

## **Editorial**

---

### **Xiangzeng Meng\* and Hong Lu**

Educational Technology Department,  
Communication College,  
Shandong Normal University,  
88 Wenhua East Road, Jinan,  
Shandong, 250014, China  
E-mail: mxz\_sdu@126.com  
E-mail: sdnulh@163.com  
\*Corresponding author

### **Qiyun Wang**

Learning Sciences and Technologies Academic Group,  
National Institute of Education,  
Nanyang Technological University,  
1 Nanyang Walk, 637616, Singapore  
E-mail: qiyun.wang@nie.edu.sg

**Biographical notes:** Xiangzeng Meng is a Professor at the Educational Technology Department, Communication College, Shandong Normal University, China. His research interests include computer assisted instruction, digital learning resource construction, and multimedia information processing and integration.

Hong Lu is a Professor at the Educational Technology Department, Communication College, Shandong Normal University, China. His research interests include computer assisted instruction, digital learning resource construction, and multimedia information processing and integration.

Qiyun Wang is an Associate Professor in the Academic Group of Learning Science and Technologies at National Institute of Education, Nanyang Technological University, Singapore. His research interests include online learning, Web 2.0 tools, web-based learning environment design, and interactive learning.

---

## **1 Introduction**

The rapid development of the internet has made tremendous educational resources and tools available. These web-based resources and tools have great potential for teaching and learning. They can be used to support interactions between the teacher and students, and/or between students and peers. They can also be used to promote collaborative learning among group members so that collaboration can take place at anytime and anywhere.

In this special issue of using web-based learning environments for interactive and collaborative learning, 13 academic papers are included. These papers cover the use of the web-based learning environments (including resources and tools) to support various aspects of interactive and collaborative learning.

## **2 An overview of the papers**

The first three papers are about using web-based tools to promote collaborative learning. In the paper about using an e-learning environment to increase students' participation and the depth of their understanding, Betts, Bal and Betts utilised game-like strategies to shape learners' behaviour towards participation in social and collaborative learning activities. They found that the number of 'experience points' a student earned on the platform was highly correlated with the average assignment mark they achieved. Using such a strategy like gamification could help improve the learning experience and the resulting performance for groups of students.

The paper written by Yang and Zhang is about using WebQuest as scaffolding in the wiki to promote students' collaborative learning. In this paper, they used the wiki to provide WebQuest for students to complete their group assignment. They found that learners in the experimental class maintained more goal-oriented when they utilised WebQuest as scaffolding provided in the wiki, and kept higher interaction among members, and reduced navigational disorientation. Also, they had better learning outcomes.

In the paper about using the weblog for collaborative learning, Liu used the weblog in various ways in a course to support collaborative learning. The ways included creating different blogs for groups and the class, defining respective responsibilities for different members, encouraging active interaction, and closely monitoring the learning process. The results confirmed that the weblog could be a useful tool for collaborative learning, and the ways of using the weblog for collaborative learning in the study were effective.

The following three papers – written by Lu, Chu, Li and Wang; Guo and Liu, and Li and Li – investigate factors influencing teachers' behaviour of using the internet for teaching and learning and the relationship between positions in a social networking site. These three papers follow the quantitative research method, and their subjects are all school teachers.

A research model to examine and explain the factors influencing faculty's knowledge sharing behaviour in a web-based virtual learning environment is proposed in the paper written by Lu, Chu, Li, and Wang. They found that both self-efficacy and outcome expectancy had a positive direct effect on knowledge sharing behaviour; instructors did not play an important part in the development of learners' self-beliefs; the influence of peers was a strong and significant predictor of self-efficacy and outcome expectancy; and the management of a virtual community played a moderate role in self-efficacy and outcome expectancy. These findings have implications for the design of effective online learning environments.

The paper, written by Guo and Liu, investigates the factors influencing teachers' behaviour of conducting teaching and research by using the internet. In this paper, they proposed a model to analyse the relationships among the factors. They concluded that school environments and subjective behavioural norms had remarkable influences on teachers' behavioural intention, teachers' perceived usefulness, and teachers' attitude;

system properties had remarkable influences on teachers' perceived usefulness, teachers' perceived ease-of-use, and teachers' attitude; and teachers' personal traits had obvious influences on teachers' perceived usefulness and perceived ease-of-use.

The following paper is about the relationship between positions in a social network and knowledge building of a virtual community for teachers. Li and Li used varied research methods to analyse the social network location of members in a virtual community, and compared characteristics of knowledge building of community members in different network locations. They found that the members in an online forum formed a core – semi-core – periphery structure; the members in different social network locations had significant distinctions in their knowledge building characteristics; and knowledge was co-constructed by all members together.

The following four papers – by Jovanovic and Hartman; Han; Xu and Jia, and Zhang and Li – explore the use of various web-based tools such as the weblog, instant messaging tool (QQ), or a virtual learning environment to promote interactions or social presence.

In the paper about using web-based virtual learning for automotive workforce training, Jovanovic and Hartman described an interactive learning environment with online modules which were developed for lifelong learners to be used and accessed at anytime and anywhere. This paper describes the design of online modules and training materials and the tentative findings of using the learning environment.

The following paper presents the way of using the weblog to support practical teaching. In this paper, Han used weblogs as communication tools and platforms for sharing resources. She found that the use of weblogs was helpful for supporting practical teaching and it was easier for the teacher to track and monitor students' learning processes. Also, the weblogs played an important role in promoting communication, sharing, and reflection.

In the paper about using QQ to promote teacher-student interaction, Xu and Jia investigated the participants' perceptions on the effect of the tool affecting the ten attributes of teacher-student interaction. They found that QQ could support and improve teacher-student interaction, but the effect was not that obvious, and differences existed in various attributes. Reasons for the differences are investigated and discussed.

In the paper about investigating the social presence in teachers' blogs, Zhang and Li reported the teachers' perceptions of social presence on the blogs. They found that the perception on activeness was the highest and on the truthfulness and non-linguistic information were the lowest. Based on the findings, this paper suggests some strategies for improving the social presence on teachers' blogs.

The following three papers – by Tan; Wang and Hui; and Ma, Yang, and Wei – are about how to effectively analyse and use web-based resources for teaching, learning, and professional development. In the paper written by Tan, the design and evaluation of a web classification system for educational resources are described. A progressive classification approach that combines web content analysis and web structure analysis was proposed in the paper, and experiments were conducted to compare the effect of this approach with two other approaches. The result showed that this progressive classification approach was the most effective one.

The following paper addresses the issue of analysing internet resources and hence choosing proper ones for specific educational purposes. In this paper, Wang and Hui explored using the transverse alignment analysis and in-depth mining approaches to

analyse the resources on a website. They found that the students could get a whole cognition about the website, and improve their abilities of analysis and problem solving. The students also learned how to think in multiple perspectives, and how to cooperate with others.

In the last paper written by Ma, Yang and Wei, they investigated the community leaders' perceptions on distance education. They found that distance education was invaluable to the rural community members; and it was important to provide professional training for community leaders and/or distance education site coordinators on using computer-based technologies.

### **3 Summary**

This special issue is a collection of research studies that use technology to support interactive and collaborative learning. It covers various topics such as ways of using technology to support collaborative learning, models for investigating factors affecting behaviour in the web-based learning environment; and approaches for analysing educational resources. It reports the use of various online tools such as the weblog, the wiki, and QQ. It involves a variety of research methods such as qualitative and quantitative methods. It also includes papers that describe the design of web-based learning environments or report the perceptions of students or teachers on existing tools or platforms. We hope that this special issue will help readers gain more insights on designing web-based learning environments.