The Effect of Synchronous and Asynchronous Communication on Social Presence and Isolation in Online Education

Laura A. Anderson

The Pennsylvania State University
Abstract

This paper explores the relationship between asynchronous and synchronous communication in online education, focusing on how the integration of synchronous learning tools impacts social presence and isolation in an online course environment. Previous research illustrates that both methods of communication serve different but equally important purposes in creating valuable learning experiences and retaining students. The interactivity promoted via synchronous technology can improve social presence and decrease isolation for students pursuing their education in an online setting. The proposed study will investigate these results further by comparing perceptions of social presence and isolation, as well as the quality and quantity of participation, in two sections of a 15-week undergraduate course at Penn State World Campus.

Keywords: Online learning, synchronous, asynchronous, social presence, isolation
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A current issue plaguing the distance education community is student retention. Students enrolled in online courses drop out at a 15-20% higher rate than students enrolled in traditional face-to-face courses (Angelino, Williams, & Natvig, 2007). While there are many variables that contribute to high attrition rates, students' feelings of isolation due to a lack of student-student interaction in an online environment are a significant contributing factor. Increasing retention in online education is not only important from the viewpoint of student success, but also from an economical and quality standpoint for institutions. High attrition rates are not only costly for institutions but retention rates are often used to measure the quality of education delivered by an institution (Moody, as cited in Angelino et al., 2007, p.2). This paper investigates the research question: Can synchronous communication in an online course improve social presence and decrease feelings of isolation for students? A review of the literature on synchronous and asynchronous learning will provide context for a proposed study at Penn State World Campus in which synchronous discussion is integrated into an otherwise asynchronous course.

Education is a social practice and distance learners have many challenges to overcome due to the physical separation of the student from their peers, such as feelings of isolation, lack of support, and a sense of disconnectedness. (Angelino et al., 2007). Tinto (1975) defined isolation as a learner lacking social and academic integration into his or her institution (as cited in Graham, Anderson, & Hasell, 2013). The feeling of isolation due to a lack of social interaction is one of the main causes of dropout in online education, impacting student levels of participation, satisfaction, and quality of learning (Mourad, Tarik, Karim, & Pascal, 2015). Therefore, the integration of social opportunities that increase communication and facilitate
strong connections among peers becomes increasing important in online settings (Graham et. al, 2013).

Social presence is defined as, “the degree to which participants in computer-mediated communication feel affectively connected to one another (Swan, Garrison, & Richardson, 2009, p. 9). Garrison and Akoyl (2013) suggested that there is a significant relationship between social presence and retention of students in distance education, which is facilitated through the creation of a trusting environment that encourages students to ask questions and contribute ideas, ultimately leading to the development of authentic relationships (Garrison & Akyol, 2013). Moore (2013) cites the mode of communication as a key variable influencing successful dialogue amongst students. If institutions can continue to investigate ways to increase student-student communication, it will present an opportunity for students to reconnect with the motivation provided by social interaction in an actual classroom (Mourad et al., 2015, p. 35). Current CMC technologies have allowed for online educators to create new opportunities to increase dialogue and sustain communities of learners at a distance through two-way transmission of information (Garrison & Akyol, 2013).

Asynchronous learning has its roots in early forms of distance education and is commonly delivered through e-mail and discussion boards, supporting work among learners who cannot be online all at once (Hrastinski, 2008). Synchronous learning, typically supported through video-conferencing and chat, involves real-time communication. Previous research has debated whether asynchronous or synchronous learning is the better option to support student learning, but each plays a different yet complementary role in online courses. Synchronous learning has the potential to provide more social and task support. Branon and Essex (2001) found synchronous learning to be useful for brainstorming and community building. “Small talk
is an immensely important part of building a sense of social community, (Hrastinski, Keller, & Carlsson, 2010, p. 670). Asynchronous learning is useful for “encouraging in-depth, more thoughtful discussions,” that are more content related and reflective (Branon & Essex, 2001, p. 36). This suggests potential for symbiosis between the two to create a holistic learning experience for online students.

Penn State World Campus currently supports synchronous communication technologies like Blackboard Collaborate and Skype, but they are often underutilized and under encouraged. Students may not realize what they are missing through lower levels of interactive and may normalize the feelings of isolation. “A learning environment where students recognize the usefulness of interactivity is vital for them as distance learners who may otherwise feel loneliness and isolation,” (Kim, Kwon, & Cho, 2011, p. 1518). Even worse, they may internalize those feelings and attribute them to the assumption that they are not ‘cut out’ for online learning.

