# 7th European Conference on Games Based Learning

(ECGBL 2013)

Porto, Portugal 3-4 October 2013

Volume 1 of 2

**Editors:** 

Carlos Vaz de Carvalho Paula Escudeiro

ISBN: 978-1-62993-139-5

ISSN: 2049-0992

#### 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© The Authors, (2013). All Rights Reserved.

No reproduction, copy or transmission may be made without written permission from the individual authors.

Papers have been double-blind peer reviewed before final submission to the conference. Initially, paper abstracts were read and selected by the conference panel for submission as possible papers for the conference.

Many thanks to the reviewers who helped ensure the quality of the full papers.

Printed by Curran Associates, Inc. (2013)

Published by Academic Conferences Ltd. Curtis Farm Kidmore End Reading RG4 9AY UK

Phone: 441 189 724 148 Fax: 441 189 724 691

info@academic-conferences.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: 845-758-2634

Email: curran@proceedings.com Web: www.proceedings.com

### Contents

## **VOLUME 1**

Paper Title	Author(s)	Page
		No.
Preface		vii
Committee		viii
Biographys		Х
Teachers' Beliefs About Game Based Learning: A Comparative Study of Pedagogy, Curriculum and Practice in Italy, Turkey and the UK	Yasemin Allsop, Ebru Yeniman Yildirim and Marina Screpanti	1
Using Gamification to Animate a Virtual Community	António Andrade and Carlos Vaz de Carvalho	11
SIMaging the CITY: The Educational use of Simulation Video Games for Disadvantaged Youth	Massimiliano Andreoletti and Gianna Cappello	19
"The Chest That Longs to be Moved": A Serious Game for the Greek Muslim Minority Children	Alexandra Androussou, Evangelia Kourti and Nelly Askouni	27
Transformational Play; Using 3D Game-Based Narratives to Immerse Students in Literacy Learning	Anna Arici and Sasha Barab	35
Approaches to Collaborative Game-Making for Fostering 21st Century Skills	Susan Bermingham, Nathalie Charlier, Francesca Dagnino, James Duggan, Jeffrey Earp, Kristian Kiili, Evelien Luts, Lien van der Stock and Nicola Whitton	45
Best Practices for Deploying Digital Games for Personal Empowerment and Social Inclusion	Lizzy Bleumers, Ilse Mariën, Jan Van Looy, James Stewart, Dana Schurmans and Anissa All	53
Investigating the Relationship Between School Performance and the Abilities to Play Mind Games	Rosa Maria Bottino, Michela Ott and Mauro Tavella	62
Experience With Digital Game-Based Embodied Learning: The Road to Create a Framework for Physically Interactive Digital Games	Carsten Busch, Florian Conrad, Robert Meyer and Martin Steinicke	72
Toward Improvement of Serious Game Reliability	Thibault Carron, Fabrice Kordon, Jean-Marc Labat, Isabelle Mounier and Amel Yessad	80
The Effects of Gamification on Student Attend- ance and Team Performance in a Third-Year Un- dergraduate Game Production Module	Hope Caton and Darrel Greenhill	88
Game-Based Learning in Health Sciences Education	Nathalie Charlier, Evelien Luts and Lien Van Der Stock	97
Specification and Design of a Generalized Assessment Engine for GBL Applications	Yaëlle Chaudy, Thomas Connolly and Thomas Hainey	105
Safer Internet: Enhancing Good Practices on the Internet Through Games Based Learning for Greek Elementary School Students	Vasiliki Choleva, Loukas Koutsikos Simeon Zourelidis, Vlassios Filis, Dimitris Metafas and Charalampos Patrikakis	115
Using Game Mechanics to Measure What Students Learn	Jill Denner, Linda Werner, Shannon Campe and Eloy Ortiz	123
Combining Game Based Learning With Content and Language Integrated Learning Approaches: A Case Study Utilizing QR Codes and Google Earth in a Geography-Based Game	Kyriaki Dourda, Tharrenos Bratitsis, Eleni Griva and Penelope Papadopoulou	130

