Contents – Part II

STEM Education

Using Augmented Reality Interactive System to Support Digital Electronics Learning ........................................... Poonpong Boonbrahm, Charlee Kaewrat, and Salin Boonbrahm

An AI System for Coaching Novice Programmers. ................. Gilbert Cruz, Jacob Jones, Meagan Morrow, Andres Gonzalez, and Bruce Gooch


Fairy Houses: A Creative Engineering Experience. .................... Andres Gonzalez, Robert Fowler, Harrison Froeschke, Sabra Leong, and Bruce Gooch

Make World, A Collaborative Platform to Develop Computational Thinking and STEAM ...................................... Mariluz Guenaga, Iratxe Mentxaka, Pablo Garaizar, Andoni Eguiluz, Sergi Villagrasa, and Isidro Navarro

Manipulation of Mathematical Expressions in Collaborative Environments . Marco Pollanen, Sohee Kang, and Bruce Cater

Designing Tools that Allows Children in the Early Childhood to Program Robots .................................................. Kryscia Ramírez-Benavides, Gustavo López, and Luis A. Guerrero


Preschool Learning with a Fingertip: Concept of a Tablet-Based Training Program to Support Emergent Literacy and Mathematical Skills Sabine Völkel, Madlen Wuttke, and Peter Ohler
Diversity in Learning

Augmentative and Alternative Communication in the Literacy Teaching for Deaf Children ......................................................... 123
Sandra Cano, César A. Collazos, Leandro Flórez Aristizábal, and Fernando Moreira

Girls in Robot Class_Smart Textiles Interactive Tool-Kits to Enhance the Participatory of Women in Technology .................. 134
Aqua Chuan-Yu Chen and Yu-Cheng Lin

A Model for Collaboration in Virtual Worlds Bringing Together Cultures in Conflict ................................................................. 148
Elaine Hoter

Different Students – Different Ways: Challenges of Integrating Non-traditional Students in Higher Education and How Electronic Learning Can Support Inclusion ............................................................... 158
Verena Jahn, Linda Heise, André Schneider, and Susanne Günther

“Beyond EFL Writing Anxiety”: Tapping into the Individual Emotionality of Proficient EFL Writers Through Semi-structured Analysis and Wearable Sensing Technology ................................................................. 170
Luciana Lew and Tiffany Y. Tang

Training Socially Responsible Engineers by Developing Accessible Video Games ................................................................. 182
Rafael Molina-Carmona, Rosana Satorre-Cuerda, Carlos Villagrá-Arnedo, and Patricia Compañ-Rosique

The Use of a New Visual Language as a Supporting Resource for People with Intellectual Disabilities ........................................ 202
Francisco Rodríguez-Sedano, Miguel A. Conde-González, Camino Fernández-Llamas, and Gonzalo Esteban-Costales

Pinata Winoto, Tiffany Y. Tang, Zeqian Huang, and Piao Chen

Learning Analytics

Dashboard for Actionable Feedback on Learning Skills: Scalability and Usefulness ................................................................. 229
Tom Broos, Laurie Peeters, Katrien Verbist, Carolien Van Soom, Greet Langle, and Tim De Laet
Can We Apply Learning Analytics Tools in Challenge Based Learning Contexts? .............................................. 242
Miguel Á. Conde, Francisco J. García-Peñalvo, Ángel Fidalgo-Blanco, and María Luisa Sein-Echaluce

Learning Analytics and Spelling Acquisition in German – Proof of Concept .............................................. 257
Markus Ebner, Konstanze Edtstadler, and Martin Ebner

Data Analysis of Coaching and Advising in Undergraduate Students. An Analytic Approach .............................................. 269
David Fonseca, José Antonio Montero, Mariluz Guenaga, and Iratxe Mentxaka

Learning Analytics and Its Paternalistic Influences .............................................. 281
Kyle M.L. Jones

Development of a Dashboard for Learning Analytics in Higher Education .............................................. 293
Philipp Leitner and Martin Ebner

Mixing and Matching Learning Design and Learning Analytics .............................................. 302
Quan Nguyen, Bart Rienties, and Lisette Toetenel

Improving the Learning and Collaboration Experience

Attitudes Towards Mobile Devices in Estonian Basic Education:
Using the Framework of the UTAUT Model .............................................. 319
Liina Adov, Olev Must, and Margus Pedaste

A Guidance and Evaluation Approach for mHealth Education Applications .............................................. 330
Tareq Aljaber and Neil Gordon

Collaborative Hybrid Agent Provision of Learner Needs Using Ontology Based Semantic Technology .............................................. 341
Mike Brayshaw, Julius Nganji, and Neil Gordon

