

Characteristics Affecting Learner Participation in Large Hybrid Classrooms

Minjuan Wang, Daniel Novak, and Joe Pacino

Educational Technology, San Diego State University
mwang@mail.sdsu.edu, danielnovak@daniel-novak.com,
Pacino_Joe@sac.edu

Abstract. This descriptive study explores characteristics that can affect learner participation in hybrid classrooms and also learning outcomes. Data were collected from an online survey of 200 students (with 107 responses) from the online degree programs of two American universities. These learners are diverse in age and ethnic backgrounds. Major findings include: 1) Learner perception of being equal or subordinate to the instructor affects their confidence to engage in online discussions. 2) There is a gender difference in dealing with conflicts in hybrid and online meetings. And 3) Students who dislike collaborative work tend to view online learning as inferior to face to face learning. These findings underscore the significance of student attitudes and differing cultural backgrounds in establishing confident participation in the online environment. We also suggest ways that these results can guide course design and conduct in online settings.

Keywords: Case study, learner characteristics, cultural differences, gender differences, learner participation in hybrid classrooms.

1 Introduction

As distance learning becomes more prevalent, online and hybrid learning programs need to examine the attitudes and effects of differing cultures of learners and how they impact student academic success. The purpose of this study was to uncover some of the critical attitudes and cultural norms that help shape the online and hybrid environment. The study focused on learner engagement in hybrid courses as demonstrated by student participation in the cognitive, emotive, and social environment of their online experience. The results of this study and others like it can offer designers and instructors some guidelines for successfully designing and teaching hybrid and online classes.

1.1 Theoretical Background

A handful of studies (e.g., [1] [2] [3] [4] [5]) reveal the connection between student participation and learning outcomes. Wang's study [4] suggests that tasks requiring collaboration demand more student participation from the learner. For many students the online experience can be culturally challenging because of its emphasis on self-directed learning and constructivist pedagogy. The constructivist approach to learning

highlights socially constructed knowledge [5], which requires participants' active engagement in social and intellectual interactions. As Wang and Kang [5] discovered, personal confidence must precede any affirmation of social presence in the online environment. They also noted that this presence is a result of the student's attitude toward self, the learning community, and the learning process.

Three aspects of presence (cognitive, social, and emotive) could affect student success in online or hybrid learning [7] [8] [5]. Combining the realms of cognitive, social, and emotive presence could lead to a more effective approach for engaging learners [5]. Wang and Kang [5] proposed a Cybergogy of Engaged Learning model (see Figure 1), which advocates for the integration of all three online modes of online presence. Engaging the learner on all three levels of presence simultaneously would promote the best learning outcomes. This Cybergogy model illustrates the areas of presence and where these areas overlap, so as to indicate the most fruitful area in which to develop learning strategies for online courses. The concept of "Cybergogy" relates to areas of student presence and what elements play key roles in developing different types of presence online.

Along with the importance of social presence in the online classroom, collaborative learning within an online course is important for student success. Students from different backgrounds may well formulate differing collaborative strategies based on cultural norms [9]. Collaborative communities establish "safety nets" for students and helps support students having difficulty with the course content. As online students are able to refer to fellow students for assistance and tutoring on course content, the social and emotional connections are strengthened along with cognitive understanding of the content.

Along the lines of instructor importance in online learning, the concept of student perception of instructors can strongly affect a student's online performance [4]. In cultural traditions in which the role of the learner is to be passive and a quiet and respectful recipient of knowledge, being in an active learning environment can be a struggle. Especially, if the instructor encourages students to debate issues and ask challenging questions [10]. Studies have shown that student perception of the instructor and culturally correct student behavior toward instructors can hinder learning online [4]. Wang [4] examined the cultural attribute of Power Distance Index (student perception of equality with the instructor) and how this perception influenced student's participation and overall online performance. Students whose culture placed instructors at a high power distance from themselves, may be intimidated by instructors and unaccustomed to interacting regularly with instructors. If, due to cultural norms, the instructor is seen as unapproachable, the student may have less confidence in engaging in discussion or asking questions to the instructor, thus affecting their level of participation. By contrast, students with a low power distance have less difficulty communicating and relating to instructors, and therefore may perform better online.

