS <i>D. Lopez, A. Clear</i>	1579
THE PEDAGOGICAL ALLIANCE BETWEEN SCHOOL AND FAMILY IN INCLUSIVE PERSPECTIVE <i>I. Zollo</i>	1587
A GAMIFICATION STRATEGY FOR THE TEACHING OF TEAM COHESION CONCEPTS IN THE UNDERGRADUATE SPORT PSYCHOLOGY CLASSROOM <i>M. Mann</i>	1591
SELF-ASSESSMENT AND THE USE OF DIAGNOSTIC OUTPUT FROM COGNITIVE DIAGNOSIS MODELS TO PROMOTE STUDENT LEARNING <i>M. Sorrel, P. Nájera, R. Kreichtmann, F. Abad, C. García, A. Martínez-Molina, S. Collado</i>	1595
MOBILE LEARNING CONTRIBUTIONS TO TEACHING AND LEARNING: THE CASE OF THE UNIVERSITY OF AVEIRO <i>D. Antunes, J. Batista, D. Simões</i>	1596
TRAINING SKILLS IN THE USE OF RADIATION IN REAL MEDICAL TREATMENTS FOR HIGHER EDUCATION STUDENTS THROUGH MONTE CARLO SIMULATIONS <i>S. Oliver, B. Juste, R. Miró, G. Verdú</i>	1607
TRAINING IN OPERATION AND SAFETY OF NUCLEAR POWER PLANTS THROUGH ACTIVE LEARNING BASED ON IAEA REACTOR SIMULATORS <i>B. Juste, R. Miró, T. Barrachina, S. Oliver, G. Verdú</i>	1613
DSEXAMS: MASSIVE AND AUTOMATED GENERATION OF RANDOMIZED MULTIPURPOSE QUESTIONNAIRES <i>E. López Cano, M. Cuesta, C. Lancho, C. Alfaro, M.J. Algar, A. Alonso-Ayuso, A. Fernández-Isabel, J. Gomez, I. Martin de Diego, J. Moguerza, F. Ortega, A. Udiás</i>	1620
CITYZEN PROJECT: PROMOTING URBAN AGRICULTURE IN SCHOOLS AS A TOOL OF TEACHING INNOVATION <i>B. Urbano, I. Méndez, I. Areños, J. Díez</i>	1628
TRAPS IN THE PROFESSIONAL DEVELOPMENT OF GEORGIAN TEACHERS <i>T. Ivanidze, L. Kaminskienė</i>	1634
DEVELOPMENT OF AN "AUGMENTED E-RUBRIC" WITH CRITICAL THINKING TO ASSESS COMPETENCES <i>B. Urbano, D. Carpio, A.M. Bartolomé, F. González-Andrés</i>	1639
SYSTEMIZATION OF RANGE AND SCALE OF THE APPROACHES TO EDUCATION OF TALENTED AND GIFTED CHILDREN IN THE EU EDUCATION SYSTEM <i>V. Dombrovskis, N. Titova, M. Veide</i>	1644
IMPLEMENTATION OF PROJECT BASED LEARNING TO ACHIEVE DEEP LEARNING IN STUDENTS OF THE DEGREE IN INDUSTRIAL DESIGN AND PRODUCT DEVELOPMENT ENGINEERING BETWEEN DIFFERENT SUBJECTS <i>J. Ivorra-Martinez, V. Moreno, S. Rojas-Lema, D. Garcia-Garcia, L. Quiles-Carrillo</i>	1654
ARE HIGHER EDUCATION TEACHERS PREPARED FOR A PERSONALIZED LEARNING ENVIRONMENT? <i>Z. Kubincová, K. Miková</i>	1661
THE SCHOLARSHIP OF EDUCATIONAL LEADERSHIP: A CASE STUDY OF DEVELOPING LEADERSHIP OF TEACHING, LEARNING AND ASSESSMENT IN A UNIVERSITY CONTEXT <i>N. Herman, J.P. Bosman</i>	1671

PROCEDURAL/ROTE LEARNING VS MEANINGFUL LEARNING: WHICH DO FIRST YEAR UNDERGRADUATE STUDENTS PREFER?	1681
<i>M.P. de Sousa Oliveira</i>	
UTILIZATION OF EVIDENCE BASED PRACTICE AMONG PHYSICAL THERAPISTS	1691
<i>S. Elgelid</i>	
GETTING READY FOR THE NEXT PANDEMIC, HOPEFULLY A LONG TIME FROM NOW	1692
<i>S. Elgelid</i>	
USING TECHNOLOGY TO TEACH YOUNG LEARNERS MATH SKILLS	1693
<i>H. Shamir, E. Yoder, D. Pocklington, C. Wang, E. Greene</i>	
CONTRIBUTION OF A UNIVERSITY MENTORING PROJECT TO THE DISSEMINATION OF THE SDGS	1701
<i>A.I. Tarrero, M. Fernando, V.A. La Fuente</i>	
EXPLORATORY DATA VISUALIZATION OF STUDENT INTERACTIONS	1709
<i>I. Ogbuchi, E. Kiely, C. Quigley</i>	
ENHANCING ENGINEERING LEARNING THROUGH THE USE OF AN INTERACTIVE LABORATORY	1716
<i>S. Shotarova, S. Stoyanova-Petrova, S. Lyubomirov</i>	
YOUNG PEOPLE'S REAL-TIME EXPERIENCES OF DIGITAL EDUCATION: "THE SCHOOL IS COMFORTABLE" "YEAH, RIGHT, LIKE GETTING SUFFOCATED IN A MASK ALL DAY IS COMFORTABLE"	1725
<i>A. Nagy, A. Szabó, B. Böcskei, M. Fekete</i>	
DISCOVERY LEARNING IN A LEXICOLOGY COURSE	1726
<i>J. Bérešová</i>	
TRAINING STUDENT TEACHERS TO ALIGN ORAL PERFORMANCES TO REFERENCE LEVELS	1731
<i>J. Bérešová</i>	
REALIZATION OF ADAPTIVE PROGRESS BARS IN MOODLE FOR ATTESTED COMPETENCIES AND QUALIFICATIONS FOR LEARNERS IN HIGHER EDUCATION INSTITUTIONS PSYCHOLOGY COURSES CONSIDERING QUALIFICATIONS-BASED LEARNING	1736
<i>R. Srbecky, S. Colutto, S.A. Wetzel, M. Winterhagen, W. Fraas, J. Dettmers, M. Hemmje</i>	
ACTIVE LEARNING METHODOLOGY APPLICATION IN ENGINEERING	1743
<i>N. Romero-Anton, K. Martín-Escudero, Z. Azkorra-Larrinaga, M. Odriozola Maritorena, I. Gomez-Arriaran, A. Picallo-Perez</i>	
ACCEPTANCE OF THE FLIPPED CLASSROOM BY ECONOMETRICS UNDERGRADUATE ECONOMICS STUDENTS	1749
<i>M. Cladera</i>	
MONITORING AND SUPPORT OF TOURISM PROGRAMMES IN POLYTECHNICS COLLEGES	1754
<i>K. Ngwenya, X. Khalo</i>	
USING AVIATION GAMING SOFTWARE TO ENHANCE ICAO PILOT TESTING	1763
<i>M. Landry, L. Landryova</i>	
THE ELIMINATION OF SCREEN INFERIORITY EFFECT ON SECOND AND THIRD GRADE READERS DURING COVID-19	1772
<i>S. Dotan, T. Katzir</i>	
UNIVERSITY TEACHERS' COMPETENCE IN TEACHING SUBJECT DIDACTICS	1773
<i>T. Krass, K. Uibu, E. Sikkal</i>	
EXPERIENTIAL LEARNING ABOUT SUSTAINABLE DEVELOPMENT IN BUSINESS EDUCATION – COURSE DESIGN, EXPERIENCES, AND TRANSFERABILITY	1778
<i>A. Spörk, A. Martinuzzi, S. Martinuzzi</i>	
TIME LIMITS FOR ONLINE TESTS DURING THE ASSESSMENT OF STUDENTS LEARNING ENGLISH AS A FOREIGN LANGUAGE AT A TECHNICAL UNIVERSITY	1779
<i>N. Antonenko</i>	
QUALITATIVE ANALYSIS OF ESCAPE ROOM-BASED METHODOLOGY IN A MATHEMATICS COURSE	1785
<i>J.S. Jeong, F. Yllana Prieto, A.I. Montero Izquierdo, D. González-Gómez</i>	
UNSOLVED TASKS IN THE BEBRAS CHALLENGE FOR UPPER SECONDARY BLIND PUPILS	1791
<i>M. Čujdíková, L. Jašková</i>	

UNPLUGGED AND MICRO:BIT ACTIVITY IN THE FUTURE CLASSROOM LAB TO EXAMINE PRE-SERVICE TEACHERS' AFFECTIVE DOMAIN IN MATHEMATICS COURSE	1798
<i>J.S. Jeong, A.I. Montero Izquierdo, F. Yllana Prieto, D. González-Gómez</i>	
INTERACTIVE LEARNING IN ENGINEERING EDUCATION BASED ON LMS AND LTI	1803
<i>S. Shotarova, S. Stoyanova-Petrova</i>	
STATISTICAL TECHNIQUES COURSE FOR UNDERGRADUATE PROGRAMS: AN EMERGENCY REMOTE TEACHING APPROACH	1811
<i>A.R. Xambre, H. Alvelos</i>	
CHILDREN'S ABILITY TO ORIENT THEMSELVES IN SPACE	1818
<i>A. Sindelarova, S. Pechouckova</i>	
ANALYSIS OF MOTIVATIONAL MEANS, METHODS AND FORMS OF TEACHING READING LITERACY OF PRIMARY SCHOOL PUPILS IN FINLAND	1823
<i>M. Žiškova, J. Miková, K. Barancová</i>	
SOCIAL WORK CURRICULAR DESIGN AND THE INTERNATIONAL STANDARDS FOR THE PROFESSION: ALIGNMENT AND MISALIGNMENT IN PORTUGAL	1824
<i>E. Justino, D. Dias</i>	
ACCESSIBILITY STATUS OF E-COMMERCE SITES OF FINNISH UNIVERSITIES OF APPLIED SCIENCES	1828
<i>J. Lahti</i>	
PACKAGING DESIGN AS A CONTAINER OF COMPLEXITY: DEFINITION OF PRACTICAL FRAMEWORK FOR A CO-DESIGN PROCESS	1834
<i>S. Palmieri, M. Bisson, R. Palomba, D. Vitale</i>	
INDUSTRIAL ENGINEERING AND MANAGEMENT: WHAT AND HOW TO TEACH AND LEARN IN AN INTRODUCTORY COURSE	1843
<i>H. Alvelos, A.R. Xambre, M.J. Rosa</i>	
HOW PANDEMIC-DRIVEN REMOTE LEARNING HELPED EXPAND STUDENT LEARNING WHEN COURSES SHIFTED FROM IN-PERSON DELIVERY TO VIRTUAL DELIVERY	1849
<i>H. Boersma</i>	
THE IMPORTANT THING IS NOT WINNING BUT TAKING PART: UNDERSTANDING SPECIAL OLYMPICS EXPERIENCES FROM THE ATHLETES' PERSPECTIVE	1850
<i>C. Mihajlovic</i>	
TRAINING AUTHENTIC LEADERSHIP IN UNCERTAIN TIMES AT THE POSTGRADUATE LEVEL	1855
<i>E.O. Cardoso Espinosa, M.J. Blas Rivera, E.D. Nava Meléndez</i>	
AGRIPOLIS: LIVING THE HIGH LIFE	1860
<i>R. Davids</i>	
UNDERSTANDING BUSINESS FACULTY ADOPTION OF TECHNOLOGY, ITS COMPLEXITIES AND NUANCES	1868
<i>M. Conyette</i>	
MENTORING OF UNIVERSITY STUDENTS. CASE OF AN ENTREPRENEUR WHO APPLIES THE HYPERSPECTRAL TECHNIQUE TO FOOD SAFETY	1878
<i>O. Cáceres-Moreno, M.D. La Rubia, C. Rus-Casas</i>	
TRAINING OF SPECIAL EDUCATION TEACHERS: PROBLEMS AND SOLUTIONS IN LATVIA	1885
<i>J. Dzerviniks, M. Rozenfelde</i>	
THE NATIONAL CYBER ETHICS MODULES: AN APPROACH FOR TEACHING CYBER SAFETY TO K12 STUDENTS	1896
<i>M. Ahmad, N. Razali</i>	
PERSPECTIVES OF TURKISH EARLY CHILDHOOD ADMINISTRATORS ABOUT INCLUSION	1901
<i>S. Rakap</i>	
THEORY AND RESEARCH-BASED GUIDELINES FOR DESIGNING AND DEVELOPING EFFECTIVE VIDEO GAMES	1902
<i>R. Almazayad</i>	
IMPACT OF A TRAINING AND COACHING TO SUPPORT TURKISH MOTHERS' IMPLEMENTATION OF MILIEU TEACHING STRATEGIES	1906
<i>S. Rakap, S. Balıkcı, E. Gulboy, S. Kalkan</i>	
VISUALIZING AND MODELING ONLINE LEARNING BEHAVIORS BY RETENTIONEERING	1907
<i>K. Li</i>	

TRAINING PROSPECTIVE ELEMENTARY SCHOOLS TEACHERS IN PLANNING, CONDUCTING AND EVALUATING PROBLEM-BASED AND EXPERIENTIAL LESSONS IN INFORMATICS, SCIENCE AND TECHNOLOGY <i>N. Bauer, M. Haack, D.M. Jozefiak, J. Mägdefrau</i>	1917
DEVELOPMENT OF STUDENTS' WELL-BEING IN THE CONTEXT OF PHYSICAL ACTIVITIES <i>J. Dzerviniks, V. Dzervinika, E. Dzervinika</i>	1928
IS ONLINE LANGUAGE EDUCATION AT A CROSSROADS OR IN DIRE STRAITS? <i>M. Šikolová, L. Koláčková, M. Veselá</i>	1936
WARGAMING – BASED LEARNING TO DEVELOP THE COMPETENCIES OF FUTURE MILITARY OFFICERS <i>G. Dudzevičiūtė</i>	1940
SOME DIFFICULTIES MET BY STUDENTS IN COMPUTING THE ENTROPY BALANCE IN SOME THERMODYNAMIC PROCESSES <i>S. Bailleux, A. Anakkur, M.L. Lahlaouti</i>	1941
VET TEACHERS' PERCEPTIONS OF THEIR PRACTICES BEFORE AND AFTER COVID-19 <i>F. Moreira, D. Oliveira, A. Oliveira</i>	1951
ENHANCING TOOLS FOR STUDYING ORNAMENTAL PLANTS: VIDEOGAME AND INTERACTIVE MAP <i>A. Hernando Gallego, M. Gómez García, M. Legrand, J. Velázquez Saornil, C. Iglesias Merchan, L.G. García-Montero</i>	1958
IMPROVEMENT IN THE AREA OF STATISTICS <i>C. Chiralt, J. Picazo</i>	1965
WHAT IS THE BEST EDUCATIONAL METHODOLOGY TO TEACH FIRST AID IN HIGH SCHOOL? <i>M.T. Pascual-Galiano, L. Vega-Ramírez, M.Á. Níguez-García, A. Vidaci, M.A. Ávalos-Ramos</i>	1973
A QUALITATIVE INTERVIEW STUDY ON THE DEVELOPMENT OF STUDENTS' SOCIAL-EMOTIONAL SKILLS DURING COVID19 <i>B. Kopp, A. Lueg</i>	1977
GEOMORPHOLOGY TOPOGRAPHIC INTERPRETATION <i>C. Carbonell-Carrera</i>	1981
PROJECT FOR SECONDARY-SCHOOL STUDENTS: ENERGY USED TO OBTAIN WATER <i>M. Gómez, M.D. Grau, E. Xandri</i>	1985
TRANSFORMATIVE IMPLICATIONS AND EVIDENCE-BASED PRINCIPLES FOR CREATING CONTENT FOR MATHEMATICS LEARNING IN THE METAVERSE <i>X. Li</i>	1994
TOWARDS DIALOGIC LEARNING THROUGH OPEN APPROACHES AND PODCASTING: SOUTH AFRICAN EDUCATORS <i>N. Agherdien, R. Pillay</i>	2004
ACADEMIC INTEGRITY: WHOSE WRITING IS IT? CAN WE STOP THE PLAGIARISM PANDEMIC? <i>H. Hope, J. Lewis</i>	2005
DIGITAL EDUCATION CONTEXTS AND LEARNING ANALYTICS TO MEASURE THE LEARNING EFFICACY <i>M.J. Sousa, H. Belchior-Rocha</i>	2006
TECHNOLOGICAL INTERFACE COMPONENTS THAT SUPPORT ACCELERATED LEARNING IN THE ACQUISITION OF FOREIGN LANGUAGE VOCABULARY <i>D. Passig, G. Eshel Kedmi, A. Aharoni</i>	2014
EXAMINATION OF OPINIONS REGARDING RISKY BEHAVIORS IN HIGH SCHOOL STUDENTS <i>S.S. Aydoğan, S. Seven, M. Erdoğan, N. Altınmakas, F. Nayır</i>	2019
ARE UNIVERSITY STUDENTS MORE SATISFIED WITH COMMUNICATION AFTER USING A MOBILE APPLICATION? <i>M. Lara, J. Flores, S. van Der Meer, I. Bezemer</i>	2020
SURVEY-BASED APPROACH TO PREDICT EARLY DROPOUT IN ENGINEERING DEGREES <i>J.C. Cuevas-Martínez, P.J. Reche-Lopez, A.J. Yuste-Delgado, R. Viciano-Abad, F. Rivas-Peña, J.M. Perez-Lorenzo</i>	2021

KNOWLEDGE AND SATISFACTION WITH THE APPLICATION OF SELF-EVALUATION AND CO-EVALUATION IN UNIVERSITY STUDIES	2030
<i>A. Penelas-Leguía, P. Cuesta-Valiño, J.M. López-Sanz, E. Nuñez-Barriopedro, C. Loranca-Valle</i>	
NON-STRESSFUL OBSERVATION: MYTH OR REALITY?	2036
<i>T. Iusupova</i>	
USING COMPUTER ALGEBRA SYSTEMS IN TEACHING AND ASSESSMENT IN CALCULUS	2041
<i>P. Carvalho, L. Descalço, H.F. Gonçalves</i>	
ATTENTION SPAN IN CALCULUS CLASSES AND YOGA BREAKS	2049
<i>P. Carvalho, L. Descalço, H.F. Gonçalves</i>	
ECONOMICS IN PRIMARY SCHOOLS – AN EMPIRICAL EXPERIMENT FROM HUNGARY	2056
<i>J. Nagy</i>	
IS IT POSSIBLE TO MAKE LEARNING ENJOYABLE AND MEANINGFUL FOR UNIVERSITY STUDENTS THROUGH GAMIFICATION?	2057
<i>M.J. López-Serrano, A. Batlles-Delafuente, F.J. Castillo-Díaz, J. Torres-Téllez</i>	
NEW ACTIVE METHODOLOGIES TO IMPROVE ACADEMIC PERFORMANCE IN THE UNIVERSITY CONTEXT: THE WOOLAP EXPERIENCE	2062
<i>A. Carrasco-Hernández, G. Lozano-Reina, M.E. Lucas-Pérez, M.F. Madrid-Garre, G. Sánchez-Marín</i>	
ARE YOU OFF TO A GOOD START? THE “JOURNAL OF THE DAY” EXPERIENCE	2063
<i>P. Morando, M.L. Spreafico, G. Turconi</i>	
STRUCTURED READING COURSE: THE IMPACT OF READINESS ASSURANCE ASSIGNMENTS	2072
<i>G. Oskarsson</i>	
KNOWLEDGE AND TEACHING EXPERIMENTS FOR THE FUTURE CREATED IN THE COVID CRISIS	2073
<i>G. Oskarsson, E. Svansson</i>	
MATH INHABITS THE MUSEUM	2074
<i>P. Morando, M.L. Spreafico</i>	
MID-TERM PSYCHOMETRIC OUTCOMES OF HOP! : A FRENCH REEMPLOYMENT PROGRAM	2082
<i>M.P. Celume, M. Erouart, C. Guignard</i>	
A PAPER CALCULATOR: HOW TO FOLD MULTIPLICATIONS AND THEIR PROPERTIES	2090
<i>M.L. Spreafico</i>	
INTERNAL MARKETING IN INTERNATIONAL AND NATIONAL INTERNSHIPS: COMPARISON OF STUDENTS’ PERSPECTIVES AND EXPECTATIONS	2097
<i>T. Pataco, M. Oliveira</i>	
ADAPTIVE FLIPPED CLASSROOM IMPROVES COMPREHENSION AND ASSOCIATED LEARNING OF A BIOMEDICAL RESEARCH TALK IN CELL BIOLOGY	2105
<i>L. Del Campo Milán, A. García-Culebras, C. Bravo-Llatas, E. Lozano Pérez, T. Angulo Carrere, M.P. Álvarez Vázquez</i>	
EVALUATING LEADERSHIP COMPETENCIES AMONG UNDERGRADUATE MANAGEMENT STUDENTS AT LMSU	2114
<i>A. Mirakyan, S. Shchelokova, I. Suslova</i>	
LECTURERS' AND CLIENTS' EXPERIENCES OF USING LEARNING BY DEVELOPING ACTION MODEL WITH PROJECT-BASED COMPUTING SCIENCE STUDY MODULES IN FINLAND AND THE UK	2121
<i>T. Lintilä</i>	
A SYNTHETIC LITERATURE REVIEW ON ANALYTICS TO SUPPORT CURRICULUM IMPROVEMENT IN HIGHER EDUCATION	2130
<i>X.V. Li, M.B. Rosson, B. Hellar</i>	
INVESTIGATING INTENTIONALITY WHEN LEARNING TO TEACH WITH DATA VISUALIZATIONS	2144
<i>A. Mamolo, S. Rodney, N. Ibeh</i>	
VIRTUAL TOURS USING 360° PHOTOS AND 3D MODELS	2145
<i>C. Carbonell-Carrera, J.L. Saorín</i>	
THE GEOGEBRA BOOK: A TOOL TO ENGAGE STUDENTS	2149
<i>M.P. de Sousa Oliveira, A. Hall, N.R.O. Bastos, D. Seabra, E. Assunção, M.J. Barroso</i>	

FLIPPED CLASSROOM METHODOLOGY AND CASE STUDY LEARNING COMPARED TO INSTRUCTIONAL TEACHING: A STUDENT EXPERIENCE EVALUATION	2158
<i>A. Triantafyllidis, M. Deloglou, K. Leftheriotis, G. Sainis, G. Vranopoulos</i>	
INTEGRAL MEDICINE WITH THE BUENAVENTURA FAMILY	2166
<i>M. Alonso-Chamorro</i>	
STUDENT PERFORMANCE IN MODERN PHYSICS IN AN ACTIVE, PARTIALLY-FLIPPED CLASSROOM	2173
<i>S. Yarbrough, R. Lopez</i>	
INTERACTIVE TOOLS FOR ENGINEERING MATHEMATICS LEARNING	2177
<i>E. Salazar Guerrero, E. Ramos, I. Monsivais, G. Sánchez</i>	
INCLUSIVE EDUCATION OF STUDENTS WITH VISUAL IMPAIRMENT THROUGH UNIVERSAL DESIGN FOR LEARNING: LITERATURE REVIEW	2181
<i>S. Ališauskienė, I. Ungeitytė</i>	
HOLISTIC LEARNER DEVELOPMENT IN ENGINEERING EDUCATION	2190
<i>M. El-Sayed</i>	
MERGING GAMIFICATION ELEMENTS WITH A TOUCHSCREEN-BASED APPLICATION TO SUPPORT CHILDREN'S LEARNING OF THE ARABIC LETTER FORMS	2199
<i>A. Al Hejaili, P. Newbury</i>	
GENDER DIFFERENCES IN THE SELF-PERCEPTION OF ANXIETY IN INITIAL ASSESSMENT OF ACROBATIC SKILLS	2208
<i>M.A. Ávalos-Ramos, A. Vidaci, M.T. Pascual-Galiano, L. Vega-Ramírez</i>	
MODULAR APPROACH TO TEACHING SOME COMPUTER SCIENCE CONCEPTS	2212
<i>S. Ramnath, B. Dathan</i>	
THE ADVENT OF WORK-BASED SKILLS AND DISPOSITIONS AS MICROCREDENTIALS FOR DUAL STUDENTS; A DETAILED LOOK AT THE PRACTICAL PHASE	2220
<i>K. Berkling, J. Schaupp, M. Semmler, S. Birkhold, A. Barth, L. Floruß</i>	
PHD-SUPERVISORS EXPERIENCES DURING THE COVID-19 PANDEMIC – A CASE STUDY	2230
<i>R. Krumsvik, L. Jones</i>	
PROMOTING SOCIAL INCLUSION IN SPORTING CONTEXTS: THE DIFFERENT ABILITIES MOTOR PROGRAM	2241
<i>G. Ferrara, F. La Versa</i>	
COMPETITIONS AS REQUIRED ASSESSMENTS IN CYBER SECURITY EDUCATION	2252
<i>C. Anton</i>	
MOTIVATIONAL FACTORS FOR INCREASING DIGITAL COMPETENCE AND INFORMATION LITERACY OF UNIVERSITY STUDENTS	2253
<i>V. Bolek, A. Romanová</i>	
BREAKING BARRIERS: FOSTERING INCLUSION AND ACCESSIBILITY IN EDUCATION AND TOURISM FOR DISABLED STUDENTS	2262
<i>P. Escudeiro, M. Campos</i>	
IREAD: INTERPRETABLE RECOGNITION AND AUTOMATED DECONSTRUCTION OF SEMANTICS IN WRITTEN ENGLISH	2266
<i>A. Satish, A. Bhamare, D. Hoskote, V. Raj, G. Srinivasa</i>	
THE SELF-EFFICACY OF PRE-SERVICE TEACHERS: LESSONS LEARNED DURING THE COVID-19 PANDEMIC IN THE NORTHWEST OF ENGLAND	2276
<i>R. Tynan, A. Mallaburn</i>	
“LEARNING WITH THE SCHOOL LIBRARY”: THE CASE OF THE WEIWE(R)BE PROGRAMME IN THE DIGITAL AND VIRTUAL SCHOOL ECOSYSTEM	2282
<i>T.M. Loureiro Cardoso, E. Ribeiro Mota, A.C. Cruz, F. Pestana</i>	
COMBINING LEARNING MANAGEMENT SYSTEM AND COURSE MANAGEMENT SYSTEM IN ACCOUNTING COURSES IN ONLINE BACHELOR OF SCIENCE IN ACCOUNTING PROGRAM	2288
<i>C. Fajardo</i>	
ENHANCING SCIENCE LEARNING THROUGH EXPERIMENTAL PRACTICE: A GUIDE FROM ITALIAN TEACHERS	2289
<i>I. De Angelis, C. Meneghini, S. Mobilio, A. Brancaccio, A. Conte, C. Mancinelli, E. Borgi, P. De Paolis</i>	
SCAFFOLDING COMPUTATIONAL THINKING THROUGH PROBLEM-BASED LEARNING AND PROJECT-BASED LEARNING: USING PROBLEM TO POWER LEARNING	2294
<i>S.L. Ong, J. Ling, W.L. Chang</i>	

MUSIC MYSTERY: LEARNING MUSIC THEORY THROUGH ESCAPE ROOM PUZZLES <i>K.Y.T. Lim, K.M. Truong, Y. Wu</i>	2303
UTILISING DEEP LEARNING IN SINGAPORE PRIMARY SCHOOL MATHEMATICAL WORD PROBLEMS <i>J. Zeng, J.D. Tan, K.Y.T. Lim</i>	2314
DEVELOPING AN INDICATOR FOR THE STANDARD OF SELF-INSTRUCTIONAL MATERIALS (SIM) IN OPEN AND DISTANCE LEARNING ENVIRONMENTS: AN EXPLORATORY STUDY ON THE RELATIONSHIP BETWEEN COGNITIVE LOAD TYPES AND TASK SETS <i>Z. Hamidon, M.L. Abdullah, H.K. A/P Dharam Singh</i>	2321
MICROWORLDS AS A FIRST STEP IN TEACHING PROGRAMMING <i>V. Gabalová</i>	2329
ICT IN CHILDREN'S COMPULSORY PRE-SCHOOL EDUCATION <i>V. Gabalová, A. Lengyelová, H.I. Vrtoch Oppenberger, V. Stoffová</i>	2334
THE USE OF ROBOTICS IN PRESCHOOL EDUCATION <i>K. Stefanova, G. Atanasova</i>	2339
MEASURING EFFECTIVENESS OF PROMPT-SPECIFIC WRITING GUIDANCE FOR STUDENTS OF LOWER AND MIDDLE GRADES <i>D. Dutta, S. Dixit, P. Gaurangi</i>	2348
THE BENEFITS OF THE EARLY INTRODUCTION OF SEO TO THE NEW DIGITAL GENERATION <i>I. Stefanov, G. Atanasova</i>	2357
ON THE COURSE OF DEVELOPMENT OF STRESS COPING COMPETENCE AMONG PROSPECTIVE NURSES AND ITS SUPPORTING FACTORS - WHAT ROLE DO TRAINING CONDITIONS PLAY? <i>J. Warwas, P. Krebs, S. Seeber, U. Weyland, E. Wittmann</i>	2364
RESTRUCTURING INTERDISCIPLINARY TEACHING MATERIALS: CROSSING OVER FROM NON-STEM TO STEM <i>W.C. Chen</i>	2365
TEACHER REQUIREMENTS FOR A WEBSITE PROVIDING EDUCATIONAL MATERIAL ON INLAND WATERWAY TRANSPORT: EVALUATION USING A USER-CENTERED DESIGN PROCESS <i>A. Haller, S. Dopler, S. Dopler, L.M. Putz-Egger</i>	2366
UTILIZING ACTIVE LEARNING TECHNIQUES TO LESSEN PASSIVITY IN DISTANCE LEARNING DUE TO THE COVID-19 PANDEMIC <i>A. Salem</i>	2372
SOFT SKILLS: EXPERIENCES FROM AN INTERDISCIPLINARY PHD PROGRAM IN INFORMATION SYSTEMS AND WORK INTEGRATED LEARNING <i>C. Gjellebæk, A. Fuentes Martinez</i>	2381
WHAT IS THE RELATIONSHIP BETWEEN SELF-CONCEPT AND SCHOOL PERFORMANCE IN PRIMARY SCHOOL? <i>R. Barroso, D. Dias</i>	2391
LEARNING THROUGH EMOTION: LEARNING BY COMMUNICATING IN EARTH SCIENCES <i>P. Cabello, A. Sáez, M. Guinau, M. Garcés, L. Cabrera, M. López-Blanco, G. Lastras, O. Ferrer, O. Gratacós, X. Delclòs, C. Martín-Closas, J. Sanjuan, I. Cacho, J. Palau, M. Rosell, A. Soler, C. Torrento, P. Piña, P. Granado</i>	2400
LEARNING BY COMMUNICATING IN EARTH SCIENCES: AUDIOVISUAL NOTES IN THE FIELD AND AUDIOVISUAL PRESENTATIONS <i>P. Cabello, A. Sáez, M. Guinau, M. Garcés, L. Cabrera, X. Delclòs, M. López-Blanco, O. Ferrer, O. Gratacós, G. Lastras</i>	2407
DISTANCE LEARNING DURING THE LOCKDOWN: METHODOLOGIES EMPLOYED AND TEACHERS' THOUGHTS <i>G. Cioci</i>	2415
SERVICE LEARNING AND CIRCULAR ECONOMY: TYRE RECOVERY ACTIVITY IN STRATEGIC MANAGEMENT COURSE <i>R. Marcos, D. Ferrández, A. Zaragoza, C. Morón</i>	2426
RESEARCH-BASED LEARNING PROPOSAL FOR THE INTEGRATION OF ELT TEXTILE FIBRE AND RECYCLED STEEL FIBRES IN BUILDING CONSTRUCTION <i>D. Ferrández, M. Alvarez, A. Zaragoza, C. Morón</i>	2433

THE SCHOOL ENGAGEMENT OF SLOVAK ADOLESCENTS IN RELATION TO THEIR SELF-CONCEPT	2439
<i>L. Ďuricová, B. Žitniaková Gurgová</i>	
METaverse, AUGMENTED REALITY, VIRTUAL REALITY, ARTIFICIAL INTELLIGENCE, GAMING AND NFT: PREPARING MARKETING STUDENTS FOR TODAY AND TOMORROW'S NEW DIGITAL REALITIES	2445
<i>N. Sarrašin, M. Zumstein, A. Widmer</i>	
LEARNING LANDSLIDE HAZARDS AT THE UNIVERSITY LEVEL BY COMBINING REAL CASE STUDIES, COLLABORATIVE WORK, AND INNOVATIVE TOOLS	2455
<i>M. Guinau, P. Cabello, E. Playà</i>	
PREDICTING GRADES ON AN EXAM THROUGH GAMIFICATION TECHNIQUES. TO WHAT EXTENT DOES THE PARTICIPATION ON A GAMIFICATION ACTIVITY IMPACT POSITIVELY ON THE MARK OBTAINED IN THE EXAM?	2463
<i>G. Morales-Alonso, A. Urueña, R.E. González, A. Hidalgo</i>	
DECREASING BOREDOM BY FLIPPING A CLASSROOM AT KING SAUD UNIVERSITY	2469
<i>R. Almazyad</i>	
GAME-BASED LEARNING TO ACCELERATE THE ENERGY TRANSITION THROUGH EDUCATIONAL ESCAPE ROOMS	2475
<i>T. Ouariachi, M. Groote, A. Van Houwelingen</i>	
RIGHT TO ONLINE EDUCATION FOR VILLAGE GIRLS IN INDIA	2481
<i>R. Tripathi</i>	
THE DEGREE TO WHICH STUDENTS OF ISLAMIC EDUCATION COURSES USE SOCIAL NETWORKS IN EDUCATION AND THE OBSTACLES TO THEIR USE	2487
<i>M. Almashaleh</i>	
DIGITAL LEARNING COMPETENCIES AMONG FEMALE STUDENTS OF THE LEARNING DISABILITIES DEPARTMENT AT THE ARAB OPEN UNIVERSITY-JORDAN	2496
<i>L. Damrah</i>	
IMPLEMENTATION OF PROBLEM-BASED LEARNING METHODOLOGY IN COMBINATION WITH COOPERATIVE LEARNING IN THE "MATERIALS SCIENCE" SUBJECT	2505
<i>J. Gomez-Caturla, O. Fenollar, R. Tejada-Oliveros, D. Lascano, D. Garcia-Garcia</i>	
PUTTING THE PIECES TOGETHER: COMBINING INTERDEPENDENT SUPPORT STRUCTURES FOR FOSTERING DIGITAL COMPETENCIES OF PRE-SERVICE TEACHERS IN A PROJECT-BASED APPROACH	2510
<i>A. Aumann, L. Heiberger, C. Schmidt, S. Schnebel, H. Weitzel</i>	
IMPROVING SUSTAINABLE MOBILITY, SPATIAL-DATA AND CORE SKILLS THROUGH A SERVICE-LEARNING PROJECT	2517
<i>E. Ortega, B. Martín, M.E. López-Lambas, C. Jorquera, S. González, C. Iglesias Merchan</i>	
THE IMPACT OF NURSING MODELS IN NURSE EDUCATION	2525
<i>U. Kõrgemaa, K. Puusepp</i>	
EXPERIENCES IN EXTERNAL CURRICULAR INTERNSHIPS IN THE DEGREE OF FOOD SCIENCE AND TECHNOLOGY	2531
<i>M.D. Rivero Perez, M. Cavia-Saiz, G. Gerardi, M. Ortega-Heras, I. Gómez, P. Muñiz</i>	
TEAM EFFECTIVENESS IN STUDENTS' TEAM PROJECT	2539
<i>L. Píkl, N. Posarić</i>	
EXPERIENCES IN INNOVATIVE TRAINING TOOLS AT THE SERVICE OF UNIVERSITY LEARNING	2545
<i>G. Gerardi, M. Cavia-Saiz, M.D. Rivero Perez, M. Ortega-Heras, I. Gómez, M.L. González-Sanjósé, P. Muñiz</i>	
PARENTAL BACKGROUND AND CHILDREN'S VIEW OF CIVIC SCIENCE EDUCATION – NARROWING THE EDUCATION GAP BY IDEALISM?	2550
<i>S.B. Linek, A. Schmidt</i>	
PROFESSIONAL DEVELOPMENT AND CREATING CHANGE OF TEACHING BY TAKING PART IN A COURSE IN DIGITAL PEDAGOGY AND DIDACTICS	2559
<i>O.M. Lindgaard</i>	
EDUCATION FOR SUSTAINABLE DEVELOPMENT (ESD) IN PRIMARY SCHOOL – AN EXAMPLE AND INVESTIGATION ON HOW PROSPECTIVE PRIMARY SCHOOL TEACHERS CAN DEAL WITH THE EDUCATIONAL CONCEPT OF ESD	2568
<i>M. Gröger, A. Dorn</i>	

