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Social Presence in Collaborative Learning:

Analysis of Interactions in Knowledge Building Community

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Abstract— Social presence is a key element in a collaborative learning environment to promote interaction and creating sense of community among online students. The purpose of establishing social presence in online courses is to facilitate a level of comfort and assurance of safety among participants. Based on two distinct online classrooms, this paper explores the interaction and investigates evidence of social presence among students. Participants in this research are from students enrolled in an online master degree program in the United States and students enrolled in a university in Singapore. A multi-method approach was used to explore the interactive aspect of learning. Within the approach, in-depth analysis of students' discourse was also carried out by using Social Presence Model by Garrison and Anderson. Findings show low levels of social presence among the two groups. The paper discusses several factors affecting the creation of social presence within two courses. These include (i) profile of the student such as maturity, time availability and their own agenda (ii) type of course and (iii) activities demand by the course. The paper suggests ways to improve social presence in online courses based on the analysis using the Social Presence Model.

Keywords— *social presence; community, interactions*

I. INTRODUCTION

It is now widely acknowledged in the literature that social presence is one of the most significant factors in helping build a sense of community in online courses [1] [2]. Reference [3] added that social presence is a critical component to create a comfortable and conducive social climate. It is also acknowledged that without achieving social presence, the learning environment can turn into one that is not rewarding for students [4][5][6]. A safe environment will enable students to make themselves impregnable with others and build productive collaboration [7]. This echoes Reference [8] who defined social presence as “the ability of participants in a community of inquiry to project themselves socially and emotionally, as “real” people...through the medium of communication being used”. The existence, or not, of social presence impacts on student satisfaction and learning within an online learning context [9] [10].

A significant body of research has shown that it is possible to create social presence and online learning communities in online courses [2]. However, in their extensive review of the social presence theory, Reference. [11] concluded that social presence is a complicated social and psychological construct and urged that more research is needed to find out the optimal level of social presence in online environment. In addition, a there is a continuous focus

on social learning [e.g.12], there is a need of ongoing research in the area of social presence [13] to advance understanding of this concept [14]. Taking into account this need and our interest in investigating social presence in online courses, we decided to analyze students' interactions of two online courses to determine to what extent there is evidence of social presence.

II. SOCIAL PRESENCE

There is a general agreement that social presence is a key element in a community, for example, the study conducted by Reference [15] showed that students who felt less comfortable and safe were the ones who contributed less. In contrast, Reference [16] found that students that felt comfortable seeking intellectual and emotional support from the class.

More recently, Reference [17] explored the extent of social presence in online courses and determines the nature of social presence and the strategies that online educators can use effectively. Among other findings, they concluded that social presence was a critical aspect of online course experience and contribute to the learning and instructors must employ appropriate strategies and tools to reinforce the social presence. Reference [18] attempted to link the social presence and social capital and reiterated that social interactions in learning communities play a role in both traditional and online education. They quoted some of the research findings that indicate that social presence supports formation of relationships and exchange of information among the community of learners and in return interaction and social ties contribute the active collaboration among learners.

Reference [19] study explored the social nature of membership in an online community of practice. He identified a number social constructs including perceived ease of use and usefulness, social ability, sense of community, satisfaction with online experience, and effectiveness of online for teaching. The results showed, among other variables that, social presence with peer is positively correlated with the social ability and learning satisfaction. The study again confirmed the importance of the level of interactions in collaborative learning community and social presence and its influence on the learning outcomes. In another study, Reference [20] explored the effects of participation, interaction and social presence in an online course that involves eighteen students. Six groups were formed in the

study, each group consisting three members. When content analysis of discussion protocols were performed, it was found that the collaboration does not occur automatically in asynchronous computer conference. However social presence helps to collaboration by establishing a warm and collegial learning community and this in turn encourage participation and interaction. With these findings and all other studies confirm that understanding of social presence may contribute how social presence mediates between individuals and their communities in online learning environments

III. SOCIAL PRESENCE INDICATORS

Although the elements that comprise social presence have been discussed differently, References [2, 8, 22] identified the elements of social presence as affective, where students share personal expressions of emotion, self-disclosure; open communication, where students create and sustain a sense of group commitment; and group cohesion, where students interact around common activities. Together the three elements provide evidence/or not of social presence in online learning courses. In the affective category, indicators such as expressions of emotions, use of humor and self-disclosure considered to determine the level of social presence. On the other hand continuing a thread, quoting from others' message, asking questions and expressing agreement can be considered as open communication. Other indicators such as addressing participants by name, vocatives, phatic and salutations are the indicators of student cohesiveness. Low levels of presence of these three categories indicate a cold and impersonal environment. A framework can guide the researcher to interpret data [21] and Reference [8] and Reference [22] model can be of assistance to measure levels of social presence in text-based communication [23].

