# Table of Contents

Preface ..................................................................................................................................................... xvi

## Section 1
New Frameworks and Architectures

### Chapter 1
Collaborative Learning in Dynamic Group Environments
Kamen Kanev, Shizuoka University, Japan
Shigeo Kimura, Kanazawa University, Japan

### Chapter 2
A Systematic Framework of Virtual Laboratories Using Mobile Agent and Design Pattern Technologies
Yi-Hsung Li, Feng Chia University, Taiwan
Chyi-Ren Dow, Feng Chia University, Taiwan
Cheng-Min Lin, Nan Kai University of Technology, Taiwan
Sheng-Chang Chen, Feng Chia University, Taiwan
Fu-Wei Hsu, Sunplus mMobile Inc., Taiwan

### Chapter 3
A Computer-Assisted Approach for Conducting Information Technology Applied Instructions
Hui-Chun Chu, National University of Tainan, Taiwan
Gwo-Jen Hwang, National University of Tainan, Taiwan
Pei-Jin Tsai, National Chiao Tung University, Taiwan
Tzu-Chi Yang, National Chi-Nan University, Taiwan

### Chapter 4
A Highly Scalable, Modular Architecture for Computer Aided Assessment E-Learning Systems
Krzysztof Gierłowski, Gdansk University of Technology, Poland
Krzysztof Nowicki, Gdansk University of Technology, Poland
Chapter 5
Recent Contributions to a Generic Architecture Design that Supports Learning Objects
Interoperability...................................................................................................................................... 64
  Sotirios Botsios, Democritus University of Thrace, Greece
  Dimitrios A. Georgiou, Democritus University of Thrace, Greece

Section 2
Promising Support Mechanisms and Technologies

Chapter 6
Statistical Inference-Based Cache Management for Mobile Learning.............................................. 87
  Qing Li, Zhejiang Normal University, China
  Jianmin Zhao, Zhejiang Normal University, China
  Xinzhong Zhu, Zhejiang Normal University, China

Chapter 7
A 3D Geometry Model Search Engine to Support Learning ............................................................ 104
  Gary K. L. Tam, Durham University, UK & Zhejiang Normal University, China
  Rynson W. H. Lau, Zhejiang Normal University, China & City University of Hong Kong, Hong Kong
  Jianmin Zhao, Zhejiang Normal University, China

Chapter 8
Supporting Interoperability and Context-Awareness in E-Learning through Situation-Driven Learning Processes.................................................................................................................. 115
  Stefan Dietze, Open University, UK
  Alessio Gugliotta, Open University, UK
  John Domingue, Open University, UK

Chapter 9
A New Process Phase Diagnostic Technique: Visualized Interface for Diagnosing Learning Progress............................................................................................................................................. 138
  Pi-Shan Hsu, Ching Kuo Institute of Management and Health, Taiwan
  Te-Jeng Chang, National Taiwan Normal University, Taiwan

Chapter 10
A FCA-Based Cognitive Diagnosis Model for CAT .............................................................................. 151
  Yang Shuqun, Fujian Normal University, China
  Ding Shuliang, Jiangxi Normal University, China
Section 3
Development of Practical Systems

Chapter 11
Adaptivity in ProPer: An Adaptive SCORM Compliant LMS
Ioannis Kazanidis, University of Macedonia, Greece
Maya Satratzemi, University of Macedonia, Greece

Chapter 12
The Construction of an Ontology-Based Ubiquitous Learning Grid
Ching-Jung Liao, Chung Yuan Christian University, Taiwan
Chien-Chih Chou, Chung Yuan Christian University, Taiwan
Jin-Tan David Yang, Ming Chuan University, Taiwan

Chapter 13
A Rule-Based System for Test Quality Improvement
Gennaro Costagliola, University of Salerno, Italy
Vittorio Fuccella, University of Salerno, Italy

Chapter 14
An Understanding Information Management System for a Real-Time Interactive Distance Education Environment
Aiguo He, The University of Aizu, Japan

Section 4
Empirical Study: Evaluation and Assessment

Chapter 15
The Effects of Communicative Genres on Intra-Group Conflict in Virtual Student Teams
Jung-Lung Hsu, National Central University, Taiwan
Huey-Wen Chou, National Central University, Taiwan

Chapter 16
Effect of Teaching Using Whole Brain Instruction on Accounting Learning
Li-Tze Lee, The Overseas Chinese Institute of Technology, Taiwan
Jason C. Hung, The Overseas Chinese Institute of Technology, Taiwan

Chapter 17
Using S-P Chart and Bloom Taxonomy to Develop Intelligent Formative Assessment Tools
Wen-Chih Chang, Chung Hua University, Taiwan
Hsuan-Che Yang, TungNan University, Taiwan
Timothy K. Shih, Asia University, Taiwan
Louis R. Chao, Tamkang University, Taiwan
Chapter 18
A Study of English Mobile Learning Applications at National Chengchi University

Pei-Chun Che, National Chengchi University, Taiwan
Han-Yi Lin, National Chengchi University, Taiwan
Hung-Chin Jang, National Chengchi University, Taiwan
Yao-Nan Lien, National Chengchi University, Taiwan
Tzu-Chieh Tsai, National Chengchi University, Taiwan

Chapter 19
E-Learning Practice and Experience at Waseda E-School: Japan’s First Undergraduate Degree-Awarding Online Program

Shoji Nishimura, Waseda University, China
Douglass J. Scott, Waseda University, China
Shogo Kato, Tokyo Woman’s Christian University, Japan

Compilation of References

About the Contributors

Index