

Table of Contents

Augmented and Mixed Reality in Education

Hybrid Document Matching Method for Page Identification of Digilog Books	1
<i>Jonghee Park and Woontack Woo</i>	
The Development of the AR-Fitness System in Education	2
<i>Kuei-Fang Hsiao and Nian-Shing Chen</i>	
ARMate: An Interactive AR Character Responding to Real Objects	12
<i>Changgu Kang and Woontack Woo</i>	
The Application of Augmented Reality to Design Education	20
<i>Chih-Hsiang Ko, Ting-Chia Chang, Yung-Hsun Chen, and Li-Han Hua</i>	
Design and Application of the Augmented Reality with Digital Museum and Digital Heritage	25
<i>Tsung-Han Lee, Kuei-Shu Hsu, and Long-Jyi Yeh</i>	

Effectiveness of Virtual Reality for Education

Effects of Multi-symbols on Enhancing Virtual Reality Based Collaborative	27
<i>Shih-Ching Yeh, Wu-Yuin Hwang, Jing-Liang Wang, and Yuin-Ren Chen</i>	
A Virtual Computational Paper Folding Environment Based on Computer Algebraic System	28
<i>Wing-Kwong Wong, Po-Yu Chen, and Sheng-Kai Yin</i>	
Physically-Based Virtual Glove Puppet	38
<i>Ssu-Hsin Huang, Ming-Te Chi, and Tsai-Yen Li</i>	
Potential of Second Life for Psychological Counseling: A Comparative Approach	44
<i>Fu-Yun Yu, Hsiao-Ting Hsieh, and Ben Chang</i>	
Constructing a 3D Virtual World for Foreign Language Learning Based on Open Source Freeware	46
<i>Hao-Jan Chen and Cheng-Chao Su</i>	

Ubiquitous Games and Ubiquitous Technology and Learning

Analysis of Brainwave Characteristics for Playing Heterogeneous Computer Games	54
<i>Fu-Chien Kao, Han-Chien Hsieh, and Wei-Te Li</i>	
Game-Based Mobile Learning System for Campus on Android Platform	55
<i>Lu Wang, Xiaoting Wang, Qiang Ju, Quanwei Li, Manyi Li, and Wei Zhang</i>	
Bayesian Network to Manage Learner Model in Context-Aware Adaptive System in Mobile Learning	63
<i>Viet Anh Nguyen and Van Cong Pham</i>	
A Walk-Rally Support System Using Two-Dimensional Codes and Mobilephones	71
<i>Tetsuya Miyagawa, Yoshio Yamagishi, and Shun Mizuno</i>	
A Service Platform for Logging and Analyzing Mobile User Behaviors	78
<i>Po-Ming Chen, Cheng-Ho Chen, Wen-Hung Liao, and Tsai-Yen Li</i>	
Educational Affordances of Ubiquitous Learning	86
<i>Tsung-Yu Liu, Tan-Hsu Tan, Min-Sheng Lin, and Yu-Ling Chu</i>	
Development of a Mobile Rhythm Learning System Based on Digital Game-Based Learning Companion	92
<i>Ching-Yu Wang and Ah-Fur Lai</i>	
Motivations for Game-Playing on Mobile Devices – Using Smartphone as an Example	101
<i>Tzu-Min Lin, Sheng-Chih Chen, and Pei-Jeng Kuo</i>	

Future Classroom

A Method for Determining Classroom Seating Arrangements by Using Bioinformatics	106
<i>Kazuhiro Shin-ike and Hitoshi Iima</i>	
Explore the Next Generation of Cloud-Based E-Learning Environment	107
<i>Chao-Chun Ko and Shelley Shwu-Ching Young</i>	
Research on Recognition and Mobile Learning of Birds Base on Network under the Condition of Human-Machine Collaboration	115
<i>Yi Lin and Yue Liu</i>	

Blue Sky Flying Camp — A Relief Project to Facilitate Pupils' Understanding Concerning Aeronautics	123
<i>Shyan-Jer Lee, I-Chung Lu, and Lynn Farh</i>	

Peer Feedback in Online Writing System	126
<i>Yu-Ting Lan, Jen-Hang Wang, Shih-Hsun Hsu, and Tak-Wai Chan</i>	

e-Reader and Multi-Touch

Designing a Mixed Digital Signage and Multi-touch Interaction for Social Learning	130
<i>Long-Chyr Chang and Heien-Kun Chiang</i>	

Building a Multi-touch Tabletop for Classrooms	131
<i>Shuhong Xu and Corey Mason Manders</i>	