IV. THE STUDY CONTEXT AND PARTICIPANTS

Based on two distinct online classes, this paper explores evidence of social presence among students. This study one was conducted in a teacher-training institute in Singapore taught by one instructor. The sample consisted of 42 trainee teachers enrolled in a one year pre-service Post-Graduate Diploma in Education Programme. The trainees were registered for the core module "Teaching and Classroom Management." After introducing the fundamentals of classroom management for six weeks in traditional classroom setting, trainees go out to schools for practice teaching. During their practice, for four weeks, an online group discussion was set up for them to share their experiences and observations on classroom management and discipline issues. Students were also required to comment on other observations. The activity was designed to learn from one another's postings through sharing, interaction and reflection.

The second study was conducted in online Master's course taught by one instructor at an American university. The course had 23 students enrolled in the course in which 16 gave their consent to participate. Learning activities were organized weekly, consisting of individual, whole class and team

activities. Students worked in whole-class discussion and in privately grouped team spaces in which they were required to perform several activities in these two settings. All activities were required and counted towards students' final marks. The majority of the students had full time jobs ranging from school administrators, primary, secondary and postsecondary teachers. Most of the students had participated in previous online courses

V. DATA COLLECTION

Data were collected weekly from whole class discussion in study one, and whole class and team discussions in study two. In study two, as seven students did not agree to take part in the study, their messages were deleted from the analysis. Quantitative data generated by the software were also collected which provided evidence of levels of participation in the activities. The discussion of social presence in this study is based on data generated in the whole class discussion within the two online courses. However, the amount of information produced by all participants in the whole class across the semester was substantial. (N=1100 for study one; N=1009 for study two). To make analysis manageable, three weeks from the whole class discussions illustrating the beginning, middle and end of activities were selected for analysis (Weeks 1, 3 and 4 for study one; and weeks 1, 8 and 12 for study two).

VI. DATA ANALYSIS

In-depth analysis of students' discourse was carried out by using Social Presence elements by Garrison and Anderson [8]. Within the selected weeks, the number of messages posted by both students and instructors were counted using the student tracking tool in study one and weekly summaries produced by the software in study two. Table 1 displays the total number of messages exchanged in both courses. As explained above, only messages by participants in study two were included in the analysis.

TABLE 1. Messages posted

| Study One | | | Study Two | | |
|-----------|----------|------------|-----------|----------|------------|
| Week | Students | Instructor | Week | Students | Instructor |
| 1 | 50 | 1 | 1 | 104 | 30 |
| 3 | 75 | 1 | 8 | 110 | 18 |
| 4 | 6 | 1 | 12 | 52 | 23 |

Qualitative analysis of the instructors' messages included exploring inductively patterns of behaviours in the whole class discussion (within selected weeks) that could shed light on evidence of social presence guided the elements by Reference [8] and Reference [22]. One of the researchers read the messages by the two instructors making notes on their margins of behaviours or ideas. The next step involved grouping these comments and notes and identifying categories in which data were later assigned.

In order to compare the behaviours identified in the initiated messages by the instructor in study two, analysis of her follow up messages (responses to students in the threads in study two) was performed. To make this analysis manageable, weeks 8 and 12 were sampled from the selected weeks. These

weeks were considered important as they included required activities and generated threads of discussion.

Throughout data analysis the researcher shared and discussed with a colleague samples of message analysis (social presence) to cross-check interpretations, which helped the researcher revise some of her interpretations.

Due to the amount of information and restricted time, analysis of a small sample of student messages within the sampled weeks in the whole class for both courses was performed. Table 2 displays the sample of messages for the Affective and Cohesive elements. Messages per study were randomly selected for analysis.

Sample for the Open Communication element consisted of 15 threads of discussion selected from the whole class for study two (N=77 messages): Five from week 1 (N=9); Five from week 8 (N=25); and Five from Week 12 (N=23). The threads were chosen taking into account the high number of study participants in it. Five threads of discussion were selected randomly for study one (N=53 messages). Two from week 1 (N=22); two from week 3 (N=25); and the whole thread for week 4 (N=6).

TABLE 2. Sample Messages

| Study One | | | Study Two | | |
|-----------|-------------------------|------------------|-----------|--------------------------------|------------------|
| Week | Message by all students | Sampled Messages | Week | Student participants' messages | Sampled Messages |
| 1 | 50 | 10 | 1 | 104 | 10 |
| 3 | 75 | 10 | 8 | 110 | 12 |
| 4 | 6 | 3 | 12 | 52 | 6 |

Analysis of the affective, cohesive and open communication categories was then carried out. Others have assigned more than one social presence indicator to a message [e.g. 24] and this study follows a similar approach. Analysis consisted of reading the selected messages, and coding appropriately. After completing the coding, analysis consisted of aggregating the number of instances each indicator had been used. Data were organised in tables and later presented in Figures 1-4. Samples of message analysis were then cross-checked by a colleague.