i

Paper Title	Author(s)	Page No.
The Design and Evaluation of a Multiplayer Serious Game for Pharmacy Students	Maciej Dudzinski , Darrel Greenhill , Reem Kayyali , Shereen Nabhani , Nada Philip , Hope Caton , Sonya Ishtiaq and Francis Gatsinzi	140
Cheating and Creativity in Pervasive Games in Learning Contexts	Stine Ejsing-Duun, Thorkild Hanghøj and Helle Skovbjerg Karoff	149
Supporting Teachers in the Process of Adoption of Game Based Learning Pedagogy	Valérie Emin-Martinez and Muriel Ney	156
Cognitive Walkthrough for Learning Through Game Mechanics	David Farrell and David Moffat	163
Global Math: Development of Online Platform for Mathematical Thinking Games	Toru Fujimoto, Keiichi Nishimura, Kaoru Takahashi, Masahiro Yachi, Kiyoshi Takahashi and Yuhei Ya- mauchi	172
What Can Play Theory Tell us About Computer Games for Young Children?	Georgy Gerkushenko and Svetlana Sokolova	179
Role Game Playing as a Platform for Creative and Collaborative Learning	Lisa Gjedde	190
Development and Evaluation of a Generic E-CLIL Web2.0 Games Engine	Thomas Hainey and Thomas Connolly	198
Designing Games to Disseminate Research Findings	Claire Hamshire, Rachel Forsyth and Nicola Whitton	208
Facilitating Teacher Students' Innovation Competence through Problem-Based Game Design Processes	Thorkild Hanghøj and Sia Hovmand Sørensen	216
Deploying Serious Games for Management in Higher Education: Lessons Learned and Good Practices	Jannicke Baalsrud Hauge, Francesco Bellotti, Rob Nadolski, Michael Kickmeier-Rust, Riccardo Berta and Maira Carvalho	225
Neuroeducational Research in the Design and use of Games-Based Teaching	Wayne Holmes, Paul Howard-Jones, Erico Tani- moto, Carol Jones, Skevi Demetriou, Owen Morgan, Philip Perkins and Neil Davies	235
Playing and Learning: An iPad Game Development Case Study	Jennifer Jenson and Rachel Muehrer	244
An Overview of Game Console Motion Sensor Technologies Exploited for Education	Marina Kandroudi and Tharrenos Bratitsis	252
Picking the Right Interface for Engaging Physical Activity Into Game Based Learning	Helle Skovbjerg Karoff, Gunver Majgaard, Lars Elbæk and Mona Have Sørensen	261
Picking the Right Interface for Engaging Physical Activity into Game Based Learning	Helle Skovbjerg Karoff, Gunver Majgaard, Lars Elbaek and Mona Have Sørensen	268
Game Based Learning in Mathematics: Teachers' Support by a Flexible Tool	Aikaterini Katmada, Apostolos Mavridis, Thrasyvoulos Tsiatsos	275
Learning Analytics with Games Based Learning	Harri Ketamo	284
Gamification and Intelligent Feedback Mechanisms for a Division Learning Tool	Michael Kickmeier-Rust and Dietrich Albert	290
Developing Games for Health Impact: Case Brains vs Zombies	Kristian Kiili, Manuel Ninaus, Mikko Koskela, M Tuomi and Antero Lindstedt	297
Meleon - a Casual Mobile Game Supporting Immersion and Reflection in Learning	Luise Klein	305

Paper Title	Author(s)	Page
		No.
The Literature Race - NFC Based Mixed Reality Game	Antti Koivisto, Harri Ketamo, Eero Hammais and Juho Salli	314
Bringing Game Achievements and Community Achievements Together	Johannes Konert, Nico Gerwien, Stefan Göbel and Ralf Steinmetz	319
Modeling the Player, Learner and Personality: Independency of the Models of Bartle, Kolb and NEO-FFI (Big5) and the Implications for Game Based Learning	Johannes Konert, Stefan Göbel and Ralf Steinmetz	329
Raising Awareness on Archaeology: A Multiplayer Game-Based Approach With Mixed Reality	Mathieu Loiseau, Élise Lavoué, Jean-Charles Marty and Sébastien George	336
Scientific Discovery Games for Authentic Science Education	Rikke Magnussen, Sidse Damgaard Hansen, Tilo Planke, Jacob Friis Sherson	344
Creating Games in the Classroom – From Native Gamers to Reflective Designers	Gunver Majgaard	352
A Holistic Framework for the Development of an Educational Game Aiming to Teach Computer Programming	Christos Malliarakis, Maya Satratzemi and Stelios Xinogalos	359
Examining Early Childhood Education Students' Attitudes Toward Educational Computer Games in Kindergarten	Dionissios Manessis	369
Integrating Non-Virtual Electronic Activities in Game-Based Learning Environments	Jean-Charles Marty, Thibault Carron, Stéphane Tal- bot, Gregory Houzet and Philippe Pernelle	378
From « Haute-Couture » to « Ready-to-Wear »: Typology of Serious Games Implementation Strategies in Higher Education	Hélène Michel	386
Motivation and Manipulation: A Gamification Approach to Influencing Undergraduate Attitudes in Computing	Nicholas Mitchell, Nicky Danino and Lesley May	394