Learning Performance and Achievement

Perceived Fit and Satisfaction on Online Learning Performance: An Empirical Study	139
<i>Wen-Shan Lin</i>	

The Relationship of Motives and Achievements in Teacher's Online Training Course	147
<i>Wan-Chun Lee, Yuan-Chen Liu, Te-Hsinh Fang, and Wei-Chun Hsu</i>	

Learning by Playing

Students Practice Minimally Invasive Surgery through Game-Based Assisted Learning	152
<i>Chiu-Jung Chen</i>	

The Study of Developing Spatial Ability by Applying Game-Based Learning	158
<i>Wen-Wei Liao and Rong-Guey Ho</i>	

A Study of Cooperative and Collaborative Online Game-Based Learning Systems	163
<i>Wan-Chun Lee, Wen-Chi Huang, Yuan-Chen Liu, and Hong-Hui Wu</i>	

Investigating the Effects of an Adventure Video Game on Foreign Language Learning	168
<i>Howard Hao-Jan Chen and Christine Yang</i>	

Employing Software Maintenance Techniques via a Tower-Defense Serious Computer Game	176
<i>Adrian Rusu, Robert Russell, Edward Burns, and Andrew Fabian</i>	

Playing Webcomic-Based Game on Facebook for Learning Chinese Festivals	185
<i>Wei-Chen Hong and Shelley Shwu-Ching Young</i>	

Old Dogs Can Learn New Tricks: Exploring Effective Strategies to Facilitate Somatosensory Video Games for Institutionalized Older Veterans	190
<i>I-Tsun Chiang</i>	

Learning English with Online Game: A Preliminary Analysis of the Status of Learners' Learning, Playing and Interaction	191
<i>Huei-Tse Hou</i>	

Game Design and Development

ACIA—A Course Design Approach to Game Design Theory	195
<i>Chun-Tsai Wu, Szu-Ming Chung, and Shao-Shiun Chang</i>	

An Application of Interactive Game for Facial Expression of the Autisms	204
<i>Tzu-Wei Tsai and Meng-Ying Lin</i>	

A Cloud and Agent Based Architecture Design for an Educational Mobile SNS Game	212
<i>Jun Lin, Chunyan Miao, and Han Yu</i>	

Facilitating Computational Thinking through Game Design	220
<i>Min Lun Wu and Kari Richards</i>	

The Embarrassing Situation of Chinese Educational Game	228
<i>Ke Jin and Sujing Zhang</i>	

Using Self-competition to Enhance Students' Learning	234
<i>Zhi-Hong Chen, Tzu-Chao Chien, and Tak-Wai Chan</i>	

Towards an Open Source Game Engine for Teaching and Research	236
<i>Florian Berger and Wolfgang Müller</i>	

Game Design Considerations When Using Non-touch Based Natural User Interface	237
<i>Mohd Fairuz Shiratuddin and Kok Wai Wong</i>	

Game-Based Learning/Training

Effects of Type of Learning Approach on Novices' Motivation, Flow, and Performance in Game-Based Learning	238
<i>Li-Chun Wang and Ming-Puu Chen</i>	

Behavioral Traits of the Online Parent-Child Game Players: A Case Study and Its Inspirations	239
<i>Sujing Zhang and Feng Li</i>	
The Evaluative Criteria of Computer-Based Vocabulary Learning Games	240
<i>Wen-Feng Chen and Jia-Jiunn Lo</i>	
The Importance and Use of Targeted Content Knowledge in Educational Simulation Games	245
<i>Fu-Hsing Tsai, Charles Kinzer, Kuo-Hsun Hung, Cheng-Ling Alice Chen, and I-Ying Hsu</i>	
Development of Training System for Finger Dexterity: Use in Rehabilitation for Upper Body Paralysis	248
<i>Kazuya Takemata, Sumio Nakamura, Akiyuki Minamide, and Shin Takeuchi</i>	
Investigating the Impact of Integrating Self-explanation into an Educational Game: A Pilot Study	250
<i>Chung-Yuan Hsu and Chin-Chung Tsai</i>	

Interactions in Games

A Study on Exploring Participant Behavior and Virtual Community in MMORPG	255
<i>Shih-Ting Wang, Wen-Chi Kuo, and Jie-Chi Yang</i>	
Exploitation in Context-Sensitive Affect Sensing from Improvisational Interaction	263
<i>Li Zhang</i>	
Improvising on Music Composition Game	264
<i>Szu-Ming Chung and Chih-Yen Chen</i>	
Increased Game Immersion by Using Live Player-Mapped Avatar Evolution	276
<i>Chen Yan and Julien Cordry</i>	
My-Bookstore: A Game-Based Follow-Up Activity to Support Modeled Sustained Silent Reading	281
<i>Tzu-Chao Chien, Zhi-Hong Chen, and Tak-Wai Chan</i>	