VII. FINDINGS

The results discuss evidence of social presence in instructors' messages followed by the students.

Evidence of social presence in instructors' messages: Analysis suggests that the instructor in study one posted three messages across the selected weeks (Table 1). These three messages consisted of initiating a thread of discussion and were mostly content oriented, with two messages starting with a "Dear all" as illustrated in one of her messages. "Dear all, you have differing opinions about how well teachers in the two case studies have done in various aspects of classroom management. I have set up sub-categories..."

In contrast, the instructor in study two clearly performed a different role in the online discussion (Table 1). Findings

suggest that across the selected weeks (1, 8 and 12), the instructor consistently posted messages to the whole group in which she updated students on course progress (e.g. assignments, new material), raised issues from the threads and introduced new topics. As illustrated in Table 3, of the 18 messages posted, 14 specifically included the expression "group" often preceded by "dear." Most of these messages ended with an expression of closure (e.g. Good wishes). The instructor also used humour and reference to everyday events in some messages (Table 3). In addition, she showed vulnerability in a few others. The following extract illustrates one of instructor's messages: "Dear group: I'm looking out at a cloudless blue sky, but the weather man predicted snow late this morning; did I miss something? As we head into the last round, a gentle nudge about the [...]. Please try and help each other see where you are being 'assumptive'..."

To complement the data presented above, analysis of the instructors' responses to messages within threads of discussion created by individual students or by her was performed in weeks 8 and 12. Results reveal that in her follow up messages this instructor consistently used students' first names (Table 4). In many messages she showed appreciation of students' contributions. This suggests that Instructor also tried to create a sense of attachment but at an individual level which valued each student.

TABLE 3: Evidence of affective and cohesive elements (study two)

| Week | N. of messages to whole group | Use of "group" expression | Use of "dear" expression | Expressions of closure | Humour | Everyday events | Show vulnerability |
|--------------|-------------------------------|---------------------------|--------------------------|------------------------|----------|-----------------|--------------------|
| 1 | 5 | 4 | 4 | 5 | 1 | 4 | 1 |
| 8 | 6 | 6 | 6 | 6 | 1 | 1 | 2 |
| 12 | 7 | 4 | 3 | 4 | 1 | 2 | 1 |
| Total | 18 | 14 | 13 | 15 | 2 | 7 | 4 |

TABLE 4. Affective and cohesive elements in follow up messages (study two)

| Week | N. of follow up messages | Address student by name | Showing appreciation | Expressions of closure |
|--------------|--------------------------|-------------------------|----------------------|------------------------|
| 8 | 12 | 12 | 7 | 1 |
| 12 | 16 | 16 | 14 | 6 |
| Total | 28 | 28 | 21 | 7 |

Evidence of social presence in students' messages: A detailed analysis of a sample revealed that the students in the two studies demonstrated in their messages affective responses (Figures 1 and 2). However, messages illustrated only social disclosures. Students in study one demonstrated a much lower number self-disclosure. As seen in Figure 2, the number of messages showing self-disclosure decreased significantly across the selected weeks. Further analysis showed that these students posted self introductions in week 1 as the main

activity. This may explain the high number of messages demonstrating self disclosure in that week. Analysis also suggests that students in both studies signaled expressions of cohesion in their messages.

Looking at Figures 1 and 2, one can observe that students in study one addressed more their colleagues by their names (vocatives). However, and generally speaking, students in study two used more greetings and closures, though they did this only on week 1. Figures 1 and 2, clearly show few evidence of group reference (e.g. we) in both studies.

