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The Smart Innovation, Systems and Technologies book series encompasses the topics of knowledge, intelligence, innovation and sustainability. The aim of the series is to make available a platform for the publication of books on all aspects of single and multi-disciplinary research on these themes in order to make the latest results available in a readily-accessible form. Volumes on interdisciplinary research combining two or more of these areas is particularly sought.

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Vladimir L. Uskov · Robert J. Howlett
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Editors

Smart Education and Smart e-Learning

Springer
Preface

Smart Education and Smart E-Learning (SEEL) is an emerging and rapidly growing area that represents an integration of (1) smart and intelligent systems, smart objects and smart environments, (2) smart technologies, various branches of computer science and computer engineering, (3) state-of-the-art smart educational software and/or hardware systems, agents, and tools, and (4) innovative pedagogy and advanced technology-based teaching strategies and learning methodologies. This is the main reason that in June 2013 a group of enthusiastic and visionary scholars from all over the world arrived with the idea to organize a new professional event that would provide an excellent opportunity for faculty, scholars, Ph.D. students, administrators, and practitioners to meet well-known experts and discuss innovative ideas, findings and outcomes of research projects, and the best practices in smart education and smart e-learning.

The main research, design, and development topics in SEEL area include but are not limited to (1) conceptual frameworks for Smart Education (SmE), (2) infrastructure, main characteristics, and features of smart universities and smart classrooms, (3) university-wide smart software, hardware, security, communication, collaboration, and management systems, (4) SmE analytics and economics, (5) main components and techniques of smart pedagogy, (6) Smart e-Learning (SeL) concepts, strategies, and approaches, (7) SeL environments, (8) smart e-learner modeling, (9) assessment and quality assurance in SeL, (10) social, cultural, and ethical dimensions and challenges of SmE and SeL, (11) applications of various innovative technologies—ambient intelligence, Internet-of-Things, smart agents, sensors, wireless sensor networks, context awareness technology, smart gamification, smart multimedia—and smart software/hardware systems in universities and classrooms, (12) mobility, security, access, and control issues in smart learning environments and numerous other topics. We hope that active and open discussion of those topics within SEEL research and academic communities will help us to (a) organize mutually beneficial partnerships, stimulate national and international research, design, and development projects in SEEL area, (b) propose innovative pedagogy, teaching, and learning strategies, standards, and policies in
SEEL, (c) identify tangible and intangible benefits, economic, technical, organizational, and financial feasibility and effectiveness of SEEL.

The inaugural international KES conference on Smart Technology-based Education and Training (STET) was held at Chania, Crete, Greece, during June 18–20, 2014. This book contains the contributions presented at the 2nd international KES conference on Smart Education and Smart e-Learning, which took place in Sorrento, Italy, during June 17–19, 2015. The book chapters, a total of 45 peer-reviewed chapters, are grouped into several parts, including: Part 1—Smart Education, Part 2—Smart Educational Technology, Part 3—Smart e-Learning, Part 4—Smart Professional Training and Teachers’ Education, and Part 5—Smart Teaching- and Training-related Topics.

We would like to thank scholars who dedicated a lot of efforts and time to make SEEL international conference a great success, namely: Dr. Luis Anido (Spain), Dr. Elena Barbera (Spain), Dr. Claudio da Rocha Brito (Brazil), Dr. Dumitru Burdescu (Romania), Dr. Nunzio Casalino (Italy), Dr. Feng-Kuang Chiang (China), Prof. Melany Ciampi (Brazil), Prof. Adriana Burlea Schiopoiu (Romania), Dr. Michele Cole (USA), Dr. Pasquale Daponte (Italy), Dr. Natalia Dneprovskaya (Russia), Prof. Dimity Dornan (Australia), Mr. Marc Fleetham (UK), Dr. Mikhail Fominykh (Norway), Dr. Brian Garner (Australia), Dr. Jean-Pierre Gerval (France), Dr. Karsten Henke (Germany), Dr. Maung Htay (USA), Dr. Alexander Ivannikov (Russia), Prof. Vladislav Pirogov (Russia), Dr. Jung-Sing Jwo (Taiwan), Dr. Aleksandra Klasnja-Milicevic (Serbia), Dr. Marina Lapyonok (Russia), Dr. Greg Lee (Taiwan), Dr. Ezra Mugisa (Jamaica), Prof. Andrew Nafalski (Australia), Dr. Enn Ünnapuu (Estonia), Dr. Elvira Popescu (Romania), Dr. Anitha S. Pillai (India), Mr. Valeri Pougatchev (Jamaica), Dr. Ekaterina Prasolova-Førland (Norway), Dr. Maria Riccio (Italy), Prof. Jerzy Rutkowski (Poland), Dr. Danguole Rutkauskiene (Lithuania), Dr. Demetrios Sampson (Greece), Prof. Richard Schumaker (USA), Prof. Boris Starichenko (Russia), Prof. Masanori Takagi (Japan), Dr. Wenhuar Tarng (Taiwan), Dr. Yoshimi Teshigawara (Japan), Dr. Vladimir P. Tikhomirov (Russia), Dr. Boban Vesin (Serbia), Prof. Natalia Gerova (Russia), Dr. Alan Weber (Qatar), Dr. Heinz-Dietrich Wuttke (Germany), Prof. Stelios Xingalos (Greece), Prof. Chengjiu Yin (Japan), Prof. Shyan-Ming Yuan (Taiwan), and Dr. Larisa Zaiceva (Latvia).

