A Study of Private Messaging Within an Asynchronous Discussion Environment

Jim Hewitt, Clare Brett, Kim MacKinnon, OISE University of Toronto, 252 Bloor Street West, Toronto ON,
Email: jim.hewitt@utoronto.ca, clare.brett@utoronto.ca, kimberley.mackinnon@utoronto.ca

Abstract: The study focused on students' use of private messaging as an adjunct form of communication in online courses. Interviews revealed that learners used private messaging to coordinate activity on group projects, request help from each other, and seek reassurance when uncertain about their performance in the course. Public computer conferences, on the other hand, were used for more formal types of academic discourse. Quantitative comparisons of public and private texts revealed that learners wrote longer, more sophisticated and academically rich messages when contributing to the public, class-wide conferences. In comparison, private messages between individuals contained simpler sentences, were easier to read, and were more likely to use jargon. The two forms of communication appeared to serve different purposes. It is proposed that private messaging may help foster a sense of mutual trust among students, which may, in turn, be a necessary precursor to community-building.

Objectives

Distance education research posits the existence of a positive relationship between collaborative student engagement and coursework performance (Graff, 2006). In the context of many online courses, the majority of interaction takes place in threaded computer conferences, where students can share ideas, discuss course material, exchange resources, generate questions, and collaboratively build new knowledge. However, the psychology of such environments is complex. As pointed out by Peters and Hewitt (2010), some students can be nervous about writing to an audience of their peers. While most students appreciate the value of collaborative engagement, they are also concerned about how they are perceived by their instructor and fellow classmates. They want good grades, and thus they are understandably cautious about publicly posing questions that may reveal a lack of understanding, or suggesting ideas that may be vulnerable to critique, or even ridicule. So while the shared nature of a threaded computer conference provides critical affordances for class-wide knowledge building, it can also be inhibiting for some (Peters & Hewitt, 2010).

As an extension of this body of research, we have developed an interest in the role that private messaging might play in online courses. To explore this issue in greater depth, the current study examined an online environment called "Pepper" that contained facilities for two types of interaction: i) a threaded discussion forum in which messages were visible to the entire class and ii) a private messaging system in which students could communicate with each other privately. How did students use these two tools? What were the differences between the writing that occurred in the class-wide computer conference and the writing that occurred in private spaces?

Theoretical Framework

This research is grounded in social-constructivist notions that learning can be fostered in online courses by exposing students to the ideas of their peers, through sustained collaborative discourse about key course concepts. It is through the articulation of one's own ideas, and through efforts to understand the perspectives of others, that learners develop deeper insights (Wise, Chang, Duffy, & Del Valle, 2004). Given the educational importance of these processes (Stahl & Hesse, 2009), the goal of the online instructor becomes one of promoting sustained, educationally productive discourse in a shared electronic space (Bullen, 1998; Gunawardena, 1995; Gunawardena & Zittle, 1997; McDonald & Gibson, 1998; Ross, 1996; Vrasidas & McIsaac, 1999). Discursive interaction is thus viewed as paramount to the success of online learning (Picciano, 2002).

Given this perspective, many instructors attempt to establish a sense of community in their online courses. An effective community is one in which individuals trust each other and are willing to ask difficult questions, constructively critique each other's ideas, and work together collaboratively to build new knowledge. Such communities are thought to have high levels of "social presence", which Garrison (2009) defines as, "participants identifying with the community, communicating purposefully in a trusting environment, and developing interpersonal relationships" (p. 7). Research suggests that higher levels of social presence are associated with people placing greater value on the perspectives of their peers (Swan & Shih, 2005), and a richer exchange of information between learners (Fung, 2004; Henning, 2004; Stacey, 1999).

