

Special Issue: Advanced Distance Learning Technologies

Editorial

Advanced Distance Education Technologies focused on the advanced techniques to provide practical solutions for distance education. Including Communication Technologies, Intelligent Technologies and Educational Technologies, advanced techniques construct a friendly and innovating learning environment for learners with different learning space and various learning style. For examples, Human-Computer Interaction, Agent-Based Software Systems, Internet and Information Systems Development, Web-Based Tools, Internet and Information Systems Development, Data Mining, Mobile and Ubiquitous Computing. Though pedagogies are less emphasize, this special issue praise those proposed technologies and applications based on educational theory, such as Computer-Supported Cooperative Work, intelligent tutoring, individualized distance learning.

In this special issue, we invited some papers from ICWL (International Conference on Web-based Learning) 2008, WBL (Workshop of Blended Learning) 2008 and ADET (Advanced Distance Learning Technologies) 2008. All of these papers have been reviewed with second round and were recommended to contain 30% more new material to be accepted and published in this Special Issue.

The first paper “A Chinese Handwriting Education System with Automatic Error Detection” demonstrates a distance education application of a Chinese handwriting education system. This system can automatically check the handwriting errors, such as the stroke production errors, stroke sequence error and stroke relationship error. Zhi-Hui Hu, Yun Xu, Liu-Sheng Huang and Howard Leung shows the experiment results to proof the system can handle more handwriting error cases than existing methods with a higher accuracy. The handwriting teaching in traditional classroom can be extended anywhere with this system, and allows students to practice homework at anytime for Master Learning.

Next paper, “eLearning 2.0 – Technologies for Knowledge Transfer in European-Wide Network of Schools” mentions a concept that experiences and knowledge are sharing through word-wide social communities. Kawa Nazemi, Maja Ćukušić and Andrina Granić apply the concept to the EU-project UNITE and set a European network of fourteen schools. In addition, this system presents an iterative fourstage- process, covering scenario planning and implementation, validation in addition to platform and process improvement. With the rapidly development of Web 2.0 technologies, this paper shows another toward way of traditional classroom teaching paradigm.

To deserve to be mentioned, collaborative learning is an important feature in the traditional classroom teaching paradigm. Thus, Jagadeesh Chandra A.P and R.D Sudhaker Samuel presents “Web-Based Collaborative Learning Architecture for Remote Experiment on Control of Bioreactor’s Environment” to provide collaborative learning and remote experiment on control of bioreactor’s environment. To translate traditional collaborative characteristics into an Internet based on-line collaborative learning environment, this paper proposes a system structure and functionalities by establishing communication between the process control computer and remote users through the Internet. With such revolutionary changes nowadays, collaborative working in an on-line environment can be more accessibility.

Moreover, Ubiquitous Learning becomes more and more popular due to the success of ubiquitous computing technique. A ubiquitous computing system involves some integration between computing nodes and the real world. That is why ubiquitous learning environments can attract learner easier and started to attract considerable attention in various disciplines. Next paper, Hai Zhang and Takanori Maesako present “A Framework of Learner Development Ecosystem for Designing a Ubiquitous Educational Informational Infrastructure”. In this paper, ubiquitous learning environment is built on the theory of social constructivism proposed by Vygotsky, the theory of ecology of human development by Bronfenbrenner and the knowledge spiral theory by Nonaka. Based on those theories supported, the authors propose a new framework of a learner development ecosystem to design ubiquitous learning environment.

With advanced computer and network technologies nowadays, learners could benefit from well-developed distance learning systems for obtaining vast learning content, as well as performing learning exercises at anytime, anywhere. One possible solution is to include some motivator factors in the online learning activities. Jui-Hung Chen, Te-Hua Wang, Wen-Chih Chang, Louis R. Chao and Timothy K. Shih present “Developing an Interactive Video Game-Based Learning Environment” which combines the video-based course materials and game elements with an integrated learning platform called “V-GBL” environment.