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It is our sincere hope that this book will serve as a useful source of valuable data and information, and provide a baseline of further progress and inspiration for research projects and advanced developments in the SEEL area.

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Contents

Part I Smart Education

The Ontology of Next Generation Smart Classrooms
Vladimir L. Uskov, Jeffrey P. Bakken and Akshay Pandey

Assessment in Smart Learning Environment – A Case Study Approach
Blanka Klimova

The Design Research of Future Informal Learning Space
Yun Zhang, Anan Liang, Huiping Sun, Lan Liu and Fengkuang Chiang

Moodle-Based Computer-Assisted Assessment in Flipped Classroom
Jerzy Rutkowski

Three Dimensions of Smart Education
Vladimir Tikhomirov, Natalia Dneprovskaya and Ekaterina Yankovskaya

To Flip or Not to Flip: A Critical Interpretive Synthesis of Flipped Teaching
Virginia N.L. Franqueira and Peter Tunnicliffe

Smart Edutainment as a Way of Enhancing Student’s Motivation (on the Example of Board Games)
Vera Novikova and Ludmila Beskrovnaya

Study Materials in Smart Learning Environment – A Comparative Study
Blanka Klimova and Ivana Simonova
Part II  Smart Educational Technology

Smart Study: Pen and Paper-Based E-Learning ................................. 93
Dieter Van Thienen, Pejman Sajjadi and Olga De Troyer

Enhance Teleteaching Videos with Semantic Technologies ............... 105
Matthias Bauer, Martin Malchow and Christoph Meinel

Tests Generation Oriented Web-Based Automatic Assessment of Programming Assignments ........................................... 117
Yann Le Ru, Michaël Aron, Jean-Pierre Gerval and Thibault Napoleon

“Living Books” and the Advanced Network Technologies for Education in a Technical University ......................... 129
Yulia Antokhina, Nikolay Balonin and Mikhail Sergeev

Just Give Me a Hint! An Alternative Testing Approach for Simultaneous Assessment and Learning ............................... 141
Jerry Schnepp and Christian Rogers

Edward E. Anderson

Development and Evaluation of a Course Model to Prepare Teachers in Mobile-Assisted-Teaching (MAD-Teaching) .......... 163
Chun-Yen Chang and Yu-Ta Chien

Block Magic: A Prototype Bridging Digital and Physical Educational Materials to Support Children Learning Processes .... 171
Andrea di Ferdinando, Raffaele di Fuccio, Michela Ponticorvo and Orazio Miglino

Part III  Smart e-Learning

Game Mechanics Used for Achieving Better Results of Massive Online Courses ......................................................... 183
Liubov S. Lisitsyna, Alexander A. Pershin and Matvey A. Kazakov

Maintaining Online Engagement in e-Learning Through Games Based Learning and Gamification Techniques .................. 193
Geraint Lang
Learning by Doing History with Smart Historical Gaming  . . . . . . 207
Brian M. Slator, Otto Borchert and Guy Hokanson

Smart Educational Environment as a Platform for Individualized Learning Adjusted to Student’s Cultural-Cognitive Profile  . . . . 219
Zinaida K. Avdeeva, Naida O. Omarova and Yulia V. Taratuhina

E-Learning Tools for a Software Platform  . . . . . . . . . . . . . . . 231
Dumitru Dan Burdescu

Transferring Smart E-Learning Strategies into Online Graduate Courses  . . . . . 243
Laurie F. Ruberg