Many learners enroll in online courses because of the asynchronous nature. While providing flexible learning opportunities is a priority for Penn State World Campus, creating quality learning experiences for students at distance is of equal importance. There are many personal factors that can impact student retention that institutions may find challenging to impact, but isolation in an online environment does not have to be one them. The research shows that asynchronous learning is not capable of solely supporting the environment students need to flourish and the online learning community needs to develop a better understanding of when, why, and how to use different types of technologies in online courses. While adding synchronous components may not be as marketable as the flexibility of asynchronous learning, when implemented in the right context, it can be a value-add to the online course experience at Penn State World Campus.
This research outlines a proposed study that investigates increasing student-student interaction through the additional of synchronous learning and the impact of on perceived feelings of social presence, community, and isolation. By evaluating these variables in a fully asynchronous section of an undergraduate course and comparing them to a section utilizing synchronous discussion, the proposed study hopes to better understand the role of synchronous communication in an online course environment. The research question driving the proposed study is: Can synchronous communication in an online course improve social presence and decrease feelings of isolation for students?

**Literature Review**

It has been empirically shown that the building of successful learning communities relies on the presence of collaborative learning activities that promote student-student interaction (Hrastinski, 2008). In order to build learning communities that engage students and decrease isolation in an online environment, it is necessary to look at how synchronous learning components have been successfully or unsuccessfully integrated into courses and how learners have balanced the use of both. This literature review will investigate previous research in this area as it pertains to the increase in social presence and perceptions of community amongst online learners.

Boling, Hough, Krinsky, Saleem, and Stevens (2012) interviewed online instructors and adult students to understand what supported and hindered their online experiences. The findings revealed that most participants viewed courses with limited student-student interaction as less helpful and that “creating a cohesive online community is a vital component of all online programs,” (Boiling et al., 2012, p. 121). The student feedback suggested that providing
opportunities to discuss course material as a group can be an effective way to conduct online communities.

Blau and Barak (2012) looked at learners’ perceived and actual preference for the use of text or audio chat synchronous media online when considering the sensitive or non-sensitive nature of the material. While students perceived that text-based chat would be the most appropriate option for the widest range of learners to interact with each other during the course, results showed that across discussion topics, participation occurred more in the audio chat discussions than the text-based chat. However, the quality of contributions was found to be comparable in both. Therefore, text-based chat may be seen as a more efficient medium to reach the same result.

Kim, Kwon, and Cho (2011) examined the relationship between interactivity and social presence in asynchronous discussion forums. The results of a survey given to participants confirmed that interactivity is a good predictor of social presence. Higher levels of student participation in the asynchronous activities was associated with a tendency to feel more socially present and acknowledged by peers (Kim et al., 2011). The analysis of the findings also indicated that social presence is developed as result of a perception of mutual attention and support, a sense of community, and open communication in order to reach affective connectedness (Kim et al., 2011, p. 1518).

Giesbers, Rienties, Tempelaar, and Gijselars (2014) believed that synchronous communication could support engagement in asynchronous communication activities and investigated the relationship between participation in video-conferencing and asynchronous discussion. Participation in the synchronous component was associated with a higher number and quality of contributions to the asynchronous discussion forum and the posting of more task-
related messages. Surprisingly, the results also suggested that participation in the asynchronous discussion had a positive impact on the students’ participation in the synchronous portion, which reinforced the need for continued research to understand the relationship between the two modes of communication (Giesbers et al., 2014).

Hrastinski’s (2008) study elicited similar results by looking at two online courses utilizing both asynchronous discussions boards and synchronous text-based chat discussions to determine how synchronous communication affected actual and perceived participation. The findings indicated that synchronous use of chat, as compared to asynchronous use of discussion board, induced more social support exchange, as well as a higher level of task support for students in both courses. Students reported a closer sense of community and higher perceived participation, particularly in the course with fewer students, when communicating synchronously, but acknowledged that the two types of media promoted different kinds of participation because of the nature of the medium in reference to time.

Hrastinski, along with Keller and Carlsson (2010), built upon the results of his 2008 study and investigated the use of online synchronous communication from a course design perspective. The goal was to determine when and how to implement synchronous learning to complement asynchronous learning. Researchers found that students who participated in instant message (IM) had a higher level of participation in course activities, larger social networks, and spent more time working with content and communicating with peers (Hrastinski et al., 2010). However, students reported slightly larger perceived participation in the asynchronous discussions at the end of one of the courses (Hrastinski et al., 2010). However, as seen in Giesbers et al. (2014), increased participation in asynchronous discussions could be as a result of the involvement of synchronous discussions. The four proposed design exemplars for
synchronous learning were then articulated and empirically tested through focus groups with teachers and experts. The designs proposed synchronous e-learning to support strong group-wide relations, weak class-wide relations, task support and social support (Hrastinski et al., 2010). Support was shown for all proposed design templars, the strongest being for the use of synchronous learning to support group-wide relations (Hrastinski et al., 2010).