Multimedia integrating e-learning environment motivates learners’ study motivation, lecture recording and organizing of visual information through user’s interaction at different technologies. Yi-Chun Liao and Chun-Hong Huang propose “Automatic Video Segmentation and Story-Based Authoring in E-Learning” which depicted a story-based editing and browsing system with the automatic video segmentation. The authors use a video classification technology can be further integrated to enhance the tool by using visual and audio information. The story-based editing is similar to hypervideo. Hypervideo is used as a hyperlink in a web. An instructor constructs an instructional material by hypervideo links.

Combing the traditional collaborative learning and Web 2.0 Blog together, Chun-Chia Wang depicts “The Development of Collaborative Learning Environment with Learning Blogs”. Current researches on collaborative

learning paid little attention to the functionalities of group members. In order to solve this problem, the author utilizes a Learning Blog (LBlog) to share experience and viewpoints of group members, and achieve learning goals together in the end. The LBlog also integrates Learning Management System (LMS) to manage the group members' profiles to evaluate the learners' learning efficiency.

Knowledge is a product out of interaction. In online community learning, learners are encouraged to ask questions and discuss answers with each others. However, interactions between learners and between learner and instructor address a problem the instructor cannot be online all the time and it is not possible for the instructor to deal with lots of questions proposed from learners in a timely manner. "A Semantic FAQ System for Online Community Learning" proposed by Che-Yu Yang, this is an automated FAQ system to support learning efficiency of community learning that everyone in the learning system can share knowledge with and learn from each others.

Next paper, Lawrence Y. Deng, Yung-Hui Chen, Yi-Jen Liu and Chang Yu-Chi proposed "Ontology-Oriented SCJP Learning and Assessing System Design" which is an advanced Petri Net model to manage the workflow of a web-based multiple participants in virtual University. The presented approach not only can conspicuously help the developer to comprehend the interaction relationship but also to easily construct a shared and trusted virtual world. This approach was based on the scaffolding theory. Their behaviors including the student's self regulations and the teacher's/virtual campus regulations are performed and built with trust development.

Finally, we selected one paper integrating assessment method to estimate learner's ability and cluster learners in web based learning environment. Wen-Chih Chang and Hsuan-Che Yang propose "Applying IRT to Estimate Learning Ability and K-means Clustering in Web based Learning". The authors integrate these two theories and propose a combination methodology to solve the estimation and diagnostic issues in e-learning environment. A web-based assist system and a small experiment is performed as well. Experimental data is collected with forty sophomore students studying "Business Data Communication" class at Dept. of Information Management in Chung Hua University in Taiwan.

We hope that the readers of this Special Issue enjoy reading and finding it useful in Educational Technologies development research. We would like to thank all the authors who worked hard to add and prepare substantial materials to the conference versions. Also, we would like to thank the Editor In Chief, George J. Sun for his patience throughout this process.

Guest Editors:

Wen-Chih Chang

Chung Hua University, Taiwan

Freya H. Lin

Chihlee Institute of Technology, Taiwan



Wen-Chih Chang received the B.S.B., M.S., and Ph.D. degrees from the Department of Computer Science and Information Engineering of Tamkang University in 1999, 2001 and 2005. From 2001 to 2005, he focused on SCORM and e-learning at MINELAB. His research interests include mobile agent, Game based learning, cooperative learning, petri net, web technology and e-learning specifications (ADL SCORM, IMS SS and IMS QTI). He is an assistant professor in Department of Information Management, Chung Hua University, Taiwan. He served as General Co-Chair of ADET 2008, PC member for AINA 2010 for the Multimedia and Social Networking track, Program Committee of ITIA 2007, ADET 2007 and AIAE 2009. He served as Session Chair of ICWL 2008 and WBL 2008.



Freya H. Lin received the M.S. degree from the Department of Informatics at Fo Guang University, Taiwan in 2003 and Ph.D. degree from the Department of Computer Science and Information Engineering of Tamkang University, Taiwan, in 2007.

She is currently an assistant professor at the Department of Information Management at Chihlee Institute of Technology, Taiwan. Her research interests include E-Learning (Adaptive Learning, Ambient Learning, and SCORM Specification) and Data Management (Repository, CORDRA, Data Warehouse and Data Mining).