

# **International Conference E-Learning and Digital Learning (ELDL2024), and Sustainability, Technology and Education (STE2024)**

Held at the Multi-Conference on Computer Science and  
Information Systems (MCCSIS 2024)

Budapest, Hungary  
13-15 July 2024

ISBN: 979-8-3313-0304-4

**Printed from e-media with permission by:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571

**Some format issues inherent in the e-media version may also appear in this print version.**

Copyright© (2024) by International Association for Development of the Information Society (IADIS)  
All rights reserved.

Printed with permission by Curran Associates, Inc. (2024)

For permission requests, please contact International Association for Development of the Information Society (IADIS) at the address below.

International Association for Development of the Information Society (IADIS)  
Rua Sao Sebastiao Da Pedreira  
No. 100, 30, 1050-209  
Lisbon, Portugal

Phone: 351 21 3151373

Fax: 351 21 3151244

secretariat@iadis.org

**Additional copies of this publication are available from:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571 USA  
Phone: 845-758-0400  
Fax: 845-758-2633  
Email: curran@proceedings.com  
Web: www.proceedings.com

# TABLE OF CONTENTS

|                   |      |
|-------------------|------|
| FOREWORD          | ix   |
| PROGRAM COMMITTEE | xiii |
| KEYNOTE LECTURE   | xvii |
| SPECIAL TALK      | xix  |
| TUTORIAL          | xxi  |

## FULL PAPERS

### *E-LEARNING AND DIGITAL LEARNING*

|  |    |
|--|----|
| EXAMINING ACCESSES TO OPEN ACCESS SIMULATOR OBJECTS IN ENGLISH AND IN PORTUGUESE<br><i>Ana M. B. Pavani and William S. Barbosa</i>   | 3  |
| TEACHING ACADEMIC WRITING IN THE ERA OF LARGE LANGUAGE MODELS: A CASE STUDY<br><i>Andrea Molinari and Elena Molinari</i>   | 11 |
| IMPLEMENTING BLENDED LEARNING AS A CULTURALLY RESPONSIVE TEACHING METHOD TO THE NEEDS OF STUDENTS WITH CULTURAL AND LINGUISTIC DIVERSITY<br><i>Vaso Anastasiou, Charoula Angeli and Yiota H. Diakou</i>            | 19 |
| EXTENDING COMMON USABILITY HEURISTICS LIST WITH LEARNER-CENTERED STRATEGIES FOR AN EXHAUSTIVE E-LEARNING DESIGN ASSESSMENT<br><i>Nadia Menad</i>   | 27 |
| THE OBSTACLES TO DIGITAL TRANSFORMATION AND THEIR IMPACT ON CYBER THREATS IN MOROCCAN HIGHER EDUCATION: A MULTI-CRITERIA APPROACH<br><i>Abdelilah Chahid, Souad Ahriz, Kamal El Guemmat and Khalifa Mansouri</i>   | 35 |
| USING AN ESCAPE ROOM GAME TO EXPLORE THE RELATIONSHIPS BETWEEN GAMEPLAY SELF-EFFICACY, EXPERIENTIAL VALUE AND LEARNING PROGRESS IN A PERFORMING ARTS COURSE<br><i>Jon-Chao Hong, Yi-An Chien and Chih-Hsuan Ho</i> | 43 |
| WELCOME: TURN ON YOUR CAMERA, YOU HAVE A LEAD ROLE<br><i>Eduardo Hamuy, Ricardo Abarca, Rolando Cori and José Garrote</i>  | 51 |
| PLAY2ESCAPE - A DIGITAL ESCAPE ROOM IN MATH CLASSES FOR UNDERGRADUATE TOURISM STUDENTS - CASE STUDY<br><i>Sónia Pais, Ana Elisa Sousa and Maria Sofia Lopes</i>  | 59 |
| FORMATION OF BACHELOR'S SKILLS IN THE FIELD OF MACHINE LEARNING AND INTELLIGENT DATA ANALYSIS<br><i>Marina Lapenok, Sergei Patrushev and Lidiya Shestakova</i>   | 67 |