Moore’s theory of transactional distance was the basis for the study by McBrian and Jones (2009). They investigated how the use of video-conferencing affected students’ experiences in an online environment and if it increased the social interaction missing in other forms of distance education. Ninety-one percent of the responses were positive in terms of the quality and quantity of dialogue experienced within the course and the majority of responses indicated strong support for using a synchronous online environment again (McBrian & Jones, 2009). Students said they felt more comfortable expressing their opinions, which illustrates the power of synchronous online learning technologies to empower students in conversation (McBrian & Jones, 2009). However, a small percentage of the students felt that their interaction in the course was negatively impacted by the technology, thus decreasing their distance, generally due to technical difficulties within the software.

The opposite was found when Graham et al., (2013) looked at how the integration of Skype video-conferencing could decrease isolation by promoting learner engagement. The study also examined factors that influenced students to utilize Skype. Of the small percentage of survey respondents, results showed that learners did not perceive the use of Skype as an effective tool to reduce isolation and few had even ventured to use Skype within the community. The researchers used the technology acceptance model (TAM) to explain that the negative perception
of the usefulness of Skype impacted the integration of that technology into the learning community.

Olson and McCracken (2015) explored perceptions of social and learning community in two sections taught by the same instructor concurrently. One section was fully asynchronous while the other involved weekly synchronous lectures in Adobe Connect. The study found that while some participants rated social community slightly higher in the synchronous section, there was no significant difference in social or learning communities between the two sections. The findings may suggest that students develop social or learning communities by utilizing whatever technologies are provided for them (Olson & McCraken, 2015, p. 9).

The review of the research illuminated key limitations in the study of student-student interaction in the building of learning communities via synchronous and asynchronous communication technology. Many of the studies involved the active intervention of professors in the synchronous components, which made it difficult to determine how much of a role teacher presence played in community building. The studies were generally small in sample size and also involved accelerated courses. Hristinksi (2008) and Olson and McCracken (2015) both used 4-week courses, which may not be enough time to develop community in an online environment. Also, in Giesbers et al. (2014) and others, students could choose to be active or not in the synchronous components during the studies. Most of the studies were conducted internationally and the diversity of the samples was often unknown. Further, the culture of individual students was not consistently considered as having potential impact on the communication outcomes.

This presents an opportunity for Penn State World Campus to make a valuable contribution to the body of research by incorporating samples of students from different cultural makeups than that which the current research represents.
While the studies present mixed outcomes in terms of the utilization of synchronous learning, much of the research still suggests that synchronous components have the potential to enrich the online learning environment and create more holistic learning experience for students. Student feedback showed overwhelming support for social presence and a sense of community as valuable components for online learning and activities to increase interactivity between students is desired. The proposed study will investigate the research question: Can synchronous communication in an online course improve social presence and decrease feelings of isolation for students? It will build upon the work of Olson & McCracken (2015), focusing on the impact on student-student relationships of adding a synchronous discussion component to an online course and how that influences the perceived and actual participation of students and their perceptions of social presence and isolation within two sections of an online course.

Three hypotheses are presented:

**Hypothesis 1:** Participants in the synchronous group will perceive higher levels of social presence and community.

**Hypothesis 2:** Participants in the synchronous group will report lower levels of isolation.

**Hypothesis 3:** In line with previous research from Giesbers et al. (2014), engagement in synchronous learning will support engagement in asynchronous learning, with higher levels of quality and quantity participation in the asynchronous discussions from participants in the synchronous group.

**Methods**

Two sections of a 3-credit undergraduate course, PSYCH 100: Introductory Psychology, offered online at Penn World Campus will be used in the proposed study. The course will
operate on the standard 15-week semester. Similar studies have utilized shorter terms, so while the proposed study will not be investigating the impact of course length, this may be an important variable to be utilized in future research.

PSYCH 100 was selected because it is an introductory course that students from a range of degrees may schedule to fulfill a general education requirement. It is expected that this course will supply a more diverse sample than courses that are more specific to certain major requirements. Each section of PSYCH 100 has a seat capacity of 75 students, allowing for a larger sample than previous studies. Although an even larger sample would be better methodologically, it could not be feasibly implemented at Penn State World Campus. The control section will maintain the current asynchronous format and the experimental section will integrate synchronous, text-based chat discussions in addition to asynchronous discussions.

Participants

Students who register for either section of the PSYCH 100 course will be randomly assigned to either the asynchronous or synchronous section of the course. Those assigned to the synchronous section will be informed via email of the specifics of the study and provided with a sample syllabus, as the typical expectation of an undergraduate World Campus course is that it will be asynchronous. Students will then have the option to opt out of the synchronous section if they cannot commit to the schedule. They will also be given an internet poll to determine what times and days of the week are optimal for them to participate in a two-hour synchronous meeting. Two hours was determined as a comparable amount of time to what a student may spend meeting the typical four post requirement in an asynchronous discussion forum.