THE ROLE OF E-LEARNING SUPPORT CENTERS IN MOBILE LEARNING AND THE DIGITAL TRANSFORMATION	2574
<i>V. Kasapidis, I.E. Lasica, D. Spanos, S. Pitsikalis, A. Kostas, A. Sofos, C. Vitsilaki</i>	
SYSTEM ANALYSIS OF A MOTORCYCLE SIMULATOR FOR RESEARCH AND EDUCATION PURPOSES	2584
<i>V. Mašek, R. Čermák, D. Fait</i>	
A SERVICE-LEARNING EXPERIENCE FOR FIGHTING FAKE NEWS ABOUT FOOD AND NUTRITION	2592
<i>M.C. Sánchez Mata, M. Cámara, M.C. Matallana, M.L. Pérez Rodríguez, V. Fernández-Ruiz, P. Morales, P. García-Herrera, E. Arranz, S. Fernández-Tomé, R.M. Cámara, M. Ciudad-Mulero, L. Domínguez, E.N. Vega, C. Tamayo-Vives, L. González-Zamorano</i>	
PODCAST AS E-LEARNING METHODOLOGY IN FOOD SCIENCE AND NUTRITION AT UNIVERSITY LEVEL	2598
<i>R.M. Cámara, M. Cámara, M.C. Matallana, M.C. Sánchez-Mata, V. Fernández-Ruiz, P. Morales, P. García-Herrera, E. Arranz, S. Fernández-Tomé, M. Ciudad-Mulero, L. Domínguez, E.N. Vega, C. Tamayo-Vives, T. Jaramillo</i>	
EMPLOYMENT OF UNIVERSITY GRADUATES IN THE SELECTED SERVICE SECTOR IN THE SLOVAK REPUBLIC	2603
<i>M. Strenitzerova, T. Corejova</i>	
PILOT STUDY TO ENHANCE THE CONTENT VALIDITY OF HISTORY TAKING OSCE FOR THE SECOND-YEAR MEDICAL STUDENT	2611
<i>Q.B. Le, T.M.H. Nguyen, H. Ho</i>	
TEAM-BUILDING QUIZ ACTIVITY BASED ON SUSTAINABLE DEVELOPMENT GOALS FOR THE ENVIRONMENTAL SCIENCE CLASSROOM	2617
<i>E. Quintano, R. Esteban</i>	
SOCIAL WORK THROUGH THE AGES: THE CASE STUDY OF PORTUGUESE HIGHER EDUCATION	2623
<i>D. Dias, E. Justino</i>	
HELPING FIRST YEAR COLLEGE STUDENTS TRANSITION TO UNIVERSITY LIFE BY STUDYING THE SCIENCE OF HAPPINESS	2629
<i>E. Pappamihel</i>	
MULTILATERAL TRAINING AS AN INNOVATIVE TEACHING METHOD TO SUPPORT THE RESILIENCE IN PEOPLE WITH DISABILITIES	2634
<i>G. Ferrara, F. La Versa, G. Battaglia</i>	
VIRTUAL REALITY IN PSYCHOTHERAPY TRAINING: SHIFT TOWARDS MODERN TRAINING ENVIRONMENTS	2641
<i>K. Varšová, V. Juřík, O. Janoušek</i>	
A TRAINING PATH FOR UNIVERSITY TUTORS. THE EXPERIENCE OF THE UNIVERSITY OF PADUA (ITALY)	2651
<i>R. Bonelli, A. Bonin, L. Da Re</i>	
LOW-COST CHIP PROGRAMMING FOR TEACHING AND LEARNING DIGITAL SKILLS	2662
<i>N.C. Cruz, J.F. Sanjuan Estrada, M. Lupión, E.M. Garzón, P.M. Ortigosa</i>	
A PILOT STUDY OF VIETNAMESE MEDICAL STUDENTS' SELF-DIRECTED SIMULATION ACTIVITIES WITH CONSTRUCTIVE FEEDBACK	2672
<i>N.L. Ho, H. Ho</i>	
ANALYZING THE IMPACT OF AI-ASSISTED DIAGNOSIS ON MEDICAL STUDENTS' UNDERSTANDING OF NEUROLOGICAL DISORDERS	2673
<i>H. Riasi, F. Nakhaei, A. Rajabpour Sanati, S.H. Sepideh</i>	
THE INTERNSHIP E-DIARY OF FUTURE TEACHERS: A LEARNING TOOL FOR BECOMING A PROFESSIONAL	2674
<i>I. Tandzegolskiene-Bielaglove, N. Ciuciulkiene, A. Lapeniene</i>	
USING STANDARDIZED PATIENTS TO ASSESS COMMUNICATION SKILLS OF MEDICAL STUDENT YEAR 2 IN A CLINICAL SIMULATION ENVIRONMENT IN VIETNAM	2682
<i>N.L. Ho, T.M.H. Nguyen, H. Ho</i>	
DEVELOPING AN AI-BASED PLATFORM FOR PERSONALIZED LEARNING IN NEUROLOGY EDUCATION FOR MEDICAL STUDENTS	2686
<i>A. Rajabpour Sanati, H. Riasi, F. Nakhaei, S.H. Sepideh</i>	
VIDEO REPORTING FOR THE DEVELOPMENT OF MEDIA LITERACY IN TEACHER EDUCATION	2687
<i>N. Ciuciulkiene, I. Tandzegolskiene-Bielaglove</i>	

ARTIFICIAL INTELLIGENCE APPLIED TO TEACHING	2692
<i>J.F. Sanjuan Estrada, N.C. Cruz, M. Lupión, E.M. Garzón, P.M. Ortigosa</i>	
PROMOTING ACTIVE CITIZENSHIP THROUGH CIVIC EDUCATION AND ACTIVE ONLINE PARTICIPATION OF YOUTH ROLE MODELS: THE CASE OF ACTION PROJECT	2702
<i>S. Tagmat, T. Arsova-Netzelmann, K. Aue</i>	
TEAMWORK USING COLAB NOTEBOOKS IN THE CLOUD	2710
<i>J.F. Sanjuan Estrada, N.C. Cruz, M. Lupión, E.M. Garzón, P.M. Ortigosa</i>	
A VIRTUAL REALITY TRAINING PLATFORM FOR CBRN OPERATORS IN A DECONTAMINATION PROCEDURE	2719
<i>F. De Lorenzis, M. Nadalin, F. Scarrone, M. Migliorini, F. Lamberti</i>	
DESIGN OF THE MASTER DEGREE IN HUMAN NUTRITION BLOG (UNIVERSITY OF GRANADA) AS A VIRTUAL TOOL FOR ACTIVE LEARNING AND KNOWLEDGE TRANSFER PROMOTION	2728
<i>T. Nestares, R. Martín-Masot, J.L. Quiles, M. López-Frías, V. Aparicio, J. Mora, F.J. Amaro-Gahete</i>	
TAKE A LOOK AT MODERN PHYSICS: VIRTUAL REALITY FOR SCHOOLS TO EXPLORE PARTICLE PHYSICS	2733
<i>A. Budano, I. De Angelis, A. Postiglione, R. Antonietti, C. Martellini, D. Tagnani</i>	
TEACHING QUALITY ASSURANCE MODEL	2738
<i>D. Zhukova, K. Tishkina</i>	
ON MACHINE LEARNING SUPPORTED CURRICULUM DESIGN AND DEVELOPMENT	2739
<i>N. Bijedić, D. Gašpar, A. Joldić</i>	
UNDERSTANDING OF WORKPLACE SUPERVISION IN VOCATIONAL AND HIGHER EDUCATION. THE CASE OF HOSPITALITY STUDIES	2744
<i>A. Roosipõld, M. Kurvits, K. Loogma</i>	
ORGANISATION OF INCLUSIVE LEARNING ENVIRONMENT: CASES OF THE VISUALLY IMPAIRED	2750
<i>I. Dansevičiūtė, A. Lapėnienė</i>	
DOODLING AND ALGORITHMICS	2757
<i>P.R. Osztián, Z. Kátai, E. Osztián</i>	
EXAMINING THE STUDENTS' STATISTICAL LITERACY CONCERNING THE REPRESENTATION AND ANALYSIS OF THE DATA	2767
<i>S.E. Elma, M. Işıksal-Bostan</i>	
TAILORING A UNIVERSITY EFL COURSE: TEACHING METHODS AND STUDENTS' PERSPECTIVES	2774
<i>A. Vlasova</i>	
DIGITAL SKILLS IN AIR TRANSPORT	2781
<i>F. Pérez Moreno, R.M. Arnaldo Valdés, S.E. Zaharia, R. Delgado-Aguilera Jurado, V.F. Gómez Comendador, A.P. Pavel</i>	
THE IMPORTANCE OF ECOLOGY FIELDWORK IN ENGLISH SECONDARY SCHOOL CURRICULA	2789
<i>R. Tynan</i>	
HOW AND WHY DOES THE DEMAND OF AN EXAM QUESTION CHANGE IF WE MANIPULATE IT SO IT CAN BE AUTO-MARKED?	2798
<i>C. Green</i>	
STUDENT LEARNING EXPERIENCE DURING THE COVID-19 PANDEMIC – IMPLICATIONS FOR LEARNING DESIGN	2799
<i>O. Lungu, D. Zhang</i>	
STUDENT AND INSTRUCTOR VIEWS OF MACHINE TRANSLATION IN TRANSNATIONAL HIGHER EDUCATION	2808
<i>M. High, A. McIntosh, S. Li, Y. Ji</i>	
FRIENDSHIPS ON DEMAND? THE USE OF SOCIAL MEDIA BY MIDDLE SCHOOL YOUNGSTERS IN MEXICO CITY	2809
<i>P. Baptista-Lucio, T. Nicolás-Gavilán</i>	
PROBLEMS AND POSSIBILITIES WITH ONLINE EXAMINATION PROCTORING: STATE OF THE RESEARCH	2816
<i>D. Woldeab, T. Brothen</i>	
MAKE LEARNING FUN: IMMERSIVE LEARNING ENVIRONMENT FOR THE TRAINING OF EDUCATORS SPECIALIZED IN LEARNING DISORDERS	2817
<i>C. Gaggioli, S. Casale, M. Ranieri</i>	

AN ALL-IN-ONE WEB-BASED E-RADIO PLATFORM TO SUPPORT COLLEGE RADIO STATIONS	2827
<i>N. Pylarinos, E. Papaioannou, C. Kaklamanis</i>	
TECHNOLOGY ENHANCED STEM EDUCATION FOR CHILDREN WHO LIVE IN URBAN DISADVANTAGED AREAS: AN IRISH CASE STUDY	2836
<i>A. Tamtam, G.M. Muntean, S. Sharma, C. Hava Muntean</i>	
MULTIMEDIA-ENHANCED ENGLISH PRESENTATION TRAINING WITH THE AUDIENCE IN MIND	2844
<i>W.C. Chen</i>	
IMPROVING OPPORTUNITIES IN ENGINEERING THROUGH A DEGREE APPRENTICESHIP PROGRAMME IN NEW ZEALAND	2849
<i>J. Mackay, H. Cadzow</i>	
REVOLUTIONIZING SPATIAL LEARNING: UNLOCKING THE POTENTIAL OF 3D MODELING IN TEACHING 2D PLAN READING	2855
<i>J. Kang, N. Sadeghi</i>	
ENHANCING EMPATHIC UNDERSTANDING OF HOSTILE OTHERS IN PREPARATION OF PERSUASIVE PRESENTATION THROUGH ENACTING HOSTILE'S LIFE EPISODE	2861
<i>H. Suzuki, H. Funaoi, Y. Kubota, T. Mochizuki, H. Kato</i>	
THE LEARNING EXPERIENCE OF CHINESE POSTGRADUATE STUDENTS IN A LITHUANIAN UNIVERSITY: THE ROLE OF TEACHERS	2870
<i>J. Lasauskiene</i>	
RESEARCH ON THE SYMPTOMS OF CIVILIZATIONAL STRESS AMONG UNIVERSITY STUDENTS DURING THE COVID-19 PANDEMIC, THE WAR IN UKRAINE AND THE ONGOING ECONOMIC CRISIS IN THE EUROPEAN REGION	2878
<i>V. Strnadová, P. Voborník, K. Provazníková</i>	
DEVELOPMENT AND EVALUATION OF A MULTIMODAL DIDACTIC CONCEPT FOR TEACHING EMERGING TRENDS IN BUSINESS INFORMATICS	2889
<i>A. Rottensteiner, C. Ploder, R. Bernsteiner, T. Dilger</i>	
DEVELOPING INSIGHTFUL AND TECHNOLOGY ENHANCED INTERNSHIP IN DIGITAL MARKETING CONTEXT	2894
<i>R. Ahlgren, H. Neuvonen</i>	
TEACHING EMBODIMENT DESIGN RULES FOR 3D PRINTING THROUGH PROJECT-BASED LEARNING	2899
<i>T. Sauer, M. Nutzmann, M. Vofß, H. Bozkurt</i>	
A CASE STUDY ON THE USE OF DIGITAL SIGNATURES AND THE RELEVANCE OF CERTIFYING ONLINE CONTENT FOR EDUCATION	2904
<i>M. Marian, I. Borcoşi, C.A. Borcosi, D. Popescu, A. Cusman, D. Ionică</i>	
PREDICTIVE MODELING AND ANALYTICS OF EDUCATIONAL DATABASES	2914
<i>D. Višnjić, M. Cerjan, D. Oreški</i>	
SATISFACTION AND LEARNING AFTER THE APPLICATION OF STUDENT-CENTRED H5P ACTIVITIES	2922
<i>C. López-Gutiérrez, A. Pérez</i>	
DEVELOPING GLOBAL EMPLOYABILITY SKILLS VIA STUDENTS' COLLABORATIVE ONLINE INTERNATIONAL LEARNING (COIL) ACTIVITIES – A CASE STUDY OF FINLAND AND UK COLLABORATION TO SHARE BEST PRACTICE	2923
<i>N. Ivarsson-Keng, M. Crossan</i>	
KNOWLEDGE AND INNOVATION MANAGEMENT	2927
<i>T. Limba, L. Lelešienė, S. Novogreckas, A. Kowalewska</i>	
VALUES AND EMOTIONAL INTELLIGENCE IN PSYCHOLOGY STUDENTS: MANIFESTATION OF THE RELATION	2936
<i>G. Kozhukhar, A. Belousova, E. Breus</i>	
HIGH SCHOOL AND HIGHER EDUCATION STUDENTS' PERSPECTIVES ABOUT RELEVANT SKILLS FOR A SUCCESSFUL TRANSITION TO HIGHER EDUCATION	2943
<i>M. Lara, J. Brouwer</i>	
ASPECTS AND ROLES OF DIFFERENT PROGRAMING LANGUAGES AND THEIR USE IN STEM EDUCATION	2944
<i>I. Srpak, L. Havaš, T. Horvat, E. Tomičić</i>	
USING OF MACHINE LEARNING METHODS IN LABORATORY FOR THE RENEWABLE ENERGY SOURCES ON THE UNIVERSITY NORTH	2954
<i>T. Horvat, L. Havaš, J. Srpak, V. Šac</i>	

RETHINKING AND REDESIGNING TEACHING METHODS IN POST-PANDEMIC ENVIRONMENTS	2962
<i>E. Dumić, E. Tomičić, D. Srpak</i>	
ADAPTING UNIVERSITY CURRICULUM TO MEET THE DEMANDS OF THE DIGITAL MARKETING INDUSTRY	2970
<i>R. Bílková, M. Kašparová</i>	
IDENTIFYING THE COMPETENCIES OF BUSINESS STUDENTS TO CREATE EFFECTIVE MULTIMEDIA CONTENT BY USE OF ASSOCIATION RULES	2978
<i>P. Petr, M. Kašparová, R. Bílková</i>	
DEBATE AS AN ASSESSMENT TOOL IN HEALTHCARE ETHICS MODULE	2987
<i>E. Naser</i>	
DESIGN THINKING IN TEACHER TRAINING USING THE EXAMPLE OF MULTILINGUAL DIDACTICS	2991
<i>N. Naugk, P. Kofahl</i>	
IMPLEMENTATION OF THE CONSTRUCTIVE ALIGNMENT OF THE TEACHING PROGRAM AND AWARENESS OF THE ENVIRONMENT FOR LEARNING - ACESIQ PROJECT	2999
<i>J.B. Giménez, L. Pastor, B. Solsona, R. Sánchez-Tovar, M. Izquierdo, J. Ribes, A. Robles, M.V. Ruano, A. Jiménez, J. Carrillo, N. Martí, R. Fernández, A. Cháfer, J. Badia, A. García, J.M. Peñarrocha, R. Jiménez, P. San Valero</i>	
QUALITY ASSURANCE DURING THE PREPARATION AND PERFORMANCE OF LABORATORY EXERCISES	3010
<i>J. Nađ, A. Šinjori, J. Srpak, D. Srpak</i>	
THE SOCIAL WORK STUDENTS' PERCEPTIONS OF FACE-TO-FACE LEARNING VS. ONLINE LEARNING IN WESTERN ROMANIA	3020
<i>C. Feher, R. Ungureanu, M. Tomita</i>	
ENGLISH PRONUNCIATION IN THE ERA OF GLOBALISATION: TO TEACH OR NOT TO TEACH?	3021
<i>A. Malinka</i>	
THE MOTIVATION OF VOCATIONAL TRAINING STUDENTS: A KEY ELEMENT IN THE PREVENTION OF DROPOUT	3029
<i>C. Pinya-Medina, C. Vecina-Merchante, M.R. Ferreira Puertas, F. Salvà-Mut, A. García-De Olaya, E. Quintana-Murci, O. Álvarez-García, M.F. Oliver-Trobat, M.T. Adame-Obrador</i>	
POSSIBLE DIFFICULTIES IN CHILD DEVELOPMENT BEFORE ENTERING KINDERGARTEN	3034
<i>M. Popelková, E. Jurišová, L. Ráczová</i>	
DEVELOPMENT AND EVALUATION OF PROFESSIONAL SKILLS ASSOCIATED WITH THE BASIC DOCUMENTS ON ENERGY SAVING AND HEALTH OF THE TECHNICAL BUILDING CODE ON THE SUBJECT "BASIC MECHANICAL INSTALLATIONS"	3040
<i>L.M. López-Ochoa, J. Las-Heras-Casas, C. García-Lozano, L.M. López-González</i>	
HOW CAN THE TEACHING E-MENTORING PROCESS MODEL HELP ADDRESS THE VARIOUS CHALLENGES HIGHER EDUCATION EDUCATORS FACE?	3046
<i>O. Lahav, N. Katz</i>	
STUDENTS' PERCEPTION OF TEACHING SKILLS IN EARLY CHILDHOOD EDUCATION	3047
<i>C. Pinya-Medina, M.M. Oliver-Barceló, V. Morcillo-Loro, B. Cabrer-Servera, M.J. Ferrer-Ribot</i>	
PARTICIPATION FROM THE BEGINNING: CONCEPTION, IMPLEMENTATION, OUTPUT AND EVALUATION OF A WORKSHOP FOR THE TARGET GROUP-SPECIFIC DEVELOPMENT OF A SERIOUS GAME	3054
<i>M. Verhovnik-Heinze, J. Griinkorn</i>	
HOW TO TRANSFER THE APPLIED RESEARCH DEVELOPED AT THE UNIVERSITY TO THE SCIENTIFIC COMMUNITY, RESPONSIBLE AUTHORITIES INVOLVED, UNIVERSITY STUDENTS AND SOCIETY	3062
<i>D. Fernández-Nóvoa, O. García-Feal, J. González-Cao, X. Costoya, A.J.C. Crespo, M. de Castro, C. Ruiz Del Portal, M. Gómez-Gesteira</i>	
THE ROLE OF EMOTIONAL INTELLIGENCE WITHIN THE ENTREPRENEURIAL INTENTION OF GRADUATE STUDENTS: INFORMING CURRICULUM IN PRIVATE HIGHER EDUCATION	3070
<i>R. Swanzen, C. Botha</i>	
TEACHER ETHICS TRAINING FOR LEARNERS WITH SPECIAL EDUCATIONAL NEEDS	3080
<i>S. Bester</i>	

EXPLORING THE IMPACT OF THE PANDEMIC ON INTEREST IN TEACHING AS A CAREER PATH <i>T. Bidjerano</i>	3081
DEVELOPMENT AND APPLICATION OF TUTORING SOLUTIONS USING CHATBOOT SOFTWARE IN MATHEMATICS TEACHING <i>C. Lucas, J. Becker, J. Lourenço, J. Morais</i>	3087
SMALL PRIVATE ONLINE COURSES AND THEIR IMPORTANCE IN THE EDUCATION OF SMALL AND MEDIUM ENTERPRISES <i>E. Kicova, O. Ponisciakova, Z. Rosnerova</i>	3092
WEB APPLICATIONS IN EDUCATION: CONTRIBUTIONS TO STATISTICAL LEARNING <i>M.M. Pinheiro, V. Santos</i>	3100
DO UNIVERSITY FACULTY MEMBERS OBSERVE UNDERGRADUATE STUDENTS' DISHONEST BEHAVIORS DURING EXAMS? <i>N. Alcalde-Fradejas, M. Marzo-Navarro, M. Ramírez-Alesón</i>	3106
COMPUTATIONAL THINKING AS AN EDUCATIONAL TREND IN EDUCATION: SOME REFLECTIONS <i>M.M. Pinheiro, C. Albuquerque, F.T. Moreira, J.V. Torres, J.M. Sousa</i>	3113
MOOC PLATFORMS: MODERN DISTANCE LEARNING <i>J. Fabus, M. Garbarova, I. Kremenova, L. Vartiak</i>	3122
HEALTHCARE CURRICULA IMPLEMENTING CHATBOTS - NEEDS AND ROLE <i>S. Konstantinidis, M. Pears, S. Reppou, N. Stathakou, E. Schiza, E. Gkoukoudi, K. Karlgren, C. Pattichis, P. Bamidis, H. Wharrad</i>	3131
TEACHER PROFESSIONAL DEVELOPMENT PROGRAMMES: DIGITAL COMPETENCIES AND BEST PRACTICE FOR THE MODERN CLASSROOM <i>O. Naidoo, G. Lautenbach</i>	3132
INNOVATIVE APPROACHES IN LIFE-LONG LEARNING IN OFFSHORE RENEWABLE ENERGIES - FLORES PROJECT <i>V. Diaz-Casas, L. Santiago Caamaño, S. Ferreiro Gonzalez, A. Munin Doce, M. Miguez González</i>	3143
ANALYSIS OF GENDER DIFFERENCES IN THE SELF-PERCEPTION OF ENGINEERING STUDENTS ABOUT GAMIFICATION AS AN EDUCATIONAL STRATEGY <i>S. Bueno, M.D. La Rubia, J.M. Romero-García, L. Pérez-Villarejo, D. Eliche-Quesada, I. Romero-Pulido, S. Martínez-Martínez, A. Galán-Martín</i>	3144
BEST PRACTICES AND CHALLENGES IN A DEVELOPMENT ASSISTANCE PROJECT: A CASE STUDY OF TECHNICAL VOCATIONAL EDUCATION TRAINING PROGRAM IN MARAWI, PHILIPPINES <i>E. Amoloza</i>	3151
SCIENCE AND SCIENTISTS FROM CHILDREN'S POINT OF VIEW <i>G. D'Addezio, N. Besker</i>	3159
EMDIGITAL INTO ACTION: AN OVERVIEW OF THE TOOL FOR ASSESSING THE DIGITAL ENTREPRENEURIAL COMPETENCES OF UNIVERSITY STUDENTS <i>V. Simovic, M. Lazic, M. Safi, B. Alkhalifah, H. Sarhan</i>	3165
ARE THE TRENDS OF EDUCATION AND TRAINING SYSTEMS IN EUROPEAN COUNTRIES IMPROVING AND CONVERGING? <i>A. Camanho, D. Stumbriene, F. Barbosa, A. Jakaitiene</i>	3172
SIMPLE REGISTER TRANSFER SIMULATOR FOR TEACHING COMPUTER ARCHITECTURE <i>S. Kristofik, O. Urban</i>	3173
A NEW MATHEMATICAL DEVELOPMENT TO MODEL AND ADJUST INDIVIDUAL LEARNING <i>D. Crous Mayné, E. Calle Ortega, J. Batlle Grabulosa</i>	3182
CO-CREATION OF A VIRTUAL INTERACTIVE TEACHING PACKAGE FOR AUDITORS OF HEALTHCARE PLACEMENTS – TOWARDS ASSURANCE OF QUALITY OF HEALTH CARE TRAINEESHIPS <i>S. Konstantinidis, Z. Tilley, S. Ko, J. Henderson, S. Cunningham, P. Hodge, A. Stefanowicz-Kocol, A. Jankowicz-Szymanska, A. Grochowska, M. Kołpa, M. Lillo-Crespo, J. Riquelme Galindo, M.P. Catala Rodriguez, V. Höjjer-Brear, M. Törne, S. Feliciano, A. Camilleri, I. Poultourtzidis, F. Papamalis, D. Spachos, N. Athanasopoulos, M. Nikolaidou, P. Bamidis, C. Hall</i>	3189
THE DIGITAL SKILLS OF TEACHER TRAINERS AT A HIGHER EDUCATION INSTITUTION IN PORTUGAL <i>D. Mascarenhas, U. Prates, M. Cruz</i>	3196

THE TANGRAM STUDY FOR MIXED REALITY AFFORDANCE COMPARISON <i>L. Sommaruga, N. Catenazzi, C. Locatelli</i>	3205
EXPERIENCES, BARRIERS AND SUPPORTS IN DIGITAL ASSESSMENT ACROSS 4 EUROPEAN EDUCATIONAL INSTITUTIONS <i>N. Biega, D. Kilanska, S. Hourican, D. Lehwaldt</i>	3213
DESIGN, IMPLEMENTATION AND ASSESSMENT OF A REINFORCEMENT ACTIVITY IN A MACHINE DESIGN SUBJECT <i>S. Gregori, J.M. Navarro, E.M. Sánchez-Orgaz</i>	3214
INTERACTIVE PHYSICS DEMONSTRATIONS FOR ACTIVE LEARNING <i>Y. Andrew, V. Tymms</i>	3221
EXPERIENCES IN DESIGNING THRESHOLD MATH CONCEPTS QUIZ FOR A MATERIALS SCIENCE COURSE <i>A.I. Pruna, F. Salas, A. Vicente Escuder, E.M. Sánchez-Orgaz, S. Martínez-Sanchis</i>	3231
THE SIGNIFICANCE AND GOOD PRACTICE OF APPLYING CREATIVE LEARNING METHODS IN DEVELOPING THE COMPETENCIES OF MILITARY OFFICERS AND SHAPING MILITARY CREATIVITY <i>V. Giedraitytė, R. Kazlauskaitė Markelienė</i>	3237
IMPROVING THE ABILITY OF UNDERGRADUATE ENGINEERING AND SCIENCE STUDENTS TO PREPARE TECHNICAL REPORTS BY MEANS OF A PEER REVIEW METHODOLOGY <i>J. García-Cañadas, F. Romero-Gavilán</i>	3238
THE USE OF GEOGRAPHIC INFORMATION SYSTEMS WITH OPEN-SOURCE SOFTWARE FOR TEACHING LANDSCAPE PLANNING IN DISTANCE EDUCATION ENVIRONMENTS <i>J. Velázquez Saornil, F. Herráez, A. Hernando Gallego, J.D. Araya, A. López</i>	3243
MOOC PLATFORMS AS AN E-LEARNING PHENOMENON <i>J. Fabus, M. Garbarova, I. Kremenova, L. Vartiak</i>	3249
SMARTERP EDUCATIONAL: A VIRTUAL LABORATORY TO TRAIN SIMULTANEOUS INTERPRETING <i>C. Arriaga Prieto, I. Villamayor, A. Serrano Leiva, A. Cascallana Rodríguez, S. Rodríguez, A. Pozo Huertas, A. Alonso González</i>	3257
VIEW AND CHOICE - CARD GAME ON THE STATE OF MATTER WITH AUGMENTED REALITY <i>S. Syskowski, J. Huwer</i>	3265
MORE ACCESSIBLE AND INCLUSIVE LAB EXPERIMENTS THROUGH EASY READING AND PICTOGRAMS <i>A. Herrero, C. Reguera, S. Sanllorente, S. Palmero, M.J. Arteaga, L. Aparicio, D.C. Castellano</i>	3272
COMPILATION AND ANALYSIS OF PHYSICS AND CHEMISTRY SIMULATORS AND VIRTUAL LABORATORIES FOR SECONDARY EDUCATION <i>J. Herrera Vergara, J. Cuadros Margarit, V. Serrano Molinero</i>	3277
THE EFFECT OF REVIEWING FORMATIVE OSCE VIDEO RECORDINGS ON THE MEDICAL STUDENT'S PERFORMANCE IN SUMMATIVE OSCE ASSESSMENT <i>T. Pham</i>	3278
PEER MENTORING AND ACADEMIC ASSESSMENT <i>P. Sposetti, G. Szpunar, MG. Rionero, E. Mattarelli, G. Vincenti, S. Gabrielli</i>	3279
EMPLOYMENT RATE AND OCCUPATIONAL DESTINATION FOR UPV/EHU DOCTORS <i>G. Barandika, E. Portillo, E. Simon, O. González-Abrisketa</i>	3286
EVALUATING STUDENT INTERNSHIP EXPERIENCE AND ITS IMPACT ON CURRICULUM IMPROVEMENTS: A CASE STUDY FOR SOFTWARE ENGINEERING STUDENTS <i>Y.G. Sahin, U. Celikkan</i>	3292
OCCUPATIONAL DESTINATION OF GRADUATES IN CHEMISTRY AT THE UPV/EHU: WOMEN-FOCUSED EVOLUTION OVER THE LAST 10 YEARS <i>G. Barandika</i>	3301
SIMULATION-BASED EDUCATION: A SOLUTION TO CHALLENGES ENCOUNTERED WITH CLINICAL TEACHING IN NURSING AND MIDWIFERY EDUCATION IN MALAWI <i>G. Mwalabu, A. Msosa, I. Tjoflåt, P. Mapulanga, M. Msiska</i>	3309
JUPITER (AND ITS MOONS) IN A ROOM <i>L. Giacomini, I. De Angelis, F. Aloisi, F. Duras</i>	3310

THE QUANTUM FOR ALL PROJECT: RATIONALE AND OVERVIEW <i>R. Lopez, K. Matsler</i>	3311
FROM LEARNING PATHWAYS TO CAREER: BUILDING E-PORTFOLIOS IN HIGHER EDUCATION TO DEMONSTRATE SKILLS ACQUISITION FOR CAREER READINESS <i>B.S. Todeschini, E. Sollberger</i>	3317
EXPERIENTIAL LEARNING APPROACHES IN ENTREPRENEURSHIP AND ENTERPRISE EDUCATION <i>A. Frost</i>	3327
THE QUANTUM FOR ALL PROJECT: TEACHER PROFESSIONAL DEVELOPMENT MODEL <i>K. Matsler, R. Lopez</i>	3337
THE RELATIONSHIP BETWEEN SOCIO-DEMOGRAPHIC CHARACTERISTICS OF ADULT STUDENTS AND THEIR ENGAGEMENT IN ONLINE-EDUCATION <i>A. Grishina</i>	3346
TRANSVERSAL COMPETENCES: ACCOMPANIMENT AND PROFESSIONAL GUIDANCE IN THE SIGNALS AND SYSTEMS COURSE OF TELECOMMUNICATIONS ENGINEERING <i>A. Carrión, L. Pereira, J.A. Álvarez, J. Gosálbez, R. Miralles</i>	3352
TRAINING SOCIAL EDUCATORS' PROFILES IN HIGHER EDUCATION IN ITALY: LEARNING OBJECTIVES AND COMPETENCES <i>M.G. Rionero</i>	3361
SHARING EDUCATIONAL RESOURCES THROUGH A WEBSITE TO HELP RIDE THE WAVES OF THE PANDEMIC <i>R. Fernández-Flores, B. Hernández-Morales</i>	3366
ADVOCATING FOR EQUITABLE EDUCATION: TRANSFORMING INEQUITABLE EDUCATIONAL PRACTICES TO SERVE DIVERSE LEARNERS <i>J. Collazo</i>	3371
DEVELOPMENT OF SOCIAL RESPONSIBILITY AND OTHER 21ST CENTURY COMPETENCES OF UNIVERSITY STUDENTS VIA A SERVICE-LEARNING EDUCATIONAL STRATEGY <i>D. Hanesová, L. Rovanová, L. Fecková</i>	3372
PARENTING STYLE, TEACHING STYLE AND TEACHER ENTHUSIASM: DO THESE VARIABLES PREDICT THE CHILDREN'S NEEDS FOR AUTONOMY, COMPETENCE AND RELATEDNESS? <i>A. Mărincaș, S. Trif, N.A. Opre</i>	3378
TECHNOLOGY-RELATED ETHICAL ISSUES IN FOREIGN LANGUAGE LEARNING <i>I.A. Drobot</i>	3386
MUSIC AND NEW TECHNOLOGIES TO SUPPORT THE LEARNING OF DYSLEXIC PRIMARY SCHOOL STUDENTS: RESULTS OF A SCOPING REVIEW <i>A. Di Paolo, M.D. Todino</i>	3393
OPENNESS TO LINGUISTIC AND VALUE DIVERSITY AS A KEY FACTOR IN THE DEVELOPMENT OF A LEARNING COMMUNITY <i>T. Sbardella, C. Calicchio</i>	3401
MIND MAP AS A CREATIVE TOOL IN THE ADVERTISING CONTEXT: A TEACHING METHODOLOGY <i>A.C. Boechat, N. Baptista</i>	3405
LET'S LEARN WITH ASTROEDU! <i>L. Giacomini, E. Gomez, G. Mazzolo, G. Sanderson</i>	3412
FACULTY PERCEPTIONS AND EXPERIENCES OF ANTI-OPPRESSION PEDAGOGY IN US SCHOOLS OF PUBLIC HEALTH <i>A. Aqil, M. Malik, K. Jacques, K. Lee, C. Kennedy, G. Mooney, D. German</i>	3413
DEVELOPING MULTIMODAL ASSESSMENT TYPES FOR TECHNOLOGY-ENHANCED AND INCLUSIVE LEARNING <i>L. Barrio-Vilar</i>	3414
CULTIVATING ANTI-OPPRESSIVE LEARNING COMMUNITIES (CAOLC): TRANSFORMING PEDAGOGY USING THE PRINCIPLES OF ANTI-OPPRESSION <i>A. Aqil, K. Jacques, G. Mooney, K. Lee</i>	3415
BLENDED LEARNING READINESS IN A MEXICAN HIGHER EDUCATION INSTITUTION: A PILOT STUDY <i>E. Peñalosa-Castro, R. García-Ros, F. Pérez-González, P. Hernández-Cerrito</i>	3416