|   |     |
|---|-----|
| STUDENT-CENTERED PERSONALIZATION OF INDIVIDUAL EDUCATION THROUGH REUSABLE AND AUTONOMOUS LEARNING UNITS - THE SPIRAL MODEL<br><i>Sorana Cimpan, Francesco Floris, Marina Marchisio Conte and Sergio Rabellino</i>   | 75  |
| DIGITAL FOR WELFARE. STORIES OF “THIRD SECTOR” REALITIES FACING THE CHALLENGES OF DIGITAL TRANSFORMATION<br><i>Dalia Gallico</i>  | 83  |
| TINKERCAD AS A VIRTUAL LABORATORY<br><i>József Udvaros and Norbert Forman</i>   | 91  |
| LEARNING ANALYTICS VISUALISATIONS OF SCHOOL DROPOUT IN VOCATIONAL EDUCATION<br><i>Christos Samaras, Anna Mavroudi and Vassilios S. Verykios</i>   | 98  |
| DIGITAL TECHNOLOGIES AND THEIR IMPACT ON METACOGNITIVE ASPECTS IN LEARNING RECOVERY IN SCIENTIFIC AND HUMANISTIC SUBJECTS<br><i>Andrea Balbo, Alice Barana, Giulia Boetti, Marina Marchisio Conte and Sara Omegna</i>   | 105 |
| TAILORING EDUCATION TO DATABASE TRENDS: CHALLENGES IN CURRICULUM DESIGN FOR ADVANCED DATABASE TOPICS<br><i>Rosa Maria Reis, Bertil P. Marques and Ricardo Almeida</i>   | 113 |
| RATING UNIVERSITIES IN HONG KONG, MACAO AND SINGAPORE BY GENERATIVE ARTIFICIAL INTELLIGENCE (AI): ARE VARIOUS AI MODELS CONSISTENT?<br><i>Victor K. Y. Chan</i>   | 121 |
| DIGITAL EDUCATION IN THE TEACHING AND LEARNING OF EXPONENTIAL AND LOGARITHMIC FUNCTIONS<br><i>Alberto Codeço, Pedro Miguel Faria and Isabel Araújo</i>  | 129 |
| DETECTING BLENDED LEARNING, COLLABORATIVE LEARNING AND INTERNATIONALISATION IN MILITARY EDUCATION: A SYSTEMATIC LITERATURE REVIEW<br><i>Alice Barana, Giulia Boetti, Antonino Cambria, Marina Marchisio Conte and Enrico Spinello</i>                                   | N/A |
| STUDENTS’ PERCEPTION OF INTERNATIONAL COLLABORATION AND CULTURAL UNDERSTANDING IN DIGITALLY DRIVEN EDUCATION<br><i>Marina Marchisio Conte, Fabio Roman, Matteo Sacchet, Enrico Spinello, Anna Molnár, Shay Attias, Paul Tudorache, Jaroslav Kompan and Andrew Dolan</i> | 145 |
| A STUDY ON THE PROMOTION OF E-LEARNING TO THE PROFESSIONAL DEVELOPMENT OF RURAL TEACHERS IN GUANGXI, CHINA<br><i>Chenfei Xiang, Jiachao Wei, Yuchen Gou, Shan Liu and Liqing Huang</i>  | 154 |
| INTEGRATION OF ARTIFICIAL INTELLIGENCE IN TEACHER TRAINING: TRAINING TO INNOVATE IN THE DIGITAL AGE<br><i>Bruno F. Gonçalves</i>  | 161 |
| JUDOMATHS: AN INTELLIGENT SEMANTIC SYSTEM TO SUPPORT SKILLS-BASED LEARNING OF FRENCH THIRD-CYCLE MATHEMATICS<br><i>Clément Aubeuf</i>   | 169 |
| GATEWAY TO SUCCESS: IMPROVING ACADEMIC ACHIEVEMENT THROUGH ONLINE MODULES<br><i>Linda van Ryneveld</i>  | 176 |

|  |     |
|--|-----|
| PARTICIPATORY PROCESSES IN THE CONTEXT OF THE DEVELOPMENT AND IMPLEMENTATION OF (DIGITAL) LEARNING OFFERINGS: A CASE STUDY ON THE SUPPORT OF INTERNSHIP PHASES IN BUSINESS MANAGEMENT STUDIES<br><i>Yvonne Bönninger, Anne Florence Merkle, Elke Mährlitz-Galler, Gunnar Voß, Beate von Velsen-Zerweck and Michael A. Herzog</i> | 183 |
| PREDICTING MOBILE LEARNING APPS' USER RATING BASED ON THEIR USABILITY EVALUATION BY GENERATIVE ARTIFICIAL INTELLIGENCE (AI)<br><i>Victor K. Y. Chan</i>  | 191 |
| EVALUATION OF THE IMPACT OF ACTIVE LEARNING USING AUGMENTED REALITY ON CADETS' KNOWLEDGE<br><i>Jadranko Tuta and Ljerka Luic</i>   | 199 |
| <b><i>SUSTAINABILITY, TECHNOLOGY AND EDUCATION</i></b>   |     |
| GREEN IT ADOPTION BY SOFTWARE DEVELOPERS: KEY FACTORS FROM THE THEORY OF PLANNED BEHAVIOR PERSPECTIVE<br><i>Yassine Talas and Hajer Rabii</i>  | 210 |
| STUDYING THE ENERGY CONSUMPTION OF INSTAGRAM FUNCTIONALITIES ON PC AND TABLET<br><i>Elisa Jiménez, Carlos Pulido, Coral Calero, M<sup>a</sup> Ángeles Moraga, Félix García and Alberto Gordillo</i>  | 219 |
| ASSESSMENT OF HYGROTHERMAL PROPERTIES OF ADOBE BRICKS. RESEARCH EXPERIENCE AT KEENE STATE COLLEGE<br><i>Fernando del Ama Gonzalo, Paul Fowler and Zachary Punch</i>  | 227 |
| RESEARCH ON AN ABSORPTION AIR-CONDITIONING SYSTEM MADE FROM SUSTAINABLE MATERIALS<br><i>Yuxian Zhou, Wenquan Wang and Xiuwei Li</i>  | 235 |
| EFFECTS OF LEARNING ENVIRONMENTS ON STUDENTS' SKILLS DEVELOPMENT: A COMPARATIVE VIEW OF EIGHT EUROPEAN COUNTRIES<br><i>Ana Tecilazić and Biljana Birač</i>   | 243 |
| GENERATIONAL PERSPECTIVE ON ENERGY-EFFICIENCY AWARENESS: A COMPARATIVE STUDY<br><i>Gabriella Francesca Amalia Pernice, Valeria Orso and Luciano Gamberini</i>  | 253 |
| A SUSTAINABILITY CAMPUS WALK AS A GAMIFIED TYPE OF BLENDED LEARNING<br><i>Anna-Marie Tuomala and Alexandra Maksheeva</i>   | 261 |