Social presence can be difficult to nurture in online courses. Text-based communication lacks many of the visual and aural cues that people naturally use when communicating, such as smiling, making eye contact, gestures, and so forth (Gunawardena & Zittle, 1997). Additionally, as Peters and Hewitt (2010) point out, the

high visibility of student writing in computer conferences may inhibit social presence. When people submit messages to class conferences, they are typically made available to all students and the instructor. Fear of criticism can prevent people from asking questions, responding honestly to controversial topic, or sharing nascent ideas with each other. This can limit the effectiveness of online interactions. In an effort to better understand this phenomenon, the current study examined a set of distance education courses in which learners could exchange ideas with one another using several forms of online communications, some public (i.e., visible to the entire class) and some private (i.e., between individuals). How were these different forms of communication used, and in what ways, if any, did they differ?

Methods

The study involved an analysis of two types of data. First, we interviewed 10 students from three distance education courses about their online experiences, with a particular focus on their use of private messaging. The purpose of the interviews was to better understand the situations in which they chose to interact privately with their peers. To encourage candid responses, a graduate researcher conducted the interviews and participants were assured that their identities would not be revealed.

The second half of the study was quantitative in nature, involving the analysis of students' private and public contributions in 19 distance education graduate-level courses (363 students). Each course took place in the Pepper environment. Because of ethics-related concerns, it was not possible to view students' private messages. However, our ethics protocols permitted computer-based statistical analyses of aggregate patterns of the text within messages, both public and private (e.g., message size, sentence size, reading ease, etc.). This allowed us to collect data that would help triangulate our interview findings without jeopardizing student privacy.

Each of the 19 distance education courses was 12 weeks in length. Within these courses, students were encouraged to collaboratively discuss various issues in the whole-class threaded discussion area. While graphics or videos were sometimes used, the interaction was predominantly text-based. Students were not required to use the private messaging environment within Pepper, but it was available if they wished to send a private message to the course instructor or a classmate. Course grading schemes typically included a 10% to 20% mark for students' participation in the class-wide discussions. The remainder of their grade was based upon submitted assignments.

For the purposes of this study, we use the term "public" to refer to text-based messages that are posted in the shared computer conferencing area in Pepper. These messages are visible to all members of the class, including the teacher. The term "private" refers to small private, text-based exchanges involving 2 or more of the people in class. Pepper's private messaging facility is similar to the private messaging facilities in Facebook and Gmail. Students in Pepper can see which of their classmates are currently online. A private message sent to a person who is logged in will "pop up" on their screen, giving students the option of chatting in real time. Messages sent to people who are offline are saved until the next time they login.

Results: Interviews

An analysis of the interview transcripts yielded the following findings concerning the most common reported applications of the private messaging facility:

• Coordinating group activity: In classes where students were assigned a group project, students used private messaging to seek out potential group partners, schedule telephone meetings (or Skype meetings) for the group, and assign tasks to different individuals. Students felt that a private forum was more appropriate for these sorts of administrative functions than the public conference.

• Seeking help: Students reported they often used private messaging to obtain information about course deadlines, receive clarification regarding assignment expectations, or to help solve technical problems. Often students would send a query to a classmate who was currently online, since that would generally produce a rapid response.

• Sharing drafts: When students felt uncertain about posting material in the public forum, or in situations where a passage of text was to be jointly authored, students would often use private messaging to exchange drafts and receive feedback from one another.

• Providing peer support and encouragement: Students reported that private messages tended to be upbeat, supportive, and empathetic in situations where people acknowledged that they were struggling. "We connect with each other at a different level in the text messages" according to one student. One individual described a situation in which one of her classmates privately messaged her, asking her to read the note she had posted in the public forum, and write a response to it. "I don't feel like I'm part of the conversation. Would you mind responding to my note?" Thus, in this particular case, private messaging was used to address a student's insecurities regarding the lack of activity surrounding her contributions to the class conference.