THE EDUCATIONAL VALUE OF REAL-LIFE SCENARIOS: EXPERIENTIAL LEARNING AT ART FAIRS	3430
<i>A. Vico-Belmonte, D. Benito-Osorio, A. Martinez-Fernandez, J. Palomo-Martinez</i>	
THE KEEP IN SCHOOL SHAPE PROGRAM: ENGAGING STUDENTS IN REVIEW ACTIVITIES OVER ACADEMIC BREAKS	3436
<i>C. van de Sande, J. Turner, J.E. Vandenberg, H. Allen, E. Castro, S. Chacon, A. Jenkins, A. Mcinnis, M. Morton, L. Reichert, H. Shaw, V. Valia</i>	
THE KEEP IN SCHOOL SHAPE PROGRAM: NUDGING STUDENTS TO REVIEW OVER ACADEMIC BREAKS AND ADOPT A GROWTH MINDSET	3446
<i>C. van de Sande, J. Turner, J.E. Vandenberg, H. Allen, E. Castro, S. Chacon, A. Jenkins, A. Mcinnis, M. Morton, L. Reichert, H. Shaw, V. Valia</i>	
JOURNALISM AS A TRANSVERSAL AXIS IN THE TRAINING OF COMMUNICATION PROFESSIONALS IN MEXICO	3454
<i>C. García-Hernández</i>	
TUTORING HIGHER EDUCATION MATHEMATICS STUDENTS THROUGH INTELLIGENT LEARNING SOFTWARE	3462
<i>J. Lourenço, C. Lucas, J. Morais, J. Becker, A. Silva</i>	
THE CHANGE IN THE POLICY OF THE CENTER'S SUPPORT SYSTEM FOR STUDENTS WITH LEARNING DISABILITIES AND/OR ATTENTION DEFICIT DISORDERS (ADHD) IN THE DAYS OF COVID-19	3468
<i>A. Frishman Shitrit, O. Tykochinsky</i>	
MAXIMISING THE POTENTIAL OF LABORATORIES TO DELIVER TRANSFORMATIVE ACTIVE LEARNING OPPORTUNITIES VIA EFFECTIVE USE OF LEARNING MANAGEMENT SYSTEMS	3469
<i>P. Holland, L. Mason</i>	
CROSS-CULTURAL AND DISCIPLINARY DESIGN WORKSHOPS: SHARING NEW PUBLIC SPACE ACTIVATION APPROACHES	3470
<i>L.M.F. Fabris, R.M. Balzarotti, A. Ros Campos, G. Semprebon, M. Twardowski</i>	
ORGANIZING A WRITING SESSION FOR C2 STUDENTS	3477
<i>A. Sigaev</i>	
TEACHING ARCHITECTURE DESIGN: EXPERIMENTS WITH COLOR AND LIGHT	3483
<i>D.S. Opincariu, L. Patachi, A. Pop, L. Vartic</i>	
PERSONALITY TRAITS OF MEN AND WOMEN AND PROCRASTINATION LEVEL	3492
<i>M. Berinšterová, M. Bozogánová, T. Pethő</i>	
CHALLENGES OF SECOND LANGUAGE ACQUISITION IN PRIMARY EDUCATION IN AN INTERNATIONAL CONTEXT	3499
<i>L. Šimanová</i>	
PRACTICAL ACTIVITIES IN ARCHITECTURAL TRAINING: SURVEYING HERITAGE BUILDINGS	3508
<i>D.S. Opincariu, L. Patachi, A. Pop, L. Vartic</i>	
USING COOPERATIVE LEARNING TO ENHANCE PROGRAMMING SKILLS IN INDUSTRIAL AUTOMATION DESIGN COURSES	3513
<i>R.P. Neco, J.R. Pérez Beltrán</i>	
FACTORS AND BARRIERS IN THE STRATEGIC MANAGEMENT OF UNIVERSITY COOPERATION WITH THE BUSINESS ENVIRONMENT CASE STUDY	3522
<i>T. Corejova, M. Strenitzerova</i>	
'WALKING IN SOMEONE ELSE'S SHOES': REDUCING AGGRESSION IN A ROMANIAN DELINQUENT POPULATION THROUGH ACTIVE LEARNING TECHNIQUES	3528
<i>L.M. Sabareanu, C.E. Oprea, V. Gonța</i>	
IMPROVING LEARNING OF COMPUTER PROGRAMMING BASICS IN SECONDARY EDUCATION THROUGH COLLABORATIVE METHODS	3535
<i>J.R. Pérez Beltrán, R.P. Neco</i>	
COMPUTATIONAL THINKING: CONTRIBUTIONS TO BEST IN-SERVICE PRACTICES	3541
<i>V. Santos, M.M. Pinheiro</i>	
PERCEPTION OF SOCIAL DEVIANC IN A ROMANIAN DELINQUENT POPULATION: A QUALITATIVE STUDY	3547
<i>L.M. Sabareanu, C.E. Oprea, M. Virlean</i>	
PEDAGOGICAL INTERACTION MODEL FOR DEVELOPMENT OF STUDENTS' SELF-DIRECTED LEARNING SKILLS IN PRIMARY SCHOOL (CLASS 1-3) – APPROBATION AND OUTCOME ANALYSIS	3552
<i>I. Pelněna, A. Medveckis</i>	

APPLIED THEATRE METHODS AS A PROMISING INNOVATION IN A RESEARCH FIELD <i>R.A. Medeišienė</i>	3562
DESIGNING AUTHENTIC ONLINE PROJECT-BASED LEARNING DURING CRISIS USING THE UDL FRAMEWORK: THE DISTANCE LEARNING SURVIVAL GUIDE <i>J. Collazo</i>	3567
AI-CHATBOT-INTEGRATION IN CAMPUS-MANAGEMENT-SYSTEMS <i>S. Bieletzke</i>	3574
METHODS FOR EVALUATING TECHNICAL DRAWING AIMED AT IMPROVING THE QUALITY OF TEACHING AND INCREASING STUDENTS' LEVELS OF KNOWLEDGE <i>P. Hofrichterová, D. Fait</i>	3584
COMPETENCY-BASED LEARNING AND ITS APPLICATION TO TEACHING THE FUNDAMENTALS OF ENGINEERING DESIGN <i>D. Fait, P. Hofrichterová, V. Mašek, R. Čermák</i>	3592
EXAMINING CHATGPT: HOW GOOD IS CHATGPT AT WRITING ENGINEERING COURSEWORK AND ITS IMPLICATIONS ON ACADEMIC INTEGRITY MISCONDUCT <i>A. Joshi, D. Shamvedi</i>	3598
SUBITIZING SKILL OF A THIRD-GRADE STUDENT WITH DYSCALCULIA <i>N.B. Duran, M. İşıksal Bostan</i>	3599
THE INNOVATIVE ROLE OF THE METAVERSE IN THE EDUCATION OF YOUNG STUDENTS <i>I. Petcu</i>	3604
ANALYSIS OF TEACHERS' MANUSCRIPTS ABOUT SCHOOL LIFE STORED IN THE ARCHIVE OF THE DEPARTMENT OF ETHNOLOGY, CROATIAN ACADEMY OF SCIENCES AND ARTS <i>M. Buterin Mičić, D. Birt Katić</i>	3611
ANALYSING THE POTENTIAL OF DIGITAL TOOLS FOR TEACHING PEDAGOGICAL DISCIPLINES AT UNIVERSITIES THROUGH THE EST&LDE CONCEPT <i>M. Kolář, J. Malach, D. Vicherková</i>	3622
UNIVERSITY TEACHERS' PERCEPTIONS ON PROFESSIONAL DEVELOPMENT OPPORTUNITIES. A CASE STUDY <i>M. Seppälä</i>	3630
ACCELERATING GENDER EQUITY IN TECHNOLOGY <i>M. Hernandez, D. Reed, P. Beltran</i>	3635
HIGHER EDUCATION FOR GOOD: PBL PRACTICES WITH POSITIVE IMPACT ON THE COMMUNITY <i>S. Filipe, T. Aragonez, I. Saur-Amaral</i>	3640
WORK FOR PROJECTS AS A STRATEGY FOR SELF-REGULATION OF LEARNING <i>S. Pereira, L. Mestre, A. Neto</i>	3648
GLOBAL SPOTLIGHT OF STUDENTS AND TEACHERS WELL-BEING: A BIBLIOMETRIC VIEWPOINT <i>S.A. Olaleye, E.O. Olaleye, M.A. Balogun, O.S. Balogun</i>	3658
PROJECT WORK IN THE 1ST CYCLE: LEARNING PATHWAYS <i>A. Neto, L. Mestre, S. Pereira</i>	3667
EVALUATION OF VIRTUAL EDUCATION IN LATIN AMERICAN UNIVERSITIES. A SUCCESS CASE: UNIVERSIDAD ESTATAL DE MILAGRO <i>F. Guevara-Viejó, R. Ramírez-Anormaliza, J. Valenzuela-Cobos</i>	3677
THE INSTRUMENTAL APPROACH IN THE DESIGN OF LEARNING SCENARIOS BY PRE-SERVICE ELEMENTARY TEACHERS <i>S. Martins</i>	3678
PRIVACY VS. LEARNING ANALYTICS <i>I. Rosanda Žigo, M. Šantalab, N. Lazić</i>	3688
THE VOICE OF STUDENTS FOR PEDAGOGICAL INNOVATION OF HIGHER EDUCATION: ADAPTING INTERNATIONAL MODELS AND PRACTICES TO THE ITALIAN CONTEXT <i>V. Grion, M. Ranieri, G. Cuozzo</i>	3695
OPEN MIDDLE PROBLEMS: MATH CHALLENGES THAT PROMOTE DEBATE AND CRITICAL THINKING <i>V. Santos, N.R.O. Bastos</i>	3703

TEACHERS' PERCEPTIONS OF SELF-REGULATED LEARNING AND THE SKILLS NEEDED TO IMPLEMENT IT IN THE CLASSROOM	3709
<i>M. Lázaro Alcalde, B. Ortega-Ruipérez, A. Castellanos Sánchez, A. Pereles López</i>	
CO-CONSTRUCTING WELL-BEING AT SCHOOL BETWEEN PERCEPTION AND REALITY	3710
<i>B. Bocchi</i>	
TEACHER TRAINING IN DIGITAL TECHNOLOGIES FOR INCLUSION	3715
<i>B. Bocchi, E. Bortolotti</i>	
CHALLENGES IN DESIGNING ONLINE LEARNING ENVIRONMENTS FOR HEARING IMPAIRED UNIVERSITY STUDENTS AT THE SCHOOL FOR THE HANDICAPPED	3720
<i>S. Unluer</i>	
DEVELOPMENT AND COORDINATION OF A MENTORING PROGRAM FOR SIX DIFFERENT DEGREES	3721
<i>E. Rubio, T. Olivares Montes, A. Rubio-Moraga, E. Amo-Saus, C. Martín, J.C. García Martínez, E. Sánchez López</i>	
CRITICAL THINKING SKILLS FOR DATA SCIENCE STUDENTS	3730
<i>H. Belchior-Rocha, R. Mauritti</i>	
PLANNING, EVALUATING, AND CERTIFYING THE DEVELOPMENT OF STUDENT COMPETENCIES USING A COMPUTERIZED SCOREBOARD: A 360° ASSESSMENT	3731
<i>S.C. Poitras, S. Rivest, J. Robitaille, S. Verreault</i>	
START IT: MOBILITY OF STUDENTS AS AN ACTIVE LEARNING METHOD FOR THE PROMOTION OF ENTREPRENEURSHIP AND DIGITAL SKILLS	3741
<i>J.C. Monteiro, H. Bollaert, K. Dziergwa, J. Hautamaki, A. Khavasi, K. Podlaski, P. Possemiers, D. O'Reilly, K. Simbeck, Z. Stawska</i>	
PERCEPTIONS OF READINESS FOR ONLINE LEARNING BETWEEN SIGHTED AND VISUALLY IMPAIRED STUDENTS	3747
<i>E. Huff, J. Brinkley</i>	
UNCOVERING ACADEMIC MISCONDUCT AMONG ETHNIC MINORITY STUDENTS: PERSPECTIVES FROM ACADEMIC INTEGRITY OFFICERS AND IMPLICATIONS FOR HIGHER EDUCATION	3756
<i>P. Seuwwou, A. Daxini, A. Ige-Olaobaju, N. Dodzo, M. Opoku Agyeman</i>	
GAMES FOR GOALS: EDUCATION FOR SUSTAINABLE DEVELOPMENT	3765
<i>J.C. Monteiro, C. Arragon, D. Bol, H. Bollaert, A. Bouin, P. Collin, F. Ederer, J. Ides</i>	
E-SAFETY AT HOME: EXPLORING THE 21ST CENTURY SKILLS OF YOUNG PEOPLE AT HOME AND AT SCHOOL	3769
<i>M. Cowling, K.N. Sim, J. Orlando</i>	
ON E-SAFETY DISCONNECTION: PARENTS AND GRANDPARENTS DIFFERENT PERCEPTIONS OF DIGITAL LITERACY AT HOME COMPARED TO YOUNG PEOPLE	3770
<i>J. Orlando, M. Cowling, K.N. Sim</i>	
RETHINKING THE POTENTIAL OF UNIVERSITY ENTREPRENEURSHIP EDUCATION	3771
<i>A. Soler-Domínguez, J.C. Matallín-Sáez, L. Morales, L. Pop</i>	
FROM DIVERSITY TO INCLUSION: UNDERSTANDING LEARNING STYLES AND ADJUSTMENT CHALLENGES OF INTERNATIONAL STUDENTS - A LITERATURE REVIEW	3776
<i>S. Sawesi, G. Tusch</i>	
A COMPARATIVE ANALYSIS OF INTERNATIONAL AND US GRADUATE STUDENTS: PRE, DURING, AND POST COVID-19	3784
<i>S. Sawesi, G. Tusch</i>	
RUBRIC: EVALUATION OF SKILLS ACQUIRED WHEN READYING SOFTWARE DEVELOPMENT PROJECTS	3791
<i>D.I. Ortiz Esquivel, M.A. Araiza Esquivel, C.A. Olvera Olvera, S. Villagrana Barraza, A. López Martínez, G. Díaz Flórez, H.A. Durán Muñoz, C.H. Castañeda Ramírez</i>	
AUGMENTED REALITY ON THE EFFECTIVENESS OF NATURAL SCIENCE TEACHING IN PRIMARY AND SECONDARY SCHOOLS: A META-ANALYSIS	3801
<i>Q. Shen, L. Kuo, P. Tsai</i>	
SOFTWARE PROJECT MANAGEMENT EDUCATION DURING THE COVID-19 PANDEMIC: AN EXPERIENCE REPORT OF EMERGENCY REMOTE EDUCATION	3811
<i>M.L. Fioravanti, R.T. Vaccare Braga, E.F. Barbosa</i>	
MENTORING AS A TOOL FOR RESEARCH INITIATION	3816
<i>J.L. Sánchez-Jiménez, F.J. Muñoz-Rodríguez, J.I. Fernández-Carrasco, J.D. Aguilar-Peña, M.D. La Rubia, C. Rus-Casas</i>	

DEVELOPMENT AND IMPLEMENTATION OF AN EDUCATIONAL PROGRAM THAT LINKS COMPUTATIONAL THINKING EDUCATION TO INQUIRY-BASED LEARNING FOR LOCAL COMMUNITY	3824
<i>K. Takemata, A. Minamide, S. Fujishima</i>	
INTERACTIVE MASS LECTURING: THE USE OF ANIMATED VIDEOS TO ENHANCE ACTIVE LEARNING IN BUSINESS ETHICS SUBJECT	3830
<i>A. Ko, E.W.K. Yeung</i>	
FLIPPED CLASSROOM TO IMPROVE THE PERCEPTION OF THE INDUSTRIAL REALITY IN SCIENCE AND ENGINEERING UNDERGRADUATE STUDIES	3836
<i>A.M. Díez, S. Escudero, A. Fdez-Sanromán, M. Pazos, E. Rosales, M.A. Sanroman</i>	
DIGITAL LITERACY AMONG TEACHERS OF LEARNERS WITH DISABILITIES IN KENYA AND THE CZECH REPUBLIC	3837
<i>M. Kavua</i>	
IMPLEMENTATION OF ACTIVE LEARNING ACTIVITIES AND THEIR EFFECT ON STUDENT MOTIVATION IN CHEMICAL TECHNOLOGY SUBJECT	3838
<i>A. Fdez-Sanromán, A.M. Díez, S. Escudero, M. Pazos, E. Rosales, M.A. Sanroman</i>	
POSSIBILITIES OF DEVELOPING THE TECHNICAL CREATIVITY OF STUDENTS IN SECONDARY SCHOOLS	3839
<i>R. Loskot, Š. Major</i>	
THE EFFECT OF ACADEMICIANS' ATTITUDES TOWARDS DIGITAL TECHNOLOGY ON JOB PERFORMANCE	3845
<i>G. Sart, F.H. Sezgin</i>	
EVALUATION OF ACADEMICIANS' ATTITUDES TOWARDS SUSTAINABILITY ACTIVITIES OF UNIVERSITIES	3851
<i>G. Sart, F.H. Sezgin</i>	
NUDGING AT-RISK STUDENTS TOWARDS SUCCESSFUL COMPLETION	3857
<i>C. Kaur, J. Luu, T. Cui, R. Yuniasih</i>	
THE RELATIONSHIP BETWEEN DIGITAL GAME ADDICTION AND SUBJECTIVE WELL-BEING IN UNIVERSITY STUDENTS	3864
<i>G. Sart</i>	
ANALYSIS OF SOCIAL MEDIA ADDICTION IN UNIVERSITY STUDENTS	3870
<i>G. Sart</i>	
THE ROLE OF EDUCATION IN THE PROCESS OF HELPING UKRAINIAN WAR REFUGEES	3876
<i>V. Demidenko</i>	
THE HEALTH RISKS POSED BY EXCESSIVE USE OF MOBILE DEVICES AS THE TOPIC OF MEDICAL EDUCATION	3883
<i>M. Trnka, N. Koscova, E. Kralova</i>	
3D PRINTING IN ARCHITECTURE	3887
<i>M. Valiente Lopez, S. Moyano Sanz, A. Verdú Vázquez, S. Díez Sanz, N. León-Martínez</i>	
CLUSTERING AND VISUALIZATION OF AUTHORS' FEATURE USING WORD FORMATTING INFORMATION TO SUPPORT PLAGIARISM DETECTION IN CLASS ASSIGNMENT REPORTS	3897
<i>A. Ohno</i>	
RETHINKING HOW TO OPTIMIZE DISSEMINATION OF THE SOLUTIONS REACHED BY THE STUDENTS TO SOLVE COMPANIES' PROBLEMS WITH PBL+ LEARNING-TEACHING METHODOLOGY	3902
<i>E.J. Martínez, R. Mateos, O. Martínez-Morán, M. Barquero, A. Crespo, C. Fernández, J. Cara, M.E. Sánchez, A. Morán, B. Urbano, X. Gómez, F. Gonzalez-Andres</i>	
APPLIED ELECTRONICS TEACHING: PBL BASED ON RADIO CONTROL VEHICLES	3910
<i>M. Fuentes Conde, M. Vivar García, J. Torres López</i>	
DO JOURNALISTS WITH A NON-JOURNALISTIC UNIVERSITY DEGREE WANT TO STUDY JOURNALISM REMOTELY? THE CASE OF CROATIA AND COUNTRIES IN THE REGION	3920
<i>T. Vukić, A. Bilan, K. Čirjak</i>	
THE EXPERIENTIAL DIMENSION OF TIME AND HOPE: A QUALITATIVE STUDY WITH HEALTH PROFESSIONALS IN TRAINING	3932
<i>F. Marone, M. De Simone, M. Navarra</i>	
OPERATIONAL EPISTEMOLOGY: PROMOTING AWARENESS OF ONE'S OWN COGNITIVE PROCESSES THROUGH METAPHORICAL LANGUAGE	3939
<i>M. De Simone, M.R. Strollo, F. Marone</i>	

GREEN SKILLS FOR SUSTAINABLE AIR TRANSPORT	3947
<i>S.E. Zaharia, A.P. Pavel, S. Toma, F. Pérez Moreno, M. Zamarreño Suárez</i>	
REVISITING LI JINHUI'S MUSIC TEACHING METHODS FOR PRESCHOOLERS FROM HIS BOOK "POPULAR TEXTBOOK - MUSIC TEXTBOOK AND TEACHING METHODOLOGY IN KINDERGARTEN"	3957
<i>Y. Huang, F.C. Loo</i>	
E-LEARNING AS AN INTEGRAL PART OF STUDY - EXPERIENCE WITH THE USE OF E-LEARNING COURSE IN THE SUBJECT NUMERICAL METHODS AND STATISTICS	3964
<i>I. Pobočková, Z. Sedláčková, M. Michalková, Z. Malacká</i>	
FEAR OF MISSING OUT SYNDROME (FOMO) AND EMOTIONAL REGULATION IN ADOLESCENTS	3970
<i>M. Popelková, E. Jurišová, M. Zatková</i>	
NANOLEARNING: TIKTOK MICROVIDEOS AS A NEW LEARNING SOURCE	3975
<i>M. Vergara-Barberán, M.J. Lerma-García, J.M. Herrero-Martínez, E.F. Simó-Alfonso, M. Beneito-Cambra, E.J. Carrasco-Correa</i>	
EVALUATION OF THE EFFECTIVENESS OF INSTRUCTIONAL VIDEOS AS A SUPPLEMENTARY SELF-LEARNING TOOL IN ANALYTICAL CHEMISTRY SUBJECTS	3984
<i>M.J. Lerma-García, M. Beneito-Cambra, M. Vergara-Barberán, J.M. Herrero-Martínez, E.F. Simó-Alfonso, E.J. Carrasco-Correa</i>	
NEW PERSPECTIVES FOR CLEANROOM TRAINING USING VIRTUAL REALITY	3994
<i>T. Kaiser, F. Lukas, M. Steinert, J. Kretschmar, A. Tünnermann</i>	
A SYSTEM FOR REPORTING AND ANALYZING LIVE DATA FROM INTERNAL COMBUSTION ENGINE EMISSIONS WITH APPLICATION IN ENGINEERING EDUCATION	3995
<i>S. Asenov, D. Shehova, H. Kanevski</i>	
ARTIFICIAL INTELLIGENCE IN THE EDUCATION OF HEALTH PROFESSIONS: A DESCRIPTIVE ANALYSIS THROUGH BIBLIOMETRICS	4000
<i>A. Alves Lopes</i>	
REAL-WORLD PROJECTS IN THE CLASSROOM: AN AUTHENTIC LEARNING APPROACH	4006
<i>H.Y.J. Tan, M. Neo, T.K. Neo, S.H. Hew, K. Hamidani</i>	
GENDER PERSPECTIVE IN BUSINESS: THE MACROECONOMIC STUDENTS POINT OF VIEW	4010
<i>M.T. Bartual-Figueras, J. Turmo Garuz, A. Colom-Cabau, M.A. Felipe-Checa, J. González-Calvet, M. Gres-Llort, F. Sánchez-Losada</i>	
THE USE OF A PROGRAMMABLE MODEL OF AN AUTOMATED WAREHOUSE IN THE TEACHING PROCESS	4015
<i>V. Binasova, B. Mičeta, M. Krajčovič, G. Gabajová, M. Gašo, M. Kasajová, Š. Mozol</i>	
INTERACTING WITH "ZOOMIES": DIFFICULTIES AND CHALLENGES THROUGH THE EYES OF LECTURERS	4022
<i>A. Carvalho, V. Lima, S. Silva, C. Silva, J. Fernandes, P. Peres</i>	
COMPETENCES, MOTIVATION AND SUITABILITY OF INTERNSHIPS TO IMPROVE EMPLOYABILITY	4031
<i>J. Turmo Garuz, M.T. Bartual-Figueras, F.J. Sierra-Martínez</i>	
ONLINE PEER EDITING: EFFECTS OF ITS ELEMENTS (COMMENTS AND TRACKED CHANGES) AND STUDENTS' PERCEPTION OF PARTICIPATION IN THIS COLLABORATIVE ACTIVITY ON WRITING PERFORMANCE	4037
<i>G. Shulgina, J. Costley, I. Shcheglova, H. Zhang, N. Sedova</i>	
DISSERTATION RESCUE AND FLEX CHAIR MENTORING FOR SOCIAL AND CULTURAL INCLUSION	4038
<i>L.L. Neiworth</i>	
LEARNING INSIDE THE BOX: STUDENTS' PERCEPTIONS OF EMERGENCY REMOTE LEARNING	4043
<i>J. Fernandes, S. Silva, C. Silva, V. Lima, A. Carvalho, P. Peres</i>	
TRAINING IN SUSTAINABLE DEVELOPMENT GOALS (SDGS) VIA WEBINAR TRANSMISSION WITH RESPONSIBLE COMPANIES	4048
<i>P. Talón-Ballesteros, M.P. Abad-Romero, A. Orea-Giner</i>	
"DIGITAL LEARNING TO (RE)IMAGINE A POSITIVE DIRECTION FOR POST-COVID EDUCATION": EUROPEAN PERSPECTIVES	4053
<i>T.M. Loureiro Cardoso, G. Bastos, F. Pestana, A.P. Rocha, M.P. Casanova, M. Beaton</i>	
THE ROLE OF QUESTIONS IN SOCIAL INTERACTIONS OF SCHOOL DISCOURSE	4058
<i>K. Rysová</i>	

INTERFERENCE OF LANGUAGE COMPETENCES OF STUDENTS WITH SPECIFIC LEARNING DISABILITIES IN HIGHER EDUCATION ENVIRONMENT <i>R. Kovářová, H. Chlebcová</i>	4064
GOING PAPERLESS: BETTER FOR THE ENVIRONMENT, BUT BETTER FOR THE STUDENTS? STUDENT PERCEPTIONS OF TEACHING USING ONLY ELECTRONIC HANDOUTS <i>A. Millward-Sadler</i>	4073
CONFRONTING ATTITUDES OF TEACHERS TOWARDS INCLUSIVE EDUCATION PREDETERMINED BY UNFAVOURABLE EDUCATIONAL FACTORS: GERMANY, POLAND AND LITHUANIA <i>A. Galkienė, O. Monkevičienė</i>	4079
SIMULATION VS CASE STUDIES: MAXIMIZING THE IMPACT OF INCLUDING ETHICAL ISSUES IN THE HIGHER EDUCATION CURRICULA FROM AN INTEGRATIVE POINT OF VIEW <i>J. Valero-Gil, F. Llena, E. Llera-Sastresa, M. Marco-Fondevilla, T. Montaner, A. Perez, A. Sanz-Hernandez, S. Scarpellini, I. Suárez-Perales, A. Aranda-Usoń, A. Garrido, J. Gutierrez</i>	4090
THE CHALLENGES AND OPPORTUNITIES INCORPORATION WORK-INTEGRATED LEARNING IN ONLINE HIGHER EDUCATION <i>S. Nilsson, U. Hedman</i>	4091
INTRODUCING CASE STUDY AUDIO PODCASTS IN BUSINESS AND INFORMATION SYSTEMS STUDIES <i>J. Jäger, S. Korkut, T. Inglese, T. Schmiedel</i>	4097
COOPERATION OF KEY ACTORS IN THE CONTEXT OF SCHOOL EDUCATION OF TWICE EXCEPTIONAL PUPILS <i>R. Kovářová, M. Kaleja</i>	4106
THE DEVELOPMENT STATUS AND DILEMMA OF VOCATIONAL EDUCATION FOR PEOPLE WITH INTELLECTUAL DISABILITIES IN CHINA <i>A.J. Yang</i>	4107
QUESTION PAPER DESIGN IN ENGINEERING EDUCATION – AN ANALYSIS <i>H. Hussain, S. Mandal</i>	4111
THE INFLUENCE OF FAMILY ON THE ORIGIN AND DEVELOPMENT OF EATING DISORDERS IN ADOLESCENT GIRLS <i>V. Kolková</i>	4118
LET'S GET INSPYRED: THE IMPACT OF THE "INTERNATIONAL SCHOOL ON MODERN PHYSICS AND RESEARCH" ON HIGH SCHOOL STUDENTS' STEM CAREER ASPIRATIONS <i>A. Postiglione, S. Bertelli, C. Curceanu, S. Arnone, D. Bifaretti, E. Patrignanelli, S. Reda, E. Santinelli</i>	4127
MINDING MEDIA MINECRAFT WORLD: DEVELOPING MEDIA LITERACY CONCEPTS THROUGH GAMIFICATION <i>V. O'Rourke, J. Blue, G. Gkogkas, K. Rounbas, T. Femić Bumbić</i>	4136
EXPLORING THE LIVED EXPERIENCES OF EXTENDED CURRICULUM PROGRAMME STUDENTS AT STELLENBOSCH UNIVERSITY IN SOUTH AFRICA <i>M. Mouton</i>	4141
GAMIFICA - CONTINUOUS LEARNING THROUGH GAMIFICATION MECHANISMS FOR MACHINE LEARNING <i>E. García-Cuesta, E. Serrano, A.M. López, I. Garrido Cerezo, R. Valle, B. Mihaljevic, D. Zanardini, J. Bajo</i>	4148
INFORMATICS IN THE FIRST LEVEL OF PRIMARY SCHOOL <i>V. Stoffová, A. Katyetova, J. Obonya</i>	4155
INCLUSIVE SECONDARY VOCATIONAL EDUCATION SYSTEM IN RUSSIA: MONITORING AND EVALUATION AND "BEST PRACTICES" <i>A. Yang</i>	4165
DESIGN, SIMULATION, AND ENERGY ASSESSMENT OF THE ENERGY PRODUCTION OF A 10 KW PHOTOVOLTAIC SYSTEM AT PU "PAISIY HILENDARSKI", SMOLYAN, BULGARIA <i>S. Asenov, D. Shehova, H. Kanevski, S. Lyubomirov</i>	4166
BADGES - THE POSSIBILITY OF INCREASING MOTIVATION IN THE EDUCATIONAL PROCESS <i>L. Gajanova, J. Michulek, J. Majerová</i>	4175
DIGITAL MARKETING COMMUNICATION IN THE PROMOTION OF UNIVERSITIES: CASE STUDY OF SLOVAK REPUBLIC <i>M. Nadanyiova, J. Majerova, A. Krizanova</i>	4180

IMPROVING RESEARCH SKILLS OF UNDERGRADUATE STUDENTS USING A PRACTICAL APPROACH	4188
<i>A.V. Herrera-Herrera, B. Socas-Rodríguez, R. Rodríguez-Ramos, Á. Santana-Mayor, A. Conde-Díaz</i>	
LEARNING MOTIVATION OF STUDENTS AND THE WAYS OF ITS DEVELOPMENT IN THE ENGLISH LANGUAGE TEACHING PROCESS AT UNIVERSITIES	4196
<i>O. Danilova, A. Zabolotskaya</i>	
PIXEL - PICTURE (OF) THE UNIVERSE: AN EDUCATIONAL BOARD GAME ABOUT ASTROPHYSICS RESEARCH WORLD	4202
<i>R. Toniolo, G. Inchingolo, S. Casu, G. Contino, V. La Parola, R. Leoni, S. Varano, A. Zanazzi, A. Ligabue, S. Ricciardi</i>	
THE NEEDS OF ELEMENTARY SCHOOLS IN THE CZECH REPUBLIC IN THE CONTEXT OF THE INTRODUCTION OF THE SOCIAL PEDAGOGUE POSITION	4210
<i>J. Šmída, T. Čech, T. Hormandlová, A. Jůvová</i>	
USING CHATGPT TO INVESTIGATE TRENDS IN DIGITAL STORYTELLING AND KNOWLEDGE SHARING IN HIGHER EDUCATION	4217
<i>D. Cranfield, I. Venter, A. Daniels</i>	
DEVELOPMENT OF SELF-REGULATORY SKILLS AT UNIVERSITY: COMPARING OPINION OF JAPANESE AND LITHUANIAN STUDENTS	4226
<i>R. Kurita, G. Ciuladiene</i>	
WHAT PROGRAMMING TOOL TO CHOOSE FOR TEACHING PROGRAMMING	4232
<i>V. Stoffová</i>	
HOW TO BE “ACROBATS OF TIME”: TEACHING CLIMATE CHANGE TO PRIMARY STUDENTS	4240
<i>M. Massignani, S. Pacchini, E. Piva, S. Schumann, G. Santovito, P. Irato</i>	
INTERVENTION FOR THE IMPROVEMENT OF SPATIAL INTELLIGENCE IN SECONDARY SCHOOL STUDENTS THROUGH GAMIFICATION WITH THE GAME BLOCK & GO! ©	4248
<i>I. Sánchez-Ramos, M. Mesa Sanz, M.J. Casati Calzada</i>	
LEARNING LABORATORY SKILLS USING VIRTUAL SIMULATORS IN A SEPARATION METHODS COURSE	4255
<i>A.V. Herrera-Herrera, B. Socas-Rodríguez, R. Rodríguez-Ramos, Á. Santana-Mayor, A. Conde-Díaz</i>	
BLENDED LEARNING AS A MEANS OF INTENSIFICATION OF THE ENGLISH LANGUAGE TEACHING AT A UNIVERSITY	4262
<i>A. Zabolotskaya, O. Danilova</i>	
REVEALING GENDER DIFFERENCES IN SELF-REGULATION SKILLS USING CLICKSTREAM DATA	4268
<i>A. Fayzullina, A. Kapuza</i>	
SUSTAINABLE EDUCATION MODEL FOR HUMANOID ROBOT INTEGRATION IN EDUCATIONAL PROCESS	4274
<i>D. Zemljak, M. Kerneža</i>	
OPTIMIZATION AND STATISTICS IN HIGHER EDUCATION: A PROJECT BASED LEARNING IN THE SUSTAINABLE DEVELOPMENT GOALS CONTEXT	4283
<i>H.S. Rodrigues</i>	
ENHANCING CREATIVE AND INNOVATION SKILLS IN ENGINEERING STUDENTS THROUGH PROJECT-BASED LEARNING	4290
<i>J. López Santiago, M.T. Gómez Villarino, D. Pereira Jerez, J. Urquijo Reguera, M. de Francisco Alonso</i>	
THE CLASSIFICATION OF THE ANIMAL KINGDOM. A GUIDED DIDACTIC PATH TO DISCOVER SYSTEMATICS STARTING FROM SPONTANEOUS HYPOTHESES	4295
<i>B. Tonon, M. Massignani, S. Pacchini, E. Piva, S. Schumann, G. Santovito, P. Irato</i>	
UNDERSTANDING PEDAGOGIES OF WRITING FOR MIDDLE SCHOOL WRITING CLASSROOMS	4303
<i>N. Mather</i>	
TEACHING AND LEARNING USING DIGITAL TECHNOLOGY: WHAT ARE THE AFFORDANCES AND HOW DO THEY ALIGN WITH THE AFFORDANCES OF DIGITAL ASSESSMENT?	4314
<i>S. Hughes, C. Green</i>	
UNIVERSITY STUDENTS’ MOTIVATIONAL ORIENTATIONS, LEARNING STYLES, THINKING STYLES, AND ACADEMIC BEHAVIORS: COMMON COURSES IN SCIENCE, MATHEMATICS, AND ENGINEERING (SME) OF GENERAL EDUCATION CURRICULA	4315
<i>A. Gogus, N.G. Gogus</i>	