# **VOLUME 2**

Sit Down to Table and Confess who you are! Design of an Epistemic Game for Nutritional Education at Secondary School	Réjane Monod-Ansaldi, Eric Sanchez, Daniel Deval- lois, Thomas Abad, Pierre Bénech, Anne Brondex, Isabelle Mazzella, Sandrine Miranda, Claudie Richet and Céline Recurt	401
Learning in Context Through Games: Towards a new Typology	Alex Moseley	409
Let the Students Construct Their own fun And Knowledge - Learning to Program by Building Computer Games	Peter Mozelius, Olga Shabalina, Christos Malliarakis, Florica Tomos,' Chris Miller and David Turner	418
Towards Understanding the Instructional Value of Real-Time Continuous Feedback From the use of Simulation Games	Mathews Nkhoma, Jaime Calbeto, Narumon Sriratanaviriyakul, Thu Yein Win, Quyen Ha Tran and Thanh Kim Cao	427
Learning Math as you Play: Comparing Arithmetic Performance Enhancement Induced by Game Play and Paper Exercises	Elena Patricia Nuñez Castellar, Anissa All and Jan Van Looy	434
Serious Game Adaptive Learning Systems	Chinedu Obikwelu and Janet Read	442
Combatting Social Isolation and Cognitive Decline: Play a Physical or Digital Game?	Daire Ó Broin and Ross Palmer	450

Paper Title	Author(s)	Page No.
Sports Games' Role for Learning Health Knowledge	Kelly O'Hara, Dulce Esteves, Rui Brás, Ricardo Rodrigues, Paulo Pinheiro and Marco Rodrigues	458
A Multi-Agent Architecture for Collaborative Serious Game Applied to Crisis Management Training: Improving Adaptability of non Played Characters	M'hammed Ali Oulhaci, Erwan Tranvouez, Sébastien Fournier and Bernard Espinasse	465
Nuclear Mayhem – a Pervasive Game Designed to Support Learning	Trygve Pløhn	475
StartUp_EU: Using Game-Based Learning and Web 2.0 Technologies to Teach Entrepreneurship to Secondary Education Students	Aristidis Protopsaltis, Thomas Hainey, Spiros Borosis, Thomas Connolly, Jesus Copado and Sonia Hezner	484
Measuring Effects of Reflection on Learning: A Physiological Study	Wen Qi, Dominique Verpoorten and Wim Westera	495
Evaluation of Adaptive Serious Games using Playtraces and Aggregated Play Data	Christian Reuter, Florian Mehm, Stefan Göbel and Ralf Steinmetz	504
Learning Effectiveness of Management Simulation Game Manahra	Petr Smutný, Jakub Procházka and Martin Vaculík	512
Using the Master Copy - Adding Educational Content to Commercial Video Games	Heinrich Söbke, Thomas Bröker and Oliver Kornadt	521
An Application of Adaptive Games-Based Learning Based on Learning Style to Teach SQL	Mario Soflano, Thomas Connolly and Thomas Hainey	531
Can Moral Sensitivity be Enhanced by Game Play?	Gunilla Svingby	539
Digital Educational Games: Adopting Pedagogical Agent to Infer Leaner's Motivation and Emotional State	Ogar Ofut Tumenayu and Olga Shabalina	546
Adapting the Complexity Level of a Serious Game to the Proficiency of Players	Herre van Oostendorp, Erik van der Spek and Jeroen Linssen	553
Designing Casual Serious Games in Science	Ayelet Weizman	561
Designing a Collaborative Serious Game for Team Building Using Minecraft	Viktor Wendel, Michael Gutjahr, Philipp Battenberg, Roman Ness, Sebastian Fahnenschreiber, Stefan Göbel and Ralf Steinmetz	569
Application of the Principles of Gamification to Facilitate Acquisition of Self-Management Skills in Young People With Long-Term Medical Conditions	Andrew Wilson and Janet McDonagh	579
Development of an Implementation Framework for Games-Based Construction Learning Using Scratch in Primary Education	Amanda Wilson, Thomas Hainey and Thomas Connolly	587
PHD papers		
Game Literacy Revisited: Developing Critical Play in Schools	Rafael Marques de Albuquerque and Shaaron Ainsworth	599
A Systematic Literature Review of Methodology Used to Measure Effectiveness in Digital Game- Based Learning	Anissa All, Elena Patricia Nuñez Castellar and Jan Van Looy	607
Investigating Collaborative Games to Teach Mathematics-Based Problem Solving in the Classroom	Reem Al-Washmi, Gail Hopkins and Peter Blanch- field	617

