# Table of Contents

**Preface** ........................................................................................................................................................................... x  
**Conference Committees** ........................................................................................................................................... xi  
**Reviewers** ................................................................................................................................................................... xiv  
**Keynote Speakers** .................................................................................................................................................... xvi  

## Full Papers

- **Drawing-Based Simulation for Primary School Science Education: An Experimental Study of the GearSketch Learning Environment** ................................................................. 1  
  - Frank Leenaars, Wouter van Joolingen, Hannie Gijlers, and Lars Bollen  
- **GETOLS: Game Embedded Testing of Learning Strategies** .......................................................................................... 9  
  - Gudrun Kellner and Andreas Weißenbacher  
- **Kill it or Grow it.: Computer Game Design for Playful Math-Learning** ................................................................. 17  
  - Andrea Valente and Emanuela Marchetti  
- **Studying the Effect of Tutor Learning Using a Teachable Agent that Asks the Student Tutor for Explanations** .................................................................................................................. 25  
- **The Problem Solving Skills and Learning Performance in Learning Multi-Touch Interactive Jigsaw Game Using Digital Scaffolds** ................................................................. 33  
- **Using Data Mining to Support Teacher’s Intervention in a Robotics Class** ................................................................. 39  
  - Ilkka Jormanainen and Erkki Sutinen  

## Short Papers

- **A Prototype on a Meta-model for Designing Instructional Pervasive Games** ................................................................. 47  
  - Cheng-ping Chen and Ju-ling Shih  
- **A Web-based Traveling Game for the Preservation of Lanna Culture** ................................................................. 52  
  - Krittiya Saksrisathaporn and Thitinadda Maneewan
Applying a Grammatical Structure to Practice Game Design on Non-Computer Games ..................................................57
Ke-Chen Pong, Ming-Hsin Tsai, and Shuo-Hsiu Hsu

Development of a Multiplayer Online Role-Playing Game-based Learning System for Multiple Curriculums ..............................................................................................................................................62
Kuo-Yu Liu, Chang-Ta Yang, and Kuei-Hsiang Chang

Game Regulated Applied Integrated Learning: A System for Post-formal Education ......................................................67
Mark G. Elwell

Integrating Domain Experts in Educational Game Authoring: A Case Study ..........................................................72
Eugenio J. Marchiori, Ángel Serrano, Ángel del Blanco, Iván Martínez-Ortiz, and Baltasar Fernández-Manjón

Investigating the Fluidity of Performance in an Educational Digital Game ........................................................................77

Micro Culture: Interactive Storytelling and Learning in the Museum ................................................................................84
Emanuela Marchetti

The Transformation of Adventure Education into Digital Game-based Counseling ....................................................89
Yu-Jen Hsu and Ju-Ling Shih

Training Teamwork Skills Using MMORPGs .................................................................................................................94
Dai-Yi Wang and Ying-An Chen

Poster Papers

A Development and Evaluation of Educational Board Game Design Course: An Example of Pre-service Teacher ..........................................................99
Chiung Wei Huang, Eric Zhi Feng Liu, Li Chun Liu, and Chun Hung Lin

A Model for Role-Playing Game with Mobile Learning ..................................................................................................................102
Jia-Sheng Heh, Hsueh-Fu Lu, Jia-Chi Hwang, Shu-Mei Lin, and Kuo-Chen Li

A Multi-Agent Architecture for Tracking User Interactions in Browser-based Games ..................................................105

A Proposal of Mobile Communication System Using Intuitive Pictogram ..........................................................108
Kouji Fujita and Takayuki Fujimoto

A Study of 2nd Grade Students’ Attitude on a Mathematics Game ..................................................................................111
Jia-Jiunn Lo and Fu-Mei Lin

An Empirical Analysis of the Playing Time by Different Genders and Ages in an MMORPG ..................................................114
Wen-Chi Kuo, Shih-Ting Wang, and Jie-Chi Yang