USING MDM (MOBILE DEVICE MANAGEMENT) FOR APPLE IPAD IN THE SCHOOL ENVIRONMENT	4326
<i>J. Kucerik</i>	
USING FLOWCHARTS IN COMPUTER MODELING AND INFORMATION TECHNOLOGY TRAINING FOR DRAWING COMPLEX GEOMETRIC FIGURES	4331
<i>S. Neykova-Karagayeva, S. Tsankov</i>	
AN EXPLORATION OF MIDDLE SCHOOL BOYS' PERCEPTIONS OF THE WRITING PROCESS	4341
<i>N. Mather</i>	
STUDEA: DIGITAL BOOKLET FOR APPRENTICESHIP	4351
<i>B. Mbaye, L. Lazar-Favory, F. Lallemand</i>	
THE PERCEPTION OF STUDENTS AT THE UNIVERSITAT POLITÈCNICA DE VALÈNCIA (SPAIN) ABOUT TRAINING IN TRANSVERSAL COMPETENCES	4356
<i>L. Canós-Darós, V.E. García Félix, F. Castelló-Sirvent</i>	
DESIGNING, IMPLEMENTING AND EVALUATING A CO-CREATIVE SUPPORT TECHNOLOGY	4364
<i>M. Pifarre</i>	
EQUITY EXPLORED: THE SACRIFICE OF INDIGENOUS STUDENTS OF NICARAGUA	4368
<i>B. Mills, P. Lane</i>	
EVALUATING THE LEARNING EXPERIENCE OF A PROGRAMMING LANGUAGE AT DIFFERENT UNIVERSITY STAGES	4375
<i>X. Costoya, D. Fernández-Nóvoa, O. García-Feal, I. Martínez-Estévez, J.M. Domínguez, M. Gómez-Gesteira, M. de Castro</i>	
THE INFLUENCE OF LOCKDOWN IN TEACHING A CHEMISTRY LABORATORY FROM THE TEACHER'S PERSPECTIVE	4380
<i>E.J. Delgado-Pujol, G. Martínez, M. Merinero, D. Casado, J.J. González, B. Begines, A. Alcudia</i>	
METACOGNITIVE ACTIVITIES FOR IMPROVING TEACHERS' AND LEARNERS' PERFORMANCE	4387
<i>A. Zernova</i>	
THE ADVANTAGES OF INCORPORATING ANIMATION AND VISUALIZATION IN DATA STRUCTURES COURSE	4394
<i>G. Kogan, H. Chassidim, I. Rabaev</i>	
BAUHAUS AT FAUHAUS	4401
<i>D.S. Opincariu, A. Pop, L. Patachi, L. Vartic</i>	
EVOLUTION OF ADMISSION AND FINAL GRADES IN DIFFERENT SUBJECTS AND UNIVERSITY DEGREES ANALYSED FROM A GENDER PERSPECTIVE	4406
<i>A. Vidaurre Garayo, I. Tort Ausina, M.A. Serrano Jareño, J. Riera Guasp, S. Quiles Casado, N. Navajas Pertegás, J. Molina Mateo, J.M. Meseguer Dueñas, R. Martín Cabezuolo, J.A. Gómez Tejedor</i>	
EFFECTIVENESS OF AN EMOTION REGULATION SKILLS TRAINING TO ALUMNI STUDYING A MASTER'S DEGREE IN GENERAL HEALTH PSYCHOLOGY: PRELIMINARY RESULTS	4412
<i>M.V. Navarro-Haro, O. Péris-Baquero, J. Osma, S. Valdivia, A. Díaz-García</i>	
THE FIRST ARCHITECTURE PROJECT: A CONTINUOUS EXPERIMENT IN THE FIRST YEAR OF STUDY	4413
<i>D.S. Opincariu, A. Pop, L. Patachi, L. Vartic</i>	
USE OF QUIZZI TO PROMOTE ACTIVE LEARNING IN THE SUBJECT "GENERAL PSYCHOPATHOLOGY"	4419
<i>O. Péris-Baquero, L. Martínez-García, M.V. Navarro-Haro, J. Osma, A. Díaz-García, V. Martínez-Loredo</i>	
MEDICAL HUMANITIES AND CULTURE AS PART OF MEDICAL STUDENTS' TRAINING IN FOREIGN LANGUAGE CLASSES	4420
<i>L.I. Leon</i>	
STUDENTS' ATTITUDE TO LECTURERS LEADERSHIP: THE CASE OF THE MILITARY ACADEMY OF LITHUANIA	4428
<i>R. Kazlauskaitė Markelienė, V. Giedraitytė</i>	
ANALYSIS OF PALEONTOLOGICAL AND EVOLUTIONARY KNOWLEDGE OF COMPULSORY EDUCATION STUDENTS FROM MADRID (SPAIN)	4429
<i>B.A. García Yelo, D. Romero-Nieto, O. Fesharaki</i>	
NEW SKILLS IN THE MODERN ACCOUNTANTS' PROFESSION: INTERNATIONAL EDUCATION STANDARDS AND THE UNIVERSITY-BUSINESS EXPECTATIONS	4438
<i>T. Cunha, A. Carvalho, M. González-Loureiro</i>	

AN EPORTFOLIO PROCESS: HOW STUDENTS CURATE SUCCESSFUL FUTURE CAREER THINKING	4450
<i>N. Yeo, J. Rowley</i>	
GENDER AND SOCIALIZATION DIFFERENCES DETECTED IN A UNIVERSITY GEOLOGICAL FIELDWORK ACTIVITY	4455
<i>O. Fesharaki, B.A. Garcia Yelo</i>	
AI IN HIGHER EDUCATION: NEW ETHICAL CHALLENGES FOR STUDENTS AND TEACHERS	4463
<i>F. Castelló-Sirvent, V.E. García Félix, L. Canós-Darós</i>	
EDUCATIONAL STRATEGIES TO MITIGATE CLIMATE CHANGE SCEPTICISM	4471
<i>L. Vladu, M. Enache</i>	
VIRTUAL ANATOMICAL SKULL STUDY OF THE BEARDED VULTURE: COMPARING 3D TECHNIQUES FOR EDUCATIONAL INNOVATION	4477
<i>J.A. De Pablo-Moreno, R. Sánchez-Belinchón, A. Miguel-Batuecas, M. Fuertes-Recuero, L. Revuelta</i>	
SCHOOL ENGAGEMENT OF SLOVAK ADOLESCENTS IN RELATION TO THE BIG FIVE PERSONALITY TRAITS	4478
<i>B. Žitniaková Gurgová, L. Ďuricová</i>	
IMAGES OF SMART COMMUNITIES WITH DIGITAL SUSTAINABILITY FROM THE YOUNG GENERATIONS IN AUSTRIA AND IN TAIWAN	4484
<i>J. Lu Hsu, M. Pivec</i>	
PILOT IMMERSION OF UNDERGRADUATE STUDENTS IN THE SCIENTIFIC METHOD BY APPLYING FOR A RESEARCH PROJECT IN A SIMULATED CALL FOR PROPOSALS	4488
<i>M.M. Caja, M.A. Martín, B. López-Ruiz, A.I. Olives</i>	
A CURRICULUM FOR CHOICE: HOW WE CAN BUILD THE CAPACITY OF YOUNG PEOPLE TO BECOME BETTER CHOOSERS	4493
<i>J. Playfoot, M. Hall</i>	
ROADMAP FOR NEW PEACE GAMES DEVELOPMENT	4501
<i>M. Pivec, A. Kronberger, U. Lagger</i>	
DROPOUT AT UTAD: EVOLUTION AND MECHANISMS OF SUPPORT	4506
<i>T. Ferreira, J.P. Cravino</i>	
USEFULNESS OF THE GUIDED CLINICAL CASE TO IMPROVE STUDENT MOTIVATION AND LEARNING IN THE SUBJECT OF ENDOCRINOLOGY AND NUTRITION IN THE MEDICAL DEGREE. TWO YEARS EXPERIENCE	4512
<i>S. Martínez-Hervas, D. Ortiz Masiá, H. Gonzalez-Navarro, F.J. Ampudia-Blasco, J.F. Merino Torres, C. Sánchez Juan, J.T. Real</i>	
HIGHER EDUCATION STUDENTS' PERCEPTION OF UNIVERSITY SOCIAL RESPONSIBILITY, SATISFACTION, SERVICE QUALITY AND SUSTAINABLE DEVELOPMENT GOALS 2030	4516
<i>Z.C.D. Sarmiento, C.S. Marques, G. Santos, T. Ferreira</i>	
APPLICATIONS OF ANALOG BOARD GAME PLAY IN HIGHER EDUCATION TEACHING AND LEARNING: A SYSTEMATIC REVIEW	4523
<i>N. Bareford</i>	
ENHANCING EXPERIENCED EXPERTS' CONTRIBUTION IN HIGHER EDUCATION OF SOCIO-PEDAGOGICAL EDUCATORS	4533
<i>M. Sottocorno</i>	
IMPROVING LEARNING EFFECTIVENESS AND STUDENT ENGAGEMENT THROUGH REAL-LIVE SIMULATIONS - RESULTS FROM A STUDY ON APPLICATION OF KPI-BASED PREDICTIVE ANALYTICS IN REAL-LIVE SPORTS EVENT FORECASTING	4537
<i>S. Dressler, D. Foerster-Trallo, T. Rachfall, S. Dressler</i>	
COMPARISON OF CLASSICAL AND INQUIRY-BASED INSTRUCTION USING VIRTUAL REALITY IN GEOGRAPHY LESSONS	4546
<i>J. Vojteková, K. Brestičová, M. Vojtek</i>	
ENHANCING LEARNER MOTIVATION THROUGH INNOVATIVE TEACHING METHODOLOGIES: A HYBRID STUDY ON COLLABORATION AND MOBILE LEARNING	4553
<i>A.B. Mudarra Fernández, R. Puentes Poyatos, D. Fernández Uclés, A. Liceran Gutierrez</i>	
NON-LINEAR MICROWAVE DEVICE CHARACTERIZATION: A STEP FORWARD FROM S-PARAMETERS IN GRADUATE AND UNDERGRADUATE ENGINEERING TEACHING	4560
<i>M. García Palomo, F. Pasadas, S. Ortiz Ruiz, A. Medina-Rull, M.C. Fernández-Sánchez, E. G. Marin, C. Torres Montijano, M. Fernández-Pantoja, F. García Ruiz</i>	

CONTRIBUTING TO THE SUSTAINABLE DEVELOPMENT GOALS THROUGH TRAINING: AN EMPIRICAL STUDY	4561
<i>R. Puentes Poyatos, A.B. Mudarra Fernández, D. Fernández Ucles, A. Liceran Gutiérrez</i>	
FUTURE OF SCHOOL BASED STUDIES (SBS) POST COVID 19	4570
<i>K. Paulus, M. Kalengay, B. Kerima</i>	
TEACHING COMPUTATIONAL THINKING WITH SCAFFOLDED PROGRAMMING SCRIPTS	4575
<i>C. Angeli</i>	
FAST AND AUTOMATIC FABRICATION OF RADIOFREQUENCY CIRCUITS FOR FUTURE ELECTRONIC AND TELECOMMUNICATION ENGINEERS	4576
<i>F. Pasadas, A. Medina-Rull, M. García Palomo, S. Ortiz Ruiz, M.C. Pardo, M. Fernández Pantoja, E. G. Marin, F. G. Ruiz</i>	
THE EFFECTS OF COGNITIVE TYPE AND LEARNING WITH GAMES ON SECONDARY EDUCATION STUDENTS' UNDERSTANDING OF IF-THEN-ELSE	4577
<i>C. Angeli, K. Tortouri</i>	
ONLINE TEST ANALYSIS FOR THE EVALUATION OF THE FLIPPED LEARNING METHODOLOGY AND THE LEARNING PROCESS IN TECHNICAL STUDIES	4578
<i>Z. Azkorra-Larrinaga, I. Gómez-Arriaran, M. Odriozola-Maritorea, J. Gainza-Barrencua, N. Romero-Antón</i>	
A FRAMEWORK FOR ASSESSING THE ROLE OF HIGHER EDUCATION PEDAGOGIES IN ACHIEVING SUSTAINABLE DEVELOPMENT GOALS IN AFRICA	4584
<i>M. Achieng</i>	
FLEXI-COMP PROJECT: DIGITAL COMPETENCES FOR A FLEXIBLE AND INCLUSIVE FRAMEWORK FOR TRANSFORMATIVE TEACHERS	4594
<i>M.J. Hernandez-Serrano, N. Morales-Romo</i>	
STUDENTS' MOBILITY IN THE COVID-19 ERA: AN EMPIRICAL STUDY IN ITALY	4600
<i>P. Bernardi, L. Tebaldi, B. Bigliardi, A. Volpi, E. Bottani</i>	
NON-FORMAL ACTIVITIES IN NANOTECHNOLOGY AREA FOR INCREASING STUDENTS' MOTIVATION	4610
<i>T. Esperanca, S. Nunes</i>	
MASSIVE DATA-MINING ANALYSIS OF DISTANCE SCIENCE EDUCATION LEARNING SYSTEMS	4611
<i>L. Kuo, P. Tsai, C. Chiang, K. Tu</i>	
DESIGN AND IMPLEMENTATION OF A NUTRITIONAL EDUCATION PROGRAM FOR PATIENTS WITH COLON CANCER AS A LEARNING TOOL FOR STUDENTS OF THE MASTER'S DEGREE IN HUMAN NUTRITION AT THE UNIVERSITY OF GRANADA	4620
<i>F.J. Amaro-Gahete, A. Cisneros, J. Jurado, A. Orellana, J. Contreras, V. De León, N. Martínez, G. Morata, C. González-Callejas, S. Candeias, M. Fernández, M. Flor-Aleman, P. Corres, T. Nestares</i>	
FUTURE TEACHERS AS PROSUMERS OF VIDEOS ON EDUCATIONAL THEORISTS: YOUTUBE FOR PROMOTING INNOVATION IN CLASSROOMS	4627
<i>M.J. Hernandez-Serrano, P. Renés Arellano, F.J. Lena Acebo, M. Buenestado Fernandez</i>	
FACTORS ASSOCIATED WITH THE LEVEL OF SATISFACTION OF STUDENTS IN STATISTICS AND COMPUTER SCHOOLS WITH VIRTUAL TEACHING IN TIMES OF THE COVID-19 PANDEMIC	4632
<i>M. Correa, F. Li, J. Aquino, N. Germán</i>	
WELL-BEING, MOTIVATION, AND ADAPTATION OF UNIVERSITY STUDENTS: THE POTENTIAL INFLUENCE OF MENTORING PROGRAMS	4636
<i>P. Paulino, S. Ibérico Nogueira, L. Almeida, M. Claro</i>	
USE OF MOODLE FOR INTEGRATED MANAGEMENT OF OBJECTIVE STRUCTURED CLINICAL EXAMINATIONS (OSCE)	4643
<i>G. Gonzalez-Caminal, R. Samson, R. Pujol-Farriols, J. Roma-Millan, C. Gomar-Sancho, M. Boteller</i>	
DO VISUAL THINKING STRATEGIES IMPROVE THE LEARNING EXPERIENCE?	4650
<i>V. Pitrella, A. Re, S. Perna, G. Città, S. Ottaviano</i>	
DEVELOPMENT OF CREATIVITY AND CRITICAL THINKING SKILLS: FINDINGS FROM STUDENTS PARTICIPATING IN A PBL EXPERIENCE	4655
<i>F. Castro-Lopes, S. Fernandes</i>	
INCLUSIVE EDUCATION AND GIFTED CHILDREN	4663
<i>E.L. Mara</i>	

WORKING METHODOLOGY TO ANALYZE THE CURRENT STATUS OF SDG INTEGRATION IN ENGINEERING SUBJECTS	4669
<i>R. Benavente, A. Borrell, J. Lluch, J. Martínez-Casas, M.D. Navarro, M.J. Rupérez, O. Sahuquillo, F. Salas, M.D. Salvador, A. Sonseca, A.M. Pedrosa</i>	
THE IMPACT OF A FLIPPED CLASSROOM DESIGN OF AN ENGLISH AS A FOREIGN LANGUAGE LISTENING COURSE ON STUDENT'S SELF-EFFICACY	4676
<i>J.B. Yang, M. Valcke</i>	
PREREQUISITES FOR EFFECTIVE FOREIGN LANGUAGE ACQUISITION AMONG ADULT LEARNERS AGED 50+: THE CASE STUDY OF LATVIA	4681
<i>M. Burima, J. Tretjakova, S. Zarina</i>	
THE PREPAREDNESS OF CITIZENS IN MUNICIPALITIES FOR EMERGENCY EVENTS WITH REGARD TO THE QUALITY OF LIFE	4682
<i>J. Kubás, M. Ballay, S. Strelcová, A. Kelíšek, P. Gapová</i>	
EDUCATIONAL ESCAPE ROOMS AS GAME-BASED ENVIRONMENTS	4690
<i>F. Rodrigues, F. Gonçalves, J. Brigas, J. Gonçalves, H. Engrácio</i>	
DEVELOPMENT OF AN INTERACTIVE TECHNOLOGY PLATFORM FOR AN AI CAPABILITY TEST AND SELF-LEARNING SERVICE SYSTEM FOR TAIWAN'S INDIGENOUS LANGUAGE LITERACY	4698
<i>L. Kuo, P. Tsai, W. Chang, Y. Hsiao, C. Chiang, K. Tu</i>	
THE INFLUENCE OF LOCKDOWN IN TEACHING A CHEMISTRY LABORATORY FROM THE STUDENTS' PERSPECTIVE	4707
<i>G. Martínez, E.J. Delgado-Pujol, M. Merinero, D. Casado, J.J. González, B. Begines, A. Alcudia</i>	
GREEN CENTRE FOR AN ECOLOGY OF ENVIRONMENT, MIND AND COMMUNITY	4713
<i>O. Bertonecello, D. Sartor, R. Simonetto, L. Battistella, M. Daniel, P. Bragagnolo, S. Martinello, G. Santovito</i>	
EMPLOYING SOCIAL MEDIA TO IMPROVE UNIVERSITY FIELD TRIPS EXPERIENCE	4722
<i>F. Rodrigues, F. Goncalves, J. Brigas, J. Gonçalves, H. Engrácio</i>	
TEACHER AND STUDENT EXCHANGE ACTIVITIES IN HIGHER EDUCATION: EXPERIENCES AND REFLECTIONS FROM ENGINEERING EDUCATION	4730
<i>S. Khoshaba, V. Haralanova</i>	
USE OF VIRTUAL AND MIXED REALITY IN SECURITY EDUCATION	4736
<i>A. Kelíšek, S. Strelcová, J. Kubás, M. Ballay, E. Sventeková</i>	
COMPARATIVE OF TWO TEACHING METHODOLOGIES IN ENVIRONMENTAL ENGINEERING: FLIPPED VS. TRADITIONAL LEARNING	4745
<i>C. Pascual, M. Quintanilla-Benito, I. Izquierdo, M. Godino, F. Marcos</i>	
DECOLONISING BIOCHEMISTRY	4750
<i>A. Stavrou, K. Garrie, D. Hindley</i>	
INSIGHTS ON ENGINEERING EDUCATION 4.0: A SYSTEMATIC LITERATURE REVIEW	4751
<i>B. Bigliardi, E. Bottani, B. Pini, L. Tebaldi, A. Volpi</i>	
QUI-BOT: CHEMISTRY AND PROGRAMMING CHALLENGES FROM EARLY CHILDHOOD TO SECONDARY SCHOOL INCLUSIVELY	4758
<i>M.I. Tarrés-Puertas, A.D. Dorado Castaño</i>	
LANGUAGE CLUB AS A TOOL OF INFORMAL FOREIGN LANGUAGE LEARNING BY ADULTS	4759
<i>M. Burima</i>	
FROM POWERS TO SUPERPOWERS: SKILL DISCOVERY BY PERSONALIZED LEARNING IN DESIGN EDUCATION	4760
<i>H. Coman, P. Opincariu</i>	
THE STORYLINE APPROACH IN EDUCATION FOR SUSTAINABILITY: A TEACHER TRAINING WORKSHOP ON THE SUSTAINABLE BRUNCH	4768
<i>I. Iliopoulou, A. Papadimitriou, A. Tsigkou, S. Petrogiannou, D. Brella, D. Kyndelerou</i>	
EDUCATION FOR SUSTAINABLE ECONOMIC DEVELOPMENT – INSIGHTS FROM TURMALINA PROVINCE IN BRAZIL	4777
<i>O. Rodrigues da Rocha, L. Morales, J.H. Coetzer, C. MacMahon</i>	
THE RELATIONSHIP BETWEEN CORPOREALITY AND DISABILITY	4778
<i>D. Chiusaroli, G. Arduini</i>	
EXPERIENCING EXPERIENCE: EXERCISES AND ENHANCERS FOR THE FUTURE OF CREATIVITY IN DESIGN EDUCATION	4784
<i>P. Opincariu, H. Coman</i>	

THE USE OF SELF-ASSESSMENT AND FLIPPED CLASSROOM IN AN UNDERGRADUATE MATHEMATICS COURSE FOR MANAGEMENT STUDENTS <i>N.R.O. Bastos</i>	4791
SEK CAMPUS MADRID: LEARNING PATHS - OUTDOOR LEARNING IN THE CENTER OF MADRID <i>J. Pro, W. Ivey, M. Cotelo</i>	4799
TEACHER TRAINEES' ATTITUDES TOWARDS INTEGRATING INFORMATION TECHNOLOGIES IN ENGLISH LANGUAGE TEACHING <i>J. Hrinak</i>	4805
SERIOUS GAMES FOR CYBERSECURITY: EVALUATING A DESIGN FRAMEWORK <i>V.S. Barletta, M. Calvano, F. Caruso, A. Curci, V. Rossano</i>	4810
FROM SCRATCH TO SKETCH: TRACING METHODS OF TRANSFORMING THOUGHTS INTO REALITY <i>P. Opincariu, H. Coman</i>	4816
CAN SCIENCE EXIST WITHOUT DOUBT? REFLECTION ABOUT SCIENCE IN SECONDARY EDUCATION <i>L. Vervacke, L. Van Den Broeck, B. Delanote, L. Boven, J. De Schrijver</i>	4823
EXAMS THROUGH E-LEARNING ENVIRONMENTS <i>O. García, F. Leon, A. Aguilar, M. Pineda</i>	4830
ANALYSING THE EFFECTIVENESS AND OUTCOMES OF A BLENDED AND SELF-DIRECTED E-LEARNING APPROACH THROUGH THE MOODLE PLATFORM FOR STATISTICAL TRAINING IN SOCIAL SCIENCE DEGREES <i>M. Pérez Priego, M.B. García-Moreno García, G. Gómez-Casero, J.R. Caro-Barrera</i>	4836
THE ANALYSIS OF ENGLISH LANGUAGE AND LITERATURE TEACHER TRAINEES' OUTPUTS IN ACADEMIC WRITING COURSE AT THE TERTIARY LEVEL OF EDUCATION <i>J. Hrinak</i>	4842
IN-COURSE EXPERIENCES WITH A SCIOER FOR OBJECT-ORIENTED PROGRAMMING <i>J. Nelson, J. McCuaig, M. Asch, N. Laundry</i>	4847
ASSESSING ORGANIZATIONAL BEHAVIOR FROM AN ORGANIZATIONAL PSYCHOLOGY PERSPECTIVE: DEVELOPMENT AND APPLICATION OF A HOSPITAL TEACHING CASE <i>J.P. Czakert, J.A.M. Reif, R. Berger</i>	4857
CAN HISTORY REPEAT ITSELF? PHILOSOPHICAL QUESTIONS TO ENHANCE STUDENTS' CRITICAL THINKING ABOUT HISTORY <i>B. Delanote, L. Van Den Broeck, L. Vervacke, J. De Schrijver</i>	4864
CRUSTACEANS, MOLLUSCS AND THEIR INVOLVEMENT IN MARINE WATER POLLUTION: AN EXPERIMENTAL EDUCATIONAL PROJECT TO INVOLVE THE PRIMARY SCHOOL IN CURRENT ENVIRONMENTAL ISSUES <i>G. Massarin, S. Vecchiato, E. Piva, S. Pacchini, S. Schumann, M. Bellio, P. Irato, G. Santovito</i>	4871
"HOUSE NEPAL": HOW A BUILDING WORKSHOP CAN SUPPORT AND PROMOTE THE EXCHANGE OF KNOWLEDGE ON MATERIALS AND CONSTRUCTION TECHNIQUES <i>M. Lidón de Miguel, V. Cristini, F. Vegas López-Manzanares, C. Mileto, N. Adhikary</i>	4881
WHATSAPP AS A TOOL FOR COLLECTING VOICE NOTED ORAL JOURNALS FROM PARTICIPANTS IN A SHARED HOME READING INTERVENTION <i>A. Dillon, K. Gallagher, C. Habak, S. Saqr, Y. Alramamneh</i>	4889
AN APPROACH TO IMPROVE THE MANAGER'S SKILLS IN THE DECISION-MAKING PROCESS <i>E. Mitan</i>	4890
THE CULTURAL VALUES OF EARTHEN ARCHITECTURE: A HERITAGE EDUCATION EXPERIENCE IN NEPAL <i>V. Cristini, M. Lidón de Migue, C. Mileto, F. Vegas López-Manzanares, N. Adhikary</i>	4900
TEACHERS' SURVEY ON THE TEACHING OF COMPUTING AS A COMPULSORY SUBJECT FOR PUPILS OF AGE 8 <i>E. Stankov, M. Jovanov, M. Jancheski</i>	4906
IMPROVING MOTIVATION IN SECOND LANGUAGE ACQUISITION THROUGH DIGITAL TOOLS <i>D. Popa, I. Cora, V. Borcan</i>	4916

LEARNING MATERIALS CONTAINING MULTIMEDIA: THE EXPERIENCE OF SECONDARY SCHOOL TEACHERS IN ESTONIA	4922
<i>L. Feklistova, M.H. Tiik</i>	
DEVELOPING A COLLABORATIVE LEARNING APPLICATION TO SUPPORT EFFECTIVE STUDENT COLLABORATION IN HYBRID LEARNING ENVIRONMENTS	4931
<i>S. O'Neill, A. Mooney</i>	
STIMULATING STUDENTS IN LOGICAL THINKING AND IMAGINATION THROUGH A NEW MULTI-ANALYSIS METHOD - A SINO-ITALIAN COLLABORATIVE CLASS EXPERIENCE	4937
<i>L.M.F. Fabris, M. Li, V. Labriola</i>	
THE IMPORTANCE OF DATA VISUALISATION IN INTRODUCTORY STATISTICS COURSES IN SOCIAL SCIENCES DEGREES	4943
<i>J.R. Caro-Barrera, M.B. García-Moreno García, C.A. Jara Alba, M. Pérez Priego</i>	
WHEN STUDENTS TAKE THE ROLE OF INSTRUCTIONAL DESIGNERS	4952
<i>M. Banek Zorica, J. Klindžić, S. Spiranec, D. Kos</i>	
POST COVID-19 PANDEMIC ON MODALITY PREFERENCES, EXPERIENCES, AND FACTORS CONTRIBUTING TO STUDENTS' SUCCESS IN MATHEMATICS COURSES	4960
<i>M. Bode, S. Devi</i>	
DESIGN OF CONTEXT AWARE MOBILE APPS: A USE CASE CENTERED TEACHING APPROACH BASED ON VISUAL PROGRAMMING	4970
<i>M. Zimmermann, C. Merschroth, G. Seilheimer</i>	
ILARGI PROJECT: PROMOTION OF EFFICIENCY IN BUILDING THROUGH STUDENTS AND STEM PROJECTS	4978
<i>P. Sarriugarte-Onandia, E. Trebolazabala, J. Aldasoro, A. Picallo-Perez</i>	
BUILDING AND STRENGTHENING THE ENTREPRENEURIAL UNIVERSITY - TAPPING INTO THE POTENTIAL OF LIBRARIES	4979
<i>S. Spiranec, M. Banek Zorica, D. Kos</i>	
INVESTIGATING THE IMPACT OF COLLABORATIVE LEARNING ON UNDERGRADUATE COMPUTER SCIENCE STUDENTS	4986
<i>S. O'Neill, A. Mooney</i>	
EPORTFOLIOS AND SELF-EFFICACY: GAUGING BEGINNING DESIGN STUDENTS' CONFIDENCE LEVELS USING EPORTFOLIOS	4993
<i>C. Fulford Iii, R. Nobles</i>	
YOUTH PARTICIPATION WITHIN THE 2030 AGENDA FOR SUSTAINABLE DEVELOPMENT: A PEDAGOGICAL PERSPECTIVE BASED ON A QUALITATIVE CONTENT ANALYSIS	4998
<i>M. Ratotti, D. Bianchi, L. Carrieria</i>	
IDENTIFICATION AND SYSTEMATISATION OF REGULAR ERRORS IN RESEARCH PROTOCOLS SUBMITTED FOR ANALYSIS BY AN ETHICS COMMITTEE: THE EXPERIENCE OF ESCOLA SUPERIOR DE SAÚDE – INSTITUTO POLITÉCNICO DO PORTO	5005
<i>D. Tavares, A. Cruz, A. Machado, A.P. Cabral, H. Sousa, H. Curado, I. Faria, M.J. Gonçalves, M.M. Amorim, P. Lopes, P. Monteiro</i>	
STUDENTS' OPINIONS ON APPLICATION OF DIGITAL GAME-BASED LEARNING STRATEGY IN EDUCATION AT FACULTY OF EDUCATION	5010
<i>R. Pondelíková, L. Lipárová</i>	
IMPROVING OF MATHEMATICAL EDUCATION OF GENERATION Z	5020
<i>N. Krivoňáková, I. Hrivová</i>	
WE SPEED UP: PAPER-BASED DOCTORAL DISSERTATIONS GIVE RISE TO NEW BIAS	5027
<i>Z. Baracska, A. Nemeth, B. Tamas</i>	
THE IMPACT OF DOCTORAL STUDY ON THE DEVELOPMENT OF PROFESSIONAL IDENTITY AND INDIVIDUAL CONCEPTS OF EDUCATOR PROFESSIONALISM WITHIN THE CONTEXT OF EDUCATION SETTINGS	5033
<i>L. Devlin, R. Morgan Guthrie</i>	
QUESTIONS AND SUGGESTIONS: WHAT KIND OF INFORMATICS EDUCATION IS NEEDED AND HOW CAN WE DELIVER IT?	5039
<i>N. Annuš</i>	
YOUTH AND OUT OF SCHOOL CONTEXTS: FIRST FINDINGS OF A NARRATIVE REVIEW ABOUT CRITICAL THINKING WITHIN THE 21ST-CENTURY SKILLS	5045
<i>M. Ratotti</i>	

