Cross-Cultural Perceptions of Collaborative Technology

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ABSTRACT
This paper compares cross-cultural perceptions towards Computer Conferencing Systems (CCSs) and identifies the factors that are conducive for collaborative learning through videoconferencing. The results indicate that effective communication can contribute to effective performance. In addition, CCSs can incorporate more elements such as language aid, accessibility, sensitivity, and playfulness into the systems.

Keywords
Collaborative technology, Computer Conferencing Systems, cross-culture, communication interface, CU-Seeme, perceptions, social presence

INTRODUCTION
Collaborative work through Computer Conferencing Systems (CCSs) has become a common practice in business, education, science, and other professional communities. Collaborative technology in this paper refers to various CCSs that are used to facilitate collaborative works. These conferencing systems include tools for synchronous and asynchronous communication such as videoconferencing, audioconferencing, and text-based conferencing systems. Previous research has found that CCSs can be conducive for collaborative learning [5, 6]. Most research is based on the results of experiments from artificial groups in a homogenous culture [8]. The subjects are chosen out of context to engage in an experiment. They may not know each other and do not have much shared context. Little empirical field-based work has been done in this area [2]. Furthermore, very little research has examined culturally diverse groups. This study includes learners from different cultures using various CCSs for language learning. This paper particularly examines the following aspects of using desktop videoconferencing (CU-Seeme) in a cross-cultural collaborative environment: (1) the students’ perceptions of desktop videoconferencing; (2) the factors that are conducive to their performance. Students’ perceptions are measured by the following constructs: social presence, communication effectiveness, communication interface, and self-evaluated performance.

RESEARCH DESIGN
Three Japanese instructors in three different geographical locations have been using various Internet-based CCSs to encourage students to practice Japanese with native speakers. Several CU-Seeme videoconferencings were scheduled for students at these sites. There are a total of 20 students. Five students are in an advanced Japanese class (400 level) at the University of Hawaii; six students are in a senior Japanese writing class at Haverford College in Philadelphia; nine students are in a senior class at Seiryo High School in Nagoya, Japan. None of the instructors or students had ever met in person throughout the whole semester. These students were divided into five teams. Each team consists of at least one member from each site. Their term projects are to design a Japanese webzine with their teammates at the remote sites. They collaborated on writing articles and the layout of the webzine. The instructors had provided access to email, WebCrossing (web-based discussion forum), and CU-Seeme for the students as means of communication. There were two videoconferencing sessions scheduled for the entire semester. The first session was introductory session for the students to get to know each other. The students got to meet with their teammates on a one-to-one base for about fifteen minutes. They then proceeded to use email and WebCrossing for collaboration on the webzine. At the end of the semester, all teams met again through CU-Seeme to throw a virtual party together. At both sessions, the instructors were just facilitators. The students initiated all conversations. Students filled out a questionnaire [8] at the end of their computer conferencing. The instrument is adopted from the scale used by Short et al [9]. The questionnaire that measures social presence, communication effectiveness, and communication interface has been validated by other research [1]. Each question is based on a one-to-seven scale using the semantic differential technique.

Hypotheses
Social Presence
Social presence is the degree that the senders and receivers can sense each other during their communication [8]. People interact differently according to the degree of social presence that they can feel. High social presence can convey multiple, nonverbal communication channels and continuous feedback. When people from different cultures meet through videoconferencing, the intensity of the interaction can be affected by their communication styles. Thus, the rating on the perceived social presence can be different because of their distinct cultural backgrounds. The subjects in this study are from two different cultural backgrounds: Japan and America. Japan is known to be a high-context society and the United States is known to be a low-context society [3]. In a high-context society, the process of communication relies more on the aids of non-verbal cues. In a low-context society, the communication relies mostly on the verbal exchanges. The interaction between the US and Japan groups is the main focus for measuring social presence.
H1: Social presence rating will differ between the Japan and US groups.

**Communication Interface**
The design of the communication interface will affect the outcomes of communication. The design of the communication media should be transparent to the users so that they can concentrate on the conversation. Transparent design includes the characteristics of simplicity, accessibility, easy navigation, and open space. High degree of social presence is an indicator of transparent interface design because the communication partners can receive higher volume of information without being hindered by the interface.

