

December 2002

A FIELD STUDY OF ASYNCHRONOUS LEARNING NETWORKS

David Spencer

New Jersey Institute of Technology/Rutgers University

Follow this and additional works at: <http://aisel.aisnet.org/amcis2002>

Recommended Citation

Spencer, David, "A FIELD STUDY OF ASYNCHRONOUS LEARNING NETWORKS" (2002). *AMCIS 2002 Proceedings*. 115.
<http://aisel.aisnet.org/amcis2002/115>

This material is brought to you by the Americas Conference on Information Systems (AMCIS) at AIS Electronic Library (AISeL). It has been accepted for inclusion in AMCIS 2002 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact elibrary@aisnet.org.

A FIELD STUDY OF ASYNCHRONOUS LEARNING NETWORKS

David Spencer

New Jersey Institute of Technology/
Rutgers University
dspencer@pegasus.rutgers.ed

Abstract

This paper reports on research in progress of a field study of online classes to determine the effect of some synchronous media use in a primarily asynchronous discussion. The research is looking for the presence of indicators of constructivism in online learning. The proposition is made that social presence and swift trust will contribute to the success of online teaching by enhancing the constructivist method.

Keywords: Constructivism, social-presence, swift-trust, online-learning, pedagogy

Introduction

One view of learning is based upon the notion of knowledge construction. A definition of constructivism states that people create knowledge from the interaction between their existing knowledge or beliefs and the new ideas or situations they encounter (Airasian and Walsh, 1997). This paper reports on the search for constructivist learning and teaching in the context of computer-mediated communications (CMC) using social presence theory and swift trust theory to predict the usage and outcomes of CMC as a place of learning. The indicators of social presence and swift trust are the basis for a good constructivist-learning context. Online classes were studied for those indicators as an outcome of adding some synchronous CMC to the asynchronous discussion. Instructors were interviewed, students were surveyed and the asynchronous discussion was content coded for indicators of social presence and swift trust.

Research Questions: Does starting the course with a synchronous CMC session boost group cohesiveness and swift trust? Does the initial synchronous media give a 'fast start' to the socio-emotional content and social presence? Can use of synchronous CMC in the predominately asynchronous process increase student 'attendance' or involvement in the class? Will the students and teachers adapt the new medium to create a more satisfying learning environment?

Theory

Constructivism

A pedagogical assertion that students learn by constructing knowledge through group interaction (Roblyer et al. 1997) is the foundation of online learning. Within the online learning context collaboration with the class using a discussion forum allows the student to construct meaning from exploration of ideas put forth by classmates.

Social Presence Theory

Social presence is the degree to which a medium is perceived as conveying the presence of the communicating individuals (Short et al. 1976). Social presence theory predicts that CMC can create in users a sense of intimacy and immediacy. When people participate in communication they can assess how much they feel that they are present in a real setting. Face-to-face yields the

highest level of social presence and some forms of asynchronous communication result in the lowest level of social presence, as the social presence can be quantified (Lombard and Ditton 1997) (Rice 1993). Social presence theory is related to media richness theory (Daft and Lengel, 1984) in that both predict the effect of medium choice in the communication of information.

Swift Trust Theory

Swift trust is defined in context of temporary teams as that measure of trust initially present in formation of a zero history team. These teams must swiftly form relationships and roles to perform the task necessary in the limited time allotted (Meyerson et al. 1996) (Jarvenpaa and Leidner 1998). The implication for the present study is that getting a social presence established early in the semester to draw in potential non-participants will establish a 'swift trust.'

Instructional Model

The model shown in Figure 1 depicts the theory of social presence as contributing to the discussion as it predicts by encouraging the individual to perceive that interaction with fellow students as enjoyable and valuable. Swift trust theory predicts that the group as first assembled online will expect reciprocal effort and open discussion from the previously unknown fellow students. The persuasive and frank discussion of the subject studied enables students to exchange ideas and previous experiences to construct knowledge upon the common denominator of the group.