DEVELOPMENT OF A PEDAGOGICAL DIAGNOSTIC INSTRUMENT "PROFILER OF ARTISTIC POTENTIAL"	5055
<i>L. Lipárová, R. Pondelíková</i>	
USABILITY OF ARTIFICIAL INTELLIGENCE TO CREATE PREDICTIVE MODELS IN EDUCATION	5061
<i>N. Annuš</i>	
CRITICAL THOUGHT IN OBSTETRIC TEACHING	5066
<i>V. Henriques</i>	
EDUCATION FOR SUSTAINABLE DEVELOPMENT	5070
<i>D. Smolčić Jurdana, R. Agbaba</i>	
ANALYSIS OF TOOLS FOR GENERATION OF EDUCATIONAL CONTENT USING ARTIFICIAL INTELLIGENCE	5078
<i>I. Blagoev, G. Vassileva, V. Monov</i>	
ARTIFICIAL INTELLIGENCE AND MEDIA COMPETENCE: A SYSTEMATIC LITERATURE REVIEW ON WEB OF SCIENCE	5087
<i>O. Vite-León, C. Poggi-Parodi, J. Lopera-Moreno</i>	
ADAPTING COMPANY EMPLOYEE TRAINING IN SALES AND MANUFACTURING SECTORS USING VIRTUAL REALITY: A CASE STUDY COMPARISON	5095
<i>S. Morrissey, K. Maye, K.J. Heinz Tegtmeyer, M. Casey, J. Moolman, J. Walsh</i>	
CONCEPTUAL MODEL REPORT: A SIGNIFICANT ELEMENT FOR PEDAGOGICAL STRATEGIES IN CLINICAL TEACHING	5104
<i>V. Henriques</i>	
HOW TO IMPROVE LIFELONG LEARNING WITH PSYCHOLOGICAL MANAGEMENT	5109
<i>J. Taylor</i>	
LEARNING PREFERENCES IN HIGHER EDUCATION ACCOUNTING COURSES IN PORTUGAL	5114
<i>F. Campos, F. Carvalho, R. Domingos, G. Azevedo, A.M. Bandeira, C. Góis</i>	
STUDENTS OF ENVIRONMENTAL ENGINEERING AS THE MAIN CHARACTERS OF THE CLASS WITH GAME BASED LEARNING	5123
<i>M. Quintanilla-Benito, C. Pascual, I. Izquierdo, M. Godino, F. Marcos</i>	
THE EFFICACY OF ISSUING BADGES AS AN INCENTIVE DURING EMERGENCY REMOTE TEACHING: A CASE STUDY	5129
<i>H. Schoeman, F. Fon</i>	
AWARENESS OF SUSTAINABLE DEVELOPMENT GOALS OF STUDENTS IN THE SUBJECTS "STATISTICS" AND "ENERGY TECHNOLOGY"	5138
<i>S. Gallardo, M. Lorduy-Alós, J. Marín, M.J. Palomo</i>	
GROSSO GUAIO AL MUSEO DI CALCI: A DIGITAL ADVENTURE TO LEARN THE SECRETS OF THE MUSEUM OF NATURAL HISTORY OF THE UNIVERSITY OF PISA	5147
<i>R. Barbuti, E. Bonaccorsi, M. Bondioli, P. Milazzo, P. Nepa</i>	
MODELLING THE PROCESS OF IMPROVING THE ACTIVITY OF THE OFFICE OF DOCTORAL STUDIES IN UNIVERSITY	5155
<i>L.G. Popescu, M.V. Zerbés</i>	
PERSPECTIVE MATTERS: A PRELIMINARY LOOK INTO THE DIFFERENCES BETWEEN PROFESSOR AND STUDENT PERCEPTION OF TEST DIFFICULTY AND THEIR RELATIONSHIP WITH TEST PERFORMANCE	5163
<i>I. Pesovski, R. Santos, S. Kagan</i>	
AUTOMATIZED CONGRUENCE OF REVIEWERS' ASSESSMENTS AND RAW DATA FOR EDUCATIONAL OBJECTS IN COMPARATIVE QUALITY EVALUATION	5170
<i>H. Kostadinova, G. Totkov</i>	
LECTURER'S EXPERIENCES ON THE ADOPTION OF IPADS AS A TOOL FOR TEACHING AND LEARNING IN A HIGHER EDUCATION INSTITUTION	5178
<i>D. Robertson, R. Singh</i>	
EVALUATION OF THE PERCEPTION AND ATTITUDES OF UNIVERSITY STUDENTS TOWARDS ECOLOGICAL ISSUES	5179
<i>M. Navrátilová, M. Beranová</i>	
CAREER MANAGEMENT IN THE PORTUGUESE NAVY: SPECIALIZATION AS CASE STUDY	5186
<i>J. Abreu, I. Soares</i>	
E-LEARNING IN CONTINUING VOCATIONAL EDUCATION AND TRAINING OFTEN USED AND (HARDLY) ACCEPTED?	5195
<i>C. Siegfried</i>	

TOWARDS A SUSTAINABLE FUTURE: THE ROLE OF EDUCATION SYSTEMS IN ACHIEVING AGENDA 2030 GOALS <i>V. Dolci, E. Gianatti, S. Kuhzaee, B. Pini</i>	5196
COMBATTING STUDENT DEMOTIVATION ONLINE: LESSONS FROM QATAR <i>R. Bianchi, B. Yyelland, A. Weber, K. Kittaneh</i>	5204
COOPERATIVE-LEARNING TO SUPPORT SOCIAL SKILLS IN AUTISM <i>S. Rizzo, A. Cavallaro</i>	5205
OPTIMIZING THE CURRICULUM IN STATE KINDERGARTENS IN ROMANIA <i>L.G. Popescu, M.V. Zerbese, O. Artene-Piloiu</i>	5214
PARENTS' ATTITUDES TOWARDS THEIR CHILDREN'S LEISURE USE OF DIGITAL TECHNOLOGIES <i>P. Kockova, K. Kilianova, K. Kostolanyova</i>	5224
PILOT STUDY: ARTIFICIAL INTELLIGENCE THROUGH THE EYES OF UNIVERSITY STUDENTS <i>K. Kilianova, P. Kockova, L. Klubal, K. Kostolanyova</i>	5229
TRENDS AND CHALLENGES IN UNIVERSITY-INDUSTRY COLLABORATION: A SYSTEMATIC AND DESCRIPTIVE ANALYSIS OF LITERATURE <i>V. Dolci, E. Gianatti, B. Pini</i>	5237
KNOWLEDGE OF THE KEY POLITICAL DOCUMENT BY TEACHING STAFF IN THE CZECH REPUBLIC <i>R. Kárníková</i>	5246
OPEN EDUCATION RESOURCES IN HIGHER EDUCATION CLASSROOM <i>M. Hunter, S. King</i>	5251
GENDER DIFFERENCES IN CLASSROOM CLIMATE PERCEPTION BEFORE P4C METHOD IMPLEMENTATION <i>L. Kaliska</i>	5252
BEHIND THE NUMBERS: A DATA-DRIVEN LOOK AT ACADEMIC PROCRASTINATION AND PERFORMANCE <i>J. Calleja-Blanco, A. Núñez-Carballosa</i>	5260
CRITICAL THINKING AND IDEOLOGY IN EDUCATION <i>J. Kaliský</i>	5266
COMMUNITY-ENGAGED PEDAGOGY BY DESIGN: PRACTICAL STRATEGIES FOR PROMOTING TRANSFORMATIVE LEARNING <i>C.L. Blitz, I. Yanovitzky, D. Amiel</i>	5270
SLOVAK FUTURE EDUCATIONAL LEADERS' EMOTIONAL INTELLIGENCE IN THE CONTEXT OF TRANSFORMATIONAL LEADERSHIP <i>L. Kaliska</i>	5276
MINDFULNESS PRACTICES IN UNIVERSITY AND HIGH SCHOOL SETTINGS: A SYSTEMATIC LITERATURE REVIEW <i>R. Baker, K. Karadjova-Kozhuharova</i>	5283
USING VIDEO REFLECTIONS AS AN ALTERNATIVE TO TRADITIONAL ASSESSMENTS IN INTRODUCTORY ECONOMICS <i>M. Cameron, N. Dodamgoda, G. Piercy</i>	5291
MICROEXPERIMENTS, A RESPONSE TO THE CRISIS OF THE TEACHING OF PHYSICS AND MATHEMATICS IN BLENDED LEARNING <i>A.M. Garces Madrigal, C. Alvarado Zamorano</i>	5292
INTELLECTUAL DISABILITY AND UNIVERSITY STUDIES - AN EXAMPLE OF INCLUSIVE EDUCATION <i>J. Calleja-Blanco, M. Romeo-Delgado, K.P. Hernández Del Valle</i>	5297
ACADEMIC TEACHING: ARE WE STILL DYING BY POWERPOINT? <i>M. Milani</i>	5301
CAREER DEVELOPMENT FOR WOMEN IN MANAGEMENT <i>M-A. Loisel, D. Fortier</i>	5306
INVESTIGATING THE IMPACT OF A CHATBOT'S DISCLOSURE BEHAVIOR ON RAPPORT BUILDING IN STUDENT COACHING <i>V. Mai, H. Maloko, P. Varney, A. Richert</i>	5312
THE SOCIAL ROLE OF DIGITAL DESIGN IN INCLUSION AND DIVERSITY: A REFLECTION-IN-ACTION APPROACH IN THE CONTEXT OF THE SKILLS FOR A NEXT GENERATION PROJECT <i>B. Giesteira, V. Peçaiques, L. Lino, G. Vila Maior</i>	5322

A ROLE PLAY TO APPROACH COMPLEXITY TOPICS LEARNING: THE CASE OF CLIMATE CHANGE AND FOOD SYSTEM INTER-DEPENDENCIES	5329
<i>J. Urquijo-Reguera, M.T. Gómez-Villarino, D. Pereira Jerez, J. López Santiago, M. de Francisco Alonso</i>	
INTERNATIONAL EDUCATED NURSES' CO-DESIGN OF A VIRTUAL SERIOUS GAME	5330
<i>C. Da Silva, A. Torres, B. Kapralos, E. Peisachovich, C. Anyinam, S. Coffey, L. Graham, A. Dubrowski</i>	
CREATING A RUBRIC FOR THE STOP HYPERTENSION SERVICE-LEARNING PROJECT	5337
<i>M. Hernández-Martín, M.D. Vicente-Torres, L. Rivera, D. Prieto, S. Benedito, N. De las Heras, A. López-Calderón, J.A. García-Donaire, M. Abad-Cardiel, N. Martell, R. Redondo-Castillejo, S.D. Paredes, D. Gómez-Garre, J.A. Issa, M.P. Montenegro, C. Contreras, V. Azcutia, M.C. Lozano-Estevan, V. Hurtado-Carneiro, R. Rodríguez-Díez, A.I. Martín-Velasco, F. Das Chagas Vasconcelos, G. Segovia, T. Priego, R. Gredilla, V. Cachofeiro, M.V. Hernández, A. Agis-Torres, P. Recio, M. Muñoz-Picos, J. Navarro-Dorado, N.F. Pascual, B. Colino, A. Gómez Del Val, I. Rodríguez-Ramiro, R. Raposo, C. Soriano, M. Sancho, V.S. Leite, J.M. Bravo, J.A. García-Baró, E. Martínez-Martínez, A. Moreno, E. Nebot, A. Sánchez-Aguilera, A. Sánchez-Pina, M.E. López-Oliva</i>	
MENTORING OF ENGINEERING STUDENTS IN SUSTAINABLE ENTREPRENEURSHIP IN THE INNOVATOR ECOSYSTEM UNIVERSITIES-TECHNOLOGICAL CENTRES	5347
<i>M.D. La Rubia, C. Rus-Casas, D. Eliche-Quesada, S. Jurado-Contreras, F.J. Navas-Martos</i>	
STUDENTS' SUCCESS MONITORING: USING DECISION TREES AND SOCIAL NETWORK ANALYSIS	5353
<i>J. Gusić Munđar, D. Munđar</i>	
USES OF THE MODEL CLASSROOMS CREATED FOR THE UNAM HIGH SCHOOL PROGRAM	5359
<i>A.M. Ramírez Bedolla, M. Zúñiga González, M.H. Avila Arciniega</i>	
MENTORING BOT FOR SCALABLE REVIEW SUPPORT	5368
<i>U.U. Shegupta, R. Schmidt, W. Hardt</i>	
REFLECTIONS OF MEXICAN UNIVERSITY PROFESSORS ON THE EXECUTION OF THEIR TEACHING-LEARNING SEQUENCES	5377
<i>C. Alvarado Zamorano, R. Castañeda, G. de la Cruz Martinez, A.L. Eslava Cervantes, A.M. Garces Madrigal, J. Ramirez Ortega</i>	
THE INCLUSION OF YOUNG PEOPLE WITH DISABILITIES IN THE UNIVERSITY ENVIRONMENT THROUGH THE FORMATION OF A SOCIALLY ACTIVE POSITION	5386
<i>N. Cebotaru, S. Racu</i>	
DIFFERENCES IN PARENTAL SUPPORT FOR CHILDREN'S PHYSICAL ACTIVITIES WITH REGARD TO THE LEVEL OF PARENTS' PHYSICAL ACTIVITY	5390
<i>J. Alić, S. Jenko Miholić, D. Kuna</i>	
MORAL EDUCATION TRANSFORMATIONS IN THE SLOVAK STATE EDUCATIONAL PROGRAM	5396
<i>J. Kaliský</i>	
ANALYSIS ABOUT THE EFFECTIVENESS OF THE INTEGRAL EDUCATION PROGRAM (PEI) IN ELEMENTARY EDUCATION I STUDENTS OF A PUBLIC SCHOOL IN THE STATE OF SÃO PAULO - BRAZIL	5402
<i>R. Ponchio, A. Nobel, A. Cara, I. Ribeiro</i>	
WHEN THE 'M' IN 'STEM' STANDS FOR MUSIC: SOME IDEAS FOR TEACHING ENVIRONMENTAL TECHNOLOGY	5409
<i>R.J. Aguado, L.V. Merchante, Q. Tarrés, G.A. Bastida, A. Mazega, M. Delgado-Aguilar</i>	
A NEW MODEL OF INTEGRATED FINAL MASTER PROJECT IN ACTUARIAL SCIENCE	5410
<i>M.C. Mayorga-Toledano, A. Fernández-Morales, E. Trigo-Martínez, O. Gómez Pérez-Cacho</i>	
DEVELOPMENT OF EXPERIENTIAL LEARNING PROJECTS IN THE ONLINE EDUCATIONAL ENVIRONMENT	5416
<i>P. Norton, E. Mosser, P. Jain, F. Krebs, S. Jennings</i>	
USE OF THE ELEVATOR PITCH METHODOLOGY TO INTEGRATE THE CIRCULAR ECONOMY IN THE FIELD OF BUSINESS MANAGEMENT AND FINANCE	5417
<i>E. Escrig-Olmedo, M.A. Fernández-Izquierdo, I. Ferrero-Ferrero, M.J. Muñoz-Torres, J.M. Rivera-Lirio</i>	
FACTORS INFLUENCING EMPLOYABILITY OF NEETS 25+ IN SELECTED EUROPEAN COUNTRIES	5424
<i>P. Fanta</i>	
EVALUATING THE TECHNICAL EFFICIENCY IN HIGHER EDUCATION INSTITUTIONS THROUGH MULTI-DIRECTIONAL ANALYSIS	5429
<i>K. Murillo</i>	

RELATIONSHIP BETWEEN DARK TRIAD TRAITS AND SUBJECTIVE PERCEIVED PERSONAL EXISTENTIAL FULFILLMENT IN FUTURE TEACHERS <i>P. Skobrtal, R. Pospíšil</i>	5437
EFFECTS OF VISUALIZATION OF MATHEMATICAL TERMS WITH THE EMPHASIS ON BETTER UNDERSTANDING <i>I. Ilavská, J. Gazdíkova, L. Kontrova</i>	5444
REMOTE LEARNING AND ASSESSMENT OF GREEK SIGN LANGUAGE IN THE UNDERGRADUATE CURRICULUM IN COVID TIME <i>G. Sapountzaki, E. Efthimiou, S.-E. Fotinea, K. Papadimitriou, G. Potamianos</i>	5452
EXPLORING TRANSITION INTO INDUSTRY 4.0 WITH CASE STUDIES ON FOUR ENGINEERING EDUCATION DISCIPLINES <i>D. Shetty, C. Campana</i>	5460
OPEN KNOWLEDGE IN HIGHER EDUCATION: CLASSROOM CIBERIMAGINARIO AS A TOOL IN THE AREA OF COMMUNICATION SCIENCES <i>M.C. Galvez de la Cuesta, M. Gértrudix Barrio, M.C. Gertrudis Casado, A. Carbonell Alcocer, J. Romero Luis, M. Rajas Fernández, M. Baños Fernández, E. Taborda Hernandez, L. Matosas López, R. Arcos Martín, J.L. Rubio Tamayo</i>	5465
INCLUSIVE DESIGN, STORYTELLING AND TEACHER TRAINING <i>P. Aiello, F. Sabatano, I. Viola, F. Capodanno</i>	5466
MODERNIZATION OF THE EDUCATIONAL PROCESS IN THE MATHEMATICS STUDY PROGRAM USING GRAPHIC DIGITAL TECHNOLOGIES <i>I. Ilavská, J. Gazdíkova, L. Kontrova</i>	5471
EFFECT OF A SCHOOL-BASED MULTIDISCIPLINARY HEALTH PROGRAM ON OBESITY PARAMETERS IN ADOLESCENTS FROM MEXICO <i>M.A. Enríquez Martínez, J.A. Valadez Lira, A. Cocca, M. Cocca, O. Ceballos Gurrola</i>	5477
ENHANCING MULTILINGUAL AND INTERCULTURAL COMPETENCES THROUGH LANGUAGE ETWINNING <i>A. Pakula</i>	5478
LANGUAGE ACQUISITION BY MINORITY CHILDREN IN LATVIAN PRESCHOOL EDUCATION PROGRAMMES: PARENTS' VIEWPOINTS <i>S. Zariņa, M. Burina, J. Davidova, S. Ignatjeva, S. Mickeviča</i>	5486
INTEGRATING SOCIAL INCLUSION, GENDER PERSPECTIVE AND SUSTAINABILITY INTO THE SKILLS DEVELOPMENT PROCESS IN HIGHER EDUCATION <i>M.C. Mayorga-Toledano, A. Fernández-Morales, O. Gómez Pérez-Cacho, E. Trigo-Martínez, R. Moreno-Ruiz, J.D. Cisneros-Martínez, B. Lacomba-Arias</i>	5487
QUANTIFICATION OF THE CONTRIBUTION OF DIGITIZED TECHNIQUES IN INCREASING STUDY PERFORMANCE IN CONTEMPORARY DENTISTRY <i>M.E. Antohe, C.G. Dascalu, I. Gradinaru</i>	5494
"I NEED YOUR HELP TO STAY IN SCHOOL": THE ROLE OF PERSONAL AND INSTITUTIONAL FACTORS IN THE INTENTION TO DROP OUT <i>I.D. Stanciu, M.L. Maier, N. Cobarzan</i>	5500
EXPERT SYSTEMS AND SIMULATION METHODS FOR OPTIMIZING FORMATIVE ACTIVITY IN DENTISTRY <i>I. Gradinaru, C.G. Dascalu, M.E. Antohe</i>	5511
DON'T UNDERESTIMATE MICROLEARNING: UNIVERSITY STUDENTS' PERSPECTIVE AND POSSIBLE FUTURE SCENARIOS <i>A. Rof, A. Bikfalvi, P. Marques</i>	5517
SUMMER SCHOOLS FOR INTERNATIONAL STUDENTS: INTERCULTURAL SENSITIVITY AND LANGUAGE DEVELOPMENT <i>S.C. Munteanu, A.-M. Capraru, S. Paduretu</i>	5525
UNDER THE KNIFE: COMPENSATORY TOOLS IN THE ENGLISH FOR NURSING (EFL) CLASSROOM <i>J. Duarte</i>	5529
UNPACKING IMMERSION TEACHERS' EXPERIENCES OF HYBRID PROFESSIONAL DEVELOPMENT <i>T. O Ceallaigh, K. Ní Chlochasaigh</i>	5537
ENGLISH FOR NON-ACADEMIC STAFF: NAVIGATING INTERNATIONALIZATION, TACKLING INTERCULTURAL COMMUNICATION AND DEVELOPING LANGUAGE COMPETENCE <i>S. Paduretu, A.M. Capraru</i>	5538

INTERNATIONAL STUDENTS LEARNING EXPERIENCE IN A POST COVID ERA: PREFERENCE ON DELIVERY MODEL FOR ACADEMIC ENGLISH SUPPORT	5542
<i>A. Hidalgo-Bastida, C. Collier, S. Sashikumar</i>	
THE TRANSFORMATION OF TEACHERS' TRAINING POLICY IN ITALY: TRACING CHANGES IN THE AFTERMATH OF THE COVID-19 CRISIS	5547
<i>A. Favella</i>	
TEACHING PHOTOGRAPHY IN SPECIAL NEEDS EDUCATION	5555
<i>D. Gounari, A. Papadopoulou</i>	
SPIKE UP PRIME INTEREST IN SCIENCE AND TECHNOLOGY THROUGH CONSTRUCTIONIST GAMES	5562
<i>P. Petrovič, F. Agarshev</i>	
LATENT PROFILE ANALYSIS OF COMPUTING IDENTITY: A STUDY OF ELEMENTARY SCHOOL STUDENTS IN COMPUTER SCIENCE IMMERSION PROGRAM	5571
<i>B. Kim, L. Peterson, C. Scharber</i>	
ADDRESSING STUDENTS ALTERNATE CONCEPTIONS OF CHEMISTRY AT THE TRANSITION FROM SECONDARY TO TERTIARY STUDIES	5579
<i>J. Lovatt, O.E. Finlayson</i>	
SUPPORT FOR MINORITY LEARNERS' SUCCESSFUL STUDIES IN LATVIAN: VIEWPOINTS OF PRIMARY SCHOOL TEACHERS	5586
<i>S. Zarina, J. Davidova, M. Burima, L. Krastiņa</i>	
ESSENTIAL BUSINESS-TO-BUSINESS SELLING SKILLS IN TODAY'S DIGITAL ERA: THE EMPLOYERS' PERSPECTIVE	5587
<i>M. Berger, J.P. Koch, V. Koch, B.M. Zunk</i>	
ALIVE AND KICKING: REVAMPING ASSESSMENT IN THE ENGLISH FOR NURSING CLASS	5592
<i>J. Duarte, A. Albuquerque</i>	
DYNAMIC AND ACTIVE ASSESSMENT IN MECHANICAL ENGINEERING	5600
<i>I. Llop-Harillo, M.C. Mora</i>	
DEVELOPMENT AND EVALUATION OF A TRAINING FOR VOCATIONAL TEACHERS AND TRAINERS TO DESIGN PROBLEM-ORIENTED TECHNOLOGY-BASED EXAMINATION TASKS	5601
<i>H. Meiners, S. Seeber</i>	
LEARNING SATISFACTION STUDENTS OF A NOVEL CONSTRUCTIVIST PROBLEM BASED-LEARNING (PBL) STRATEGY THROUGH VIDEO IN PATHOPHYSIOLOGY	5602
<i>V.S. Leite, M. Hernández-Martín, S. Benedito, A. Sánchez-Pina, L. Rivera, D. Prieto, C. Contreras, R. Redondo-Castillejo, J.A. Issa, A. Gómez Del Val, J. Navarro-Dorado, M. Muñoz-Picos, N.F. Pascual, B. Colino, M.P. Montenegro, C. Soriano, J.J. Merino, A. Agis-Torres, B. Climent, P. Recio, R. Raposo, M. Hernández, M.E. López-Oliva</i>	
NIGHTMARE OR GAMECHANGER: PROJECT BASED LEARNING OF PROJECT MANAGEMENT FOR GENERATION Z: BEST PRACTICES FOR BLENDED LEARNING	5608
<i>J. Grimmer, M. Priester</i>	
INTERNATIONALIZATION OF HIGHER EDUCATION IN EASTERN EUROPE	5619
<i>A. Mucsi, E. Malota, T. Gyulavári</i>	
USING PROGRAMMABLE DRONE IN EDUCATIONAL PROJECTS AND COMPETITIONS	5624
<i>P. Petrovič, P. Verčimák</i>	
THE USE OF A SERVICE-LEARNING METHODOLOGY FOR END-OF-DEGREE PROJECTS IN INDUSTRIAL ENGINEERING-RELATED DEGREES	5634
<i>A. Jiménez-Suárez, A. Cortés, S. Cifuentes, S. García-Rodríguez</i>	
THE MEDIATING EFFECT OF ATTITUDES TOWARDS STATISTICS AND TECHNOLOGY IN UNIVERSITY STUDENTS	5642
<i>O. Silva, Á. Sousa</i>	
EFFECTS OF THE COVID-19 PANDEMIC ON READING AND WRITING SKILLS OF ELEMENTARY STUDENTS WITH AND WITHOUT LEARNING DISABILITIES IN GREECE: EDUCATORS' PERSPECTIVES	5649
<i>S. Tzivinikou, A. Moutavelis, Z. Krokou, M. Louari, P. Papadimitriou</i>	
THE POWER OF GAME JAMS UNDER LOCKDOWN	5658
<i>E. Pietrikova</i>	
SCHOOL OF THE FUTURE THROUGH THE EYES OF SLOVAK STUDENTS	5667
<i>J. Fabus, A. Chrenkova, Z. Kolarovszka, D. Tothova</i>	

INTERNATIONAL STUDENTS' TRANSITION INTO THE UK'S HIGHER EDUCATION <i>A. Hidalgo-Bastida</i>	5674
GENERATIVE DESIGN IN INTERIOR DESIGN: EXAMINING ITS FEASIBILITY AND IMPLEMENTATION IN PRACTICE AND EDUCATION <i>H. El-Hammali, M. Suleiman</i>	5675
IMPACTS OF YOUNG PEOPLE'S BEHAVIOR ON THE USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES <i>O. Silva, Á. Sousa, J. Nunes</i>	5676
DISRUPTIVE TECHNOLOGIES IN STEM EDUCATION – A METHOD FOR BROADENING THE SPECTRUM OF IT TEACHER EDUCATION <i>G. Bujdosó, K. Teperics, T. Roskó, E. Jász, K. Szilágyi-Czimre, E. Molnár, J. Kapusi, C.M. Novac, O.C. Novac</i>	5684
A FRAMEWORK FOR EVALUATING STEAM EDUCATIONAL PRACTICES <i>P. Russo, N. Spyropoulou, A. Kameas</i>	5693
GUIDED PLAY AND ALGORITHMIC THINKING: A STUDY IN EARLY CHILDHOOD EDUCATION <i>M. Figueiredo, D. Gomes, V. Alves</i>	5700
ARE WE ASSESSING TEACHER STUDENTS IN WAYS THAT COULD HELP THEM TO BECOME GOOD TEACHERS? -THE EXAMPLES ARE FROM PHYSICAL EDUCATION <i>A.R. Jenssen</i>	5701
IS CHATGPT GOOD FOR YOUR STUDENTS? A STUDY DESIGN OF THE IMPACT OF AI TOOLS ON THE STUDENT EXPERIENCE IN LEARNING JAVA <i>M.L. Maher, Y. Tadimalla, D. Dhamani</i>	5702
TOWARDS A HOLISTIC COMPETENCE FRAMEWORK FOR INCLUSIVE STEAM EDUCATORS <i>G. Sakellariopoulou, N. Spyropoulou, A. Kameas</i>	5710
EFFICACY OF BLENDED LEARNING AND TEACHING FOR HE PHYSICS COURSES <i>V. Tymms, Y. Andrew</i>	5718
CHILDREN'S LITERATURE AND PERSONAL AND SOCIAL DEVELOPMENT IN EARLY CHILDHOOD EDUCATION: A PRACTITIONER RESEARCH STUDY <i>M. Figueiredo, A.C. Fernandes, I. Aires de Matos</i>	5719
EXPERIENCES IN EDUCATION: UNDERSTANDING THE ROLE OF PSYCHOMETRIC TESTING TO PREDICT OUTCOMES OF ADULT LEARNERS RETURNING TO EDUCATION ON GOVERNMENT FUNDED RESKILLING INITIATIVES <i>S. Creaner, G. Creaner, C. Creaner</i>	5720
IMMERSION-SPECIFIC TEACHER COMPETENCIES: A ROADMAP FOR SUSTAINABLE CHANGE <i>T. O Ceallaigh, G. Nig Uidhir</i>	5730
RESEARCH ON COMPETENCY OF NURSES: A COMPARISON WITH WORKFORCE COMPETENCY <i>T. Nishizono, Y. Minoura</i>	5731
DIVERSITY IN HIGHER EDUCATION: STUDENTS' GRITS AND FEARS <i>G. Santos, D. Dias, T. Candeias, E. Pinto da Costa, E. Justino</i>	5732
LECTURE BOARD GAME <i>B. Kouch, R. Angotti, K. Sung</i>	5733
A CRITICAL REVIEW OF THE EDUCATIONAL SYSTEM IN GHANA, WEST AFRICA <i>P. Yeboah-Hammond, E. Kumi, E. Glakpe</i>	5740
THE ROLES OF INSTITUTIONS IN ADDRESSING THE NEEDS OF STUDENTS FROM MARGINALISED BACKGROUNDS IN HIGHER EDUCATION IN NAMIBIA <i>M. Sheyapo, C. Haihambo, E. Mbongo</i>	5749
LITERA BRAILLE: PROTOTYPING AND DEVELOPMENT OF LOW-COST DEVICE BASED ON BRAILLE TYPEWRITER <i>T. Ribeiro Alves, C. Pinto Pereira, T. Cerqueira de Jesus</i>	5759
DISTANCE LEARNING SYSTEM FOR SHARING DEVICES BETWEEN MULTIPLE LEARNING INSTITUTIONS WITH USE OF REMOTE ACCESS <i>J. Baláži, L. Vacho, M. Baráth, P. Kósa, B. Švidraň</i>	5769
THE EFFECT OF ENGAGING WITH IN-CLASS POLLS, BOTH OF A QUALITATIVE AND QUANTITATIVE NATURE, ON STUDENTS' FINAL GRADES <i>C. Godfrey, P. Perlman-Dee</i>	5774

EXPLORING DIGITAL TOOLS IN HUMANITIES FOR UNDERGRADUATE STUDENTS IN LINGUISTICS <i>J. Kuzmina</i>	5775
IMMERSIVE LEARNING ENVIRONMENTS: DO THEY IMPROVE STUDENT SKILLS OR CAUSE COGNITIVE OVERLOAD? A LITERATURE REVIEW <i>J.P. Graham, J. Murray, B. Allen</i>	5780
EDUCATIONAL SWITCHED MODE POWER SUPPLY TEST BENCH, FOR LABORATORY EXPERIMENTS AND TEACHING <i>C. Nagy, D.C. Zuideroliet, P.J. van Duijsen</i>	5787
COVID-19: THE CONSTRAINT AND ENABLER IN CHANGING THE TEACHING AND LEARNING ENVIRONMENT <i>K. Naidoo, H. Schoeman</i>	5798
ORGANIZATIONAL COMMUNICATION AND SOCIAL RESPONSIBILITY: A CASE REPORT OF A VIRTUAL EXCHANGE BETWEEN BRAZIL AND PORTUGAL <i>P. Patrício, A. Torres, P. Pinheiro</i>	5803
TEACHING POWER ELECTRONICS USING MODELING AND SIMULATION <i>T.R. Kerssens, D.C. Zuideroliet, P.J. van Duijsen</i>	5812
ENHANCING STUDENT SKILLS TO UNDERSTAND GLOBALIZATION AND EMERGING CHALLENGES <i>I. Casquilho-Martins, H. Belchior-Rocha, D. Alves</i>	5822
TRENDS IN EXECUTIVE EDUCATION FOR INTERACTIVE DIGITAL DESIGN FIELD: A TEN-YEAR CASE STUDY <i>B. Nobre, E. Duarte</i>	5828
ACTIVE LEARNING IN A VOCATIONAL EDUCATION AND TRAINING PROGRAMME <i>N.R.O. Bastos, M.P. de Sousa Oliveira, I. Ferreira</i>	5837
ENHANCING CRITICAL THINKING SKILLS IN THE FLUID AND THERMAL SCIENCES <i>M. Clark, E. Gibson, E. Glakpe</i>	5846
LEARNING WITH A NEWBORN BEE – DESIGN AND DEVELOPMENT OF A VIDEOGAME <i>V. Alves, N. Carapito, C. Sousa, R.P. Duarte, J. Braguez, F. Fonseca, J. Cardoso, B. Lamelas, C.A. Costa</i>	5852
PROMOTING BEST TEACHING PRACTICES <i>A. Hassan, J. Crandall</i>	5853
COMPETENTIAL METHODOLOGICAL CHANGE IN ENGINEERING: COMPUTER SCIENCE AS A MEANS FOR THE LINK BETWEEN CONCEPTS AND THE MODELLING AND CONSTRUCTION OF LOGICAL STRUCTURES <i>M. Dádamo, S. De Federico, G. Cánaves</i>	5858
EMBEDDING CULTURE AND LOCAL HERITAGE ELEMENTS IN LEARNING EXPERIENCES FOR THE DEVELOPMENT OF DIGITAL COMPETENCIES IN THE SENIOR POPULATION <i>M. Amorim, R. Castro Madureira, M. Rodrigues, M. Ferreira Dias, C. Alves, M. Madaleno</i>	5869
BACK TO THE POST-PANDEMIC CLASSROOM: LESSONS LEARNED FROM TEACHING CYBERSECURITY ONLINE <i>B. Taylor, S. Kaza, P. Zaleppa</i>	5876
UNDERSTANDING THE CHALLENGES OF E-LEADERSHIP: THE IMPORTANCE OF COMMUNICATION COMPETENCIES FOR REMOTE WORK CONTEXTS <i>M. Amorim, B. Lins, C. Silva, R. Castro Madureira, M. Ferreira Dias, M. Rodrigues</i>	5877
COMPARISON BETWEEN POWERPOINT SLIDES AND VIDEOS IN EFFECTIVENESS FOR E-LEARNING <i>W. Weng, M. Zheng</i>	5887
RETHINKING TEACHING AND LEARNING IN A LARGE LECTURE COMMUNICATION COURSE <i>N. Linardopoulos</i>	5894
MATLAB GUI EXECUTABLE FOR MATRIX ALGEBRA <i>L. Villegas, F. Li</i>	5895
ISOCIAL: VIRTUAL SOCIAL SKILLS INTERVENTION FOR NEURODIVERSE INDIVIDUALS WITH HIGH FUNCTIONING AUTISM <i>J. Bruno</i>	5900

