
Editorial: Technology Enhanced Learning: Moving Theory into Practice

- Best Papers Selected from the Conference TELearn 2009

Nian-Shing Chen*

Department of Information Management, National Sun Yat-sen University, Taiwan
E-mail: nschen@mis.nsysu.edu.tw

*Corresponding author

Gwo-Jen Hwang

Department of Information and Learning Technology, National University of Tainan, Taiwan
E-mail: gjhwang@mail.nutn.edu.tw

Ming-Puu Chen

Graduate Institute of Information and Computer Education, National Taiwan Normal University, Taiwan
E-mail: mpchen@ntnu.edu.tw

Wu-Yuin Hwang

Department of Computer Science and Information Engineering, National Central University, Taiwan
E-mail: wyhwang@cc.ncu.edu.tw

Abstract: TELearn 2009 has successfully attracted over 91 submissions, from 4 continents, 11 countries. Half of the submissions came from the outside of Taiwan, which indicates TELearn has become a truly international event. This year, TELearn accept 18 full papers, the acceptance rate of full papers is less than 20%. From the 18 full papers, 5 best papers from Japan, Taiwan, USA, Finland and South Africa were included in this special issue to contribute the understanding of social computing in e-learning and raise potential questions which will require reflection.

Keywords: Technology Enhanced Learning, e-Learning, Learning

Biographical notes: Prof. Nian-Shing Chen is with the Department of Information Management, National Sun Yat-sen University, Taiwan. Dr. Chen received his Bachelor and Master Degree in Industrial Engineering in 1984 and 1986 respectively and his Ph.D. Degree in Computer Science in 1990 from the National Tsing-Hua University, Taiwan. He has published over 250 papers in academic journals, international conferences and book chapters. He is also the author of three books with one text book entitled "e-Learning Theory & Practice". Prof. Chen received the distinguished research award from the

National Science Council, Taiwan in 2008. His current research interests include assessing e-Learning course performance; online synchronous teaching; mobile learning; knowledge management and information system development methodology. Dr. Chen is a member of IEEE, ACM and an executive member of IEEE Technical Committee on Learning Technology (<http://ltf.ieee.org/contacts.htm>).

Prof. Gwo-Jen Hwang is currently a Distinguished Professor in the Department of Information and Learning Technology, and Dean of the College of Science and Engineering at National University of Tainan in Taiwan. In 1991, Dr. Hwang received his Ph.D. degree in Computer Science and Information Engineering from National Chiao Tung University in Taiwan. Dr. Hwang is the Executive Editor of International Journal of Mobile Learning and Organization as well as of International Journal of Digital Learning Technology. In addition, he serves as an editorial board member and a reviewer for more than 30 academic journals. His research interests include mobile and ubiquitous learning, computer-assisted testing, expert systems and knowledge engineering. Owing to the distinguished achievements in mobile and ubiquitous learning studies, in 2007, Dr. Hwang was elected as the Chair of the Special Interest Group of Mobile and Ubiquitous Learning in the Information Technology Education Division of the National Science Council in Taiwan. He has been serving the position since then. Dr. Hwang has published more than 330 academic papers, including 115 papers in such professional journals as Computers & Education, Educational Technology & Society, British Journal of Educational Technology, Innovations in Education and Teaching International, Electronic Library, and IEEE Transactions on Education among others. One of his research papers has been recognized by the well-established Computers & Education as one of the top 10 most frequently cited papers. Owing to the good reputation in academic research and innovative inventions of e-learning, in 2007, he received the annual Most Outstanding Researcher Award from the National Science Council in Taiwan.

Professor Ming-Puu Chen is with the Graduate Institute of Information and Computer Education, National Taiwan Normal University, Taiwan. He received his MA and Ph.D. degrees in Educational Technology from University of Northern Colorado, USA. His major research interests include personal epistemology in learning computers and digital game-based learning.