H2: High social presence students will rate communication interface higher than low social presence students will

**Perceived Performance and Communication Effectiveness**
The criteria to evaluate performance are chosen as a result of the consultation with the instructors. The instructors regard highly the students' abilities to use the language in the real world. Therefore, creativity, coherence, comprehension, and sense of community are chosen as the criteria for self-evaluated performance rating. Communication effectiveness can be determined by both how people feel about the effectiveness of the communication with partners and the effectiveness of the communication technology that transmits the information. Although effective communication process does not necessarily mean effective performance, research has shown that the correlation is highly significant. O'Reilly and Roberts [7] found evidence that links communication effectiveness to perceived performance. Hackman [4] has also found that those groups that communicate more effectively also perform better. This study would like to test these hypotheses.

H3: Students who rate communication effectiveness high will rate perceived performance high.

Again, these students vary in their cultural backgrounds and computer experience. Their perception in effective performance may be different.

H4: Perceived performance rating will differ between American students and Japanese students.

H5: Perceived performance rating will differ between experienced and novice computer users.

**RESULTS**
One-way ANOVA was used to analyze the data. All hypotheses were supported except for the first hypothesis. There was no significant difference in the rating of social presence between American students and Japanese students. Nevertheless, there is a significant difference in the rating of communication interface between the high social presence group and the low social presence group (p<0.05). Students who feel strongly the presence of their communication partners rated the communication interface higher (H2). Furthermore, students who rate the communication effectiveness high also rate their self-perceived performance high (p<0.5). The perceived communication effectiveness is highly correlated with perceived performance (H3). The rating of perceived performance is significantly different between the American and the Japanese students (H4). Japanese students have a significant higher rating of their performance than the American students (p<0.05). In addition, their prior experience in using computer also made a significant difference in their rating of performance (p<0.05). Novice users tend to rate their performance lower than experienced users (H5).

**DISCUSSIONS AND SUGGESTIONS**

**Cultural Difference**
The results of this study have indicated that cultural backgrounds make no significant difference on the learner's ratings of social presence. One explanation is that videoconferencing system can convey high volume of both verbal and non-verbal cues. The presence is salient to the communication partners. Hence the medium allows ample space for personal, expressive, humane, close, and sensitive aspects of the communication process that is similar to face-to-face communication. However, cultural difference does make a difference in the perceived performance. Japanese students rate their performance higher than American students do. One possibility is the difference between the low-context (American) and the high-context (Japanese) cultures. The language used in the conversations was Japanese. The Japanese students were more advantaged in the conversation since they do not have to struggle with the language. Furthermore, Japanese students did not always rely on verbal communication to express feelings and understand their partners. When they did not understand a situation, they would wait and observe first, whereas American students would ask for clarification right away. This explains why there is a significant difference in the perceived performance. An online language aid for disadvantaged students should ease their nervousness when communicating with partners through videoconferencing.

**Individual Differences**
The more frequently one uses the medium, the higher rating the perceived performance receives. Furthermore, effective communication contributes to better performance. Based on the questionnaire, communication effectiveness consists of factors such as good feeling, accessibility, true, speed, playfulness, meaningfulness, and sensitivity. It would be best to build into the system such these qualities that can contribute to the effectiveness of the communication process. Appropriate training for novice users before they use the system can also help enhance the communication.

**LIMITATIONS AND CONCLUSIONS**
There are two main limitations: time and subject size. The students have very limited opportunity in using desktop videoconferencing. Throughout time, the perceptions towards collaborative technology can be different. There were 19 students who filled out the questionnaire. Since this study is designed to observe how collaborative technology is used in actual classrooms, it is impossible to control the student enrollment. In the future, more classes should be recruited for
a longer duration of observation. Personal interviews can also be conducted to learn about what the students really think about the medium.

As computer networks grow exponentially, there’s no boundary on how far one can reach. Collaborative learning across cultures has been very common in educational institutes and corporations. Advanced planning and knowledge of media characteristics are keys to successful educational collaboration.

REFERENCES