COMPARATIVE RESULTS OF PROGRAM EVALUATION FROM BRAZILIAN SHORT-TERM COURSES	5905
<i>B. Wilges, P.R. Martins, V.M. Silva, V.B. Martins, R. Cislighi, G.P. Mateus, D.H. Longo</i>	
A MATLAB GUI FOR TEMPERATURE DEPENDENT UNDERGRADUATE LAB EXPERIMENTS	5913
<i>E. Momox, D. Cajas-Morales, R. Muñoz-Castillo K, J. Cedillo-Zertuche</i>	
BUILDING COMPUTER SCIENCE EDUCATION CAPACITY IN MIDDLE SCHOOLS: A UNIVERSITY-DISTRICT PARTNERSHIP	5922
<i>C.L. Blitz, D. Amiel</i>	
EMERGENCY GAMIFICATION AND 3D SLIDES AS A TOOL FOR ONLINE LEARNING IN COVID19	5931
<i>L. Guerra-Menéndez, B. Crilly-Montague, M.V. Naval López, J. Del Pino, P.V. Moyano-Cires</i>	
DIGITAL SKILLS MATRIX WITH FOCUS ON TEACHING AND LEARNING ACTIVITIES	5937
<i>A.M. Ramírez Bedolla, G.P. González Alarcón, S. García Garibay, M. Avila Quintana</i>	
RE-IGNITING CREATIVE CULTURAL SCHOOLS	5946
<i>P. Lane, B. Mills, J. Benavides, E. Gomez</i>	
ARTIFICIAL INTELLIGENCE IN EDUCATION: ETHICS AND TRUST CHALLENGES	5951
<i>D. Pantazatos, M. Grammatikou, V. Maglaris</i>	
USING FLIPPED CLASSROOMS AND ACTIVE LEARNING ACTIVITIES IN STEM EDUCATION: ENHANCING STUDENT ENGAGEMENT AND LEARNING EFFECTIVENESS	5958
<i>R. Azimzadeh, S. Rodchua, M. Watson</i>	
GATHERING TO LEARN, GROW, AND COLLABORATE FROM ANYWHERE	5959
<i>A.C. Vidaña Montes</i>	
DEVELOPING GROWTH MINDSET IN COLLEGE CLASSROOMS	5963
<i>R. Azimzadeh, A. Danley, S. Rodchua, M. Watson</i>	
METHODOLOGY FOR THE DEVELOPMENT AND DESIGN OF EDUCATIONAL PROGRAMS IN KAZAKHSTAN	5964
<i>A. Niyazgulova, Y. Daineko, D. Tsoy</i>	
BLOOD FLOW DESCRIPTION USING MATH MODEL AND ITS VISUALIZATION IN UNITY 3D ENGINE AS A PART OF MEDICAL EDUCATIONAL SIMULATOR	5971
<i>B. Alipova, Y. Daineko, F. Tokmukhamedova, M. Ipalakova, ZH. Bolatov, D. Tsoy</i>	
DIGITAL TRANSFORMATION OF EDUCATIONAL ECOSYSTEM AND GRANTS SUPPORT SYSTEM IN SCHOOLS	5976
<i>I. Pihir, M. Tomičić Furjan, K. Tomičić-Pupek</i>	
PROJECT-BASED LEARNING: CREATING AN IMMERSIVE EXPERIENCE FOR LEARNERS	5982
<i>A. Ko</i>	
COPEs MODEL BASED UX DESIGN AND IMPLEMENTATION WITH A MOBILE APP TO ENHANCE SPONTANEOUS REVIEW HABITS FOR SECOND LANGUAGE LEARNING	5983
<i>R. Nakagawa, Y. Ohkawa, X. Zhao, A. Takahashi, T. Ohyama, T. Mitsuishi, Y. Hayakawa</i>	
COMPUTATIONAL THINKING IN CHILDHOOD MATHEMATICS EDUCATION: TOWARD A STRATEGIC USE OF DIGITAL AND COMPUTATIONAL LITERACIES IN TEACHER PREPARATION	5988
<i>H. Haydar</i>	
EXPLORING STUDENT EXPERIENCES AND ATTITUDES TOWARDS COMPUTER-BASED TESTING AND FEEDBACK IN MATHEMATICS EDUCATION	5994
<i>T. Kraav, K. Orav-Puurand, H. Jukk, S. Pihlap, E. Kirsiaed</i>	
METAVErSE IN THE PROCESS OF ARCHITECTURAL PROJECTS	5999
<i>M. Valiente Lopez, N. León-Martínez, S. Moyano Sanz, A. Verdú Vázquez</i>	
THE SUPPORT FOR TEACHERS AND SCHOOL LEADERS IN THEIR PROFESSIONAL GROWTH AND PERSONAL DEVELOPMENT	6007
<i>A. Mišianiková, V. Hubeňáková, K. Kozelková, K. Lukáčová, V. Ondová, M. Babinčáková, D. Šveda</i>	
THE IMPORTANCE OF TECHNOLOGY-ENHANCED BIOLOGY EDUCATION IN PRIMARY AND SECONDARY SCHOOLS	6016
<i>A. Mišianiková, A. Lešková</i>	
WEBQUEST FOR THE DEVELOPMENT OF INTERCULTURAL COMMUNICATIVE COMPETENCE OF ITALIAN SECOND LANGUAGE LEARNERS	6026
<i>A. Pakula, T. Sbardella</i>	

APPLICATIONS OF VIRTUAL AND AUGMENTED REALITY IN DENTISTRY EDUCATION <i>S.M.N. Haider, D. Topalli</i>	6034
SELF-EFFECTIVENESS OF ENGINEERING STUDENTS IN FACE-TO-FACE, DISTANCE AND REMOTE ACCESS LEARNING <i>T. Ivanova, N. Kafadarova</i>	6043
CURRENT TRENDS IN THE DEVELOPMENT OF PROFESSIONAL LITERACY IN CRITICAL SOCIAL WORK EDUCATION <i>M. Gruslytė</i>	6050
THE RELEVANCE OF CREATIVITY, CRITICAL THINKING, COMMUNICATION, AND COLLABORATION IN UNIVERSITY STUDENTS: A LONGITUDINAL FOLLOW-UP STUDY IN THE FIRST TWO ACADEMIC YEARS <i>J.F. Luesia, I. Benítez, P.P. Pérez, J.F. Plaza Sánchez, R.M. Vilches-Cansino, M. Sánchez-Martín</i>	6056
BREAKING DOWN GEOGEBRA: TWO DIMENSIONS OF THE GEOGEBRA SOFTWARE APPLICATION <i>M. Jancheski, S. Jancheska, M. Jovanov, E. Stankov</i>	6061
DEVELOPMENT OF A SYSTEM OF LABORATORY EXERCISES FOR THE DISCIPLINE "ELECTRONICS" USING THE METHODS: FACE-TO-FACE LEARNING, DISTANCE LEARNING WITH SIMULATIONS AND REMOTE ACCESS LEARNING <i>T. Ivanova, N. Kafadarova, S. Milev</i>	6071
EFFECTS OF AN EXERGAME ON MENTAL ROTATION AND MENTAL CALCULATION <i>P. Fargier, V. Cécé, N. Burel, C. Roure, V. Lentillon-Kaestner</i>	6076
FINDING A SUITABLE METHOD FOR TEACHING PHRASEOLOGICAL UNITS <i>D. Kuzmanovska, V. Koceva, A. Vitanova-Ringaceva, S. Kirova, B. Ivanova</i>	6085
"FLIPPED CLASSROOM" – THE FUTURE OF MODERN TEACHING <i>A. Vitanova-Ringaceva, D. Kuzmanovska, V. Koceva, B. Ivanova, S. Kirova</i>	6093
INVESTIGATING FACTORS NECESSARY FOR THE DEVELOPMENT OF EFFECTIVE STUDENT RECRUITMENT CAMPAIGNS: A SURVEY STUDY <i>R. Chinoracky, N. Stalmasekova, M. Majercakova, L. Madlenakova</i>	6098
SLOVAK PARENTS' IMPLICIT THEORIES ABOUT LEARNING BY VERY YOUNG CHILDREN: A FOCUS GROUP STUDY <i>P. Gavora, D. Dvorská, J. Medvedová, Z. Geršicová</i>	6106
COMPARING THE EFFECTIVENESS OF FACE-TO-FACE, EMERGENCY REMOTE, AND HYBRID TEACHING APPROACHES: A CASE STUDY OF AN INFORMATION MANAGEMENT SCHOOL <i>Y. Guan, M.L. Fernandes, R. Henriques</i>	6107
FOSTERING EMPLOYABILITY SKILLS IN ENGINEERING EDUCATION: A GAME BASED LEARNING APPROACH <i>P. Varney, V. Mai, V. Varney</i>	6117
THE IMPORTANCE OF UNDERGRADUATE TEACHER TRAINING IN THE CONTEXT OF THE ECEC SYSTEM IN SLOVAKIA IN EARLY CHILDHOOD <i>Z. Geršicová, M. Masáriková, S. Barnová, S. Krásna</i>	6127
FROM IMAGE TO SPACE: STRATEGIES FOR THE DEFINITION OF GEOMETRIC AND CONSTRUCTIVE SYSTEMS BASED ON INTUITIVE CREATIVE PROCESSES <i>Y. Zhang, J. Mosquera González</i>	6134
TEACHING VISUAL PROGRAMMING: HUMANOID ROBOT PROGRAMMING AS A CASE STUDY <i>M. Zimmermann</i>	6143
THE ETHICAL AND PEDAGOGICAL ISSUES OF LEARNING ANALYTICS IN HIGHER EDUCATION INSTITUTIONS <i>M. Klačmer Čalopa, I. Ďundek Kokotec, K. Kokot</i>	6150
HOW DO ADOLESCENTS LIVE THEIR SOCIAL MEDIA? <i>G. Fulantelli, L. Scifo, D. Taibi</i>	6160
THE USE OF VIRTUAL REALITY IN OSH EDUCATION <i>A. Ďaďová</i>	6168
APPLICATION OF THE CASE-STUDY METHOD OR THE METHOD OF SPECIFIC SITUATIONS IN THE PROCESS OF FORMATION OF STUDENTS' CRITICAL THINKING <i>I. Balandina, L. Yuzdova, T. Moskvitina, I. Kazachuk, A. Milyutina, G. Shiganova</i>	6178
USING SMART LABS TO SUPPORT STUDENTS AND TEACHERS <i>M. Zamiri, J. Sarraipa, J. Calado, R.J. Goncalves</i>	6182

STRATEGY FOR SYSTEMATIC EDUCATION OF ROBOTICS, DRONES AND UNMANNED SYSTEMS THROUGH CASE STUDIES <i>D. Shetty</i>	6191
A COMPARISON OF COVID-19 DISTANCE LEARNING AND FACE-TO- FACE EXPERIENCES IN USING PROJECT-BASED PEDAGOGIES FOR UNDERGRADUATE ENGINEERING STUDENTS <i>G. Ragusa</i>	6196
ONLINE POST-GRADUATE PROGRAM IN DIGITAL EDUCATION: AN ASSESSMENT OF STUDENT'S PERCEPTION <i>A. Cardoso, C. Martinho, R. Pereira Rodrigues, V. Manteigas, R. Abreu, M.J. Escudeiro</i>	6202
CHALLENGES AND OPPORTUNITIES IN INTEGRATING STEM EDUCATION AT THE ELEMENTARY LEVEL IN NORTHERN QUEBEC <i>B. El Fadil</i>	6206
INCORPORATING MICROSOFT EXCEL INTO UNDERGRADUATE DEGREES: A CASE STUDY <i>I. Tsener</i>	6207
BUILDING BRIDGES: ALIGNING TEACHERS' PERCEPTIONS OF STUDENT WRITING WITH STUDENTS' PERCEPTIONS OF TEACHERS' FEEDBACK <i>A. Albuquerque</i>	6208
TRANSACTIONAL AND TRANSFORMATIVE COACHING AND ITS VALUE <i>K. Schneider</i>	6215
GAMIFIED NETWORK TRACE ANALYSIS: AN EDUCATIONAL ESCAPE ROOM TO RAISE LEARNERS' AWARENESS OF DATA PRIVACY AND DATA ENCRYPTION <i>T. Baumeister</i>	6216
STUDENTS AND THE INTERNET: USES, PROBLEMS AND BENEFITS DURING THE COVID-19 PANDEMIC IN PORTUGAL <i>N.S. Morais, T. Pestana</i>	6222
AN INQUIRY INTO HOW ACADEMIC FACULTY MEMBERS IN SAUDI ARABIAN UNIVERSITIES VIEW THE POSSIBILITY OF UTILIZING AUGMENTED REALITY AS A TEACHING TOOL <i>E. Alqahtani</i>	6230
USING PHOTOGRAMMETRIC 3D MODELS AS LEARNING SOURCES IN ARCHAEOLOGY <i>M. Bouzas</i>	6231
TEACHING THE LITERATURE OF NEW YORK IN THE UNIVERSITY STUDIES OF ENGLISH AS A FOREIGN LANGUAGE AND ITS IMPACT ON THE DEVELOPMENT OF READING SKILLS <i>B. Jerliu</i>	6236
THE IMPACT OF THE PROGRAMME NURTURING PHYSICAL SCIENCES EDUCATORS ON IMPROVING LEARNER PERFORMANCE <i>K.J. Tlhabane, M.P. Rankhumise</i>	6244
PSYCHOSOCIAL OUTCOMES OF A DRAMA-PEDAGOGY TRAINING FOR UNIVERSITY STUDENTS: ANXIETY AND POSITIVE EMOTIONS <i>M.M.P. Celume, B. Dauvier</i>	6245
DEVELOPING INTUITIVE THINKING IN MATHEMATICS STUDENTS ENGAGED IN SEARCH ACTIVITY <i>Z. Dedovets, M. Rodionov, A. Nazarov</i>	6256
PEDAGOGICAL GARDEN IN THE TEACHING-LEARNING PROCESS IN A MUNICIPAL SCHOOL IN CAMPOS DOS GOYTACAZES-RJ, BRAZIL <i>P.C. Dos Santos, R.A. Beltrame, J.F. Lima, J.S.B. Lirio, L.F.S. Siqueira, A.J.C. Carvalho</i>	6261
CONCEPT MAPS, KNOWLEDGE GRAPHS, ONTOLOGIES AND INTELLIGENT SEMANTICS - BASED APPROACHES FOR PERSONALIZED LEARNING <i>T. Ivanova</i>	6266
THE DIDACTIC EFFECTIVENESS VERIFICATION OF THE TEACHING MODEL THAT USES AN INNOVATIVE E-LEARNING MODULE <i>M. Misutova, M. Misut</i>	6276
THE PLAY IN TEACHING FRENCH BETWEEN TECHNIQUES AND CLASS PRACTICE <i>K. Aada</i>	6282
TERTIARY TEACHERS' REFLECTION ON ONLINE TEACHING IN AUSTRIA <i>M. Beňo, D. Cagáňová, J. Hvorecký</i>	6283

CLASSROOMS FOR PARTICIPATION: AN EXPERIENCE OF EDUCATION FOR CITIZEN PARTICIPATION USING SOCIAL MEDIA	6291
<i>A. Sanz-Hernández, L. Bacallao-Pino, E. Monforte García, E. Edo Agustín, P. Jiménez-Caballero</i>	
DISTANCE EDUCATION IN UKRAINE DURING THE WAR	6300
<i>L. Movchan, N. Komisarenko, Y. Fernos, V. Kolisnyk</i>	
GENDER DIFFERENCES IN STUDENTS' ATTITUDES TOWARDS ECONOMETRICS	6306
<i>M. Cladera, A. Suárez-Álvarez, M.R. Vicente</i>	
LEADERSHIP IN EDUCATION: A CASE STUDY OF SUCCESSFUL TEAM LEARNING ACTIVITIES	6314
<i>A. Barbu, O.C. Dochia, G. Militaru, D.C. Deselnicu</i>	
INCLUSIVE EDUCATION IN MALAYSIAN PRIMARY SCHOOLS: A REVIEW OF MAINSTREAM TEACHERS' EXPERIENCES OF TEACHING LEARNING-DISABLED CHILDREN	6323
<i>H. Kaur</i>	
FACTORS AFFECTING PERFORMANCE OF FACULTY MEMBERS IN LEBANESE HIGHER EDUCATION DURING ECONOMIC CRISIS- A STUDY ON PRIVATE HIGHER EDUCATION INSTITUTIONS	6324
<i>L. Saleh, K. Bourdoukani, J. Arida</i>	
ANALYZING THE EFFECTIVENESS OF ONLINE VS. FACE-TO-FACE WINE COURSES IN AN EXPERIMENT	6335
<i>A. Stoeckl, C. Di Gennaro, D. Dotto, A. Gallaun, M. Wilfinger</i>	
IMPROVING LABORATORY SKILLS IN HIGHER EDUCATION WITH A FLIPPED-CLASSROOM CONTEST	6344
<i>F. Aznar, M. García Bosque, C. Aldea, E. Cascarosa, C. Sánchez-Azqueta, S. Celma</i>	
RETHINKING THE CAPSTONE EXPERIENCE: OFFERING MINI PROJECT MODULES IN A SOFTWARE DEVELOPMENT MSC PROGRAMME	6348
<i>N. Anderson, A. McGowan, D. Stewart, E. Barlasakar, L. Galway, P. Hanna, J. Bustard, J. Adhikari</i>	
LEADING IN TIMES OF INSTABILITY: VOICES FROM THE SCHOOL PRINCIPALS	6354
<i>B. Kafu-Quvane</i>	
INSPIRING HUMANNESSTHROUGH CHILDREN'S LITERATURE	6359
<i>M. McMartin, T. Campbell</i>	
IMPACT OF THE MIGRATION OF TEACHING ACTIVITIES DURING THE HEALTH CONTINGENCY IN FES ZARAGOZA, UNAM	6367
<i>J.L.A. Mora, F. Palestino, G.M. García Escalante, M.S. Gonzalez, R. Rangel Corona, G. Gonzales, V. Moreno Mtz</i>	
LEVERAGING GENERATIVE ASSISTIVE INTELLIGENCE (AI) FOR INSTRUCTIONAL DESIGN: A CASE STUDY USING ELABORATION THEORY	6373
<i>R. Robinson, T. Kayalackakom, S. Philip, S. Modise, M. Millis</i>	
USING INTERNET OF THINGS AND MAKER CULTURE FOR TEACHING FIRE DETECTION SYSTEMS IN HIGH SCHOOL	6374
<i>A. Montenegro, C. Oliveira, S. Cruz, B. Cunha, V. Bremgartner, A. Araújo, F. Teixeira, W. Cativo</i>	
USING AN AUTOMATED SPACED REPETITION ALGORITHM TO ENHANCE LEARNING IN CARIBBEAN MEDICAL STUDENTS: A PILOT STUDY	6380
<i>R. Robinson, E. Schneider</i>	
ROBÔ-EDU: EDUCATIONAL ROBOTICS STIMULATING THE INVOLVEMENT OF ELEMENTARY SCHOOL PUBLIC SCHOOL STUDENTS IN TECHNOLOGICAL INITIATION	6384
<i>V. Bremgartner, J. Sousa, A. Ribeiro, M. Reis, G. Mendonça, J. Silva, D. Sousa, H. Lima, G. Silva</i>	
RETHINKING EDUCATION: A CASE STUDY IN THE FIELD OF POPULAR AND SECOND-CHANCE SCHOOLS	6391
<i>V. Cotza</i>	
VOLUMETRIC VIDEO BROADCASTING AND CAPTURE: UNLEASHING THE FUTURE OF EDUCATION	6402
<i>B. Carter</i>	
CURRICULUM DEVELOPMENT BASED ON STATE SCIENCE ASSESSMENT DATA AND A TEACHER NEEDS SURVEY	6403
<i>P. Pinner</i>	
IN-SERVICE EDUCATION OF MUSIC THERAPIST AIMING TO HELP THE VULNERABLE GROUPS SUPPORTED BY AUTO-ETHNOGRAPHIC RESEARCH	6412
<i>J. Duras Gled, Z. Bagaric, E. Strucic</i>	

LIVING LABS AS PARTICIPATORY AND COMMUNITY LEARNING APPLIED TO REGIONAL DEVELOPMENT	6421
<i>N. Cruz-Pérez, J.S. Rodríguez-Alcántara, J. Rodríguez-Martín, C. Moujan, I. La Jeunese, J.C. Santamaría</i>	
FOSTERING ROBOTICS EDUCATION THROUGH IMMERSIVE AND INTERACTIVE LEARNING CONTENT	6425
<i>L. Hornung, D. Puljiz, P. Augenstein, C. Gonzalez, C. Wurll, F. Bellalouna</i>	
ONLINE LANGUAGE MODULE: LEARN CROATIAN!	6434
<i>A. Ordulj</i>	
UNLEASHING CREATIVITY FROM A WELSH PERSPECTIVE: DEVELOPING RESEARCH-BASED EVIDENCE FOR THE SUSTAINABILITY OF SOCIAL PRESCRIBING ART-ON-PRESCRIPTION FOR THE HEALTH AND WELLBEING OF THE NATION	6442
<i>M.S. Rogers</i>	
USING INNOVATIVE ARTISTIC RESOURCES FOR LEARNING ABSTRACT CHEMISTRY CONCEPTS	6449
<i>M.T. Doménech-Carbó</i>	
A PERSPECTIVE OF UNIVERSITY AND FABLAB NETWORKS TO INTEGRATE SUSTAINABILITY INTO FASHION DESIGN CURRICULA THROUGH INDUSTRY 4.0 TECHNOLOGIES	6450
<i>G. Rizzi, P. Bertola</i>	
RESILIENCE FOR INNOVATION PROJECTS IN THE EDUCATION SECTOR	6460
<i>R. Lamscheck-Nielsen</i>	
UNIVERSITY NETWORK COLLABORATION IN HIGHER EDUCATION: CASE CERN BOOTCAMP SUMMER SCHOOL	6470
<i>J. Ojasalo</i>	
LIVING LAB APPROACH TO IMPROVING THE QUALITY OF TRAINING SPACES	6477
<i>A. Violano, R.G. Aenoai</i>	
IMPROVISATION TO ADDRESS INDIGENOUS KNOWLEDGE IN THE TEACHING OF LIFE SCIENCES	6487
<i>R. Kgopong, X. Khalo</i>	
TEACHING MECHATRONICS, ROBOTICS AND AUTOMATION WITH ARDUINO	6497
<i>R. Čermák, V. Mašek, D. Fait</i>	
ASSESSING THE VIABILITY OF GENERATIVE AI FOR CREATING FORMATIVE MULTIPLE-CHOICE QUESTIONS TO ENHANCE FORMATIVE LEARNING IN CARIBBEAN MEDICAL STUDENTS: A PHENOMENOLOGICAL STUDY	6503
<i>R. Robinson, R. Millis, T. Kayalackakom, T. Joy, N. Karanja, S. Philip, S. Modise</i>	
ETHNOGRAPHIC RESEARCH OF PARTICIPATORY STORYTELLING IN THE CONTEXT OF SOCIAL INCLUSION OF CHILDREN WITH DEVELOPMENTAL DISABILITIES	6504
<i>D. Mikulec, S. Stibohar, Z. Bagaric</i>	
STABILITY AND VARIABILITY, A VITAL BALANCE BETWEEN GENOME EVOLUTION AND DISEASE: POSITIVE EFFECTS OF A NEW DOCENDO DISCIMUS TEAM DISSEMINATION SCIENCE PROJECT	6510
<i>R. del Gaudio</i>	
INTERACTIVE VIRTUAL SIMULATORS FOR THE DISCIPLINE OF ELECTRICAL CIRCUITS	6511
<i>G. Mata Hernández</i>	
TECHNOLOGICAL DESIGN WORKSHOP FOR THE PARTICIPATED ENERGY RETROFIT OF THE 'VIVIENDAS SOCIALES ANTONIO RUEDA' IN VALENCIA	6518
<i>A. Violano, L.P. Palmero, G. Bernardo, M. Cannaviello, M. Merola</i>	
EMPOWERING EARLY CHILDHOOD PROFESSIONALS: A EUROPEAN PROJECT ON PROGRAMME-WIDE POSITIVE BEHAVIOUR SUPPORT DEVELOPED IN 4 COUNTRIES	6519
<i>S. Barros, V.H. Oliveira, M. Santos, S. Araújo, A. Otero-Mayer, V. Michaelidou, M. O'Brien, A. Szproch, K. Krousorati, A. Agathokleous, V. Grammatikopoulos</i>	
ONLINE KNOWLEDGE ASSESSMENTS DURING THE CORONAVIRUS QUARANTINE: A STUDENT PERSPECTIVE ON E-LEARNING SYSTEMS	6527
<i>M. Ražnjević Zdrilić, V. Kalajžić, J. Grzunov</i>	
DEVELOPMENT AND IMPLEMENTATION OF INTELLECTUAL COMPONENTS OF THE DIGITAL EDUCATIONAL ENVIRONMENT	6535
<i>S. Krashennnikov, F. Novikov, M. Nakhatovich, D. Kurnosov</i>	

DEVELOPING DESIGN PRINCIPLES FOR CREATING A MEANINGFUL LEARNING ENVIRONMENT	6542
<i>M. Al Abri, A. Al Aamri, A. Elhag</i>	
CHANGE GAME AND PLAY WITH EARTH: A MANAGEMENT GAME FOR COLLABORATION, EDUCATION AND DIGITALISATION	6552
<i>L. Oliveti</i>	
THE LIGHTING EFFECTS ON TACTILE PERCEPTION IN INTERIOR DESIGN STUDIOS	6561
<i>N.S. Abdelaziz Mahmoud</i>	
PROBLEM & PROJECT-BASED LEARNING IN PRE-UNIVERSITY EDUCATION: FROM IDEOLOGY TO PRACTICE	6568
<i>C. Costa-Lobo, A. Vazzoler-Mendonça, V. Capellini, H. Wafunga</i>	
TRENDS IN PHOTOVOLTAIC ENGINEERING EDUCATION	6574
<i>D. Shehova, S. Shotarova, S. Lyubomirov, R. Popov, A. Parushev</i>	
REMOTE LABORATORY FOR PHOTOVOLTAIC SYSTEM RESEARCH IN ENGINEERING EDUCATIONAL INSTITUTIONS	6584
<i>S. Shotarova, D. Shehova, H. Kanevski, S. Lyubomirov, S. Asenov</i>	
LEADERSHIP FOR EVERYONE: EMPOWERING LEADING FEMALES	6593
<i>S. Karmysov</i>	
DIGITAL DISTANCE LEARNING EXPERIENCES IN THE COVID-19 CRISIS: THE CASE OF BIFRÖST UNIVERSITY, ICELAND	6600
<i>E. Svansson, S.L. Einarsdottir</i>	
EMBEDDED SOFTWARE DEVELOPMENT WITH A MOBILE ROBOT	6601
<i>M. Hodoň, P. Ševčík, J. Kapitulík, P. Danišovič</i>	
ESCAPE ROOM "FUTURE EXPLORATION": COLLABORATIVE VIRTUAL REALITY FOR TEACHING STRATEGIC FORESIGHT	6607
<i>G. Gándara, A.G. Rodríguez, M. Martínez</i>	
BRAND COMMUNITY AS A VERSATILE BRAND-BUILDING TOOL	6614
<i>E. Juozėnaitė</i>	
GENIUSUP! AN EDUCATIONAL EXPERIENCE THROUGH SERIOUS GAMES USING AUGMENTED REALITY	6623
<i>F.J. Perales Lopez, A.F. Florit</i>	
LEARNING SPECIFIC SKILLS IN TECHNICAL SUBJECTS WITH A LARGE NUMBER OF STUDENTS: ANALYSIS OF THE ANALOG ELECTRONICS SUBJECT	6629
<i>G. Prats-Boluda, J. Garcia-Casado, Y. Ye-Lin, B. Trénor Gomis, E. Guijarro-Estellés, J.L. Martínez-de-Juan</i>	
ARE MORE EFFICIENT UNIVERSITIES MORE TRANSPARENT, OR VICE VERSA?	6637
<i>J.L. Zafra-Gómez, J.C. Garrido-Rodríguez, G. Pérez-López, P. Povedano-Fernández, L. Marques-Arenas, G. Lopez-Perez</i>	
VOICE - A DIGITAL OPEN EDUCATIONAL PLATFORM FOR SUPPORTING TEACHERS' PROFESSIONAL LEARNING: DESIGN AND EVALUATION	6646
<i>S. Avgitidou, S. Theodosiou, S. Lykomitrou, C. Sidiropoulou, K. Karadimitriou</i>	
SELF-STUDY, LEARNER CENTRED EDUCATION ABOUT ACTIVE CITIZENSHIP ON AN APP TO BE DOWNLOADED FOR FREE	6652
<i>I. Häuser</i>	
THE PROBLEM WITH THE SELF-LEARNING MACHINES: TOWARDS THE DEVELOPMENT OF THE PEDAGOGY OF ARTIFICIAL INTELLIGENCE	6660
<i>R. Tomaszewska, A. Pawlicka</i>	
LEVERAGING PODCASTS IN ENGLISH LANGUAGE TEACHING: ENHANCING COLLABORATIVE LEARNING THROUGH GOOGLE MEET IN THE CONTEXT OF COVID-19	6669
<i>E. Bañares-Marivela, L. Rayón-Rumayor, J. Hernández Ortega, C. Barroso Moreno</i>	
ROBOT CAR - LEARNING BY DOING	6677
<i>M. Hodoň, P. Ševčík, J. Kapitulík, P. Danišovič</i>	
STATE-OF-THE-ART OF ASSESSMENT PRACTICES IN STEM REMOTE LEARNING	6684
<i>M. Manatos, A.R. Dias, P. Sampaio, A.S. Barbosa Pereira, J.P. Teixeira Domingues</i>	
HISTORY OF SCIENCE AND TECHNOLOGY IN THE CONTEXT OF STEAM EDUCATION: A NON-FORMAL EDUCATION PROJECT FOR THE DEVELOPMENT OF SCIENTIFIC LITERACY IN BASIC SCHOOL STUDENTS	6693
<i>C. Venturine, I. Malaquias</i>	
UNETHICAL USE OF ARTIFICIAL INTELLIGENCE IN EDUCATION	6703
<i>A. Elmessiry, M. Elmessiry, K. Elmessiry</i>	

INCLUDING NEWLY ARRIVED CHILDREN IN THE EDUCATION SYSTEM OF LATVIA: ASPECTS OF THE ASSOCIATED PROBLEMS AND POSSIBLE SOLUTIONS <i>I. Prudnikova, V. Lubkina, L. Danilane, J. Dzerviniks, S. Usca, I. Bruveris</i>	6708
STUDYING THE DISTRIBUTION OF THE RESULTS OF VIRTUAL EXPERIMENTS IN PHYSICS <i>C. Ionascu, R. Dinescu, A. Jipa</i>	6718
QUALITATIVE ANALYSIS TEACHING AND LEARNING: A FEW PEDAGOGICAL PRINCIPLES FOR DESIGNING DIGITAL LEARNING OBJECTS <i>D. Dumitrica, N. Oosterman</i>	6719
IMPLEMENTING TEAM-BASED LEARNING IN DATA SCIENCE EDUCATION: ENHANCING STUDENT SATISFACTION AND PERFORMANCE <i>R. Henriques, L. Oliveira, R. Santos, C. Albuquerque</i>	6720
POST-PANDEMIC EDUCATIONAL INSIGHTS IMPLEMENTING THE PEDAGOGICAL VARIATION MODEL (ROGERS, 2013) <i>M.S. Rogers, A. Grunewald Nichele</i>	6730
NEW EXPERIENCES IN LEARNING ABOUT ENTREPRENEURSHIP FOR ENGINEERING STUDENTS AT THE UNIVERSITY OF JAÉN <i>L. Hontoria, C. Rus-Casas, J.D. Aguilar-Peña, F.J. Muñoz-Rodríguez, F. Baena</i>	6739
STUDYING CHALLENGES, TASKS AND BENEFITS OF USING VIRTUAL SPACES FOR EDUCATIONAL, LEARNING AND SHOWCASING PURPOSES <i>M. Jäntti, M. Aho, J. Kaleremo-Poranen</i>	6745
PROPOSALS FOR TRAINING IN SOLAR PHOTOVOLTAIC ENERGY FOR SECONDARY EDUCATION LEVELS <i>V. Raya, J.D. Aguilar, L. Hontoria, C. Rus-Casas, F.J. Muñoz-Rodríguez</i>	6755
COOPERATIVE LEARNING IN THE NANOMATERIALS SUBJECT TO OBTAIN DIFFERENT NANOSTRUCTURED MATERIALS THROUGH VARIOUS TECHNIQUES <i>V. Moreno Garcia, C. Pavón Vargas, H. De La Rosa Ramírez, J. López Martínez, S. Ferrándiz Bou</i>	6761
IMPACT OF THE FLIPPED CLASSROOM METHODOLOGY IN THE SOLID WASTE TREATMENT LABORATORY <i>C. Pavón Vargas, V. Moreno, M.D. Samper, M. Aldas, J.M. Ferri, J. López-Martínez</i>	6767
LEARNING TO PERFORM BIBLIOMETRICS: LIBRARIANS TRAINING RESEARCHERS THROUGH RAPID REVIEWS <i>A. López-Martínez, M. González-Gallarza, R. Sánchez-Fernández, M. Cuadrado-García, M. Portelli-Giner, C. Gimeno-Estornell</i>	6774
VALUE CO-CREATION BETWEEN LIBRARIANS AND RESEARCHERS: AN EXAMPLE AROUND THE EXPERIENCE VALUE CONCEPT IN THE ARTS <i>A. López-Martínez, M. González-Gallarza, M. Cuadrado-García, R. Sánchez-Fernández, C. Gimeno-Estornell, M. Portelli-Giner</i>	6782
WHAT IF ALL COURSES ARE ONLINE: LEARNING APPROACHES AND STRATEGIES OF STUDENTS OF MEDICAL SCIENCES AND THEIR PERCEIVED LEARNING ACHIEVEMENT AND SATISFACTION <i>A.N. Diep, G. Philippe, L. Counasse, P. Hubert, A.F. Donneau</i>	6788
CRIBEL: LIFELONG LEARNING SOCIAL NETWORK GOVERNED BY ACADEMIC INSTITUTIONS: AN AFFORDABLE SERVERLESS MODEL IN THE CLOUD <i>J.A. Romero-Del-Castillo, J. Mancha-Dieguez, D. Ortiz-Boyer</i>	6789
APPLYING THE ADJUNCT MODEL OF CONTENT-BASED LANGUAGE INSTRUCTION IN A TERTIARY-LEVEL ENGINEERING SETTING <i>A. Casey</i>	6796
AN INNOVATIVE LEARNING SYSTEM FOR INTERCONNECTED EMBEDDED SYSTEMS <i>L. Formanek, V. Olesnanikova, P. Sarafin, P. Sevcik</i>	6801
THE ROLE OF THE FAMILY IN THE EDUCATION OF A CHILD WITH LEARNING DIFFICULTIES <i>C.C. Pascariu</i>	6805
PROTOTYPE FOR MEASURING AND PREDICTING AIR QUALITY USING UAVS <i>L. Formanek, V. Olesnanikova, P. Sarafin, P. Sevcik</i>	6810
DOUBLE HELIX'S PLATINUM ANNIVERSARY : A NEW HANDS-ON/STEM-BASED PROJECT TO LEARN DNA STRUCTURE BUILDING 3D CREATIVE MODELS USING RECYCLED AND ECO-SUSTAINABLE MATERIALS FROM PAPER TO BIOPLASTIC <i>R. del Gaudio</i>	6815
"SIRIUS": A SERIOUS KNOWLEDGE GAME FOR ANDROID <i>F. Gedeon, E. Papaioannou, C. Kaklamanis, E. Psarrou</i>	6816