The Information System of Distance Learning for People with Impaired Vision on the Basis of Artificial Intelligence Approaches  . . . 255
Galina Samigulina and Assem Shayakhmetova

Development of University’s Web-Services  . . . . . . . . . . . . . . 265
Vladimir Tikhomirov, Natalia Dneprovskaya and Ekaterina Yankovskaya

Situation Awareness Training in E-Learning  . . . . . . . . . . 273
Liubov S. Lisitsyna, Andrey V. Lyamin, Ivan A. Martynikhin and Elena N. Cherepovskaya

Intra-domain User Model for Content Adaptation  . . . . . . . . 285
Anwar Hussain, M. Abu Ul Fazal and M. Shuaib Karim

Part IV Smart Professional Training and Teachers’ Education

Preparation and Evaluation of Teachers’ Readiness for Creation and Usage of Electronic Educational Resources in School’s Educational Environment  . . . . . 299
Marina V. Lapenok, Olga M. Lapenok and Alevtina A. Simonova

ICT Proficiency Measurement While Realizing Information Activity of Students Majoring in Pedagogical Education  . . . . . 309
Natalya Gerova

Training of Future Teachers in Development and Application of Computer Tools for Evaluation of Student Academic Progress . . . 321
Marina Mamontova and Petr Zuev
Contents

The Diagnostics’ Methods of Students’ Readiness for Professional Pedagogical Activity Within Information Educational Environment .................................................. 333
Alexander V. Slepukhin and Natalia N. Sergeeva

The Diagnostics of Well-Formed Ability of Students and Teachers to Make and to Evaluate the System of Modern Methods of Teaching Mathematics .................................................. 345
Irina N. Semenova and Sergey A. Novoselov

The Word Cloud Illustration of the Cognitive Structures of Teacher Candidates About Education Concept .......................... 357
Nuray Zan, Burcu Umut Zan and F. İnci Morgil

Formalization of Knowledge Systems on the Basis of System Approach ................................................................. 371
Natalia A. Serdyukova, Vladimir I. Serdyukov and Vladimir A. Slepov

Forming and Self-evaluation of ICT-Competence of Mathematics Teachers to Be in the Course of Their Professional Training ................................................................. 383
Irina G. Lipatnikova and Alexander P. Usoltsev

Raising the Level of Future Teachers’ Professional Competence in the Conditions of Informational and Educational Environment ........................................................ 393
Irina V. Rozhina, Anna M. Lozinskaya and Tamara N. Shamalo

Pedagogical Practices to Teacher Education for Gerontology Education ................................................................. 403
Leticia Rocha Machado, Patricia Alejandra Behar and Johannes Doll

Part V Smart Teaching- and Training-related Topics

Investment Competitions on the Current Local Scene from Students’ Perspective – Case Study ................................................................. 417
Libuse Svobodova and Miloslava Cerna

The Usefulness of the Virtual Speaking Head, as Well as 3D Visualization Tools in the New Communication, Teaching, Energy Control and Presentation Technologies is Almost Unlimited ........ 429
Eva Pajorová and Ladislav Hluchý
A Tool for Developing Instructional Digital Comic Strips
with Associated Learning Objectives .......................... 437
Fotis Lazarinis, Vassilios S. Verykios and Chris Panagiotakopoulos

Music Coding in Primary School ............................. 449
Luca A. Ludovico and Giuseppina Rita Mangione

Methods and Technologies for ICT Workers Virtual Mobility .... 459
Danguole Rutkauskiene and Daina Gudoniene

Extensiveness of Manufacturing and Organizational Processes:
An Empirical Study on Workers Employed in the European SMEs . . 469
Nunzio Casalino, Marco De Marco and Cecilia Rossignoli

Smart Control System of Human Resources Potential
of the Region .................................................. 481
Olga A. Ivashchuk, Igor S. Konstantinov and Irina V. Udobenko

Smart Learning Environments Using Social Network,
Gamification and Recommender System Approaches
in e-Health Contexts .............................................. 491
Pierpaolo Di Bitonto, Enrica Pesare, Veronica Rossano
and Teresa Roselli

Real-Time Feedback During Colonoscopy to Improve Quality:
How Often to Improve Inspection? ............................... 501
Piet C. De Groen, Michael Szewczynski, Felicity Enders,
Wallapak Tavanapong, JungHwan Oh and Johnny Wong

Author Index .......................................................... 513