This research studies the effect of different media modes on the ability of the CMC to provide an effective and satisfying means for students to construct knowledge. Will the addition of multiple modes of communication increase social presence and maintain swift trust in the computer mediated discussion?

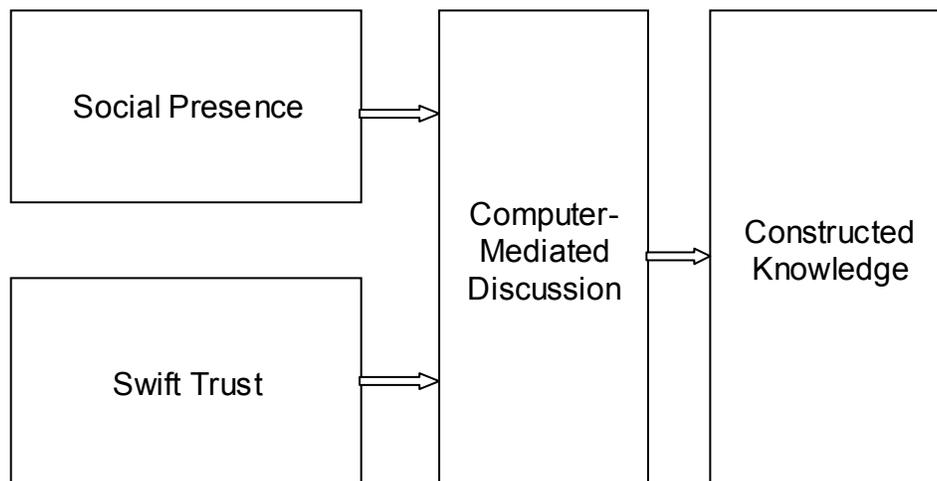


Figure 1. CMC Contribution to Constructivist Learning

Field Study

Research Design

The research design (adapted from Hiltz, 1994) seen in Figure 2 depicts a field study comprising one independent variable, MODE, and three dependent variables, Effectiveness, Satisfaction by Students, and Satisfaction by Instructors. The independent variable was measured by interviews with the instructors and the dependent variables were measured by Likert and Semantic scale type survey forms.

Intervening and Usage factors were also considered and measured. Student information was obtained through the university grade sheets, student surveys and subject matter designation as technical or non-technical. Synchronous and Asynchronous media use was obtained from transcripts and instructor interviews. Social presence, swift trust, collaboration, and constructivism levels are obtained by coding of discussion transcripts.