MEDIA LITERACY IN HIGHER EDUCATION: PERCEPTIONS ABOUT ETHICAL ISSUES IN JOURNALISM AMONG STUDENTS OF A SOCIAL COMMUNICATION COURSE	6825
<i>N.S. Morais, J. Martins, M. Midões</i>	
WHAT HAPPENS WHEN A USER FIRST ENTERS AN ONLINE ASYNCHRONOUS LEARNING COURSE AND HOW TO DESIGN A USER-FRIENDLY ENTRY SPACE	6832
<i>M. Norscini, P.G. Rossi, M. Amicucci</i>	
MOTIVATION AND TEAMWORK IN A MULTIDISCIPLINARY PROJECT	6842
<i>L. Canós-Darós, E. Babiloni, C. García Gallego, M. García Gallego, C. Santandreu-Mascarell, E. Guijarro</i>	
USE OF ELECTRONIC DEVICES WITH SCREENS BY PRE-ADOLESCENTS AND THE ASSOCIATION WITH SELF-CONTROL	6848
<i>I. Becerril-Atxikallende, J. Jaureguizar</i>	
TEACHERS' ATTITUDES TOWARDS PROBLEM-BASED APPROACH IN PRIMARY SCHOOL BIOLOGY TEACHING	6855
<i>V. Županec, D. Raletić</i>	
IMPLEMENTATION OF CORRELATIVE-INTEGRATIVE APPROACH IN BIOLOGY TEACHING IN PRIMARY SCHOOL	6863
<i>V. Županec, V. Sekulić, T. Lazarević, T. Pribićević</i>	
FAST TRACK FOR UNIVERSITY - SME COOPERATION	6870
<i>P. Rantanen, O. Bogdanova</i>	
DEMOCRATIZING ACCESS FOR SMES TO THE RESULTS OF PUBLICLY FUNDED RDI PROJECTS	6875
<i>O. Bogdanova, P. Rantanen</i>	
INTEGRATING BIOPHILIC APPROACH AND STAND EXHIBITION IN INTERIOR DESIGN EDUCATION	6880
<i>G. Elsamanoudy</i>	
FAIRSCHOOL: THE COLLABORATIVE DIGITAL PLATFORM THAT CONNECTS SCHOLARS AND TEACHERS	6888
<i>L. Oliveti</i>	
EVALUATION OF THE DESIGN OF AN ONLINE COURSE FOR SCRATCHJR LEARNING IN STUDENTS OF THE PEDAGOGY UNDERGRADUATE DEGREE	6895
<i>M. Santos Miranda-Pinto, P. Ibañez-Cubillas, S. López Rodríguez</i>	
EVALUATION OF THE IMPACT OF TRAINING IN PROGRAMMING WITH SCRATCHJR ON FUTURE PEDAGOGY PROFESSIONALS	6900
<i>P. Ibañez-Cubillas, M. Santos Miranda Pinto, S. López Rodríguez</i>	
THE PEDAGOGICAL TRAINING OF FUTURE ICT TEACHERS: AN EXPERIENCE REPORT FROM THE UNIVERSITY OF THE AZORES	6905
<i>A.C. Loureiro, A.I. Santos</i>	
BOUNDED SCALES: A NEW TYPE OF SCALE FOR EDUCATIONAL PRACTICE AND RESEARCH	6912
<i>P.H. Vossen, S. Ajit</i>	
PERCEPTIONS OF THE EDUCATIONAL POTENTIAL OF ROBOTICS AND CODING IN INCLUSIVE SETTINGS	6923
<i>A.C. Loureiro, M. Santos Miranda Pinto</i>	
PROBLEM-POSING TO DEVELOP PROPORTIONAL AND PROBABILISTIC REASONING	6931
<i>M. Burgos, N. Tizón-Escamilla</i>	
PRIMARY SCHOOL PUPILS' INTUITIONS AND STRATEGIES WHEN SOLVING FAIR GAME TASKS	6938
<i>M. Burgos, N. Tizón-Escamilla, M.M. López-Martín</i>	
EXPLORING TEACHERS' DIGITAL KNOWLEDGE AND SKILLS: A COMPARATIVE STUDY IN THE PANDEMIC PERIOD 2020-2023	6946
<i>G. Kalogeratos, C. Pierrakeas</i>	
LOW COST 360 DEGREE VIRTUAL REALITY VIDEO CREATION FOR NURSING INTENSIVE CARE UNIT PRACTICES: A DESCRIPTIVE STUDY	6957
<i>P. García-Pazo, F.J. Perales Lopez, A. Babiloni Coll, C. Moreno, L.A. Brogi</i>	
ARTIFICIAL INTELLIGENCE IN THE PUBLIC GREEK SCHOOL AFTER THE COVID-19 ERA	6958
<i>G. Kalogeratos, C. Pierrakeas</i>	

AN ASSESSMENT OF ONLINE COURSES FOR SUPPORTING GREEK HIGHER EDUCATION TEACHERS' DIGITAL COMPETENCE	6965
<i>E. Bitakou, K. Demestichas, M. Ntaliani, C. Costopoulou</i>	
TEACHING PHASORS WITH THE AID OF GAMING TOOLS	6970
<i>G. Pagiatakis, N. Voudoukis, D. Uzunidis</i>	
USING KAHOOT TO TEACH WAVE BASICS	6974
<i>N. Voudoukis, G. Pagiatakis, D. Uzunidis</i>	
GROUP-PEER-ASSESSMENT FROM A QUANTITATIVE POINT OF VIEW	6979
<i>P.H. Vossen, S. Ajit</i>	
WAYS OF COMMUNICATION USED BY THE MUSIC TEACHER AS A MEDIATOR TO ENCOURAGE CHILDREN TO DISCERN AND DEMONSTRATE THE PERCEIVED QUALITIES OF MUSICAL SOUNDS	6990
<i>D. Žitkevičienė</i>	
SOCIOMETRIC ASSESSMENT FOR MEASURING THE DEGREE OF COLLABORATION IN STEM EDUCATIONAL ENVIRONMENT	6998
<i>D. Donev, G. Avramova-Todorova</i>	
DEVELOPMENT OF PERSONAL COMPETENCES THROUGH STEM: EVIDENCE-BASED METHODS AND THEIR USE IN EDUCATIONAL SYSTEMS	7007
<i>M. Manolov, G. Avramova-Todorova</i>	
EXPRESSING THE CULTURE OF EDUCATIONAL INNOVATIONS IN EARLY CHILDHOOD EDUCATION	7016
<i>D. Žitkevičienė, R. Barusevič</i>	
ACTIVE AND COLLABORATIVE LEARNING ENVIRONMENTS IN HIGHER EDUCATION: A PARTICIPATORY CONSTRUCTION PROCESS AT ISCTE-UNIVERSITY INSTITUTE OF LISBON	7017
<i>S. Pintassilgo, J. Monteiro, A. Paio, S. Fonseca, P. Sebastião, N. Pedro</i>	
COACHING AS A MODEL FOR SUCCESSFUL EDUCATION	7027
<i>A. Pukienė, I. Brazauskaite-Zubaviciene, C. Saccone</i>	
STUDENTS AS TEACHERS: INTERDISCIPLINARITY AND PEER-LEARNING IN TOURISM EDUCATION	7036
<i>S. Vasconcelos, A. Balula, R. Costa</i>	
QUEST-DRIVEN EXPLORATION OF INTERACTIVE INSTALLATIONS IN SCIENCE CENTRES	7040
<i>J. Wideström, R.J. Cumming, C. Larsson, S. Siddiqui, J. Boström, C. Djurelind, C. Sandberg, C. Törn-Lindhe</i>	
USING LEARNING ANALYTICS TO MOTIVATE PROGRAMMING NOVICES	7047
<i>E. Pietrikova</i>	
EVOLVING NON-PLAYER CHARACTERS IN EDUCATIONAL GAMES IN VIRTUAL WORLDS	7053
<i>P. Athanasiou, E. Voyiatzaki, I. Hatzilygeroudis</i>	
TO WHAT EXTENT ARE ENTREPRENEURIAL EDUCATION AND NATIONAL HUMAN CAPITAL CONNECTED TO THE DEVELOPMENT OF ENTREPRENEURSHIP IN EUROPE?	7060
<i>I. Fojs, K. Detelj</i>	
INTELLIGENCE AND SOCIO-DEMOGRAPHIC CHARACTERISTICS OF STUDENTS WITH SPELLING DIFFICULTIES	7069
<i>S. Trecha, A. Tsibidaki</i>	
FROM SIMULATION TO REAL CHARACTERIZATION TO TEACH SCANNING PROBE MICROSCOPES TO STUDENTS OF NANOSCIENCE AND NANOTECHNOLOGIES DEGREE	7075
<i>M.B. Montero Rodriguez, M.C. Ramírez Gómez, M. Rico Varela, R. Bouza Padín, J.C. López Lago, J. Martín Pérez</i>	
UNIVERSITY BRAND: STUDYING ALUMNI REPRESENTATION PRACTICES	7080
<i>K. Dimopoulos, E. Voyiatzaki</i>	
DEVELOPING A NEW FUNCTIONAL SKILLS MATHS (PAPER-BASED) INITIAL ASSESSMENT AND EXPLORING ITS EFFECTIVENESS	7086
<i>K. Norley</i>	
AUTOMATIC ASSESSMENT WITH MATLAB GRADER IN ENGINEERING EDUCATION: THE CASE OF INDUSTRIAL PROCESS CONTROL	7094
<i>I. Tejado, R. de la Encarnación-Sama, C. Nuevo-Gallardo, E. Pérez</i>	

EXPERIENCES OF GLOBAL ETHNIC MAJORITY STUDENTS IN UK HIGHER EDUCATION: EVALUATING MULTIPLE THEORETICAL FRAMEWORKS TO UNDERSTAND THE GLOBAL ETHNIC MAJORITY AWARDING GAP <i>H. Chepkurui, P. Seuwou, N. Dodzo, M. Opoku Agyeman</i>	7104
DESIGN OF AN ONLINE MASTER'S DEGREE THROUGH THE LENS OF THE SENIOR TEACHING QUALIFICATION PROFESSIONAL DEVELOPMENT PROGRAM: THE CASE OF ERASMUS UNIVERSITY ROTTERDAM <i>D. Vlachopoulos, J. Maarschalkerweerd</i>	7112
ACADEMIC SKILLS FOR IMPROVING SUCCESS: A PROPOSAL ORIENTED TO STUDENTS IN POST-GRADUATION CYCLES <i>R. Mauritti, H. Belchior-Rocha, S. Pintassilgo, J. Monteiro</i>	7121
TEACHING COMPUTER PROGRAMMING LANGUAGES BY EXPERIENTIAL LEARNING <i>Y. Tseng</i>	7126
MODELLING GAMIFIED E-LEARNING EXPERIENCES WITH USER PROFILES <i>J. Miškov</i>	7131
EDUCATIONAL CONTINUITY PROGRAM PLANNING: LESSONS LEARNED FROM THE COVID-19 PANDEMIC FOR EDUCATIONAL ADMINISTRATION IMPROVEMENT <i>B. Barrett</i>	7141
ENHANCING STEM EDUCATION USING MACHINE LEARNING AND REINFORCEMENT LEARNING TECHNIQUES FOR EDUCATIONAL SOFTWARE AND SERIOUS GAMES <i>Y. Liu, B. Zoghi</i>	7148
EMERGING TECHNOLOGIES IN EDUCATION: ENHANCING DISTANCE LEARNING WITH TECHNOLOGY-ENHANCED LEARNING <i>Y. Liu, B. Zoghi</i>	7153
APPLICATION OF DIFFUSION OF INNOVATION APPROACH IN CREATING THE LA ADOPTION MATURITY FRAMEWORK <i>N. Kadoic, N. Begičević Ređep</i>	7158
DEDUCTIVE AND INDUCTIVE INSTRUCTIONAL SEQUENCE: THE IMPACT ON STUDENTS' PERFORMANCE <i>A. Gorbunova, J. Costley, A. Savelyev, I. Shcheglova, C. Lange</i>	7164
THE IMPORTANCE OF INTEGRATING PHARMACOGENETICS AS A NEW SUBJECT IN THE MEDICINE AND PHARMACY DEGREES AT THE MIGUEL HERNANDEZ UNIVERSITY <i>P. Castro-Sanchez, M.J. Prieto-Castelló, L. Pitaluga-Poveda, D. Marhuenda-Amorós, A. Cardona-Llorens, A. Corno-Caparrós</i>	7165
THE LEARNING APPROACHES OF LYCEUM STUDENTS ATTENDING THE COURSE "PRINCIPLES OF ECONOMIC THEORY" <i>S. Asonitou, E. Pantzouri</i>	7172
HYPERTEXT IN EDUCATION: A 40-YEAR HISTORY <i>G. Fulantelli</i>	7182
PIAE+: AN UNIVERSITY PROJECT IN STUDENT ACCOMPANIMENT <i>M. Alonso Diaz, V.E. García Félix, M.C. Rodríguez Monzonis, M.E. Gomez Martin</i>	7191
CURRICULUM DESIGN FOR DISTANCE AND REMOTE LEARNING IN LEGAL STUDIES <i>O. Dorul, A. Nastas</i>	7200
STUDENTS' ATTENDANCE, STUDY HABIT AND PERFORMANCE IN AN ANIMAL PHYSIOLOGY CLASS <i>K.M. Yam</i>	7204
TOWARDS AN EVALUATION CONCEPT FOR IMMERSIVE TEACHING BASED ON THE "COGNITIVE AFFECTIVE MODEL OF IMMERSIVE LEARNING (CAMIL)" FRAMEWORK <i>M. Stirzel</i>	7211
THE FREQUENCY OF PLAYING ONLINE GAMES IN THE STUDENT POPULATION BEFORE AND DURING THE COVID-19 PANDEMIC <i>D. Vučić, V. Vidaček Hainš, S. Čurković</i>	7219
MASTERING THE ART OF TEACHING: HOW TO DEVELOP STUDENTS' SKILLS THROUGH VIRTUAL MOBILITY? <i>J. Bruneckiene, V. Kumpikaitė-Valiūnienė, I. Zykiene</i>	7226

INTERNATIONAL ASSESSMENT OF MATHEMATICAL KNOWLEDGE – THE SOURCE OF NEW APPROACHES IN PRIMARY EDUCATION	7234
<i>A. Prídavková</i>	
A NEW METHODOLOGY FOR LEARNING HOW TO DESIGN HEALTH CAMPAIGNS	7244
<i>E. García-Cabrera, J.J. Marin-López, S. Sanchez Fidalgo, F. Morales Marin, L. Bejar-Prado, A. Vilches-Arenas</i>	
MODELLING OF ELEMENTARY MATHEMATICAL CONCEPTS USING AUGMENTED REALITY TECHNOLOGY IN PRIMARY EDUCATION	7249
<i>A. Prídavková</i>	
DATA ACQUISITION SYSTEM AS A SYSTEM TO SUPPORT THE TEACHING OF TECHNICAL DISCIPLINES	7255
<i>J. Micek, O. Karpis, V. Olesnanikova, M. Chochul</i>	
TEACHING DESCRIPTIVE STATISTICAL METHODOLOGY USING TWO APPS FOR THE COLLECTION AND ANALYSIS OF ANTHROPOMETRIC DATA	7261
<i>E. García-Cabrera, A. Quintero-Florez, J.R. Lacalle-Remigio, A. Fernández-Palacín, J. Polo Padillo, A. Vilches-Arenas</i>	
TESTING SYSTEM TO INCREASE LISTENER ACTIVITY	7265
<i>J. Micek, O. Karpis, V. Olesnanikova, M. Chochul</i>	
MINECRAFT AS A REMOTE LAB FOR ACTIVE LEARNING: THE STUDENTS' EXPERIENCE DURING THE PANDEMIC	7271
<i>M.E. Cigognini, A. Benassi, A. Nardi</i>	
TEACHING LSP THROUGH PROJECT-BASED LEARNING IN MIXED SPECIALISATION CLASSES	7281
<i>L. Mayorova, V. Avdeeva, A. Kravchenko, A. Bogatov, D. Bogatova</i>	
EXPERIENCE IN DESIGNING AN INDIVIDUAL SELF-DEVELOPMENT TRAJECTORY OF THE PEDAGOGICAL MASTER'S PROGRAM STUDENTS	7287
<i>G. Melnikova, S. Gilmanshina, R. Sagitova, A. Galeeva, I. Gilmanshin</i>	
DEVELOPING STUDENTS' SKILLS IN NATURAL RESOURCES MANAGEMENT THROUGH SERIOUS GAMES	7292
<i>M. Tramonti, A.M. Dochshanov, L. Tramonti</i>	
TECHNOLOGIES OF PEDAGOGICAL ADAPTATION OF FOREIGN SCHOOLCHILDREN TO THE NEW EDUCATIONAL ENVIRONMENT	7297
<i>S. Gilmanshina, D. Darzemanova, R. Sagitova, A. Galeeva, I. Gilmanshin</i>	
ANALYSIS OF THE INTRODUCTION OF LITERATURE INTO FOREIGN LANGUAGE TEACHING	7305
<i>N. Ta</i>	
FROM REGULATORY INNOVATION TO EDUCATIONAL INNOVATION: WHEN EVALUATION SUPPORTS LEARNING PROCESSES AND INCREASES STUDENTS' MOTIVATION	7310
<i>M.E. Cigognini, L. Parigi</i>	
LEARNING AIDS ON A VIRTUAL CAMPUS: CORRELATING USAGE WITH EXAM SCORES AND IMPROVING PERFORMANCE	7323
<i>M.P. Vinardell, R. Martín-Venegas, J. Olloquequi, J. Del Valle, C. Pelegrí, M. Rabanal, R. Ferrer, M.J. Rodríguez-Lagunas, M.C. Morán, T. Cambras, M. Mitjans</i>	
EDUCATING THE BOARDS OF FAMILY FIRMS IN SUSTAINABILITY: WHERE DO WE STAND?	7328
<i>M. Madaleno, E. Vieira, D. Magueta</i>	
SATISFACTION SURVEYS OF STUDENTS IN THE OCCUPATIONAL RISK PREVENTION MASTER OF MIGUEL HERNANDEZ UNIVERSITY: A TEMPORARY EVOLUTION THAT INCLUDES THE PANDEMIC OF COVID19 (2018-2022)	7339
<i>M.J. Prieto-Castelló, A. Cardona-Llorens, P. Castro-Sánchez, L. Pitaluga-Poveda, D. Marhuenda-Amorós</i>	
SOCIAL ROLES AND INDIVIDUAL INTEREST OF STUDENTS IN A HIGHER VOCATIONAL TRAINING CYCLE	7345
<i>Y. Martínez-Hierrezuelo, D. Gil Pareja, L. Lucio González</i>	
POSSIBILITIES OF USING THE EDUCATIONAL MOBILE APPLICATION IN TEACHING EDUCATIONAL PSYCHOLOGY	7351
<i>M. Mesárošová, R. Miháliková</i>	
THE RELIABILITY OF A QUESTIONNAIRE OF STUDENTS' EXPECTATIONS AND INDIVIDUAL INTEREST IN A HIGHER VOCATIONAL TRAINING CYCLE	7356
<i>V. García Aparicio, J. Muñoz Martin, Y. Martinez-Hierrezuelo</i>	

SENSORY INTEGRATION OF CHILDREN WITH AUTISM SPECTRUM DISORDER: PARENTS' EXPERIENCES	7364
<i>M. Jurevičienė, I. Kaffemanienė, I. Bilbokaitė-Skiauterienė, R. Bilbokaitė, K. Gindulytė, V. Linkuvienė</i>	
ENABLING STUDENT CHOICE OF ASSESSMENT STYLE: CONSIDERATIONS AND PRACTICALITIES	7373
<i>G. Hopkins</i>	
GROUPING BACHELOR'S STUDENTS ACCORDING TO THEIR MOODLE INTERACTION PROFILES: A K-MEANS CLUSTERING APPROACH	7383
<i>R. Santos, R. Henriques</i>	
INSPIRING EDUCATORS TO RETHINK SUSTAINABILITY	7390
<i>L.F. Dal Pian, M.C. Dal Pian, M. Dal Pian</i>	
INFORMAL LEARNING EXPERIENCES BY EXPLORATION OF VISUAL RESEARCH DATA IN A SCIENCE CENTER	7400
<i>L. Pareto, I. Pettersson, M. Söderberg</i>	
CROSS-CULTURAL ANALYSIS OF CONFIDENCE IN ANSWERING MULTIPLE-CHOICE COGNITIVE PROBLEMS FROM THE MATHEMATICAL KANGAROO COMPETITION FOR SCHOOLGIRLS OF THE 4TH AND 5TH GRADES	7410
<i>S. Churbanova, M. Martynovsky</i>	
SATISFACTION SURVEYS TO PROFESSORS REGARDING TEACHING AND SERVICES IN THE MASTER'S DEGREE IN OCCUPATIONAL RISK PREVENTION AT THE MIGUEL HERNÁNDEZ UNIVERSITY	7411
<i>A. Cardona-Llorens, P. Castro-Sanchez, M.J. Prieto-Castelló, L. Pitaluga-Poveda, D. Marhuenda-Amoros</i>	
QUALITY INDICATORS OF THE OCCUPATIONAL RISK PREVENTION MASTER IN THE MIGUEL HERNANDEZ UNIVERSITY. A TEMPORAL EVOLUTION THAT INCLUDES THE PANDEMIC OF COVID19 (2018-2022)	7418
<i>M.J. Prieto-Castelló, A. Cardona-Llorens, P. Castro-Sánchez, L. Pitaluga-Poveda, D. Marhuenda-Amorós</i>	
DEVELOPMENT OF SOCIAL SKILLS FOR CHILDREN WITH SEVERE AND PROFOUND SPECIAL EDUCATIONAL NEEDS	7424
<i>M. Jurevičienė, A. Vaitkevičienė, I. Bilbokaitė-Skiauterienė, I. Kaffemanienė, R. Bilbokaitė</i>	
INVESTIGATING THE INNOVATION CAPABILITIES OF DESIGN STUDENTS IN HIGHER EDUCATION: A CASE STUDY IN SPAIN	7433
<i>L.M. Cerdá Suárez</i>	
A THEMATIC SYNTHESIS OF EARLY CHILDHOOD EDUCATORS' PERCEPTIONS OF CREATIVE TEACHING AND COVID-19	7441
<i>A.G. Tan, S.E. Lim</i>	
AN INTERGENERATIONAL PERSPECTIVE ON GAMIFICATION IN EDUCATION AND RESEARCH	7449
<i>I.G. Mocanu, M. Velciu, O. Cramariuc</i>	
SELF-CARE USING TECHNOLOGICAL MEDIA IN VULNERABLE CONTEXTS	7454
<i>S. Vasquez, E. Flores</i>	
HIGHER EDUCATION IN WARTIME: CHALLENGES AND PRACTICES	7459
<i>O. Labenko, T. Ugryn, A. Skrypnyk, I. Sytykova</i>	
SOCIAL INTERRELATIONSHIPS A KEY ASPECT TO ACHIEVE AN INCLUSIVE UNIVERSITY: FACULTY MEMBERS PERCEPTION ABOUT THE INCLUSION OF MASTER STUDENTS WITH DISABILITIES	7465
<i>I. Heras, I. Becerril-Atxikallende, B. Marcos-Rivero, K. Gonzalez-Antona, J.M. Becerril</i>	
VIDEO AS A TOOL FOR UNDERSTANDING CREATIVE TEACHING PRACTICES IN EARLY CHILDHOOD SETTINGS	7473
<i>K.H. Phua, A.G. Tan</i>	
ETHICAL PRINCIPLES AND PEDAGOGICAL TACT – SURVEY AT THE FACULTY OF MEDICINE COMENIUS UNIVERSITY IN BRATISLAVA	7479
<i>E. Kralova, L. Martauzova, M. Trnka</i>	
MEASUREMENT INVARIANCE AND LATENT MEAN DIFFERENCES OF SOCIAL SKILLS AS A SCHOOL READINESS TEST FOR HUNGARIAN PRESCHOOL CHILDREN IN HUNGARY AND SLOVAKIA	7483
<i>K. Józsa, D. Borbélyová, T.Z. Oo, A. Nagyová, J. Podráczky, G. Zentai</i>	
BENEFITS OF TEACHING 3D PRINTING IN THE EDUCATION PROCESS AT THE FACULTY OF MANAGEMENT SCIENCE AND INFORMATICS	7492
<i>L. Formanek, A. Tupy, L. Cechovic, P. Sarafin</i>	

CHILDREN'S PERSPECTIVE ON EDUCATIONAL CONTEXT THROUGH PHOTOVOICE <i>L. Luini, M. Guerra</i>	7499
THE IMPORTANCE OF SAFE WATER AND ITS PERCEPTION BY STUDENTS IN EUROPE AND AFRICA AS PART OF A TRANSNATIONAL RESEARCH PROJECT <i>O. Cramariuc, H. Lebig, T. Kodom, I.G. Mocanu, K. Bierwirth, E.S. Lohan</i>	7505
INMOOV PROJECT CONTROLLED BY ROBOT OPERATING SYSTEM (ROS) <i>L. Formanek, A. Tupy, L. Cechovic, P. Sarafin, M. Buchta</i>	7511
ST3LLARSAT1 "BOIRA": ESTABLISHING THE FIRST STUDENT CUBESAT PROGRAM AT UC3M <i>A. Marcos, A. Ponche</i>	7521
INVESTIGATING THE KNOWLEDGE OF PRE-SERVICE PRIMARY SCHOOL TEACHERS REGARDING DIVISION OPERATION <i>E. Balci, M. İşıksal-Bostan</i>	7531
HUMANISTIC LEARNING IN ONLINE TEACHING ENVIRONMENT: PRINCIPLES AND IMPLICATIONS <i>M. Bava Harji, L. Ravindran, N. Saffari, L. Habeb Al-Obaydi</i>	7537
REFRAMING THE IMPACT OF INNOVATIVE LEARNING TECHNOLOGIES ON UNIVERSITY STUDENTS AND LECTURERS TO SAVE TIME AND IMPROVE LEARNING CHALLENGES & OPPORTUNITIES <i>A. Majeed, A. Asim, P. Bocij</i>	7546
DIGITAL JEWELRY AND VIRTUAL EXHIBITION: INTERACTION IN THE METAVERSE <i>L. Tenuta, B. Rossato</i>	7554
INTELLECTUAL PROPERTY AT THE UNIVERSITY IN CROATIA - UNDERSTANDING, DIFFERENCES, DISPOSITION <i>M. Kos Weissbarth, M. Šantalab, J. Lasić Lazić</i>	7561
DIMENSIONS OF FAMILY DYNAMICS AND SOCIO-DEMOGRAPHIC CHARACTERISTICS OF PARENTS OF CHILDREN WITH SPELLING DIFFICULTIES <i>A. Tsibidaki, S. Trecha</i>	7567
IEEE STANDARDS: TECHNICAL STANDARDS POWERING INNOVATION AND NEXT GEN EDUCATIONAL PROGRAMS <i>E. Vega Janica</i>	7573
THE SDG AT ISEC LISBOA: STUDENTS AND TEACHERS' AWARENESS AND KNOWLEDGE <i>A. Oliveira, T. Carraquico</i>	7574
SPREADING DIGITAL INNOVATION CULTURE AMONG STUDENTS: A MULTI-STAGE LABORATORY MODEL ON AI AND ANTICIPATORY THINKING FOR SCHOOLS <i>S. Bocconi, F. Talamini, G. Trentin</i>	7579
POLICY FOR DIGITAL TRANSFORMATION IN SCHOOLS – CASE STUDY OF VIETNAM <i>H. Trinh, P. Le, H. Mac, A. Nguyen, H. Trinh</i>	7585
FACTORS THAT INFLUENCE TEACHERS' PERCEPTIONS OF ENGINEERING EDUCATION: A SURVEY STUDY <i>M. Ben Ghalia, M. Al Mestiraihi, E. Donaire</i>	7594
INTERDISCIPLINARY FRAMEWORK FOR PYTHON PROGRAMMING AT SECONDARY SCHOOL <i>R. Papancheva</i>	7600
A TAXONOMIC FRAMEWORK FOR DEVELOPMENT OF ADAPTIVE METRIC SYSTEM FOR ASSESSMENT OF STEM-COMPETENCIES <i>N. Kaloyanova, R. Papancheva</i>	7608
ELABORATING GROUP POSTERS TO COOPERATIVE LEARN STORAGE DEVICES AND FILE SYSTEMS FOR DATA CENTRES <i>M.F. Dolz, S. Catalán, M. Castillo, V.R. Tomás</i>	7615
ACTIVE LEARNING IN COMPUTER NETWORKS <i>S. Catalán, R. Moreno-Vozmediano, M.F. Dolz, M. Castillo</i>	7621
DEVELOPMENT AND OPERATION OF ONLINE SCHOOLS: A CASE STUDY OF VIETNAM <i>H. Trinh, H. Mac</i>	7628
ENHANCING APPRENTICESHIP AND TECHNICAL EDUCATION WITH AI: IMPROVING TEACHING & LEARNING IN COMPUTER SCIENCE AND DATA ANALYTICS <i>P. Bocij, A. Majeed, M. Warsame</i>	7636

THE EFFECTIVENESS OF SYNTHETIC SPEECH FOR SECOND LANGUAGE LISTENING: AN EXPERIMENT USING THE MERE EXPOSURE EFFECT <i>N. Matsuda</i>	7643
THE VIRTUAL READING CHALLENGE: AN EDUCATIONAL TOOL TO PROMOTE READING AND PEER COOPERATION <i>G. Moretti, A. Morini, F. Sidoti</i>	7644
TEACHERS' AND STUDENTS' KNOWLEDGE FOR INFORMATION AND COMMUNICATION TECHNOLOGIES INTEGRATION INTO THE CURRICULUM DURING THE COVID-19 PANDEMIC <i>D. Monteiro Will, M. Bazzo de Espíndola, S. da Aparecida Martins, E. Vasconcelos de Almeida</i>	7653
INQUIRY-BASED INFORMAL MATHEMATICS LEARNING IN A SCIENCE CENTER <i>L. Pareto, J. Wideström, H. Sigurdsson, C. Sandberg</i>	7659
RATIONALITY, MATHEMATICS & SELF-ESTEEM - INNOVATION IN MATHEMATICS EDUCATION IS THE KEY FOR SUSTAINABILITY <i>M. Farkas-Kis</i>	7669
EVERY TEACHER SHOULD HAVE A STUDENT LIKE CHRIS: EMBRACING NEURODIVERGENCE, UDL, AND EDUCATING A VARIETY OF LEARNERS <i>B. Sundararajan, M. Sundararajan, K. Haigh, S. Vimalraj</i>	7678
YOUTH AND CHILDREN'S PARTICIPATION THROUGH CO-DESIGN OF PLACES <i>L. Luini, F. Rota</i>	7688
EDUCATIONAL ROBOTICS AS A TOOL FOR THE ACQUISITION OF TECHNICAL AND SOFT SKILLS IN UNIVERSITY EDUCATION <i>J. Ruiz-de-Garibay, P. Garaizar</i>	7694
THE DEVELOPMENT OF SDGS IN COMPUTER SCIENCE SUBJECTS <i>V.R. Tomás, G. León, L. García, M.J. Aramburu</i>	7703
TEACHER TRAINING FOR DIGITAL INFORMATION AND COMMUNICATION TECHNOLOGIES INTEGRATION INTO THE CURRICULA DURING THE COVID-19 PANDEMIC <i>R. Zen Cerny, M. Bazzo de Espíndola, D. Monteiro Will</i>	7709
PRE-SERVICE SCIENCE TEACHERS' OPINIONS ON HOW TO DECOLONIZE THE PHYSICAL SCIENCES CURRICULUM BY INCLUDING INDIGENOUS KNOWLEDGE <i>B. Mzilikazi</i>	7718
BRIDGING PROBLEM BASED LEARNING (PBL) TO VALUE CREATION (VC) IN PHYSICS CURRICULUM <i>I. Stroe</i>	7723
THE EXPERIENCE OF COOPERATION BETWEEN A UNIVERSITY AND AN AIRPORT FOR THE RECYCLING OF AIRCRAFT FOR HOUSING <i>B. Serrano Lanzarote, J. Romero, A. Rubio, I. Villanova</i>	7724
FACE-TO-FACE TEACHING: THE OPINION AND THE COMMITMENT OF THE STUDENTS OF PHYSIOLOGY AND PATHOPHYSIOLOGY III IN THE PHARMACY DEGREE OF THE UNIVERSITY OF BARCELONA <i>J. Del Valle, C. Pelegrí, À. Franch, M.E. Juan, M. Massot-Cladera, L. Miró, J. Olloquequi, M. Riba, J. Vilaplana, R. Ferrer, R. Martín-Venegas</i>	7735
TEACHERS OR INFLUENCERS? A NEW MODEL OF EDUCATION BASED ON TRUST <i>J.L. Galdón Salvador, I. Gil Pechuán</i>	7742
VOLUMETRIC COMMUNICATION IN MEDICAL TRAINING - CPR EMERGENCIES <i>K. Pietroszek</i>	7747
AN AUTOMATIZED QUALITY ASSESSMENT SYSTEM BASED ON A NATURAL LANGUAGE INTERFACE FOR EXTRACTION AND PROCESSING OF RAW DATA OF THE EDUCATIONAL SYSTEM <i>G. Totkov, M. Zhekov, H. Kostadinova, G. Pashev</i>	7748
ACADEMIC BURNOUT VS. ENGAGEMENT: A MIXED-TECHNIQUE STUDY AMONG UNDERGRADUATE STUDENTS OF BIOTECHNOLOGY BACHELOR'S DEGREE <i>A. Heredia, C. Barrera, M. Martínez-Gómez, M.C. Rodríguez Monzonis, A. Albors, P. Gutiérrez-Colomer, A. Jiménez-Belenguer, C. Rubio-Michavila</i>	7758
EVALUATION RUBRIC BASED ON BLOOM TAXONOMY FOR ASSESSMENT OF STUDENTS LEARNING THROUGH EDUCATIONAL RESOURCES <i>M. Moreira Gois, M.A. Eliseo, R. Mascarenhas, I. Carlos Alcântara de Oliveira, F. Silva Lopes</i>	7765
USAGE MATTERS: LONGITUDINAL BENEFITS OF COMPUTER-ASSISTED INSTRUCTION FOR EARLY LEARNERS <i>H. Shamir, E. Yoder, D. Pocklington</i>	7775

TEACHERS' INTERACTION STYLES IN ONLINE UNIVERSITY LESSONS <i>R. Miháliková, M. Mesárošová</i>	7783
SUSTAINABLE DEVELOPMENT GOALS APPROACHED THROUGH CHALLENGE BASED LEARNING <i>L. Seguí, C. Barrera, M.L. Castelló, J. García-Hernández, A. Heredia</i>	7790
CHANGES IN COGNITIVE PROCESSING SPEED AFTER REGULAR AND PHYSICAL EDUCATION CLASSES IN EARLY ADOLESCENTS FROM SOUTH TIROL, ITALY <i>A. Cocca, C. Carmignola, M. Niedermeier, M. Kopp, K. Greier, G. Ruedl</i>	7799
THE ROLE OF GAMIFICATION IN THE DEVELOPMENT OF (FAKE) NEWS LITERACY IN HIGHER EDUCATION <i>J. Jäger, C. Eisemann, C. Pimmer</i>	7800
EXPANDING VOCABULARY AND IMPROVING SPEAKING SKILLS THROUGH CONTEXTUALIZED LEARNING <i>D. Bogatova, A. Bogatov, V. Avdeeva, A. Kravchenko, L. Mayorova</i>	7808
EVALUATION OF THE BASIC THEORETICAL AND PRACTICAL TRAINING OF FIREFIGHTING MEMBERS <i>M. Ballay, J. Kubás</i>	7813
OUTCOMES OF THE USE OF VIRTUAL UNIVERSE PRO AS A SUPPORT FOR TEACHING IN AUTOMATION: FIRST STEPS TOWARDS IMMERSIVE EXPERIENCES <i>E. Pérez, P. Merchán</i>	7819
TEACHING APPLIED IT IN SOCIAL SCIENCES FOR ENGLISH SPECIALIZATIONS: INTERNATIONAL STUDENTS' GROUP INTERACTIONS IN DIGITAL SOCIETY TOPICS <i>A.B. Andreica</i>	7826
EFFECTIVENESS OF PEER-TO-PEER CRIME PREVENTION PROGRAM IN THE FIELD OF EDUCATION ABOUT INTERNET SECURITY <i>V. Soltes, V. Adamova, S. Hubocan</i>	7836
STRATEGIES OF THE MEXICAN STATE FOR THE INCLUSION OF INDIGENOUS PEOPLES IN A DIGITAL SOCIETY <i>O. Allende-Hernandez, C. Reyes, L. Sanchez</i>	7842
ARCHITECTURAL SCALABILITY OF TUTORING WITHIN INTELLIGENT TUTORING SYSTEMS <i>A. Ebale Nnemetete, L. Capus</i>	7849
FACTORS INVOLVED IN RESPONSIBLE CONSUMPTION BEHAVIOR IN HIGHER EDUCATION STUDENTS: A CASE STUDY <i>M. Martínez-Gómez, E. Bustamante-García, C. Berna Escriche</i>	7860
CHEMISTRY EDUCATION: TEACHING STRATEGIES USED DURING THE FIRST YEAR OF THE PANDEMIC <i>F. Nunes da Silva, A. Grunewald Nichele</i>	7865
ENGLISH AS A FOREIGN LANGUAGE (EFL) UNIVERSITY STUDENTS' ATTITUDES TOWARDS THE USE OF AN AUGMENTED REALITY APP FOR VOCABULARY LEARNING <i>A. Guamán, L. Villagómez, L. Sánchez</i>	7873
AN INVESTIGATION ABOUT THE USE OF PADLET FOR CHEMISTRY TEACHING <i>F. Nunes da Silva, G. A. Flores de Almeida, A. Grunewald Nichele</i>	7878
EXPERIENCE OF INTERNATIONAL COLLABORATION BETWEEN UNIVERSITIES AND TECHNOLOGY CENTERS BASED ON THE CASE OF THE DESIGN OF A SMART FAÇADE SYSTEM <i>J. Alarcón Castro</i>	7884
THE EFFECTS OF USING FLIPPED CLASSROOM ON LEARNING CHEMICAL REACTIONS SUBJECT IN THE MIDDLE SCHOOL <i>E. Anjass, E. Aguaded Ramírez</i>	7890
SENIOR CITIZENS AND ICT USE: NEW HORIZONS <i>J. Pange, R. Madlenak, E. Evangelou</i>	7891
FOSTERING STUDENTS' EMPLOYABILITY IN TOURISM AND HOSPITALITY: A CROSS-CUTTING VIEW AT THE ROLE OF HEI AND STUDENTS' PERCEPTIONS <i>C. Melo, S. Vasconcelos, A. Melo</i>	7896
THE USE OF CHATGPT AS A CASE STUDY IN A CHANGE MANAGEMENT STUDY MODULE: TO BAN OR ALLOW? <i>A. Daunoriene, J. Baryniene, V. Jonaitiene</i>	7902
BUILDING CIRCUITS FROM SCRATCH <i>C. de Trazegnies Otero, J.M. Vargas Domínguez</i>	7907