When asked to discuss the relative value of private messaging versus email, many students responded that private messaging was more efficient because it was built-in to the software, and thus didn't require them to go to a different application or website. It also provided them with speedier responses, because students could see when their classmates were online, and communicate with them directly. However, in some situations, people didn't trust private messaging. One student recounted a situation in which a discussion moved from private messaging to email. The discussion concerned a sensitive issue (the questionable online behavior of a classmate) and the participants became concerned that the instructor might be able to somehow access their private messages and deem them inappropriate. Consequently they moved their discussion to email.

Results: Quantitative Analysis

The second half of the study consisted of a larger-scale, statistical analysis of differences in the texts of private messages and public notes in the threaded discussions. A comparison of private and public texts across the 19 courses uncovered a number of significant differences:

• Private messages were significantly smaller than the public messages in the class-wide computer conference ($p < 0.001$). Private messages contained an average of 41.08 words compared to an average 186.82 words for public messages. Private messages also contained significantly shorter sentences than public messages ($p<0.001$).

• Private messages tended to be more readable than Public messages. Two measures of readability were examined: i) the Flesch Reading Ease metric and ii) the Flesch-Kincaid Grade Level. Private messages had significantly higher readability scores and lower grade level scores than public messages ($p<0.001$ for both message types). Public notes were written at a 10.67 grade level, on average, while private messages were written at a 4.94 grade level.

• Public messages were more "academic" in tone. The Academic Word List Ratio is a measure of the degree to which a passage of text uses vocabulary that it is common in academic writing. It is based upon the Academic Word List (AWL), a corpus of 3,110 words divided into 570 word families. The list includes such words as "data", "discover", "rate", "theory", and so forth. The contents of the list comprise 10%-15% of the words found in academic texts across all disciplines. However, words in the AWL comprise only 1.4% of the words found in non-academic texts (Coxhead, 2000). In the currently study, private messages had a significantly lower percentage of academic words than public messages. Private messages had 4.4 academic words per 100 words (on average), while the corresponding value for public messages was 7.83 words per 100 words. This difference was statistically significant ($p<0.001$).

• Students used much more informal vocabulary in private messages. Using Internet message boards for source material, we developed a list of 45 informal terms such as "LOL", "yup", etc. Private messages contained 21.92 informal terms per 1000 words, while public messages used 2.06 informal terms per 1000 words. This finding was statistically significant ($p<0.001$).

• Our studies failed to find differences in the "sentiment" of the respective texts. Sentiment analysis is concerned with the level of positive and negative emotion expressed in a passage of text. To measure the positivity and negativity of language, we employed an algorithm that uses a positive word list and a negative word list, respectively, to examine the frequency of positive (and negative) words in students' notes. These lists were provided by a tool called LIWC (pronounced "Luke" - Linguistic Inquiry and Word count). Studies indicate that "LIWC accurately identifies emotion in language use" (Tausczik & Pennebaker , 2010, p. 32). The LIWC algorithm produce scores that range from 1.0 (highly negative emotion) to 9.0 (highly positive emotion). A score of 5.0 is neutral. In the current study, public messages had a mean sentiment score of 6.38, a score that was not significantly higher than the sentiment score for private messages (6.33).

Taken together, the quantitative results appear to be consistent with the findings from the interviews. Private messages are more familiar, shorter, and less academic than the messages that are saved in the public discussion conferences.

Discussion and Conclusions

Although the private messaging facility was an optional component of these courses, students made frequent use of it. Private messages were significantly different than public computer conferencing messages in the following respects: They tended to be shorter, contained simpler sentences, were easier to read, were less academic in nature, and used informal vocabulary. Messages on the public forum, on the other hand, were longer, more formal, and more academic in nature.

Since we were unable to directly analyze the contents of private messages, we used interviews to learn about the students' private messaging practices. Both the interview data and the quantitative analyses suggest that students adopted a less formal style of discourse when conversing privately. According to the interviews, the private discourse provided learners with a place where they could ask ("dumb") questions to a classmate, privately share an idea, or a draft of a text passage, before revealing it the larger group. We suggest that this informality may help foster social presence and interpersonal trust. Asking another person for help or advice is

a particularly important step when building trust. Threaded discussion environments are not particularly helpful in this regard; many students are understandably wary about admitting their lack of knowledge in a public forum that is monitored by their instructor.