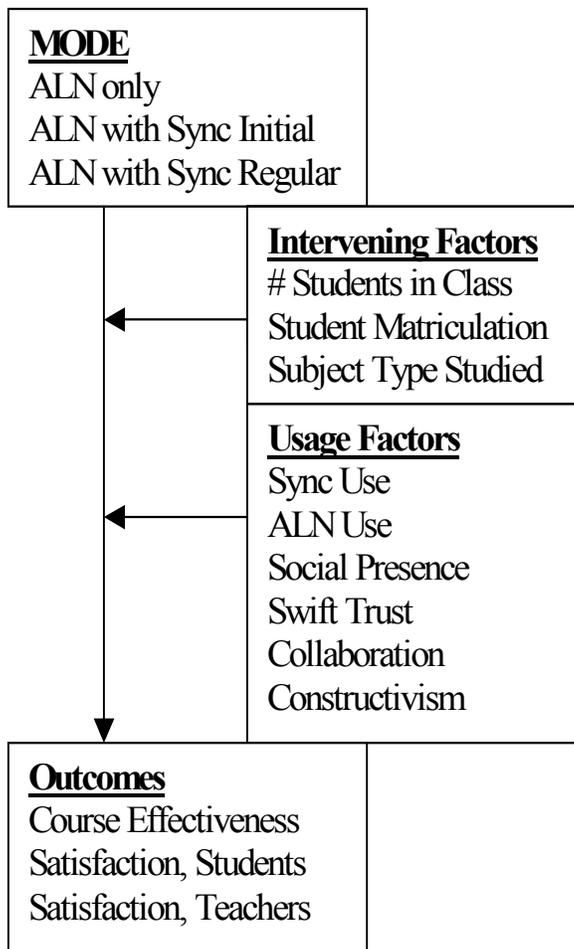


Figure 2. Research Design Model

Human Subject Review

Application was made to the University Human Subjects Review Board in December before the start of the first semester of the study. Initial reactions from the director and representative from the legal department suggested that the major problem would be assuring student anonymity, preventing coercive participation, and obtaining informed consent. Of particular concern was the study's plan to use student ID numbers (SS numbers) to record individual responses to the online survey. This was resolved to use student typed-in email addresses during the initial page of the survey. The traditional student consent form used in face-to-face subject investigations was modified to become a page of the student survey that could not be ignored after the student typed the email address and required affirmative selection by the student before data was collected.

Online Class Selection

The list of classes scheduled to be taught online was obtained from the university website for distance learning. These appeared in two flavors: WebBoard® based and WebCT® based. All instructors were emailed an invitation letter explaining the research

and methodology and inviting their participation. During the email exchanges with instructors their level of interest in synchronous discussion with their class was determined. In the spring 2001 semester 7 instructors agreed to participate representing 10 separate classes with separate discussion forums and in the fall 2001 13 instructors agreed to participate representing 18 separate classes with separate discussion forums. Each instructor stated a preference for level of use of synchronous media in the mostly asynchronous learning discussion. To enable chat in WebBoard® each instructor was advised to create a chat room using the administrator tools. Access to the WebBoard® class by the researcher was open. On the WebCT® based classes access by the researcher was restricted since the university course registration controlled the class roster and access, so special permission was obtained from computer administration. Chat in WebCT® is always enabled and available to students without instructor setup.

Recording of Chat Sessions

The use of chat as the synchronous communication media was universal. However the incidence and attendance of chat sessions varied widely. Instructors were advised to record the chat sessions and post the transcript in the asynchronous discussion as a topic for non-attendees to review. Since this research project did not intend to analyze the chat discussion, no attempt was made to collect the transcripts. The intention was to record the level of use of chat in the class as an indicator of the amount of synchronous communication between students.

Recording of Asynchronous Discussion

All asynchronous discussion is maintained online for review during the semester and afterward. The researcher can access the discussion for copy and analysis at any time. In this project the number of comments in each class posted during the semester by students varied from about 500 to well over 1000. To analyze this large amount of data, sampling of the transcript using every tenth topic/thread posted was recorded in a text file for subsequent content coding. By recording every tenth complete discussion thread in the sample, the number of comments to analyze was reduced by two-thirds while maintaining continuity. The text file was given a descriptive header, sentences ended with line break, and the file imported to a content coding computer application.

Interview of Instructors

Each instructor was interviewed near the end of the semester using an interview guide consisting of 12 open ended questions and a survey with 28 Likert type statements on perception of learning and satisfaction with student progress. This guide can be found on the <http://www.alnresearch.org/> site. Basic data about the instructor and the class was also captured on the form and an audio recording of the interview. A transcript of the interview was made and entered into the same content coding application. The Likert data has been entered into a database also containing the student survey data.

Survey of Students

An online survey of students was requested during the last two weeks of class. This survey directly inputted data into a database for analysis and display. The survey requested demographic data about the student and opinions/perceptions about Media Use, Group Collaboration, Learning, Course Effectiveness, Instructor Effectiveness, and Overall impressions. This survey can be found on the <http://www.alnresearch.org/> site. The response rate varied from class to class, ranging from 10% to 30%. There was no overt incentive to complete the survey but it was stated that the student's name and email address would be sent to the instructor. The data was reviewed for blank and multiple input records, those being discarded.

