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Global Collaborative Learning Support System for Facilitator Collaboration: First Phase Development Report

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Abstract: This research reports the initial design and development of a global collaborative learning (GLoCL) support system for collaborative work among multiple facilitators. Among the system's main features are (1) support for facilitators collaborating on the design and implementation of global project-based learning; (2) improved feedback and enhanced quality of student interaction; and (3) reduction of the administrative burden on facilitators. The system will be developed in two phases. The poster presentation introduces the system's overall design and describes the first phase of system development.

Keywords: global learning, facilitation, CSCL, community of inquiry

1. Introduction

In Japan, internationalization and global human development in higher education are strongly encouraged (Central Council for Education, 2010). The cultivation of global human resources requires an approach that emphasizes learning through authentic activities and measurement of acquired knowledge in terms of learning outcomes. By eliminating restrictions related to time and space, Information Communication Technology (ICT) can provide authentic global learning opportunities for students. However, only a few examples of ICT-based global collaborative learning have been reported in Japan. One survey (Goda et al., 2014) reported that only 2 out of 327 university students had learned in collaboration with foreign students online. They identified time differences, curriculum and school timetables, legal issues, infrastructures, and teachers' altered role as facilitators of collaborative leaning as obstacles to implementing global collaborative learning. As computer-supported collaborative learning (CSCL) gains in popularity, tools and systems have been developed in support of CSCL (e.g., Knowledge Forum, WorldWatcher), but most of these center on face-to-face classroom use and take no account of global learning settings and collaboration among multiple facilitators.

The ultimate goal of our research project is to design and develop a support system for global collaborative learning for both students as active learners and teachers as facilitators. The purpose of this research is to report on the initial design and development of a global collaborative learning support (GLoCL) system that supports collaborative work by reducing the burden on facilitators and making it easier to design and implement global project-based learning online.

2. Overall Design and Two Phases of System Development

The overall design of the proposed GLoCL system consists of ten functions. Five functions are common to students and teachers (Table 1), and five provide facilitator support (Table 2). Effective CSCL design based on community of inquiry (CoI, Garrison, Garrison, Anderson, & Archer. 2000) were introduced for English learning (Goda and Yamada, 2012). CoI was employed as a framework to design the system for quality interactions among students. In the first of two phases of system development, functions (other than Top Page and Submission) have been developed as a Moodle module. Three of the system's

key features are (1) support for facilitators collaborating on the design and implementation of global project-based learning; (2) improved feedback and enhanced quality of student interaction; and (3)

Table 1: Design of Global Collaborative Learning Support System: Common Functions (Students and Teachers)

Function	First Phase		Second Phase		System Features ((1) Support for facilitator collaboration (2) Improved feedback (3) Reduced administrative burden)
	Student	Teacher	Student	Teacher	
Top Page	Not yet available	Not yet available	Check reminders and what's new after logging out last time; see world clock; get reminders for upcoming tasks; access information on cultural differences.		(1) Identify time gap easily; complete tasks on time; share what has been done with other facilitators.
Chat	Chat in one's group. Post, edit, and delete comments. Reply to others' comments. Use emoticons. Attach a file.	See a list of groups. Check and monitor chat in each group. Make comments on group chat.	Revise when necessary	Revise when necessary	(2) Monitor students' discussion and intervene easily. (3) Switch groups easily to monitor discussions.
Task Scheduling	Plan schedules. Share tasks and decide their dues. Assign tasks. Check tasks in Calendar.	See a list of groups. Check and monitor the task assignments and schedule of each group.	Revise when necessary	Revise when necessary	(3) Monitor students' project progress and collaboration.
Questionnaire	Take questionnaire	Preview questionnaire	Revise when necessary	Revise when necessary	(3) Use questionnaire for grouping.
Submission	Not yet available	Not yet available	Submit tasks as a group or individually	Check individual submissions; download tasks one at a time.	(3) Access individual submissions; download whole submissions.

reduction of the administrative burden on facilitators. Each of the system's functions was designed to deliver more than one of these features. In the case of (2), for example, the facilitation function visualizes the social presence and cognitive presence of a community of inquiry. Ongoing discussion in each group is supported by the application of text mining using tf-idf, enabling facilitators to identify need-help groups (Yamada, et al. 2016). Where feedback is needed during group discussion, the Facilitation function provides easy-to-use comment templates for effective feedback within each learning process. The Group Management function uses questionnaire results for manual or automatic generation of homogeneous or heterogeneous groups in relation to a specific trait or characteristic.

Table 2: Design of Global Collaborative Learning Support System: Facilitator Support Functions

Function	First Phase	Second Phase	System Features
Questionnaire Manager	Manage questionnaires.	Revise when necessary	(3) Questionnaire is used for grouping. Appropriate and adaptive questionnaire can be used for grouping.
Group Manager	Manage groups. Get the questionnaire results and make groups based on the results (homogeneous group vs. heterogeneous group).	Revise when necessary	(3) Manual or automatic grouping with questionnaire results available.
Log	Log (Chat, Questionnaire, Behavior) download.	Revise when necessary	(3) The log is downloadable for grading or/and research purposes.
Facilitation	Monitor students' process of learning. Check the visualized SP and CP in a group and of each student. Access the group chat with some problems and give feedback and support with comment support function.	Check "Facilitator Guideline," final "Project Design," Cultural Feature Information	(2) Visualization of social presence and cognitive presence allow facilitators to find salient features of the groups in discussion. Comment template along with SP and CP process help facilitators provide more appropriate feedback to individuals and the group.
Project Design	Share current course or project information among facilitators. Design a project for students.	Revise when necessary	(1) Design project based learning for global learning considering purposes and situations of all participant facilitators.

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References

Central Council for Education Working Group on the Promotion of Globalizing Universities. (2010). The concept of global human resource development focusing on the East Asian region. Retrieved from http://www.mext.go.jp/english/highered/1303540.htm (Accessed 2 May, 2014).

Garrison, D. R., Anderson, T., & Archer, W. (2000). Critical inquiry in a text-based environment: Computer conferencing in higher education. *The Internet and Higher Education*, 2(2-3), 87–105.

Goda, Y., Yamada, M. (2012). Application of CoI to Design CSCL for EFL online asynchronous discussion. In Akyol, Z., Garrison, D.R. (eds.) *Educational Community of Inquiry: Theoretical Framework, Research and Practice*, pp. 295–316. IGI Global

Goda, Y., Yamada, M., Ishige, Y., & Handa, J. (2014). Survey on Japanese university students' learning experiences with ICT and open sources for international collaboration. Proceedings of *22nd International Conference on Computers in Education, ICCE 2014* (pp. 827–829). Asia-Pacific Society for Computers in Education.

Yamada, M., Kaneko, K., & Goda, Y. (2016). Social presence visualizer: Development of the collaboration facilitation module on CSCL. In *International Conference on Collaboration Technologies* (pp. 174-189). Springer Singapore.