Conflict, and the avoidance of conflict on a cultural and/or gender basis impacts online learner success as well [11]. If the individual, due to gender role or cultural norms, is not likely to voice opinions contrary to those stated by others in online discussion, this could cause the online interaction to be a painful experience. A review of available literature indicated that conflict for online courses could be categorized as passive-aggressive, aggressive, and structural. While research has been done in this area, not a great deal of concrete research has identified methodologies that could reduce the conflict online in light of cultural or gender differences.

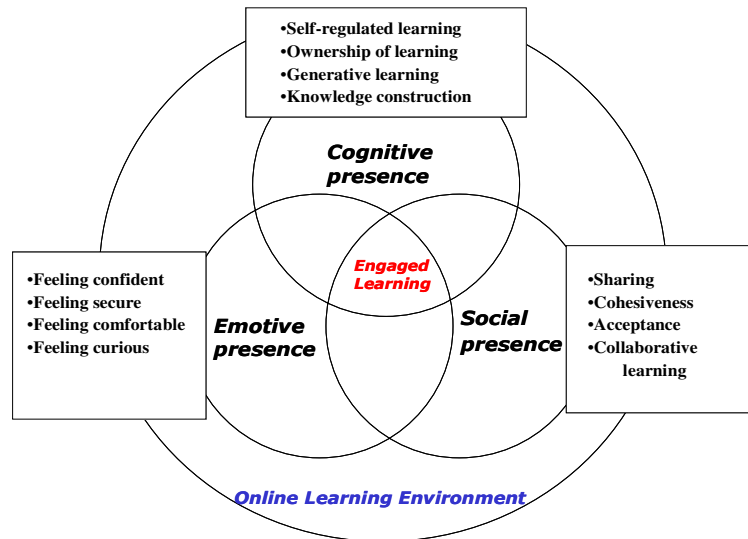


Fig. 1. Cybergogy for Engaged Learning (Wang & Kang, 2006)

Thus, there is a great need to design courses that accommodate cultural differences by emphasizing flexibility in several areas. Through examining personal characteristics that affect students' participation in hybrid classes, our study intends to fill in this gap. The goal of this study is to develop and disseminate guidelines for designing instructional materials and teaching facilitation that accommodates online student's diverse cultural backgrounds.

2 Research Method

This survey research examines the characteristics of students taking online or hybrid courses, and explores the influence of these characteristics on student's attitudes towards conflict, preference for the modality of work (solo versus group), and their preferences for communication tools. Gender is also factored in to further analyze these students' reactions towards conflict.

2.1 Participants, Instruments, and Data Collection

The respondents to the survey comprised of 107 graduate and undergraduate students, enrolled in hybrid courses offered at two public universities in California. These courses were considered hybrid because they included both campus and online students. (Please see section 2.2 for a detailed description of the hybrid learning environment). Participation in this study was entirely voluntary and the participants were reasonably knowledgeable about online learning environments.

The research team developed two online surveys for data collection using SurveyMonkey, an easy-to-use tool for the creation of online surveys. The first survey entitled *Survey on Online Learners' Perceptions* included fourteen questions, in the format of Single Choice, Multiple Choice, Likert Scale type questions and Rating

Scales. Questions one through six ask the respondents for demographic information and academic background; questions seven and eight elicit prior knowledge of the respondents' experience with online learning, use of the internet, and use of computers. Questions nine through fourteen ask for respondent's online learning experiences, attitudes of their teachers, emotional characteristics and perceptions of the media used online and in class. The second survey solicits data from eight constructs of the three domains illustrated in the Cybergogy Model (see Figure 1).

The eight constructs include: 1) prior knowledge, 2) motivation, 3) confidence for conflict management, 4) socializing, 5) perceptions of the instructor, 6) self-efficacy, 7) perceptions of online learning, and 8) tendency to interact online. Confidence for conflict management refers to how students create and dissipate conflicts in an online learning environment, as well as the instructor's ability to develop teaching strategies that could reduce the opportunities for destructive conflicts in online and classroom environments. Self-efficacy is an impression that one is capable of performing in a certain manner or attaining certain goals. Some studies find that learners' self-efficacy beliefs can be significant predictors of their performance of a task. These researchers argue that a learner can only actively engage in the learning process if they feel that a task is achievable and manageable.