Application of Laser Guide and Wireless Control Method on Military Training and the FPS Game System ..........................................................117
Wei-Kai Liou and Sou-Chen Lee

Brief Guidelines for Educational Adventure Games Creation (EAGC) ........................................................................120
Paul Sommeregger and Gudrun Kellner
Collaborative Constellation Learning Environment with Sharing Learners' Gazing Points in the Real Night Sky ................................................................................................................................. 123
Masahito Ohama and Masato Soga

Database Support for Shogi Learners .................................................................................................................. 126
Kohei Yamamoto, Tetsuya Takahashi, Masaya Kitaoka, Yoshikazu Tagashira, Hiroyuki Tarumi, and Toshihiro Hayashi

Development of the Web Application that Create a Handmade Picture Book with Originality ................................................................. 129
Naoya Funabashi and Takayuki Fujimoto

Digital Game-Based Learning on Digital Archives: A Case Study of Taiwanese Classical Poems .................................................................................................................. 132
Tsun-Hung Tsai, Hsin-Chih Lin, and Kuo-Chu Huang

Evaluation of the Universal Puppet Theater Based on Inclusive Design Method .............................................................................................. 135
Kumiko Wada, Ryohei Egusa, Miki Namatame, Fusako Kusunoki, Hiroshi Mizoguchi, and Shigenori Inagaki

Learning through Agent Negotiation: A Conceptual Framework ......................................................................................... 138
K. Robert Lai and Chung-Hsien Lan

More than Learning Mathematics: The Impact of Mathematics Games on Learning in Geography and Community Education .................................................................................. 141
Jung-Hui Chiu, Ching-Ching Cheng, and Kuo-Hung Huang

My-Pet-My-Quest: Developing a Quest-Driven Learning System to Facilitate Students Learning ................................................................................................................................. 144
Charles Y.C. Yeh, Zhi-Hong Chen, Jackie W.N. Chen, and Tak-Wai Chan

Perfect PAPA©: Designing and Evaluating Digital Instructional Game Combining Situated Learning and Role-playing Strategies for Life Skill Training ........................................................................... 147
Hao Chen, Huei-Tse Hou, Yi-Shiuan Chou, Si-Nga Lai, and Yi-Syuan Wu

Proposal and Development Prototype of Markers-type Mouse System with Considering Practical and Entertainment ................................................................................................................................. 150
Kazuya Murata and Takayuki Fujimoto

Relationships between Engagement and Learning Style for Using VPL on Game Design ................................................................................................................................. 153
Chih-Kai Chang, Tsung-Yen Chuang, and Wen-Lin Kuo

Running Tommy©: Developing a Digital Adventure Game Based on Situated Learning to Promote Learners’ Concepts of Earthquake Escape ................................................................................................................................. 156
Yi-Shiuan Chou, Huei-Tse Hou, Min-Chi Yu, Hui-Jen Lee, Hui-Shi Wu, Ya-Ting Yang, and Yi-Ju Liao

Sequence Generation Based on Mutual Relationship between State and Action: As a Mechanism in Narrative Generation System ................................................................................................................................. 159
Kou Onodera and Takashi Ogata
Single Event and Scenario Generation Based on Advertising Rhetorical Techniques
Using the Conceptual Dictionary in Narrative Generation System .................................................. 162
Yike Zhang, Junpei Ono, and Takashi Ogata

Story Generation System Based on Propp Theory as a Mechanism in Narrative
Generation System .......................................................................................................................... 165
Shohei Imabuchi and Takashi Ogata

The Development of Conceptual Dictionary for Narrative Generation System: The
Structure and Functions ................................................................................................................. 168
Kensuke Oishi and Takashi Ogata

Time Mesh: An Educational Historical Game .................................................................................. 171
David Gouveia, Duarte Lopes, Carlos Vaz De Carvalho, and Ricardo Batista

Towards an Integrated Narrative Generation System Based on Structural Techniques
and Generation Control .................................................................................................................. 174
Taisuke Akimoto and Takashi Ogata