Wu-Yuin Hwang received his Ph.D. degree in computer science from National TsingHua University, Taiwan, in 1997. He is currently an Associate Professor of the institute of Network Learning Technology, National Central University, Taiwan. Dr. Hwang has published several papers in major international computer education journals, indexed by SSCI, SCI and EI. From 2000, he has got four best paper awards of the 4th, 8th, 9th and 13th Global Chinese Computer Conference in Education in Singapore, Hong Kong, Hawaii and Taipei (GCCCE 2000, 2004, 2005 and 2009). National Science Council, Taiwan also gave him Ta-You Wu Memorial Award in 2005. His research interests include human computer interaction, multimedia interaction and knowledge construction.

1. Technology Enhanced Learning

Recent rapid development of advanced information technology brings high expectations of its potential to improvement and innovations in learning. Current researches on

technology enhanced learning shift their focus from technology to support factual learning and memorization and the reinforcement of basic skills to stimulate students to engage in meaningful learning. The support of information technology would help students develop higher-order skills, such as critical thinking and problem-solving as well as domain-based reasoning. Technology enhanced learning is an interdisciplinary field where a multitude of sciences work together and needs to draw on the following possible perspectives (Balacheff, Ludvigsen, Jong, Lazonder, & Barnes, 2009):

- the design area – a focus on the design and co-evolution of new learning activities;
- the computational area – a focus on what technology makes possible;
- the cognitive area – a focus on what the individual can learn under certain conditions in different types of contexts;
- the social and cultural area – a focus on meaning-making, participation, and changes in activities in schools, universities, workplaces, and informal settings;
- the epistemological area – a focus on how the specificities of the domain impact the design and use of technologies.

Although, many technology enhanced learning researches demonstrate how technologies were successfully employed to support learning activity which resulted to more efficient learning, there are still some issues yet have to be considered. The problems of institutional acceptance and the “fit” of the technology into ongoing educational practices have hindered their acceptance into the educational mainstream (Tchounikine, Mørch, & Bannon, 2009). The area has also suffered from an over-hyping of technological possibilities with relatively meager evidence of successful implementations from very limited field trials and highly resourced experimental sessions.

2. Introduction to this special issue

More and more researchers realize the issues related to technology enhanced learning become more important and their increase of interest gives rise to more and more initiatives. One of such initiatives is the annual Technology Enhanced Learning Conference (TELearn) and this special issue shows a short overview of some excellent papers presented in TELearn 2009.

In order to bridge the gap between theoretical research in the field and its practical implementation, the National Science & Technology Program of Taiwan initiates annual Technology Enhanced Learning Conference (TELearn). The major aim of TELearn was to provide a forum for the technology enhanced learning researchers to publish their research results and exchange their experiences and ideas. The first TELearn conference was held at National Central University, Taiwan in July, 2007 with the main theme “Knowledge infrastructure of the future”. The second TELearn 2008 conference was held in Ha Noi, Vietnam in December, 2008 and the theme was “Create a Diversified e-Learning Environment Afford for Learning Anytime Anywhere”. The third TELearn 2009 conference was held in Academia Sinica, Taiwan. Its main theme of the conference was “Social Computing in e-Learning” with the following topics:

- Systems and platforms for e-learning
- Theoretical foundations for e-learning

- Emerging tools and technologies for e-learning
- Development and applications of digital content for e-learning
- Trends in content/courseware development
- Discipline-based cases for e-learning
- Social computing in e-learning
- Technology enhanced language learning
- Mobile and Ubiquitous Learning

TELearn 2009 has successfully attracted over 91 submissions, from 4 continents, 11 countries. Half of the submissions came from the outside of Taiwan, which indicates TELearn has become a truly international event. This year, TELearn accept 18 full papers, the acceptance rate of full papers is less than 20%. From the 18 full papers, 5 best papers from Japan, Taiwan, USA, Finland and South Africa were included in this special issue to contribute the understanding of social computing in e-learning and raise potential questions which will require reflection.

In the first paper of this special issue, Tosh Yamamoto (2010) reported his study about the assessment of interactivity of multimedia and e-Learning content that could lead to learning effectiveness. Theoretical constructs were defined such as interactivity, interest, knowledge and experience and the interactivity was further divided into subcomponents to develop an assessment tool - the rubrics to measure and visualize interactivity from the learner's and teacher's perspectives.