Course Design
The course design team will assign students to smaller groups within both sections of the course. Hrastinski et al. (2010) found that synchronous communications are more useful in smaller groups of 10 students or less. Therefore, the groups will consist of 10 students each for both sections of the course in order to create similar structures for comparison. For the synchronous group, the poll results will help the course design team to match students in appropriate discussion groups based on time zones and preferences. The flexibility of online courses is often a draw for students, so this consideration will help to regulate that for the synchronous group.

Both sections of the course will be given identical readings, discussion prompts, and assignments and assessed by the same criteria. Students in the asynchronous group will be required to participate in weekly discussion forums related to the respective lesson in Angel, the Penn State World Campus learning management system (LMS). This will occur for a 14-week period, allowing for a week at the end of the course to prepare for finals.

Since the proposed study is looking strictly at student-student interaction, the synchronous communication will not be a lecture and instead will function as a discussion tool, similar to the asynchronous discussion boards. The experimental group will participate in bi-weekly, two hour-long, text based synchronous discussions in Skype, a technology that many students may already be familiar with. They will have asynchronous discussions in the alternating weeks. Text-based chat was chosen over videoconferencing because there are less technical difficulties anticipated and individuals are generally more familiar with text-based communication. Participation in all asynchronous and synchronous discussions will be mandatory. This will ensure that students are provided with sufficient opportunities for social interaction and engagement in the learning community. However, in order to honor the best
interest of the students, students in the synchronous section will be given one opportunity to opt out of the mandatory synchronous discussion by writing a short paper in response to the weekly prompt.

**Instrumentation and Data Collection**

The proposed study will utilize a between participant design and will collect quantitative and qualitative data. A questionnaire will be provided at the end of the semester within the course management system to students in both sections. The questionnaire will collect demographic information, including age, gender, ethnicity, program of study, projected graduation date, country of origin, and current geographic location. There will also be a question regarding previous online experience, specifically how many courses they have taken online. The number of online semesters taken previously was found to have no relationship to social presence in the study by Kim et al. (2010) in reference to asynchronous learning but investigating that aspect may be more relevant when testing the use of synchronous technologies and could be used in future studies.

The questionnaire will also pose a set of questions on a seven-point Likert scale from “strongly disagree” to “strongly agree” in order to measure perceptions of social and learning community and isolation. Examples of questions that will be included are “I don’t feel isolated from my classmates,”, “I feel students in this course care about each other,” and “I feel connected to others in this course” as seen in Olson and McCracken (2015). A questionnaire was chosen over alternative methods such as a phone interview because there is potential for greater participation, the information is easier to code for the researchers, and there is anonymity for the participant. An open-ended space will be available for participant to add additional thoughts.
To assess for actual participation in both sections of the course, electronic log data will be gathered for all interactions. Content analysis will be used to analyze contributions numerically and by complete sentences, in order to see what types of content is being discussed within the asynchronous and synchronous discussions, as well as between the two sections of the course. Sentences will be classified into three types of exchanges, as used in Hrastinki et al. (2010): information, task support, and social support. This will help to determine if the content discussed impacts perceptions of social presence or if perceptions of social presence and community are correlated with the level of interactivity between students. It will also help to identify if synchronous learning can increase social interactions.

Limitations

The proposed study will focus on participation and perceptions of social presence and isolation, which are important variables in student success but certainly not the only variables. Student learning outcomes as well as reported satisfaction in the course should be considered in future studies to better understand the value of synchronous communication to support asynchronous. A positive experience with synchronous learning may not ultimately mean that students will be successful. Longitudinal data would need to be gathered to determine this. While this study will not be investigating retention data, outcomes supporting the hypotheses could have significant implications regarding student retention in online courses.

Conclusion

Contemporary research suggests that asynchronous online education is insufficiently fulfilling the social learning needs of students. Effective utilization of a range of asynchronous and synchronous learning tools can positively influence student perceptions of social presence, compensating for a lack of physical contact with peers. If synchronous learning can be utilized in
a deliberate way that increases student interaction and a sense of community, research shows that it can lead to decreased feelings of isolation and improve retention for online students. This diversification could have positive implications for student success, as well as financially benefitting Penn State World Campus and other institutions by decreasing the costs associated with attrition. It critical for course designers and faculty to evaluate the ways in which they deliver online courses to insure that quality does not suffer as a result of an over-emphasis on convenience.
References


from http://www.academia.edu/6568766/The_Viability_of_Skype_to_Reduce_Learner_Perceived_Sense_of_Isolation