THE IMPACT OF THE COVID-19 PANDEMIC ON TEACHING MATHEMATICS IN INCLUSIVE SECONDARY SCHOOLS: SPECIAL EDUCATORS' VIEWS AND PERCEPTIONS <i>S. Tzivinikou, P. Papadimitriou</i>	7913
GROUP WORK 2.0 – INTERACTIVE GROUP WORK IN SERIOUS GAMING ENVIRONMENTS <i>V. Göhler, S. Walter</i>	7923
PRESCHOOLERS' HOME LEARNING ACTIVITIES IN RELATION TO DIFFERENT TYPES OF KINDERGARTENS <i>J. Kvintová, L. Vachova, M. Bucharova, M. Pugnerova, I. Plevova, J.S. Novotny, R. Cuberek</i>	7924
REAL EXPERIENCE WITH THE PROCESS OF RECOGNITION OF PRIOR FORMAL AND NON-FORMAL LEARNING AND WORK EXPERIENCE IN THE FRAMEWORK OF THE ARPEL4ENTREP PROJECT <i>R. Madlenak, S. D'Alessandro, A. Pagano, D. Rasimavičienė, J. Pange</i>	7931
CHALLENGE-BASED LEARNING AS A TOOL FOR THE DEVELOPMENT OF SOCIOEMOTIONAL COMPETENCES IN ARCHITECTURE STUDIES <i>G. Ramírez Pacheco, P. De Mingo Palacios, S. Domínguez Gil, A. San José, B. González-Fierro, P. Miguel-Sin Monge, S. Alonso de los Ríos, S. García Morales</i>	7939
LEARNING THROUGH COMPETITION: AN EVALUATION OF STUDENT PERFORMANCE IN THE DESIGN EVENTS AT THE NATIONAL COLLEGIATE LANDSCAPE COMPETITION <i>J. Walker, T. Schauwecker</i>	7946
SOCIOEMOTIONAL COMPETENCES IN ARCHITECTURE STUDIES: A MATTER OF NEW REQUIREMENTS ON THE LABOR MARKET <i>G. Ramírez Pacheco, B. González-Fierro, P. Miguel-Sin Monge, P. De Mingo Palacios, A. San José, S. Domínguez Gil, J. Armengot Paradinas</i>	7947
LITERACY AND DIGITAL LITERACY: REVISITING FUNDAMENTAL EDUCATIONAL CONCEPTS FOR BETTER INTEGRATION INTO TEACHING AND LEARNING <i>K. Schneider</i>	7955
INTEGRATION OF SUSTAINABLE DEVELOPMENT GOALS (SDG) IN THE CURRICULUM: FINDINGS BASED ON THE ANALYSIS OF HIGHER EDUCATION PROGRAMMES <i>A.S. Albuquerque, S. Fernandes, A. Araújo, P. Morais, E. Barros</i>	7964
MORNING MEETING AS THE CORE OF ORAL COMMUNICATION AND DEMOCRATIC VALUES ALONG THE WHOLE EDUCATIVE SYSTEM: FROM PRESCHOOL TO UNIVERSITY <i>A.B. Abril Les</i>	7972
TEACHING PORTUGUESE TO CHINESE STUDENTS: COMPARATIVE STUDY BETWEEN REMOTE AND IN PERSON TEACHING IN A LANGUAGE IMMERSION CONTEXT <i>C. Mangas</i>	7973
AN EXPERIENCE OF ORGANIZING AN INTERNATIONAL CONTEST IN ROBOTICS ENGINEERING <i>N. Aliane, G. Mariscal</i>	7983
DESIGNING A TOOLKIT FOR TOURISM EDUCATORS: FROM PAPER TO ACTION <i>S. Vasconcelos, C. Melo, A. Melo</i>	7994
STUDENT EXPERIENCE: EXPLORING THE PARADIGM SHIFT WITH INTERNATIONAL POSTGRADUATE STUDENTS <i>D. Nwaozuzu</i>	8001
THE HUMAN-CENTRED COMPUTING EXPERIMENT PLATFORM: A PRACTICAL DESIGN FOR ENGAGING AND ACCESSIBLE STUDENT EXPERIMENT PARTICIPATION <i>Z. Jin, T. Gedeon, S. Caldwell</i>	8008
WORKING TOWARDS A THINKING CLASSROOM IN A LARGE INTRODUCTORY CALCULUS COURSE <i>A.H. Jonsdottir, E.K. Hafsteinsson</i>	8015
VIRTUAL MINERAL RECOGNITION LABORATORY <i>D. Fdez-Aviles Pedraza, J.C. Salazar Calderón, J.E. Ortiz Menéndez, M. García Romo</i>	8020
TO PLAY OR NOT TO PLAY: A SNAPSHOT OF THE CONTRIBUTION OF GAME-BASED APPROACHES IN TOURISM HIGHER EDUCATION <i>C. Melo, S. Vasconcelos, A. Melo</i>	8028

EXPLORING STUDENTS' SELF-REGULATED LEARNING IN ONLINE LEARNING ENVIRONMENTS: THE MULTIMODAL LEARNING ANALYTICS APPROACH <i>L. Juhaňák</i>	8038
FOSTERING ECONOMIC GROWTH IN RURAL COMMUNITIES THROUGH EXPERIENTIAL LEARNING AND ENTREPRENEURIAL LEADERSHIP: A CASE STUDY FROM CENTRAL APPALACHIA, USA <i>J.L. Milan Garcia, P. Hackbert</i>	8046
EFL STUDENTS' PERCEPTION OF THE USE OF GOOGLE CLASSROOM DURING THE COVID-19 PANDEMIC <i>M. Jović, V. Stevanović</i>	8052
EXPERIENTIAL LEARNING AS A KEY FACTOR IN CURRICULUM INTERNATIONALIZATION: HANDS-ON APPROACH TO ENHANCE A STRONG GLOBAL MINDSET IN FACULTY DEVELOPMENT <i>A. Pietraszek</i>	8060
DESIGN THINKING AND SOCIAL INNOVATION IN PLANNING EDUCATION <i>S. Tsenkova</i>	8065
REFLECTION ON TEACHING PEDAGOGY INNOVATION: REIMAGINING HISTORIC PLACES THROUGH DESIGN THINKING <i>S. Tsenkova</i>	8073
EDUCATING INDUSTRIAL DESIGNERS FOR THE DEVELOPMENT OF THE TERRITORY THROUGH INNOVATION DRIVEN DESIGN <i>J. Alarcón Castro, J. Brañes Alarcón, J. Brañes Alarcón, G. Ormeño Bustos</i>	8082
INTEGRATING DESIGN THINKING APPROACHES TO ENHANCE UNDERGRADUATE STUDENT OUTCOMES <i>L. Summers, P. Hackbert</i>	8089
ANOMALY DETECTION IN LEARNING ANALYTICS: FACILITATING DOMAIN EXPERTS' SENSEMAKING OF HETEROGENEOUS STUDENT DATA <i>A. Al Doulat, M.L. Maher</i>	8094
PHOTOVOICE: A TEACHING AND EVALUATION TOOL FOR STUDY ABROAD COURSES <i>M. Navarro</i>	8104
AN INSTRUCTIONAL DESIGN MODEL BASED ON AN INTELLIGENT SITUATIONAL ASSESSMENT FOR DETECTING MATH LEARNING DIFFICULTIES IN ONLINE SPACES <i>N. Rigaud Téllez, R. Blanco Bautista, J.M. Flores Pérez, A. Rodríguez García, V. Flores Herrera</i>	8105
CITATION REPOSITORY: A PILOT STUDY IN TEACHING STUDENTS LITERATURE REVIEW SKILLS <i>R. Nieto-Aguilar, A. Aguilera-Méndez, I.A. Nambo-Castro</i>	8113
CO-CURRICULAR PROGRAMMING TO ENHANCE THE UNDERGRADUATE RESEARCH EXPERIENCE: A CONCEPTUAL FRAMEWORK <i>M. Navarro</i>	8117
INVESTIGATION OF IMPACT ON STUDENT PERFORMANCE FROM MODE OF INSTRUCTION AND TYPE OF LEARNING MATERIAL <i>W. Weng, M. Zheng</i>	8118
REMOTE LEARNING OF PHYSICAL PROTECTION STUDENTS DURING THE COVID-19 PANDEMIC <i>J. Durica, Z. Zvakova</i>	8124
TEACHBACK INTEGRATED WITH PROBLEM SOLVING FOR ENHANCED STUDENT LEARNING <i>M. Rahman, K. Nguyen</i>	8129
READING LITERACY AS AN ELEMENT OF FUNCTIONAL LITERACY <i>I. Balandina, T. Moskvitina, L. Yuzdova, N. Glukhikh, Z. Krovatti, S. Bondarenko, M. Kulakovich</i>	8136
PICTURE THIS: EVALUATING HEALTHCARE EDUCATION USING STUDENT GENERATED PICTORIAL DATA <i>C. Gordon, C. Fletcher</i>	8140
ASSESSMENT AND BACKWARD DESIGN: REFLECTIONS FROM A NEWLY IMPLEMENTED BACCALAUREATE DEGREE PROGRAM <i>N. Rodríguez</i>	8141
EXPLORING THE CLASSROOM ROOTS OF FOREIGN LANGUAGE ANXIETY <i>A. Danilova, O. Rotko</i>	8142

DECONSTRUCTION OF LINGUISTIC AND CULTURAL STEREOTYPES IN MULTILINGUAL GROUPS OF STUDENTS: OVERCOMING THE NARROW LIMITS OF PREJUDICE <i>A.M. Toma</i>	8148
MULTIDISCIPLINARY WITHIN THE AREAS OF CHEMISTRY AS A WAY TO IMPROVE LEARNING OF UNDERGRADUATES IN THEIR FINAL DEGREE THESIS <i>J. Sánchez Bodón, I. Moreno, M. Azkune, A. Goñi, A. Peña, L. Lezama, L. Ruiz-Rubio</i>	8149
DEVELOPMENT OF A KNOWLEDGE DEMONSTRATING/SHARING BLOG IN HEALTH-BASED RADIATION PROTECTION: EXPERIENTIAL LEARNING THAT LEVERAGES THE WEB 2.0 EXPERIENCE OF LEARNERS IN A COMMUNITY OF PRACTICE AND INFLUENCED BY PRESSURES OF THE COVID-19 PANDEMIC <i>I. MacDonald</i>	8153
A COMMODITY MATERIAL AS A MAIN DRIVING FORCE: A PROJECT BASED LEARNING IN POLYMER CHEMISTRY <i>J. Sánchez Bodón, I. Moreno, J.L. Vilas-Vilela, L. Ruiz-Rubio</i>	8154
STUDENT COGNITION IN THE CLASSROOM LEARNING: A PERSPECTIVE FROM TEACHERS <i>M.T.O.V. Peiris</i>	8158
A STUDY ON EDUCATION IN TIMES OF CRISES: COVID 19 AND REMOTE LEARNING <i>V. Gaur</i>	8168
TEACHER AND LEADER VACANCY CRISIS IN VIRGINIA, UNITED STATES <i>K. Cassada</i>	8177
MONITORING AND TRACING MOVEMENT AND CONTACT OF INDIVIDUALS IN HEALTHCARE FACILITIES THROUGH THE COV-ID PROJECT <i>L. Mariš, A. Velas</i>	8178
I WILL SURVIVE! - TEACHING STUDENTS IN EMERGENCY AND NATURAL DISASTER MANAGEMENT SKILLS <i>L. Mariš, M. Lusková</i>	8182
LEARNING WITH 512. A PROPOSAL FOR THE ACTIVE RECOVERY OF POST-PANDEMIC LEARNING FOR PRESCHOOL BOYS AND GIRLS INTEGRATING FAMILY AND SCHOOL <i>A. Espanol, M. Cabrera, M. Guzman, R. Blais</i>	8187
ALL ABOARD: A COMPREHENSIVE PROPOSAL FOR SCHOOL HEALTH AND PREVENTION <i>A. Espanol, M. Cabrera, M. Guzman, R. Blais</i>	8188
AFTER THE PANDEMIC, DO HEI PROFESSORS STILL FEEL THE NEED TO IMPROVE THEIR ONLINE TEACHING SKILLS? <i>M. Montanari, F. Martinez de Carnero, G. Cibulskis, D. Pantazatos, M. Grammatikou, K. Dostatnia, R. Teles</i>	8189
STATISTIC MOOC: A DESIGN PROPOSAL <i>C. Martinho, C. Silvestre, C. Luz, C. Nunes</i>	8195
BOOSTING AGILE PROJECT-BASED TEACHING AND LEARNING THROUGH AN ONLINE COMMUNITY OF PRACTICE <i>K. Nikolakopoulou, C. Pierrakeas, A. Kameas</i>	8200
ENHANCING ICT SKILLS OF MANAGEMENT EDUCATORS WITH THE OLMEDU MOOC AND TOOLKIT <i>A. Kameas, A. Achilleos, G. Vonitsanos, F. Gatomati, P. Kyriakou</i>	8210
THEMATIC ANALYSIS OF FACTORS INFLUENCING INDIAN STUDENTS' AND THEIR ACHIEVEMENT IN UK HIGHER EDUCATION <i>M. Kanubhai Patel, H. Cui, M. Opoku Agyeman</i>	8219
THEMATIC ANALYSIS OF FEMALE SOFTWARE DEVELOPERS' WORKPLACE EXPERIENCE IN NIGERIAN COMPANIES <i>A. Shamsudeen Imam, M. Opoku Agyeman</i>	8229
TO EMBRACE, OR NOT TO EMBRACE: CHATGPT IS THE QUESTION <i>J. Murray, A. Williamson</i>	8239
COVID-19 HERITAGE: ARE SPANISH PROFESSORS TREASURING THEIR ONLINE TEACHING EXPERIENCE? <i>M. Montanari, F. Martinez de Carnero, A. Hernando García-Cervigón, E. Garayzábal Heinze, P.C. Bonnin Arias, L. Sanz Simon</i>	8246

CURSE OR OPPORTUNITY: ONLINE LEARNING AFTER THE COVID EMERGENCY FROM THE ITALIAN PROFESSORS' POINT OF VIEW	8251
<i>M. Montanari, F. Martinez de Carnero, S. Celani, G. Di Flumeri, V. Ronca, R. Capotorto</i>	
LEARNING MANAGEMENT SYSTEMS AFTER LOCKDOWN A CASE STUDY OF POST GRADUATE CERTIFICATE IN EDUCATION STUDENTS IN SOUTH AFRICA	8261
<i>N. Nosihle</i>	
THE LEARNING MODEL MARTAPURA: IS IT EFFECTIVE IN IMPROVING STUDENTS' CREATIVITY AND MULTIPLE INTELLIGENCE?	8262
<i>A.R. Agusta, A. Suriansyah, D.A. Pratiwi, B.B. Wiyono, N. Noorhapizah</i>	
A COMPARATIVE ASSESSMENT OF EMPLOYMENT CHALLENGES OF STUDENTS IN UNIVERSITY OF NORTHAMPTON BEFORE AND AFTER THE CORONA VIRUS LOCKDOWN: A CASE OF NIGERIAN STUDENTS	8277
<i>I. Abigail Osunkojo, M. Opoku Agyeman, H. Cui</i>	
THE CONSEQUENCES OF ONLINE LEARNING ON THE GRADES OF NIGERIAN INTERNATIONAL STUDENTS DURING THE COVID-19 LOCKDOWN AT UNIC, UK	8288
<i>E. Kehinde Egedson, M. Opoku Agyeman</i>	
EXPLORING THE RELATIONSHIP BETWEEN LANGUAGE BARRIER AND THE POOR PERFORMANCE OF BAME/INTERNATIONAL STUDENTS IN THE UNITED KINGDOM UNIVERSITIES	8298
<i>P. Alunyo Bello, M. Opoku Agyeman</i>	
IMPLEMENTING TOKENS FOR PERSONALIZED LEARNING IN A BIOMEDICAL ENGINEERING PROGRAM: LESSONS LEARNED AND FUTURE CONSIDERATIONS	8308
<i>E. Alvarez, R. Striker, D. Ewert</i>	
INFORMAL EDUCATION AND ITS IMPACT ON JOB MARKET: ANALYSIS AND RECOMMENDATIONS FOR THE FUTURE	8315
<i>N. Dominguez-Vergara</i>	
A SYSTEMATIC REVIEW OF VIRTUAL REALITY AND USER EXPERIENCE IN MEDICINE	8325
<i>G. Atas, D. Topalli, N.E. Cagiltay</i>	
CHALLENGES AND SOLUTIONS FOR THE AGING FACULTY POPULATION AT THE UNIVERSIDAD AUTÓNOMA METROPOLITANA (UAM)	8332
<i>N. Dominguez-Vergara</i>	
TEAM MOTIVATION AND COMMUNICATION AS KEY FOR ASSESSING THE QUALITY OF SCHOOL PERFORMANCE	8342
<i>I. Bilbokaitė-Skiauterienė, R. Bilbokaitė, G. Petrauskienė</i>	
TRENDS IN CHILDREN'S INDEPENDENT READING AND MOTIVATION: THE CONTEXT OF PEDAGOGUES' OPINIONS	8349
<i>I. Bilbokaitė-Skiauterienė, R. Bilbokaitė</i>	
INTERNATIONAL PROJECTS, CHALLENGES AND BEST PRACTICES	8357
<i>D. Cagáňová, N. Horňáková</i>	
FACTORS INFLUENCING INTERNATIONAL STUDENTS' DECISION-MAKING WHILE CHOOSING A STUDY DESTINATION: A COMPARISON BETWEEN GERMANY AND UNITED KINGDOM	8365
<i>L. Jeena Prasad, M. Opoku Agyeman</i>	
THE IMPACT OF SELF-SPONSORSHIP ON ACADEMIC PERFORMANCE AMONG UNDERREPRESENTED ETHNIC MINORITIES IN THE UNITED KINGDOM	8374
<i>O. M. Osadugba, M. Opoku Agyeman</i>	
INTEGRATED APPROACH IN TEACHING LANGUAGE DURING PHYSICAL EDUCATION CLASSES IN MULTILINGUAL COMMUNITIES	8383
<i>G.A. Nacula</i>	
ENHANCING ELEMENTARY SCHOOL STUDENTS' ENVIRONMENT AWARENESS THROUGH VIRTUAL REALITY BASED IMMERSIVE LEARNING EXPERIENCES	8384
<i>D. Sulisworo, V.Y. Eroviana, B. Robiin</i>	
THE COOPERATION BETWEEN UNIVERSITY-INDUSTRY-SCIENCE ELEMENTS	8391
<i>M. Dakova</i>	
DIGITAL TOOLS FOR PROFESSIONAL DEVELOPMENT IN CLASSES OF ENGLISH FOR SPECIFIC PURPOSES	8398
<i>E. Polyudova</i>	
THE EFFECT OF COMPUTATIONAL ACTION ON STUDENTS' COMPUTATIONAL IDENTITY AND SELF-EFFICACY	8404
<i>H.N. Pang, R. Parks, C. Breazeal, H. Abelson</i>	

QTL MAPPING MADE EASY: A PRACTICAL TUTORIAL USING R/QTL <i>G. Villanueva, E. Rosa-Martínez, S. Vilanova, P. Gramazio, J. Prohens, M. Plazas</i>	8413
CHROMOSOME VISUALIZATION WITH INTROGRESSIONS: A TUTORIAL USING TASSEL AND GGT2 SOFTWARE <i>G. Villanueva, E. Rosa-Martínez, S. Vilanova, P. Gramazio, J. Prohens, M. Plazas</i>	8419
EMBEDDING SUSTAINABILITY INTO THE EDUCATION OF HEALTH PROFESSIONALS <i>A. Flynn</i>	8423
NURSES' ATTITUDES TO SUSTAINABILITY <i>A. Flynn</i>	8424
IMPROVING THE EXPERIENCE OF OLDER ADULT LEARNERS <i>M. Velciu</i>	8425
TEACHING SUSTAINABLE ENTREPRENEURSHIP USING CHALLENGE-BASED LEARNING METHODS <i>F. Stel</i>	8430
MODEL OF EDUCATIONAL EXPERIENCE IN SPOKEN DIALOGUE SYSTEMS FOR LANGUAGE LEARNING <i>E. Ericsson</i>	8441
FLIPGPT - PILOT EXPERIMENT: EXPLORING THE POTENTIAL OF AI IN HIGHER EDUCATION <i>T.B. Godinho, J. Mouro, N.R. Oliveira</i>	8442
DEVELOPMENT OF AN E-LEARNING PROGRAM WITH 'EASY JAPANESE' FOR TRAINING MEDICAL INTERPRETERS <i>N. Ono, T. Hamai, J. Okabe</i>	8443
ENHANCING EFFECTIVE LEARNING EXPERIENCES IN CHALLENGING TIMES: A REVIEW OF THE MODELS FOR ONLINE LEARNING <i>A. Gogus</i>	8444
USING DIGITAL RHYTHM TRAINING TO IMPROVE READING FLUENCY IN CHILDREN <i>A. Giannakopoulou, T. Zanto, C. Gallen, A. Ostrand, J. Younger, R. Anguera, J. Anguera, A. Gazzaley</i>	8445
COACHING BY LEADERS IS IN DEMAND BUT GOOD LEADERS AS COACHES ARE HARD TO FIND <i>J. Milner</i>	8446
DIALOGIC TEACHING IN THE ESP CLASSROOM: CHALLENGES AND SOLUTIONS <i>I. Bocianu</i>	8447
RUBRICS FOR ASSESSMENT: IMPROVING THE ROLE OF THE RATER <i>K.A. Martinez Algeciras, P. Elosua Oliden</i>	8454
BUSINESS STUDENTS INVEST THEIR TIME IN COMPLEX AND CHALLENGING PROCESS DIGITALIZATION TASKS INSTEAD OF PREPARING FOR THE EXAM <i>A. Dannecker</i>	8461
PEER INFLUENCES ON THE LONG-TERM DEVELOPMENT OF HIGHLY SKILLED AND LESS SKILLED VOLLEYBALL PLAYERS <i>P. Coutinho, C. Bessa, I. Mesquita</i>	8468
CAN HETEROGENEOUS GROUP IMPROVE MORE STUDENTS' GAME INVOLVEMENT THAN HOMOGENEOUS GROUP IN PE? <i>C. Bessa, B. Vilaça, C. Farias, I. Mesquita</i>	8469
FOSTERING CROSS-CULTURAL UNDERSTANDING THROUGH TECHNOLOGY-LED EDUCATIONAL PRACTICES: PERSPECTIVES FROM GREEK TEACHERS <i>I. Lefkos, E. Chanioti, M. Karatsiori</i>	8470
IMPROVING THE MOOD AND WELL-BEING OF MUSIC STUDENTS THROUGH MUSIC THERAPY <i>M.D. Rucsanda, A. Belibou, A.I. Rucsanda, N. Karacsony</i>	8471
THE IMPACT OF EMERGENT LITERACY AND COGNITIVE LINGUISTIC SKILLS ON ESL READING SUCCESS IN SOUTH AFRICA: IMPLICATIONS FOR TEACHERS AND POLICYMAKERS <i>A. van Staden</i>	8479
OVERCOMING COMMUNICATION OBSTACLES CAUSED BY THE COVID-19 PANDEMIC IN BANGLADESH: RECOGNITION OF ZOOM AS AN IMMINENT TECHNOLOGICAL ASSET <i>R. Hossain</i>	8489

EVALUATION OF THE PUBLIC MANAGEMENT DEGREE (ISCAP – PORTO) <i>A.A. Pereira, T. Teixeira</i>	8500
TEACHERS' PERSPECTIVES ON THE USE OF HUMANOID ROBOTS AT PRIMARY AND SECONDARY EDUCATION LEVEL, WITH A FOCUS ON NATIVE LANGUAGE TEACHERS <i>M. Kerneža, D. Zemljak</i>	8504
VIDEO LECTURES – THE DIGITAL ASSISTANT IN THE HIGHER MATHEMATICS EDUCATION PROCESS AT RIGA TECHNICAL UNIVERSITY <i>I. Volodko, S. Cernajeva</i>	8512
THE DEVELOPMENT DIRECTIONS OF TEACHERS' TRAINING STUDY PROGRAMS IN LATVIA <i>J. Davidova, S. Zarina, I. Kokina</i>	8517
CREATION AND TRANSFER OF KNOWLEDGE AND THE CONTRIBUTION OF HEI TO ECONOMIC DEVELOPMENT <i>M. Dakova</i>	8525
HOW ANYONE IN EDUCATION CAN FURTHER INSTRUCTIONAL IMPACT WITH AI TOOLS <i>M. Macfarlan</i>	8531
EVALUATING EFFORT, NOT PERFECTION, INCENTIVISES IMPROVEMENT IN ACADEMIC PERFORMANCE <i>O. Lewandowska, M. Sama</i>	8532
SOCIAL MEDIA AS A TOOL OF MOTIVATION AND LEARNING OF BASIC AND TRANSVERSAL SKILLS OF GASTRONOMY AND CULINARY ARTS STUDENTS <i>A. Valdés García, S. Ortiz Calabuig, M. Mateo Tomás, E. Fuster Aparicio, B. Orts Romero, A.G. Martín Blanco, P. Fullana Puig, L. Blanco Domínguez, J.D. Jordá Guijarro, R.M. Torres Valdés</i>	8533
THE ROLE OF INFORMAL LEARNING PROGRAMS IN THE RELATIONSHIP BETWEEN INTEREST, PERCEPTION, AND PARTICIPATION OF STUDENTS IN STEM EDUCATION <i>Z. Ahmad</i>	8534
AUCTIONS, A.I., AND “ART COURT”: A GAMIFIED AND INCLUSIVE APPROACH TO ARTS CURRICULUM <i>L. Dade</i>	8535
ATTITUDES OF TRAINEE ENGLISH TEACHERS TOWARDS THE USE OF LITERATURE IN EFL TEACHING <i>L. Kocianova</i>	8536
CHALLENGES AND BARRIERS FACED BY LANGUAGE LEARNERS WHEN STUDYING LITERATURE IN THE TARGET LANGUAGE <i>L. Kocianova</i>	8542
MICRO-CREDENTIALS IN DIGITAL FORM - LIFELONG DEVELOPMENT PATH <i>M. Nowakowski</i>	8543
TRANSLANGUAGING IN ACTION AT A BILINGUAL INSTITUTION OF HIGHER EDUCATION: ST. AUGUSTINE COLLEGE SHOWCASE <i>J. Villegas</i>	8544
THE PERCEPTION OF THE UNIVERSITY STUDENTS OF THE USE OF CHATGPT DURING THE UNIVERSITY EDUCATION: CASE OF TURKEY <i>G. Sart</i>	8545
THE EFFECTS OF THE EFFECTIVE USAGE AND THE DEVELOPMENT OF TECHNOLOGY AS 21ST CENTURY SKILLS ON UNIVERSITY STUDENTS' SELF-CONFIDENCE <i>G. Sart</i>	8546
THE USE OF DIGITAL ESCAPE ROOM AND GAMIFICATION TOOLS IN MANAGERIAL SKILLS AND THEIR IMPACT ON LEARNING AND STUDENTS' SATISFACTION <i>J. Barrena-Martínez, J. de Frutos-Belizón, M.J. Foncubierta- Rodríguez, F. Guerrero-Alba, J.A. Medina-Garrido, T. Rodríguez-Gonzalez, M. Ruiz-Martínez</i>	8547
MOBILE TECHNOLOGY IMPACT IN SUPPORT NOTE-TAKING AND SHARING ACTIVITIES DURING EDUCATIONAL BIOLOGY FIELD TRIPS <i>T. Becker</i>	8548
POST-COVID-19 ADAPTATION: THE SHIFT TOWARDS ONLINE LEARNING AND THE IMPLICATION FOR MATHEMATICS TEACHER PREPARATION IN HIGHER EDUCATION INSTITUTIONS <i>B. Olawale, W. Hendricks, V. Mncube</i>	8549

IMPROVING SECONDARY SCHOOL STUDENTS' ACHIEVEMENT IN TRIGONOMETRY USING GAME BASED LEARNING APPROACH <i>M. Mosimege, F. Egara</i>	8556
GENDER DIFFERENCE IN SECONDARY SCHOOL STUDENTS' RETENTION OF MATHEMATICS CONCEPTS: A FLIPPED CLASSROOM LEARNING APPROACH <i>F. Egara, M. Mosimege</i>	8566
PRE-SERVICE TEACHERS' EXPERIENCES OF LEARNING ECONOMICS EDUCATION: THE CASE OF THE MULTIPLIER EFFECT, SIMPLE KEYNESIAN MODEL <i>M. Mphuthi, M. Kimanzi</i>	8574
ONLINE EDUCATIONAL TECHNOLOGIES AS A CURRICULUM APPROACH IN TEACHING AND LEARNING FOR FIRST YEAR PRE-SERVICE TEACHERS <i>M. Mphuthi, M. Tshelane</i>	8582
TEACHER EDUCATION AND REFLECTIVE PRACTITIONER DEVELOPMENT: THE IMPACT ON EDUCATIONAL LEADERSHIP <i>E. Seghedin</i>	8590
WHAT HAS CHANGED? AN INSIGHT ON COMMUNIST'S YOUTH PERSPECTIVE ON EDUCATION <i>S. Nitu, E. Seghedin</i>	8591
RETHINKING SCHOOL BUSINESS PARTNERSHIPS TO DRIVE COLLABORATION AND INNOVATION IN PUBLIC SCHOOLS: A CASE OF SOUTH AFRICAN PUBLIC SCHOOLS IN LIMPOPO PROVINCE <i>M. Lamola</i>	8598
TRANSFORMING THE INDUSTRIAL & ACADEMIC CAPABILITY DEVELOPMENT SYSTEM TO ADDRESS SOCIAL & GOVERNMENT PRIORITIES FOR A SUSTAINABLE FUTURE IN PAKISTAN <i>F. Azmat, K. Stansfield, R.F. Colmenares Quintero, M.B. Khan</i>	8606
EARLY CHILDHOOD EDUCATORS' BELIEFS AND KNOWLEDGE CONSISTENTLY INFORMS THEIR LITERACY DEVELOPMENT AND LITERACY LEARNING ENVIRONMENTS <i>L.A. Kahla</i>	8614
PERCEPTIONS OF PARENTS ON THE SOUTH AFRICAN EARLY CHILDHOOD DEVELOPMENT CENTRES <i>N. Skota-Dayile, M.S. Mkhomi</i>	8619
"WE ARE ON OUR OWN"- LIVED LEARNING EXPERIENCES OF LEARNERS FROM CHILD-HEADED HOUSEHOLDS <i>T. Ngqushwa, M.S. Mkhomi</i>	8625
ORANGE CANVAS - BUSINESS MODEL FOR CREATIVE INDUSTRIES <i>F. Palma, R. Rodriguez, V. Ferrari</i>	8632
FRAMEWORK FOR IMPROVING SPEAKING SKILLS IN GRADE 4 ENGLISH FIRST ADDITIONAL LANGUAGE LEARNERS DURING ENGLISH LESSONS IN RURAL AREAS <i>M.A. Linake, F. Liziwe, C. Kleinbooi</i>	8638
GRADE FOUR TEACHERS' EXPERIENCES ON USING ENGLISH AS A MEDIUM OF INSTRUCTION: A CASE STUDY OF TWO PRIMARY SCHOOLS IN MDANTSANE TOWNSHIP <i>L.A. Kahla, M. Ngozi, E. Adu, M.A. Linake</i>	8647
THE DEVELOPMENT OF LEARNING COMPETENCES OF PRIMARY SCHOOL CHILDREN BASED ON A CASE STUDY IN NORTH-RHINE-WESTPHALIA, GERMANY <i>K. Knees</i>	8651
A DIGITAL LEARNING GAME ON BUILDING AWARENESS AND SKILLS TOWARDS NATURAL RESOURCES MANAGEMENT <i>H. Tsalapatas, O. Heidmann, G. Senka, T. Jesmin, J. Terasmaa, C. Vaz de Carvalho, M. Caeiro</i>	8652
VIRTUAL TRIP: EXPLORING A 360-DEGREE MUSEUM FOR STUDENTS WITH IMMERSIVE EXPERIENCE <i>S. Tanabashi</i>	8653
ANALYSIS ON THE BLENDED TEACHING MODEL OF FOREIGN LANGUAGES BASED ON FLIPPED CLASSROOM <i>N. Ta</i>	8654
REVEALING PATTERNS OF STUDENT ONLINE LEARNING BEHAVIORS THROUGH LATENT PROFILE ANALYSIS <i>F. Gao, E. Mandell, L. Li</i>	8655

**THE PASSIVE VOICE: CHALLENGES AND SUGGESTIONS FOR ENGLISH
LANGUAGE TEACHING**

8656

O. Rotko, A. Danilova