Improving Success/Completion Ratio in Large Surveys:
A Proposal Based on Usability and Engagement .............................................. 352
Juan Cruz-Benito, Roberto Therón, Francisco J. García-Peñalvo, José Carlos Sánchez-Prieto, Andrea Vázquez-Ingelmo, Martín Martín-González, and Jorge M. Martínez

Interaction Design Principles in WYRED Platform .............................................. 371
Francisco J. García-Peñalvo and Jorge Durán-Escudero
Personal and Shared Perspectives on Knowledge Maps in Learning Environments .......................... 382  
Anna Goy, Giovanna Petrone, and Claudia Picardi

Designing a Peer Feedback Mobile Application as a Professional Development Tool .......................................................... 401  
Evangelos Kapros, Mirjam Neelen, and Eddie Walsh

The Influence of Trust on User Interactions in e-Transaction Platforms: The Context of a Developing Country .................................................. 419  
Godfrey O. Kingsley, Sónia Sousa, and Abiodun Ogunyemi

Integration of Estonian Higher Education Information Technology Students and Its Effect on Graduation-Related Self-efficacy ......................... 435  
Külli Kori, Margus Pedaste, and Olev Must

discuss: Embedding Dialog-Based Discussions into Websites ................. 449  
Christian Meter, Tobias Krauthoff, and Martin Mauve

Design and Development of Intelligent Learning Companion for Primary School Students Based on the Tour of Well-Known Scenic Spots in Beijing .................................................. 461  
Yujun Wang, Haotian Ma, Chengyu Li, and Feng-Kuang Chiang

The Evaluation on the Usability of Digital Storytelling Teaching System in Teaching .......................................................... 473  
Pei-Fen Wu, Hui-Jiun Hu, Feng-Chu Wu, and Kuang-Yi Fan

Nellodee 2.0: A Quantified Self Reading App for Tracking Reading Goals .................................................................. 488  
Sanghyun Yoo, Jonatan Lemos, and Ed Finn

Author Index ....................................................................... 497
Contents – Part I

Multimodal and Natural Interaction for Learning

Immersive Visualization Technologies to Facilitate Multidisciplinary Design Education ......................................................... 3
    Jorge D. Camba, José Luis Soler, and Manuel Contero

Peacemaking Affordances of Shareable Interfaces: A Provocative Essay on Using Technology for Social Change ......................... 12
    Andri Ioannou and Chrystalla Antoniou

Acoustic Filter: New Virtual Reality Audio Format Pretends to Enhance Immersive Experience ................................................. 22
    Josep Llorca, Ernesto Redondo, Francesc Valls, David Fonseca, and Sergi Villagrasa

Gesture Deviation in Interactive Communication – A Cross Cultural Study of Indian Case Examples ........................................ 34
    Ravi Mokashi Punekar and Sarath Paliyath

Brain Tagging: A BCI and HCI Tagging System to Evaluate the Learning Contents .............................................................. 46
    Yang Ting Shen, Pei Wen Lu, and Xin Mao Chen

Analytical Steps for the Validation of a Natural User Interface ................................................................. 55
    Madlen Wuttke, Sabine Vökel, Peter Ohler, and Nicholas H. Müller

Monitoring Cognitive Workload in Online Videos Learning Through an EEG-Based Brain-Computer Interface ........................................ 64
    Yun Zhou, Tao Xu, Yanping Cai, Xiaojun Wu, and Bei Dong

Learning and Teaching Ecosystems

Lessons Learned from Evaluating an Authoring Tool for Learning Objects ................................................................. 77
    André Luiz de Brandão Damasceno, Carlos de Salles Soares Neto, and Simone Diniz Junqueira Barbosa

ECoLab: A Cooperative System to Improve Training Processes ................................................................. 90
    Ángel Fidalgo-Blanco, María Luisa Sein-Echaluce, and Francisco J. García-Peñalvo
Part I

A Metamodel Proposal for Developing Learning Ecosystems .......................... 100
   Alicia García-Holgado and Francisco José García-Peñalvo

Needs Analysis as a Cornerstone in Formation of ICT Competence in Language Teachers Through Specially Tailored In-service Training Course ........................................... 110
   Nadezhda Kabanova and Marina Kogan

Design Considerations for Competency Functionality Within a Learning Ecosystem ................................................................. 124
   Irina Kondratova, Heather Molyneaux, and Helene Fournier

Integrated Learning Environment for Blended Oriented Course: 3-Year Feedback on a Skill-Oriented Hybrid Strategy ................................. 137
   Walter Nuninger