The next two variables are perceptions of online learning and tendency to interact online. Although several studies suggest that online and hybrid learning can be as effective as traditional classroom models, more research is still needed to understand how students perceive and react to elements of online learning. Also, researchers should examine how to apply these approaches to enhance learning. The tendency to interact online has to do with the feeling of having a learning atmosphere that is safe versus fearful and having open negotiation versus domination. Quality interaction among students and instructor are conducive to a positive learning atmosphere, one that is marked by socializing, rapport, connections, debates, and open negotiation [12].

2.2 Learning Environment and Demographics of the Respondents

The hybrid classes offered at both universities often have about 50 students, with 60% being in the classroom and 40% being online. These students select their "modality" of study (online or campus) at the time of the admission, and their modality remain consistent during the course and their entire program of study. Online students are geographically dispersed, across the U.S. and around the world. They therefore bring diverse cultural and academic background to these classes.

Each class has one instructor and an assistant who operates the web camera and also answers questions from online students in the AdobeConnect chat room. AdobeConnect is the live meeting system used in these hybrid classes. Instructors show most of their instructional materials (e.g., PowerPoint, word document, URLs) in this system, which students see either through the classroom LCD projector or on their personal computer. Figure 2 is a screen capture of one hybrid classroom. In this research method class, the instructor was presenting to the campus class, with a few students tuning into the session online. The online students typed in their questions, comments, and feedback in the chat room, which was visible to campus students. They could also push the "talk" button in the AdobeConnect system to speak to the instructor and all students. The discussions among campus students were broadcast to online students through the many desk microphones. Thus, this robust hybrid learning

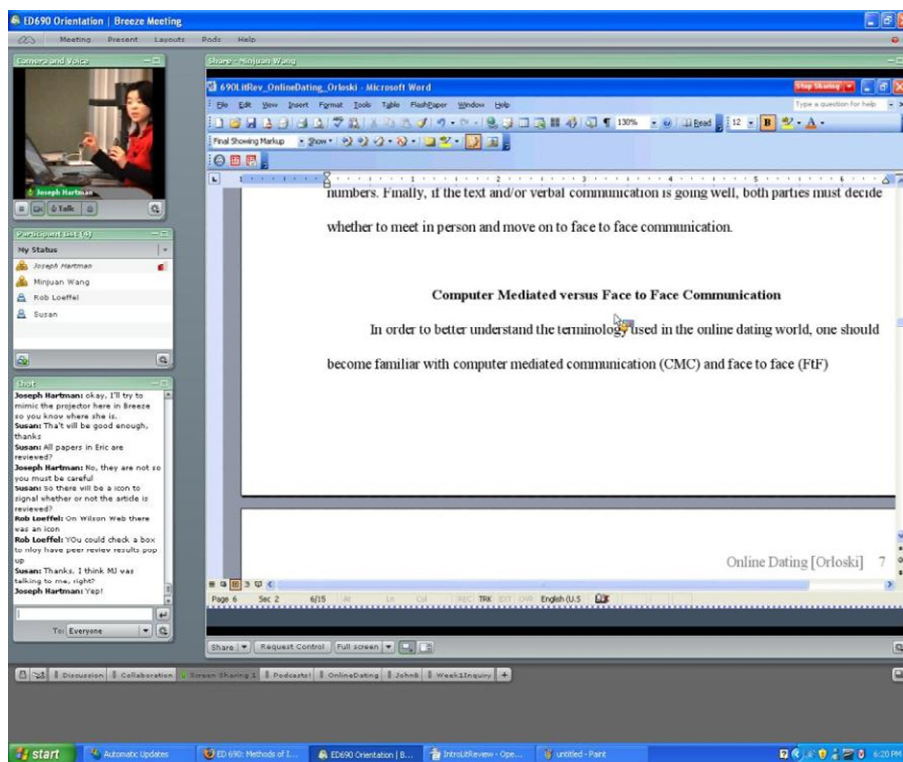


Fig. 2. A Hybrid research-method class in session

system enabled two groups of students to interact through both texts and audio. In addition to asking questions, students were also prompted to collaboratively solve problems that were anchored on real-life settings. For instance, they conducted a group data analysis using Google documents, to see if diet coke loses its taste after three months. These activities normally lasted 10 to 15 minutes. The course's learning system also had a forum (discussion board), where students posted questions or threaded discussions.