## **SHORT PAPERS**

### ***E-LEARNING AND DIGITAL LEARNING***

|   |     |
|---|-----|
| THE IMPACT OF THE MAKER MOVEMENT ON ENTREPRENEURSHIP FROM A RESOURCE PERSPECTIVE<br><i>Tsai-Hsin Chen, Tsz-Yu Huang and Chun-Wang Wei</i> | 273 |
|---|-----|

|   |     |
|---|-----|
| THE PDSA APPROACH TO UNDERSTANDING SELF-REGULATED<br>LEARNING STRATEGIES<br><i>Yassine Safsouf</i>  | 277 |
| SHIFTING PERCEPTIONS OF AI: AN INTEGRATED LEARNING PROGRAM IN<br>THE MIDDLE SCHOOL SETTING<br><i>Won Jung Kim and Sangjin An</i>  | 281 |
| COLLABORATIVE ONLINE INTERNATIONAL LEARNING (COIL): SWOT<br>ANALYSIS FROM A TECHNICAL ENGINEERING COURSE PERSPECTIVE<br><i>Jaime Garbanzo-León, Luís Jorge Gonçalves and Jorge Medina</i> | 286 |
| COGNITIVE LOAD MEASUREMENT WITH ELECTROENCEPHALOGRAPHY<br>BASED ON MACHINE LEARNING ALGORITHM<br><i>Yi-Hsuan Wang, Hsing-Yi Wu and Chun-Wang Wei</i>                                      | 291 |
| ZINES AND DIGITAL TASK-BASED PROJECTS: CONTENT-BASED<br>INSTRUCTION AND TASK-BASED LEARNING<br><i>Peter Gobel and Makimi Kano</i>   | 295 |

## REFLECTION PAPERS

### ***E-LEARNING AND DIGITAL LEARNING***

|  |     |
|--|-----|
| ADAPTING ASSESSMENT DESIGN: NAVIGATING TECHNOLOGICAL<br>ADVANCES AND ACCESS TO INFORMATION<br><i>Fran Greyling and Linda van Ryneveld</i>                        | 303 |
| ADVANCING EARLY CHILDHOOD EDUCATION: A CONCEPTUAL<br>FRAMEWORK FOR ARTIFICIAL INTELLIGENCE APPLICATIONS IN EARLY<br>CHILDHOOD EDUCATION<br><i>Hesham Alomyan</i> | 307 |

## POSTERS

### ***E-LEARNING AND DIGITAL LEARNING***

|  |     |
|--|-----|
| APPLYING VIRTUAL LEARNING ENVIRONMENTS ASSISTS LANGUAGE<br>LEARNERS TO STUDY ENGLISH<br><i>Pei-Lin Liu and Chiu-Jung Chen</i>  | 315 |
| DESIGN OF STACKABLE CERTIFICATE COURSE MODULES IN AN ONLINE<br>PROGRAM<br><i>Parviz Ghandforoush</i>   | 318 |
| LEARNING ANALYTICS WITH MAPPER: INVESTIGATING PARAMETER<br>CONFIGURATION<br><i>Hitoshi Inoue, Koichi Yasutake, Osamu Yamakawa, Takahiro Tagawa, Takahiro Sumiya<br/>and Kiyomi Okamoto</i> | 321 |