In the second paper, Ju-Shih Tseng and Ming-Puu Chen (2010) presented their study about the influence of instructional strategy and grade level on students' music composition performance and attitude. They designed experimental learning activity for third and fifth grades students of elementary school based on the 5E learning cycle model with two instructional strategies such as instructor-led and learner-led with music composition software *Hyperscore*. The results demonstrate that fifth graders outperformed third graders in creativity, whereas, third graders had higher extrinsic motivation and perceived that the computer-based music composition software was useful in learning music composition in contrast to fifth graders. Besides, students with instructor-led instructional strategy outperformed significantly than those with learned-led instructional strategy on creativity and craftsmanship.

The third paper, by Kuan-Chung Chen, Syh-Jong Jang and Robert Maribe Branch (2010) investigated the relative salience of perceived autonomy, affiliation, and ability on learner motivation and learning outcomes. They found that the most salient predictor varied from categories of motivation and learning outcomes, and the number of significant predictors increased by participants' level of motivation/self-determination. The results implied that to keep students highly motivated and obtain expected learning, multiple strategies should be integrated into the online learning environment that support autonomy, affiliation, and ability.

The fourth paper, by Kirsi Silius, Thumas Miilumäki, Jukka Huhtamäki, Teemo Tebest, Joonas Meriläinen and Seppo Pohjolainen (2010) investigated students' motivations for usage of the social network site. Based on the needs of Finnish university students, especially freshmen, one social networking site called "TUT Circle" was developed and implemented in Basic Engineering Mathematics learning at Tampere University of Technology and provided students convenient tools for interaction and study support. In this research, the discussions were presented about students' attitudes towards social networking sites, the aspects of social network services that motivate students to actively participate in discussions.

The fifth paper, by Sibitse Mirriam Tlhapane and Sibongile Simelane (2010) presented a case study of a technology-enhanced problem-based learning methodology implementation in the B Tech Occupational Nursing program at the Adelaide Tambo School of Nursing Science in South Africa. The study tried to examine how technology-enhanced problem-based learning enhances students' thinking and social skills and social space. Results of the study demonstrated that the proposed technology-enhanced problem based learning methodology could enhance students' critical thinking, problem solving, and social skills improved, social space and their learning performance.

References

- 1 Balacheff, N., Ludvigsen, S., Jong, T., Lazonder, A., & Barnes, S. (2009). *Technology Enhanced Learning: Principles and Products*. Dordrecht: Springer.
- 2 Chen, K.C., Jang, S.J., & Branch R.M. (2010). Autonomy, Affiliation, and Ability: Relative Salience of Factors that Influence Online Learner Motivation and Learning Outcomes, *Knowledge Management & E-Learning: An International Journal*, 2(1), 30-50.
- 3 Silius, K., Miilumäki, T., Huhtamäki, J., Tebest, T., Meriläinen, J., & Pohjolainen, S. (2010). Students' Motivations for Social Media Enhanced Studying and Learning, *Knowledge Management & E-Learning: An International Journal*, 2(1), 51-67.
- 4 Tchounikine, P., Mørch, A.I., & Bannon, L.J. (2009). Technology Enhanced Science Learning. In, N. Balacheff, S. Ludvigsen, T. de Jong, A. Lazonder, S. Barnes, L. Montandon (Eds.). *Technology Enhanced Learning: Principles and Products*. Dordrecht: Springer.
- 5 Tlhapane, S. M., & Simelane, S. (2010). Technology-Enhanced Problem-Based Learning Methodology in Geographically Dispersed Learners of Tshwane University of Technology, *Knowledge Management & E-Learning: An International Journal*, 2(1), 68-83.
- 6 Tseng, J.S., & Chen, M.P. (2010). Instructor-led or Learner-led for Elementary Learners to Learn Computer-based Music Composition?, *Knowledge Management & E-Learning: An International Journal*, 2(1), 17-29.
- 7 Yamamoto, T. (2010). A Proposal for Measuring Interactivity that Brings Learning Effectiveness, *Knowledge Management & E-Learning: An International Journal*, 2(1), 6-16.