Among the 107 respondents to this study, the percent of female respondents (74.3%) was much higher than the male respondents. Even though the age range of the respondents varied from 20 to 63, 29% (the highest) of the respondents fell into the 25-26 age group. As to their educational background, 57.2% of the respondents were graduate students, who were pursuing masters and doctorates. Also, 52.3% of the respondents majored in education. The rest of the students were in the disciplines of business management, art history, and women studies. The discipline differences, however, are not compared in this study.

3 Major Findings

The following section selectively reports the findings that have implications for designing and facilitating hybrid classes.

3.1 Gender Differences in Confidence for Conflict Management

First, researchers looked for gender differences in the aforementioned eight variables studied. As both descriptive and inferential statistics (t test with $p < 0.01$, $n = 107$) indicate, the expressions of an opinion in the face of conflicts, exhibit the most noticeable gender difference. The mean score of confidence in conflict management for males is 16.14 (high) while for females it is 14.82 (low). This is a 1.320 mean difference, and it is the highest difference of all the results from other questions. Of the total 28 male respondents, only four express reservations about voicing their opinions. Of the 79 female respondents, 20 have reservations about expressing conflicting opinions. This means that 25% of the females lack the confidence in self-expression, as compared to only 14% of the males. This result points to a gender difference in the degree of confidence in expressing opinions that may challenge others. Table 1 displays the descriptive statistics of the variables studied.

Table 1. Gender Differences in self-expression, conflict, and perceptions of the instructor

Variable	G	N	Mean	SD	Variable	G	N	Mean	SD
prior knowledge	M	28	14.32	.983	Perceptions of Instructor	M	28	15.18	2.212
	F	79	13.94	1.530		F	79	14.47	1.832
motivation for accomplishment	M	28	8.14	1.557	Self-efficacy with study	M	28	8.18	1.442
	F	79	8.51	1.218		F	79	7.80	1.137
motivation for study	M	28	8.61	1.397	Self-efficacy with computers	M	28	4.21	.787
	F	79	7.96	1.445		F	79	3.78	.970
Confidence for conflict management	M	28	16.14	2.563	Effectiveness of online learning	M	28	11.68	2.539
	F	79	14.82	2.863		F	79	11.73	2.881
Preference for solo work	M	28	4.07	1.245	Attitudes toward interaction	M	28	14.86	2.534
	F	79	3.81	1.099		F	79	14.43	2.903
Preference for teamwork	M	28	7.75	2.030	Total Score	M	28	113.14	10.244
	F	79	7.29	1.902		F	79	108.54	10.297

3.2 Perceptions of the Instructor and Tendency to Interact Online

Analyzing the data in terms of ethnicity, 8 of the 12 Asians (foreign students) have low scores on the tendency to interact online. This can be partially attributed to their language abilities (English as a second language). Of the 67 Anglo-Europeans in the sample only 10 have such low scores. The Asian sample is small compared to the Anglo-European, but the results suggest that a higher percentage of the individuals sampled have low confidence in online discussions. This aligns with the findings from other cultural studies of online learning. In a previous study of cultural differences

among three groups (American Anglo-European, Chinese, Korean), Wang [4] reported significant cultural differences in students' sense of Power Distance with their instructors. Korean students had the highest score on the Power Distance Index and participated the least in online classes. American Anglo-Europeans demonstrated a much lower level of perceived Power Distance, and an increased level of participation. Wang points to this result as an explanation for the lack of student confidence in online courses.