Digital Museum and Technology and Behavior in Games

Way to Inspire the Museum Audiences to Learn: Development of the Interpretative Interactive Installations for Chinese Cultural Heritage	284
<i>Chun-Ko Hsieh, Yi-Ping Hung, and Yi-Ching Chiang</i>	

Learning from Internet of Things for Improving Environmentally Responsible Behavior 292
 Jun Hu, Bram van der Vlist, Gerrit Niezen, Willem Willemsen, Don Willems, and Loe Feijs

Using Intelligent 3D Animated Character as the Interface for Interactive Digital TV System 300
 Ying-Szu Chen, Tsai-Yen Li, Shwu-Lih Huang, and Hung-Wei Lee

Educational Robots and Toys

A Novel Approach of Learning English with Robot for Elementary School Students..... 309
 Nian-Shing Chen, Benazir Quadir, and Daniel C. Teng

Framework for Educational Robotics: A Multiphase Approach to Enhance User Learning in a Competitive Arena 317
 Ngit Chan Lye, Kok Wai Wong, and Andrew Chiou

Learning Robots: Teaching Design Students in Integrating Intelligence..... 326
 Emilia Barakova and Jun Hu

Applying ARCS Model for Enhancing and Sustaining Learning Motivation in Using Robot as Teaching Assistant 334
 I-Chun Hung, Ling Lee, Kuo-Jen Chao, and Nian-Shing Chen

An Investigation of Using Educational Toys into Science Instruction for 4th Graders 342
 Ching-San Lai and Fang-Chu Wang

E-Learning Platforms and Tools

HuayuNavi: A Mobile Chinese Learning Application Based on Intelligent Character Recognition 346
 Jen-Ho Kuo, Cheng-Ming Huang, Wen-Hung Liao, and Chun-Chieh Huang

Webpage-Based and Video Summarization-Based Learning Platform for Online Multimedia Learning..... 355
 Wen-Hsuan Chang, Yu-Chieh Wu, and Jie-Chi Yang

Effects of Learning English Maxim through M-Learning with Different Content Representation 363
 Chiu-Jung Chen and Pei-Lin Liu

Mobile Terminal-Based Tennis Instruction Support System for Beginners	376
<i>Kiyoshi Nosu, Akira Goshima, Takayuki Imamura, and Kenji Mitsumoto</i>	
Developing a Complexity Problem-Based E-Learning Model: A Longitudinal Qualitative Case Study of a Six-Year Course Blog	383
<i>I-Tsun Chiang and Mei-Li Chen</i>	
An Online Summary Writing System Combining with Concept Mapping and Annotation Sharing	392
<i>Wan-Chun Lee, Shih-Po Huang, Yuan-Chen Liu, Sheng-Ren Wang, and Wei-Chun Hsu</i>	
Web Programming Education through Developing Online Shop Web Application	397
<i>Makoto J. Hirayama and Toshiyuki Yamamoto</i>	
e-Adviser: A Web-Based Academic Support System for High School Students	399
<i>Hsi-Mei Chen and Ya-Tin Hsu</i>	
Constructing Directed Semantic Relationships between Concepts for Training Semantic Reasoning	402
<i>Ming-Chi Liu, Yueh-Min Huang, Kinshuk, and Dunwei Wen</i>	
Live Python-Based Visualization Laboratory	407
<i>Chu-Ching Huang, Tsang-Hai Kuo, and Shao-Hsuan Chiu</i>	
 Game Engine/Rendering/Animations	
Cage-Based Tree Deformation	409
<i>Chao Zhu, Weiliang Meng, Yinghui Wang, and Xiaopeng Zhang</i>	
Stylized Textile Image Pattern Classification Using SIFT Keypoint Histograms	414
<i>Hui Zhang, Zhigeng Pan, and Ming-Min Zhang</i>	
 Game-Assisted Language Learning	
The Attributes and Importance of Online Game with Language Learning for College English-Majored Students	420
<i>Ru-Chu Shih, Charles Papa, Tien-Hsin Hsin, and Shi-Jer Lou</i>	
The Influence of the Presentations of Game-Based Learning Teaching Materials on Chinese Idiom Learning	425
<i>Shi-Jer Lou, Yu-Yen Weng, Hwei-Yin Tsai, and Ru-Chu Shih</i>	