D1: Workshop on Human Factors in Game and Toy Enhanced Learning & Society
Applying Role Reversal Strategy to Conduct the Virtual Job Interview: A Practice
in Second Life Immersive Environment ....................................................................................... 177
Ben Chang, Jui-Ting Lee, Yan-Yin Chen, and Fu-Yun Yu

Development of a Simulation Learning Environment for Inquiry-based Learning: An
Example of Stray Dogs Problem in Taiwan .................................................................................. 182
Wen-Lin Kuo, Yu-Ying He, and Chih-Kai Chang

Game-Based Career Guidance Systems Design Concept .................................................................. 187
Yen-Ru Shi and Ju-Ling Shih

Heuristic Evaluation of Digital Game Based Learning: A Case Study .......................................... 192
Yi Hsuan Liao and Chun-Yi Shen

“Landscape Montage” Digital Game for Virtual Counseling Purposes ............................................. 197
Yu-Jen Hsu and Ju-Ling Shih

The Design of IWB-based DGBL Activities Model for EFL Preschoolers ......................................... 202
Yun-Hsuan Huang and Tsung-Yen Chuang

D2: Workshop on Game, Toy, and Robot for Language Learning and Health Promotion for Diverse
Populations
A Comparison of Differences in Wii Performance and Perceived Life Quality
among Physical Active and Inactive Aging Males in the Community ............................................. 207
Yi-Te Liu, I-Tsun Chiang, Shang-Ti Chen, and Shiou-Ru Chen

A Preliminary Study on Using Augmented Virtuality to Improve Training
for Intercollegiate Archers .............................................................................................................. 212
Tsung-Yi Wu, Yi-Chieh Chang, Shang-Ti Chen, and I-Tsun Chiang
A Situated Game for Autistic Children Learning Activities of Daily Living ................................................................. 217

Maiga Chang, Rita Kuo, Chun-Wei Lyu, and Jia-Sheng Heh

An Affective Learning Interface with an Interactive Animated Agent ........................................................................... 221

Ching-Ju Chao, Hao-Chiang Koong Lin, Jin-Wei Lin, and Yu-Chuan Tseng

Application of Game-based Learning (GBL) on Chinese Language Learning in Elementary School ............................................................ 226

Kun Hsien Li, Shi-Jer Lou, Tsai-Feng Cheng, and Huei-Yin Tsai

Construction and Application of Incorporating Imagination Cooperative Learning with Team Game Tournament ......................................................... 231

Wei-Yuan Dzan, Ru-Chu Shih, and Shi-Jer Lou

Developing an Education Card Game for Science Learning in Primary Education ......................................................... 236

Po Guang Chen, Eric Zhi Feng Liu, Chun Hung Lin, Wan Ling Chang, Tien Hsin Hsin, and Ru Chu Shih

Effect of Incorporating Project-Based Learning into the Development of an English Short Play for Children ................................................................. 241

Ru-Chu Shih, Charles Papa, Mei-Mei Chang, and Tien-Hsin Hsin

Incorporation of Windows Live Social Network into Elementary School Instruction ......................................................... 246

Yuh-Ming Cheng, Sheng-Huang Kuo, Y.L. Wu, and Kou-Hung Tseng

Robust Design for Game-Based Instruction Using Interactive Whiteboards ................................................................. 250

Hsiang-jen Meng and Ding-Chau Wang

The Effect of Reflective Strategies on Students’ Problem Solving in Robotics Learning ......................................................... 254

Chun Hung Lin and Eric Zhi Feng Liu

Using Somatosensory Video Games to Promote Quality of Life for the Elderly with Disabilities ................................................................. 258

Shang-Ti Chen, Yueh-Guey Laura Huang, and I-Tsun Chiang

Using Xbox 360 Kinect Games on Enhancing Visual Performance Skills on Institutionalized Older Adults with Wheelchairs ......................................................................... 263

I-Tsun Chiang, Jong-Chang Tsai, and Shang-Ti Chen

Author Index ................................................................................................................................. 268