In this study a similar and significant relationship ($r=0.48$, $p<0.0001$, $n=72$) exists between students who view instructors as equals and their willingness to voice opinions even when those opinions are in conflict with others. In this study one third of the males and one third of the females disagree that students are equal with the instructors. The ethnic breakdown results in a greater percentage of the Asians that do not view themselves equal in stature with the instructor, while a higher percentage of American Anglo-Europeans express the opposite view. This re-confirms Wang's [4] study and underscores the student attitude toward the instructor in contributing to their active participation in classes.

3.3 Preferences for Collaboration and Perceptions of Learning Effectiveness

In their "Cybergogy" model, Wang and Kang [5] assert that self-confidence and positive self-perception must be complemented with a positive attitude about the larger community and a sense of belonging. For constructivists the social dimension is crucial for cognitive development. Social discourse is fundamental in constructing knowledge. Therefore, collaborative activities must be an essential part of online courses. This study suggests that working with others may be problematic for students. There is a significant correlation ($r=0.44$, $p<0.0001$, $n=69$) between students' preference for teamwork and their attitude toward the proposition that hybrid learning is as effective as face to face. Both questions resulted in similar mean scores 3.43 and 3.44. Of the 38 students who disagree that online learning is as effective as face to face, 22 also express a dislike for group work; while 16 who like group work are not convinced that online learning is as effective.

In essence, there is a positive correlation between learners' preferences for collaboration and their perceptions of learning effectiveness in hybrid classrooms. Further research is needed to confirm that group work may have a negative impact on student participation for those that dislike group work. Considering that many online courses are built around collaborative work, this tentative finding has significant ramifications for online course design.

3.4 Active Participation and Feelings of Isolation

The survey also reveals a negative correlation between active participation and expressions of isolation from the online students. The Pearson r data ($r=-0.57$, $p<0.01$, $n=105$) also shows a significant, inverse relationship between those who voice their opinions and feelings of isolation in online courses. Students who participate more in online courses will be less likely to express feelings of isolation. The mean scores for questions of self-expression are 3.92 and 4. The inverse low mean scores of 2.17 and 2.93 result from questions of feeling isolated and anxious. There is also a significant

relationship ($r=0.47$, $p<0.0001$, $n=105$) between this feeling of isolation and the lack of online communication. Students who agree with feeling anxious when there is a lack of communication also feel isolated. Those who express loneliness and anxiety prefer live chats. Of the 25 respondents that express those feelings, 19 give higher scores for live chats over asynchronous communication. This suggests that more participation and live communication reduce anxiety and isolation in the online environment.

It's noteworthy that all classes studied here have access to similar asynchronous online forums. Though there are differences between how online learners and in-class learners use forums, the parity of access indicates that all students could participate outside of the regular classroom time and according to their preferences.

4 Conclusions, Design Implications, and Limitations of This Study

The study examined characteristics that affect online learners' participation in hybrid sessions, and ultimately the success of learning outcomes. The constructivist philosophy of instruction places great emphasis on social dialogue and co-construction of knowledge. Success in the online environment requires students to collaborate and communicate with others. In this setting, students must exhibit confidence in expressing their opinions and confidence in using technology. A review of the literature suggests that some student perceptions are conditioned by cultural differences. Studies by Wang [4] have demonstrated that Asian students view the instructor as intimidating, reducing their level of self-expression. Anglo-European Americans are more likely to consider the instructor equal in status and consequently exhibit more confidence in online courses.

These different attitudes result in different levels of engagement and must be considered by designers and instructors. This consideration will aid these students in developing the social skills required for success in online courses. Other attitudes are based on the new context of the online environment which requires student adaptation.

This study confirms Wang's conclusion [4] that a student perception of inequality with the instructor determines their confidence to engage in online discussions. A greater percentage of Asian students exhibited a lack of confidence in self-expression and also believed that the instructor was not equal in status with students.

Learners' confidence in expressing opinions in the face of conflicting viewpoints (i.e., conflict management) reveals a difference between the sexes. A higher percentage of females displayed a lack of confidence in presenting their opinions in controversial situations than males. A follow up study on content analysis of online discussions should be conducted to further investigate this conclusion.

