

A comparison of Computer- and Mobile Phone- Mediated Collaboration: A case study of Japanese university students

Garcia, Gibran
g169004t@yamata.icu.ac.jp
Doctoral course student
International Christian University
Tokyo, Japan

Abstract: This exploratory case study carried out in Tokyo, Japan, examines the Computer Mediated Collaboration via Moodle, a web forum on desktop computers, and the Mobile Collaboration via LINE, an application for smartphones. First, it investigates and compares how these two kinds of media affect the participation, interaction and collaboration of students through content analysis of the messages posted. Second, it inquires into the students' collaborative experiences, opinions, and difficulties they had during online discussions via focused interviews. Finally, it explores the impact of these two online media sources using the students' final written reports. Based upon the results and review of associated literature, this case study concludes that smartphones have a great potential to enrich interactions online.

Key words: *Participation; Interaction; Online collaboration; LINE; Moodle; Smartphones; Desktop computers.*

Background

Interaction on web-based forums is an essential element (Savenyene, 2005) for a discussion to move from simple participation to collaboration (Ingram & Hathorn, 2004). It is also an important factor for increasing student achievement (Zirkin & Sumler, 1995) since it impacts students' satisfaction (Burnett, et al., 2007), perception of learning (Swan, 2001) and alters the nature and quality of learning (Beuchot & Bulleh, 2005). However, despite its relevance, interaction has been reported to be scarce in online discussion forums. The lack of interaction has been attributed to unusable software with excessively complex routines, organizational readiness and communication values to individuals (Fitcher, 2005). Nevertheless, Jung et al. (2002) argues that social interaction is correlated with student participation; therefore, if sociability is stimulated, there may be a relevant effect on the level of interaction (Beuchot & Bullen, 2005). The most successful handheld technologies that involve rich social practices are built around rather simple and reliable technology (Roschelle, 2003), and instant messaging (SMS) on mobile phones has been seen as one of the most used and context rich means of social interaction (Sorensen & Gibson, 2004). SMS use in online instruction could increase students' ease of communication, accelerate the work process (Beurer-Zuelling & Meckel, 2008) and contextualize interactions giving users a sense of "be[ing] part of the action" (Asi, et al, 2011). Thus, if there is an improvement in social interactions and an acceleration of the work process, the use of SMS could have a greater effect on performance at both the individual and group levels.

Statement of the problem

Previous studies have focused mainly on analyzing interactions on Computer Mediated Collaboration (CMC) (Beuchot & Bullen, 2005; Burnett, et al., 2007; Swan, 2001) and how they differ from face-to-face environments. Also, some of them have suggested the use of SMS to support online collaboration (Savenye, 2005; Wuensch, et al., 2008). However, little research has been done to know how interactions through mobile phones differ from those of stationary desktop computers and how those interactions affect student satisfaction and group outcomes.

Methodology

This study compared the participation, interaction, and collaboration between Computer Mediated Collaboration (CMC) and Mobile collaboration (MC) aiming to answer three main questions:

1. Are there differences in participation and interaction between computer- and mobile phone-mediated collaborative learning groups?
2. How different are the collaboration experiences between mobile phone- and computer-mediated collaborative learning groups?
3. What is the impact on the groups' final written reports when interacting on mobile phones versus computers?

A total of 26 students, 9 males and 17 females ranging in age from 19 to 23 years old, from a course on instructional design and technology at a private university in Tokyo comprised the sample of the study. The data was obtained from three different sources: a) The content analysis of the messages posted by students to web-based forums on desktop computers (Moodle program) and chat rooms on a mobile application (LINE); b) The participants' individual self-reflection notes on the online group activity; c) Group focused interviews with seven active members from each Moodle and LINE group. Two main groups were formed for the online discussion. The group engaged in the CMC or Moodle group (10 females and 4 males), and the group engaged in the MC or LINE group (7 females and 5 males). These two groups were subsequently divided, resulting in the formation of four small groups. Both LINE and Moodle groups were given 10 days to discuss their learning beliefs. After the end of the discussion period, all groups were allotted four days to summarize their group discussions and to write a group report. After each group submitted their group reports, all students were requested to submit an individual reflection note regarding their experience with the online collaborative activity.

Results

Differences in participation and interaction

LINE groups made a larger number of postings containing a small number of sentences; whereas Moodle groups made a smaller number of postings containing a larger number of sentences. The content analysis results showed that in both Moodle and LINE groups, the largest type of on-task statement exchange happened between a student and the whole group. Further, it was found that the majority of these statements were direct on the content of the discussion followed by management and social content. Nevertheless, LINE groups registered more Social Management and off-task statements in contrast to Moodle groups. It was also observed that Moodle groups had a lower degree of statement exchange with the moderator in comparison to LINE groups. As for interaction threads formed during the online discussion, Moodle groups showed fewer varieties of interaction threads (*a-b*, *a-b-a*, and *a-b-c*) in contrast to LINE groups (*a-b*, *a-b-a*, *a-b-c*, *a-b-c-a*, *a-b-c-b*, and *a-b-c-d*).