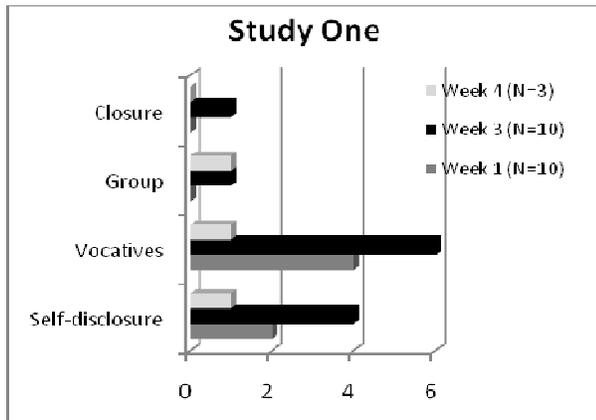


Fig. 1 Affective and cohesive indicators

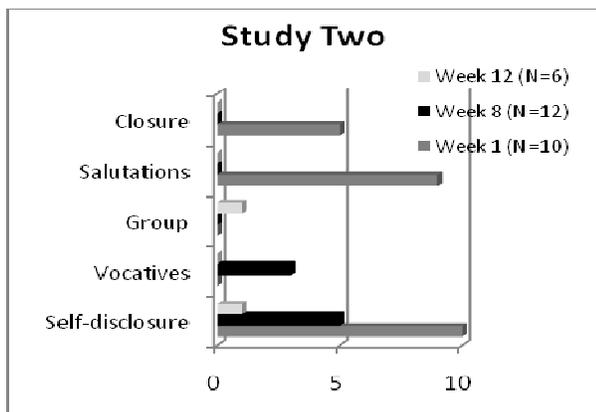


Fig 2. Affective and cohesive indicators

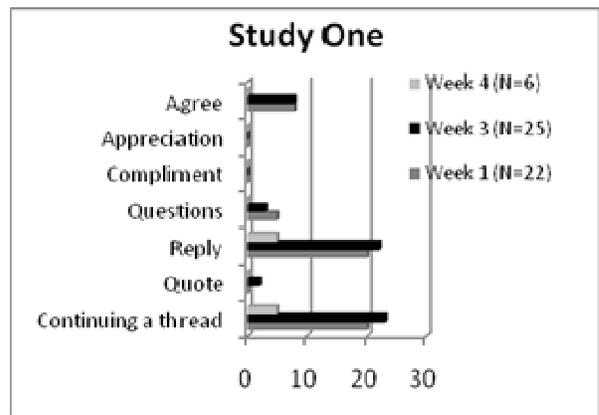


Fig. 3 Open communication

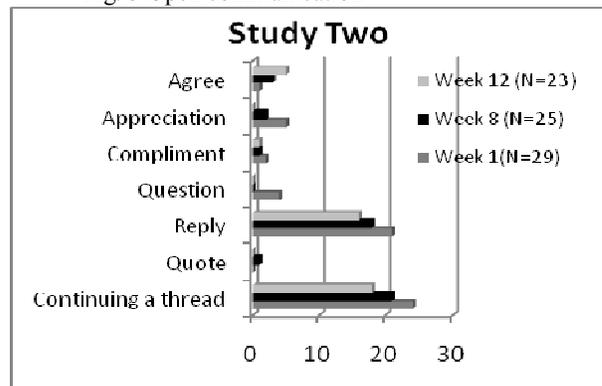


Fig. 4 Open communication

Evidence of open communication in students' message was then explored. As shown in Figures 3 and 4, in both studies students continued the threads of discussion and referred to each others' messages across the selected weeks. Only in study two, a few messages demonstrated expressions of appreciation and compliment (Figure 4). In both studies, only a few messages illustrated expressions of agreement and questions.

VIII. CONCLUDING REMARKS

This study explored evidence of social presence in both students and instructors' messages within two online class discussions. Based on Reference [8] and Reference [22] social presence model, findings suggest, in general, low levels of social presence within the two groups studied. As suggested by Reference [25], low levels of presence of the three categories in the model, indicate a cold and impersonal environment.

One may wonder why students in study two did not demonstrate higher levels of social presence since the instructor in study one tried to develop a supportive environment in the whole class by giving the written conversation an affective and cohesive dimension and prompted replied to students' messages. Results clearly show this did not impact on students. Exploring further students'

profile, it shows that the students enrolled in this particular course were adults with full time jobs. As seen elsewhere in this paper, students had to complete several activities for this course (individual, group and whole class discussions). It is possible to argue that these students did not have enough time to engage fully in the discussions as they had to complete many tasks and juggle with additional commitments such as job and family. Thus, students' concerns may have been in completing the required tasks and not in developing social relationships. The implication here is that in order to promote students' full engagement in the online discussions, the course workload needs to be reduced. This matter requires further research to justify generalizations.

A possible explanation for low levels of social presence among students in study one, could be that these students were not able to promote social presence by themselves within the online class. Another possible explanation could be related with the way the course was structured. Students had face to face encounters before they came to online class. This may explain why some addressed peers by their names across the selected weeks (Figure 1). Students may have felt comfortable with each other when they joined the online discussion. Analysis showed that their self disclosures were related to work experience and what they did in schools. They may have discussed everyday events in their face to face encounters. More research is needed to ascertain whether these students were indeed working within a comfortable online environment as a result of their face to face encounters.

A common pattern found in Figures 3 and 4, is that students used the software feature to continue the threads of discussion and reply across the weeks. This may be related to the required activities, in which participation in the discussions counted for the marks. This, however, may have not been enough to help create high levels of social presence among students.

Although this study presented a preliminary analysis of students' messages, it nevertheless, discussed important factors affecting the development of social presence in online discussions. The results of this study contribute to advance a little further the discussion on social presence. Because of the small sample size, however, caution is needed when attempting to draw more general conclusions. Future research could investigate more deeply the reasons for low levels of social presence within the two studies. Using larger samples and other data sources such as interviews would have allowed more solid conclusions.

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