Innovative Pedagogy for Enhancing Web-based Collaborative Learning in Tertiary Teacher Education Using Wikis

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Abstract: This paper describes an innovative pedagogy to enhance collaborative learning in four classes of pre-service early childhood student teachers using wiki technology. Learning activities supported by Vygotsky's socio-cultural perspective were designed across twelve weeks. Outcomes of activities were collected as data source. The findings showed that this innovative teaching strategy enhanced students' collaboration learning.

Keywords: CSCL, wiki, Web 2.0, higher education

Introduction

New wave, new ways. New technologies incline to offer new opportunities to enhance the quality of education. In particular, the rapid advancement of web technologies has raised attention to academics in the field of education. Web 2.0 is characterized as a cyberspace which facilitates collective intelligence, social networking and collaboration (O'Reilly, 2005). Thanks to Vygotsky (1978), social aspect of learning and collaboration has been recognized as a process of learning. This rationale closely aligns with the collaborative features of Web 2.0. This paper elaborates an innovative pedagogy for collaborative learning among pre-service kindergarten teachers in tertiary education facilitated by wiki which is a key element of Web 2.0 technologies.

1. Theoretical Background

1.1 Socio-cultural Perspective of Learning

Based on the work of Vygotsky (1978), researchers regarded education and cognitive development as cultural processes with knowledge shared amongst members of communities. People jointly construct understandings by their involvement and interactions (Drummond & Mercer, 2003). From the socio-cultural perspective, learning occurs in the mental process of social interaction and dialogue. Students thereby can learn by negotiating and collaborating with others (McLoughlin & Marshall, 2000).

1.2 Zone of Proximal Development (ZPD) & Intermental Development Zone (IDZ)

Vygotsky (1978) recognized the ZPD as the development zone which can be brought by more capable peers by interactions. Moreover, Fernandez et al. (2001) defined IDZ as a

characteristic of dialogical phenomenon, created and maintained between people of similar levels in interaction for jointly construction of meaning for mutual learning. It follows that if students are intentionally brought together to work collaboratively, it is expected that students' learning can be enhanced by either proceeding to ZPD or IDZ.

1.3 Collaborative Learning Using Wiki

Collaboration learning includes the co-construction of meaning through interaction with others and a joint commitment to a shared goal (Roschelle & Teasley, 1995; Littleton & Hakkinen, 1999). Among Web 2.0 technologies, wikis are web technologies to facilitate generation, collaboration and distribution of contents in a quick and easy way (O'Leary, 2008). In fact, researchers have recognized the power of wikis to foster collaborative learning (Mak & Coniam, 2008). However, there are still only a handful of researches which work on web-based collaborative learning in tertiary teacher education for reference. In this connection, this paper aims to introduce an innovative pedagogy for enhancing web-based collaborative learning in tertiary teacher education using wikis.

2. Project Background and Purposes

The course "Information Technology in Education" taught by the researcher was offered to 4 classes of first year pre-service kindergarten teachers in semester 1 of 2010 – 2011 academic year with class size of about 40 and a total of 152 students. The researcher intended to enable student teachers to equip knowledge on the application of Web 2.0 technologies in education by involving them into an online learning environment facilitated by Web 2.0 technologies. Moreover, by engaging them in knowledge construction processes with collaborative learning activities using the wiki platform, student teachers were expected to develop knowledge on some controversial issues concerning the usage of information and communication technology (ICT) in early childhood education.

3. Methods

The following three controversial issues were given to students for critical discussion.
   1. Childs' development on creative thinking capability is inhibited by using ICT.
   2. Childs' development on social communication ability is inhibited by using ICT.
   3. Childs are not secured to use the Internet.
Students in each class were further divided into 6 groups by themselves with 6-7 students in each group. Two groups were assigned to discuss an issue as illustrated in Figure 1. Students were required to construct their works collaboratively on the wiki platform. By the end of the project, each group had to compile a report to elaborate their critical comments on the controversial issue. The project last for 12 weeks. Activities were designed by researcher on weekly or bi-weekly basis to enhance their collaborative learning as shown in Table 1. Outcomes of activities were collected as data sources for analysis.

Figure 1 : Groups and discussion issues allocation in each class.

| Week | Students form groups and choose discussion issue. |
| 1 | Students write their initial understanding of the issue in the wiki platform. |

Week 2-3	Students enter their group members' information and group name into the wiki platform. Students brainstorm keywords and search relevant websites for sharing in wiki platform.
Week 4-5	Students read two given reference papers and write 100 – 200 words summary on the wiki platform for sharing with other group members.
Week 6-8	Students read more related papers and write short summary to share their understanding on the readings.
Week 9-10	Each group writes the first draft of group report concerning their comments on the controversial issue.
Week 11	Students were invited to feedback on the report of same discussion issue in another class with arrangement illustrated in Figure 2. Each student has to provide feedbacks.
Week 12	Each group finalizes their group report according to comments received from classmates.

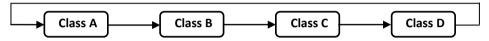Table 1 : Weekly or bi-weekly activities

Figure 2 : Arrangement of peer feedback on group reports.

4. Results & Conclusion

At the early stage, students still required accommodating on the collaborative learning process. However, after a few weeks, it was happy to notice that some active students in each group started to organize contents in a systematic manner and began some meaningful discussions. At the end, all students were found to have their input and feedbacks in the wiki platform and they managed to finish the group report with good quality. Evidences showed that this new teaching strategy enhanced web-based collaborative learning among student teachers in tertiary education. However, since the research involved large numbers of participants and many learning outcomes, extensive efforts was required for analysis. It was also difficult to provide timely feedback for individual students. These practical challenges will be major research directions in the future.

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