Coding of Discussion

The sample text of the discussion is being content coded using NUD*IST application. Coding categories are derived from Bales IPA categories (McGrath 1984) and indicators of collaboration and constructivism.

Results

Synchronous Activity

Actual use of chat or other synchronous media varied greatly from the initial intentions of the instructors. There needs to be a more quantifiable measure of the amount of synchronous media use by students. In one class students met to chat nearly every night and did post the transcript. In others chat was a one-time event in the beginning of the semester. Many of the instructors used a scheduled chat session to simulate office hours, but as is the case in face-to-face office hours most students did not avail themselves of the opportunity.

Evidence of Constructivism

This can be derived directly from the content coding using Bales IPA categories. It seems that there is evidence of that but it remains to be coded to show the correlation with social presence or swift trust.

Social Discussion

Social discussion seems to be related to the instructor's technique and desire to foster discussion. The instructors who worked at getting chat sessions established also were the most successful at fostering a social atmosphere.

Trust in Team Projects

In none of the classes was there evidence of a lack of trust, either in those classes that were small group project oriented or in classes that used the discussion to reflect and critique each other's work.

Conclusion

It can be seen that the indicators of social presence, such as enjoyment, involvement, persuasion, etc. are also among indicators that constructive learning is taking place. Swift trust supports collaborative teamwork through participant trust in the initial action and direction of the group. The simple fact of the discussion as an inviting place to visit (and work) generates interaction and constructive learning. In general the unique nature of CMC has the potential to serve as an enhanced constructive context.

This research in progress seeks to quantify the effect of synchronous media to improve learning in online classes. There is much data left to code and analyze. A limitation of the research is the continuing modification of instruction methods and techniques as they learn what works and what they enjoy. The validity of comparing past semester discussions with future discussion content would be suspect.

This in-process research studies CMC used in a real application, the higher education 'classroom.' Students are not volunteer subjects in a made-up task. The results of the research should be applicable to other uses of CMC. That is, to answer the question of how will social presence and swift trust help the users to adapt the medium to their use and what effect that will have on their perception of the medium and its effective use?

References

- Airasian, P.W. and Walsh, M.E., "Cautions for Classroom Constructivists," *Phi Delta Kappan* (78:6), 1997, pp.444-449
- Daft, R.L. and Lengel, R.H., "Organizational Information Requirements, Media Richness and Structural Design," *Management Science* (32:5), 1986, pp.554-572
- Hiltz, S.R., *The Virtual Classroom: Learning without limits via the computer networks*, Norwood NJ, Ablex Publishing, 1994, 384p.

- Jarvenpaa, S.L. and Leidner, D.E., "Communication and Trust in Global Virtual Teams," *JCMC*, (3:4), June 1998, 38p.
<http://www.ascusc.org/jcmc/vol3/issue4/jarvenpaa.html>
- Lombard, M. and Ditton, T., "At the Heart of It All: The Concept of Presence," *JCMC*, (3:2), 1997, 43p.
<http://www.ascusc.org/jcmc/vol3/issue2/lombard.html>
- McGrath, J.E., *Groups: Interaction and Performance*, Englewood, Prentice Hall, 1984, 287p.
- Meyerson, D., Weick, K.E. and Kramer, R.M., "Swift Trust and Temporary Teams," Chap. 9 in 'Trust in Organizations' edited by Kramer and Tyler, Sage Publications, 1996, pp.166-195
- Rice, R., "Media Appropriateness: Using Social Presence Theory to Compare Traditional and New Organizational Media," *Human Communications Research*, (19:4), 1993, pp.451-484
- Roblyer, M.D., Edwards, J.E., and Havriluk, M.A., "Learning Theories and Integration Models," Ch.3 in 'Integrating Educational Technology into Teaching,' Englewood, Prentice Hall, 1996, pp.54-79
- Short, J., Williams, E., and Christie, B., *The Social Psychology of Telecommunications*, London, Wiley, 1976