The Development of a Mediation Artifact for Representing Teaching Practices: A Study Connecting the Areas of Design and Learning Design .......................... 158
   Patricia B. Scherer Bassani, Igor Escalante Casenote, Eduardo Guilherme Albrecht, and Diego Mergener

On the Potential of Using Virtual Reality for Teacher Education ................ 173
   Kalliopi-Evangelia Stavroulia and Andreas Lanitis

e-Learning, Social Media and MOOCs

Exploring the Impact of Social Learning Networks in M-Learning: A Case Study in a University Environment ........................................... 189
   Fisnik Dalipi, Florim Idrizi, and Arianit Kurti

Improving Concepts of E-Learning by Using ERP Systems for an Interactive Knowledge Diffusion ........................................... 199
   David Heim, Marcus Fischer, and Axel Winkelmann

Using Phenomenography to Understand Cultural Values in Facebook .......... 216
   Leantros Kyriakoullis and Panayiotis Zaphiris

Exploring the Determinants Affecting the Adoption of Social Web Applications Used in Massive Online Open Courses .......................... 237
   Tihomir Orehovački and Snježana Babić

E-safety in Web 2.0 Learning Environments: A Research Synthesis and Implications for Researchers and Practitioners ........................ 249
   Antigoni Parmaxi, Kostantinos Papadamou, Michael Sirivianos, and Makis Stamatelatos
Pedagogical Voice in an E-Learning System: Content Expert Versus Content Novice ................................................................. 262
Lincoln Sedlacek, Victor Kostyuk, Matthew Labrum, Kevin Mulqueeny, Georgina Petronella, and Maisie Wiltshire-Gordon

Adaptive and Cooperative Model of Knowledge Management in MOOCs . . . 273
María Luisa Sein-Echaluce, Ángel Fidalgo-Blanco, and Francisco J. García-Peñalvo

The Quality of MOOCs: How to Improve the Design of Open Education and Online Courses for Learners? ........................................ 285
Christian M. Stracke

E-Learning Supported Martial-Arts-Training ........................................ 294
Armin Vahidi and Nicholas H. Müller

Beyond the Classroom

Security Beyond Secrecy: Practical Strategies to Address Emerging Cybersecurity Paradoxes Through Professional and Stakeholder Education and Co-management Architectures Designed to Cultivate Community-Situated, Non-technical Structures of Group Synthetic Intelligence (aka “Neighborhood Watch”) ........................................ 305
Scott L. David and Barbara Endicott-Popovsky

Learning Together with CSCL Tools in the Classroom ....................... 324
Reuma De-Groot

Outdoor Studying System Using Bluetooth Low Energy Beacon—To Feel Cultural Sites ......................................................................... 340
Yuko Hiramatsu, Fumihiro Sato, Atsushi Ito, Hiroyuki Hatano, Mie Sato, Yu Watanabe, and Akira Sasaki

Measuring Usability of the Mobile Learning App for the Children ....... 353
Zahid Hussain, Wolfgang Slany, Wajid H. Rizvi, Adeel Riaz, and Umair Ramzan

An Analysis of the Note-Taking Function of the Audience Response System ..................................................................................... 364
Toshikazu Iitaka

Measuring User Engagement in Mobile Classroom Response System: A Case Study ................................................................. 375
Tek Yong Lim, Chia Ying Khor, and Yin Bee Oon

Higher Education Disruption Through IoT and Big Data: A Conceptual Approach ................................................................. 389
Fernando Moreira, Maria João Ferreira, and Abilio Cardoso
Connectivist, Context-Aware Communication Channels - Peer Finding
Algorithm for Distributed Learning Networks .................................. 406
  Ingolf Waßmann and Ebram Sherif

Games and Gamification for Learning

CodeAdventure: An Adventure Game for Computer Science Education .... 423
  Panayiotis Andreou, George Nicou, Irene Polycarpou,
  Panagiotis Germanakos, and Nearchos Paspallis

Using Mental Models to Design for Learning: Lessons
from Game Development .......................................................... 433
  Aleshia Hayes

Strategic Design: Breaking Mental Models Initiates Learning
in Video Games ................................................................. 443
  Jay Dee Johns III

Gamifying the Eating Experience: An Interactive Companion for Children’s
Nutrition Education and Behavior ............................................. 462
  Erin Lew, Jevrin Alviando, EunSook Kwon, and Jorge D. Camba

Gamification Methods in Higher Education .................................. 474
  Lila A. Loos and Martha E. Crosby

Subliminal Learning. What Do Games Teach Us? ....................... 487
  Vicente A. Quesada Mora, Francisco J. Gallego-Durán,
  Rafael Molina-Carmona, and Faraón Llorens-Largo

Author Index ................................................................. 503