Students' collaboration experiences

In Moodle Group 1, members expressed their discomfort with the slow response and lack of participation from their peers. The lack of ideas to enhance the online discussion was also considered a problem. In addition, the discussion was dominated by only two members. In Moodle Group 2, the majority of students expressed their

satisfaction with the activity and its usefulness to rethink concepts taught in class. This was due to the planning and distribution of responsibilities among the group members. Most of the participants felt very satisfied with the participation and contribution of all the members. LINE Group 1 and 2 reported having enjoyed collaborating. Both groups highlighted the convenience of receiving notifications and the messages straight to their mobile phones, and considered the “Read” notification very useful to encourage participation from other member members. Further, they considered the discussion to be relaxed and delighted as if they were having “a frank conversation.” Nevertheless, some of them considered LINE not to make them think deeply on their answers. Overall, both groups reported being satisfied with the participation and contribution of their peers.

Groups’ final written reports

Differences were found in the final group reports. Moodle Group 1’s report was not considered a synthesis of all the group members’ opinions. Three unedited comments from two students became visible after comparing the final product with the transcripts of the discussion. Moodle Group 2’s report was considered closer to a synthesis of the group’s ideas, but it included a brief summary made by one of its members during the online discussion. LINE Group 1’s report was also considered to be close to a synthesis; however, a short summary previously posted by one of its members was also included. Finally, LINE Group 2’s report proved to contain a synthesis from all group members’ ideas. After it was analyzed and compared with the transcripts of the online discussion, no comments or summaries previously made by single members were found.

Conclusions

Based on the review of literature and results of this case study, it can be concluded that mobile phones have the potential to enhance interaction in online collaboration. The short length of the messages and short time in posting the replies generated multiple interaction threads among LINE groups which were not registered in Moodle groups. Although the content analysis results showed a higher percent of social and off-task statements in LINE group discussions in contrast to Moodle groups, the percentage of direct statements on the topic of discussion was not surpassed. This suggests a potential for students to maintain on-task discussions via a mobile phone, but within a more suitable environment to share personal experiences and opinions. In addition, mobile phones enhanced information exchange and kept the flow of the discussion more active. This made students from LINE groups reach an agreement earlier than those in Moodle groups. As a result, LINE members had more time to work to edit their final group report. These characteristics of collaborating via a mobile phone had a positive impact on student performance, quality and satisfaction which were reflected on the students’ self-reflection notes. However, LINE discussions tended to be different in content. While the Moodle group discussions were based on the students’ experience, materials provided in their course, and other sources from websites; LINE groups’ discussions were mainly experience based.

Literature References

- Asi, D., Geoff, M., Geoff, S., & Frances, W. (2010). Mobile learning shareable content object reference model (m-scorm) limitations and challenges. United Kingdom: Tribal.
- Beuchot, A., & Bullen, M. (2005). Interactions and interpersonality in online discussion forums. *Routledge*, 26 (1), 67-87.
- Beurer-Zuelling, B., & Meckel, M. (2008). Smartphones enabling mobile collaboration. Proceeding of the 41st Hawaii international Conference on system science, 1-9.
- Burnett, K., Bonnici, J. L., Miksa, S.D., & Kim, J. (2007). Frequency, intensity and topicality in online learning: An exploration of the interaction dimensions that contribute to students’ satisfaction in online learning. *Journal of education for library and information science*, 48 (1), 21- 35.
- Fitcher, D. (2005). The many forms of e-collaboration: Blogs, wikis, groupware, discussion boards, and instant messaging. *Online*, 29 (4), 48-50.
- Ingram, A. L., & Hathorn, L. G. (2004). Methods for analyzing collaboration in online communications. In T.S. Roberts (ed.), *Online Collaborative Learning: Theory and practice* (pp.215-241). Hershey, PA: Information Science Publishing.
- Jung, I., Choi, S., Lim, C., & Leem, J. (2002). Effects of different types of interaction on learning achievement, satisfaction and participation in web-based instruction. *Innovations in Education and Teaching International*, 39 (2), 153-162.
- Roschelle, J. (2003). Unlocking the learning value of wireless mobile devices. *Journal of Computer Assisted Learning*, 19 (3), 260-272.
- Savenyene, W. C. (2005). Improving online courses: What is interaction and why use it? *Distance Learning*, 2 (6), 22- 28.
- Sorensen, C. & D. Gibson (2004). Ubiquitous visions and opaque realities: Professionals talking about mobile technologies. *The Journal of Policy, Regulation and Strategy for Telecommunication, Information and Media*, 6 (3), 188-196.
- Swan, K. (2001). Designing factors affecting students’ satisfaction and perceived learning in asynchronous online courses. *Distance education*, 22 (2), 306-331.
- Wuensch, K. L., Aziz, S., Ozan, E. Kishore, M., & Tabrizi, H.N. (2008). Pedagogical characteristics of online and face-to-face classes. *International JI. On e-learning*, 7 (3), 523-532.
- Zirkin, B., and Sumler, D. (1995). Interactive or non-interactive? That is question. *The journal of distance education*, 10 (1), 1-10. Retrieved from <http://www.jofde.ca/index.php/jde/article/view/230/605>