The results of this study reveal a tentative link between dislike for group work and skeptical view that online learning is as good as face to face learning. The data reveal a strong correlation between the question on collaboration and the affirmation of the effectiveness of online learning. The evidence indicates that students who dislike collaborative work tend to view online learning as inferior to face-to-face learning. This conclusion has significant ramifications for online instructors who follow the constructivist approach and rely on collaborative assignments. Designers and instructors need to adjust their degree of facilitation in collaborative work based on the composition of their learner populations.

Online environments depend extensively on technologies and human interactions that bridge both the physical and psychological distance between instructors and students. When the distance is large, students experience feelings of isolation and anxiety. These feelings also arise when the level of participation is low. This study indicates that those students who are less confident and participate less frequently in online discussion experience isolation and anxiety. The data also confirmed that students experiencing isolation and anxiety prefer live communication over asynchronous communication. For these students, the live chat environment enhances the direct connections with instructor and other students.

These findings underscore the significance of student attitudes and differing cultural backgrounds in establishing confident participation in the online environment and must be considered by all online designers and instructors.

Student attitudes and backgrounds affect their level of participation and engagement in online courses more than in traditional settings. These factors are important considerations for successful student outcomes. This study confirms the important role that these student perceptions exert on student engagement. Course participation demands a level of student confidence in dialogues with the instructor and with other students. Identifying and examining these attitudes will help online courses deal more effectively with the root causes of student attrition and student failure.

Finally, this study only used surveys and the participants are from two public universities in California. In addition, the small sample sizes of culturally diverse students makes an analysis of cultural differences limited in its scope. Future studies should seek out larger and more diverse samples. The researchers did not examine the effect of media on the user's experience, as that fell outside of the bounds of study. Future research should also examine the effect of online and face-to-face learning on user preferences and confidence.

References

1. Picciano, A.G.: Beyond Student Perceptions: Issues of Interaction, Presence, and Performance in an Online Course. *Journal of Asynchronous Learning Network* 6(1) (2002), http://www.sloan-c.org/publications/jaln/v6n1/v6n1_picciano.asp (retrieved March 15, 2006)
2. Reis, R.: Tomorrow's Professor Msg.#342 Teaching for Engagement (2003), <http://sll.stanford.edu/projects/tomprof/newtomprof/postings/342.html> (retrieved March 15, 2006)
3. Simon, G.: *E-tivities: The key to active online learning*. Kogan Page Ltd., London (2002)
4. Wang, M.J.: Designing online courses that effectively engage learners from diverse cultural backgrounds. *British Journal of Educational Technology* 38(2), 294–311 (2007)
5. Wang, M.J., Kang, J.: Cybergogy of engaged learning through information and communication technology: A framework for creating learner engagement. In: Hung, D., Khine, M.S. (eds.) *Engaged learning with emerging technologies*, pp. 225–253. Springer, New York (2006)
6. Vygotsky, L.S.: *Thought and language*. MIT Press, Cambridge (1986)
7. Kort, B., Reilly, R., Picard, R.: External representation of learning process and domain knowledge: Affective state as a determinate of its structure and function (2001), http://affect.media.mit.edu/AC_research/lc/AI-ED.html

8. Dirkx, J.: The power of feelings: Emotion, imagination, and the construction of meaning in adult learning. *New Directions for Adult and Continuing Education* 89, 63–72 (2001)
9. De Hann, M., Elbers, E.: Minority status and culture: local constructions of diversity in a classroom in the Netherlands. *Intercultural Education* 15(4) (2004), <http://taylorandfrancis.metapress.com/content> (retrieved March 1, 2007)
10. Gunawandener, C.N., Wilson, P.L., Nolia Nora, C.: Culture and online education. In: Moore, M.G., Anderson, W.G. (eds.) *Handbook of Distance Education*. Lawrence Erlbaum, Mahwah (2003)
11. Novak, D., Wang, M.J., Oristian, K.: Gender, Sex and conflict in the online classroom. *Journal of Open and Distance Education in China* 14(4), 65–70 (2008)
12. Wang, M.J., Laffey, J., Poole, M.: The construction of shared knowledge in an Internet Based shared environment for Expeditions (iExpeditions). *International Journal of Educational Technology (IJET)* 2(2) (2001)