To create a genuine sense of community, it may be necessary to provide opportunities for participants to interact in ways that lack some of the formality of public academic discourse (e.g., the use of jargon, humor, and "I don't get it" kinds of statements). Learners need a risk-free place where they can "try out" ideas on a trusted classmate before making the ideas public, much in the same way that academic researchers may "try out" ideas with colleagues before attempting to publish the idea in a journal article, or make a conference presentation.

The differences between public and private discourse revealed by this study suggest that conventional computer conferencing, on its own, may not meet all the needs of learners. It is proposed that opportunities for private interaction may be a key ingredient for building student-student relationships. While it may at first seem like a counterintuitive relationship, the trust developed during private, interpersonal exchanges may play an important role in the forging of a healthy, public, online community.

References

Bullen, M. (1998). Participation and critical thinking in online university distance education. Journal of *Distance Education, 13*(2), 1–32.

Coxhead, A. (2000). An academic word list. *TESOL Quarterly, 34*(2), 213-238.

Fung, Y. (2004). Collaborative online learning: interaction patterns and limiting factors. Open Learning: The *Journal of Open and Distance Learning, 19*(2).

Garrison, D.R. (2009). Implications of online learning for the conceptual development and practice of distance education. *Journal of Distance Education, 23*(2), 93-104.

Graff, M. (2006). The importance of online community in student academic performance. *The Electronic Journal of e- Learning, 4*(2), 127 - 132

Gunawardena, C. (1995). Social presence theory and implications for interaction and collaborative learning in computer conferences. *International Journal of Educational Telecommunucations, 1*(2/3), 147–166.

Gunawardena, C., & Zittle, F. (1997). Social presence as a predictor of satisfaction within a com- puter-mediated conferencing environment. *American Journal of Distance Education, 11*(3), 8–26.

Henning, W. (2004). Everyday cognition and situated learning. In D. Jonassen. (2nd ed.). *Handbook of research on educational communications and technology*. (pp. 143-168). New Jersey: Mahwah, Lawrence Erlbaum.

McDonald, J., & Gibson, C. (1998). Interpersonal dynamics and group development in computer conferencing. *American Journal of Distance Education, 12*(1), 7–25.

Peters, V., & Hewitt, J. (2010). An investigation of student practices in asynchronous computer conferencing courses. *Computers & Education, 54*, 951-961.

Picciano, A. G. (2002). Beyond student perceptions: Issues of interaction, presence, and performance in an online course. *Journal of the Asynchronous Learning Network, 6*(1), 21-40.

Ross, J. A. (1996). The influence of computer communication skills on participation in a computer conferencing course. *Journal of Educational Computing Research, 15*(1), 37–52.

Stacey, E. (1999) Collaborative learning in an online environment. *Canadian Journal of Distance Education, 14*(2), 14–33.

Stahl, G., & Hesse, F. (2009). Paradigms of shared knowledge. *International Journal of Computer-Supported Collaborative Learning, 4*(4), 365-369

Swan, S., & Shih, L. (2005). On the nature and development of social presence in online course discussions. *Journal of Asynchronous Learning Networks, 9*(3), 115-136.

Tausczik, Y. R. & Pennebaker, J. W. (2010). The psychological meaning of words: LIWC and computerized text analysis methods. *Journal of Language and Social Psychology, 29*(1), 24-54.

Vrasidas, C., & McIsaac, M. (1999). Factors influencing interaction in an online course. *American Journal of Distance Education, 13*(3), 22–36.

Wise, A., Chang, J., Duffy, T., & Del Valle, R. (2004). The effects of teacher social presence on student satisfaction, engagement, and learning. *Journal of Educational Computing Research, 31*(3), 247-271,

Acknowledgments