Paper Title	Author(s)	Page
Training Flexible and Adaptive Arithmetic Problem Solving Skills Through Exploration With Numbers: The Development of NumberNavigation Game	Boglárka Brezovszky, Erno Lehtinen, Jake McMullen, Gabriela Rodriguez and Koen Veermans	<b>No.</b> 626
Trials to Assess Team-Based Mixed-reality (TBMR) Games in HE	John Denholm and Sara de Freitas	635
Understanding 'Game-Ness' Within the SCRABBLE Family of English Word Games	Paridhi Gupta	645
Interactive Story as a Motivator Element in an Educational Video Game	José Rafael López-Arcos, Francisco Luis Gutiérrez Vela, Natalia Padilla-Zea and Patricia Paderewski	656
A Domain Ontology of Game Theory Applied to Game Based Learning	Yemna Mejbri, Maha Khemaja and Rafik Braham	666
Puzzle-Based Games as a Metaphor for Designing in Situ Learning Activities	Javier Melero, Patricia Santos, Davinia Hernández- Leo and Josep Blat	674
Supporting and Facilitating Collaborative Learning in Serious Games	Kimmo Oksanen and Raija Hämäläinen	683
Playing for the Future - Examining Gameplay, Narrative and fun in Games-Based Training	Mark O'Rourke	691
Towards Game Based Learning Design Process Based on Semantic Service Oriented Architecture (SSOA)	Kaouther Raies, Maha Khemaja and Rafik Brahamm	698
Using Games for Learning, From the Students' Perspectives	Aishah Abdul Razak and Thomas Connolly	706
Incidental Learning in a <i>World of Warcraft</i> Guild, a Case Study	Gabriela Rodríguez	714
In Search for the Right Measure: Assessing Types of Developed Knowledge While Using a Gamified Web Toolkit	Martin Ruskov, Paul Ekblom and Angela Sasse	722
The Influence of Digital Games on Learning Reading: A Closer Look	Mas Idayu Md Sabri, Peter Blanchfield and Gail Hopkins	730
The Mediatization of Digital Games for Learning – a Dual Rub-Off Effect	Helga Sigurdardottir and Robin Munkvold	740
Efficacy of Reward Allotment on Children's Motivation and Learning	Zhenhua Xu, Earl Woodruff and Bodong Chen	748
Applying Ideas From Intelligent Tutoring Systems for Teaching Programming in Game Based Learning	Matej Zapušek and Jože Rugelj	756
Masters		
Cultivating Preschoolers Creativity Using Guided Interaction With Problem Solving Computer Games	Georgios Fessakis and Dimitrios Lappas	763
Haptic Physics Simulation	Luciano Santos and Carlos Vaz de Carvalho	771
Evaluating the Embedding of Games Based Learning in a Computing Subject at University	Emilia Todorova and David Moffat	776
WIP Papers		

Paper Title	Author(s)	Page No.
A Design Approach for Implementing 3D Educational Collaborative Virtual Environments on Virtual World Platforms	Rosa Reis, Benjamin Fonsecaand Paula Escudeiro	785
EMOTE: Embodied-Perceptive Tutors for Empathy-Based Learning in a Game Environment	Sofia Serholt, Wolmet Barendregt, Tiago Ribeiro, Ginevra Castellano, Ana Paiva, Arvid Kappas, Ruth Aylett and Fernando Nabais	790
Exploring Learning Effects During Virtual Sports Through Biomechanical Analysis (a Work in Progress)	Pooya Soltani and João Paulo Vilas-Boas	793
siLang: Culturally Oriented Language Skill Development in Line With Workplace Needs	Hariklia Tsalapatas, Olivier Heidmann, Rene Alimisi and Elias Houstis	797
Developing Ethical Decision Making Skill of Novice Volunteers in Natural Disaster Response	Didin Wahyudin, Shinobu Hasegawa and Tina Dahlan	800