Study on Influence of Adventure Game on English Reading Confidence, Motive and Self-efficacy	430
<i>Hsiu-Min Lu, Shi-Jer Lou, Charles Papa, and Chih-Chao Chung</i>	

The Application of Digital Game-Based Learning to Idioms Education Acceptance	435
<i>Sheng-Huang Kuo, Shi-Jer Lou, Tien-Hsin Hsin, and Wei-Yuan Dzan</i>	

Using Web 2.0 Social Networking to Enhance Collaborative Learning in Preparing Graduation Events	440
<i>I-Tsun Chiang, Eric Zhi-Feng Liu, Shang-Ti Chen, and Ru-Chu Shih</i>	

Learning with Robots and Robotics Education

A Pilot Study of Taiwan Elementary School Students Learning Motivation and Strategies in Robotics Learning	445
<i>Chun-Hung Lin and Eric Zhi-Feng Liu</i>	

A Survey on Storytelling with Robots	450
<i>Gwo-Dong Chen, Nurkhamid, and Chin-Yeh Wang</i>	

Design a Partner Robot with Emotions in the Mixed Reality Learning Environment	457
<i>Gwo-Dong Chen, Yu-Ling Chi, Chi-Wen Huang, Cheng-Yu Fan, and Chia-Jung Wu</i>	

The Human-Like Emotions Recognition Using Mutual Information and Semantic Clues	464
<i>Hao-Chiang Koong Lin, Min-Chai Hsieh, and Wei-Jhe Wang</i>	

e-Portfolio and ICT-Enhanced Learning

Paradigm Shift in Education with the Use of e-Portfolio: Showcases of e-Portfolio at Work at the Various Levels of Education – Introduction and Showcase I: K-12 e-Portfolio Involving All Stakeholders	471
<i>Toshiyuki Yamamoto</i>	

Collaboration and Communication Using e-Portfolio among Junior-High/High School Students from Japan, Taiwan, and the United Kingdom	476
<i>Takashi Takekawa and Tomoka Higuchi</i>	

Use of e-Portfolio in Effective Career Advising: Case of Ritsumeikan University	481
<i>Tomoka Higuchi and Takashi Takekawa</i>	

Portfolio Intelligence System at Graduate School Level.....	486
<i>Minoru Nakazawa</i>	

Game-Based Testing and Assessment

Deployment of Interactive Games in Learning Management Systems on Cloud Environments for Diagnostic Assessments	492
<i>Wen-Chung Shih, Shian-Shyong Tseng, and Chao-Tung Yang</i>	
A Pilot Study of Interactive Storytelling for Bullying Prevention Education	497
<i>Min-Kun Tsai, Shian-Shyong Tseng, and Jui-Feng Weng</i>	
Assessment for Online Small Group Discussion Based on Concept Map Scoring	502
<i>Zhe-Hao Hu, Shein-Yung Cheng, Kuo-Chen Li, and Jia-Sheng Heh</i>	

Trend, Development and Learning Process of Educational Mini Games

Using Game-Based Learning and Interactive Peer Assessment to Improve Career Goals and Objectives for College Students	507
<i>I-Tsun Chiang, Ru-Chu Shih, Eric Zhi-Feng Liu, and Alex Jun-Yen Lee</i>	
Digital Educational Games in Science Learning: A Review of Empirical Research	512
<i>I-Hua Chung and Ying-Tien Wu</i>	
A Review on the Concepts and Instructional Methods of Mini Digital Physics Games of PHYSICSGAMES.NET.....	517
<i>Yen-Hung Shih, Huei-Tse Hou, and Ying-Tien Wu</i>	
A Flash-Based Game for Employee Doing On-the-Job Training	522
<i>Eduardo Werneck and Maiga Chang</i>	
The Construction of Text-Based and Game-Based Teacher Career Aptitude Tests and Validity Comparisons	527
<i>Kuo-Hung Chao and Zi-Yang Chao</i>	
Investigating Different Instructional Approaches Adopted in Educational Games	532
<i>Chung-Yuan Hsu</i>	

VR and Edutainment

Direct Lighting under Dynamic Local Area Light Sources	537
<i>Jie Guo and Jingui Pan</i>	

XXIV Table of Contents

A Group-Based Load Balancing Approach for the Multi-service Distributed Virtual Environment	542
<i>Yan Zhuang and Jingui Pan</i>	
Research of Emotion Promoting Teaching Interaction in Virtual Learning Community — A Case Study of Virtual Learning Community Based on Blackboard	548
<i>Zhongwu Zhou, Shaochun Zhong, Jianxin Shang, Min Zhou, and Peng Lu</i>	
Author Index	557