

## **Measuring Up Online: The Relationship between Social Presence and Student Learning Satisfaction**

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*Abstract: The study examined students' perceptions of social presence in online and face-to-face course environments. Data from surveys of 112 undergraduate students (80 in online, 32 in face-to-face classes) are presented. Statistical tests include t-tests and ordinary least squares regression tests. Students' perceptions of social presence were similar in the online and face-to-face sections, and predicted their learner satisfaction scores. Experience in online courses had a statistically significant effect on online students' perceptions of social presence. Students' social presence scores did not have a significant effect on their learning outcomes, perhaps due to the small amount of variation in learning outcomes.*

*Keywords: Online, social presence, learner satisfaction, learning outcomes.*

### **I. Introduction.**

The evolution in higher education from a traditional to a computer-mediated environment creates challenges and opportunities for educators and researchers. As technology transforms the way we teach and learn (Bonk and Cunningham, 1998), computer-mediated options range from email communication with students (Flinn, 1995; Folaron, 1995), to online course environments for posting course materials and facilitating discussions, and finally to totally asynchronous Internet-based course delivery (Twigg, 2003). Computer-mediated education is popular: in 2003, nearly two million U.S. college students took an online class (Carlson, 2004). In an annual survey of university information technology officers, Green reports that helping faculty “integrate technology into instruction” is the top priority on campuses (2001, p.2). Further, Green finds that one-fifth of all college courses utilize technology for course management. Entire degrees may be earned online at some accredited universities (Indiana University, 2003).

Some educators have been hesitant to embrace online education (Mama, 2001; Schoech and Helton, 2002), due in part to questions about the soundness of its pedagogy. At the forefront are concerns about accreditation, which at present applies standards for traditional courses to online courses rather than establishing standards specific to computer-mediated environments (Benson, 2003). More research is needed to thoroughly understand excellent pedagogy in online education, including establishing the criteria by which excellence should be judged. A review of the scholarship of teaching and learning (SoTL) literature begins with excellence in face-to-face education, as a foundation for excellence in online education.

#### *Educational Excellence*

A classic in SoTL literature on educational excellence is Chickering and Gamson's *Seven Principles for Good Practice in Undergraduate Education* (1987). The seven principles are contact between students and faculty, cooperation among students, active learning, prompt feedback, time on task, high expectations, and respect for diverse talents and ways of learning (1987, p.3). More recently, research has been conducted on student engagement, developing

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Chickering and Gamson's seven principles into measurable variables and evaluating college education across the country. Examples of items about which students have been surveyed are contributing to class discussions, making class presentations, participating in community-based projects as part of course work, working harder than they thought they could to meet an instructor's standards, and critical thinking skills, to name a few (Kuh, 2002). The literature indicates that educational excellence is becoming well-studied.

Related to the above principles of excellence in education is that of *teacher immediacy behavior*, based on Wiener and Mehrabian's early work in psychology (1968). Immediacy can be defined as the amount of "perceived physical and/or psychological closeness between people" (Christophel, 1990, p. 325). Smiling, having a relaxed body posture and position, speaking to the students rather than to the chalkboard, using humor, and modulating the voice are examples of teacher immediacy behaviors. Researchers have linked teacher immediacy behaviors with positive student learning outcomes (Kearney, Plax, and Wendt-Wasco, 1985; Gorham, 1988).

The notion of teacher immediacy behaviors has been further developed into the concept of social presence as first identified by social psychologists Short, Williams, and Christie (1976). Social presence is "the degree to which a person is perceived as a 'real person' in mediated communication" (Gunawardena, 1995, p.151). Immediacy behaviors increase social presence. In examining whether "real" relationships can be established in a "virtual" medium (Jones, 1995, p. 14), studies of social presence and computer-mediated communication have shown that "despite the low social bandwidth of the medium, users of computer networks are able to project their identities whether 'real' or 'pseudo,' feel the presence of others online, and create communities with commonly agreed on conventions and norms ..." (Gunawardena, 1995, p. 151). An examination of the effectiveness of teaching methods to increase social presence in computer-mediated communication is clearly warranted if educators are to learn how to create excellent online course environments.

#### *A. Social Presence in Online Education.*

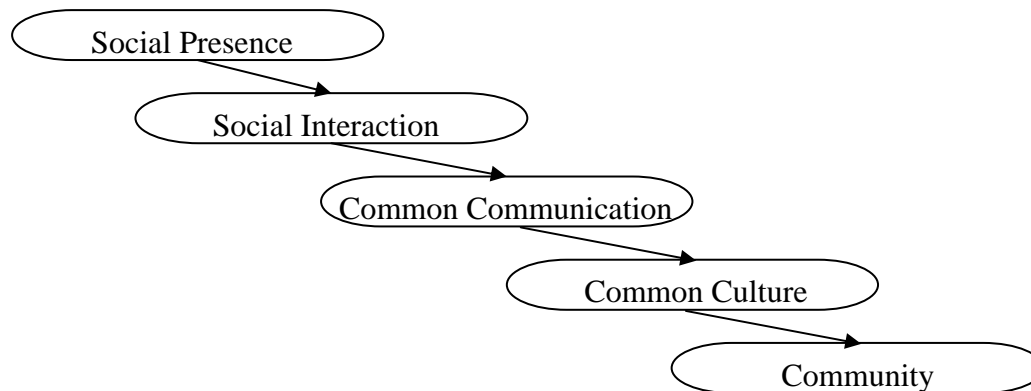
Several studies address social relationships in online education. Mama (2001) compares students' attitudes regarding a site-based and a web-based (with three face-to-face meetings) class, finding that the students in the web-based class felt it was more personal than site-based courses they had taken before. Swan (2002) reports that students perceived online discussions as more equitable and more democratic than traditional classroom discussions, and that there was a positive relationship between levels of interaction among students and student satisfaction in the course. Gunawardena and Zittle (1997) surveyed graduate students in a computer-mediated inter-university conference. They found that social presence predicted student's learning satisfaction. Richardson and Swan (2003) adapted Gunawardena and Zittle's survey instrument for use with mostly nontraditional-aged students in several online courses. Their results indicated that social presence was positively correlated with students' perceived learning.

Further research examines the connection between relationships and learning. Two studies claim to have found a positive correlation between social presence and students' perceptions of their learning (Christophel, 1990; Richardson and Swan, 2003). Support is found for the positive correlation between the level of students' perceptions of social presence in their courses and higher results on learning measures (Picciano, 2002). In a study involving random assignment of students to online or traditional classes, Schutte (1997) finds that the students in the online course perceived a greater amount of peer contact than the traditional classroom-based students and also earned significantly higher grades than the traditional students. Rodriguez, Plax

and Kearney (1996) claim that teacher immediacy behaviors influenced students' affective learning, which in turn influenced students' cognitive learning.

*B. The Link between Social Presence and Community.*

The importance of human relationships in computer-mediated education, then, is well-supported, but do these relationships translate to an educational community? Before exploring the possible connection between social relationships and community, it is helpful to understand what is meant by community. Researchers do not always provide a definition of community or an explanation of the link between social presence, community, and learning (Jones, 1995; Gunawardena, 1995; Rourke, Anderson, Garrison, and Archer, 1999; Reid, 1995; Swan, 2002; Tu and McIsaac, 2002). Brueggemann (2002) describes community as shared experiences in which both individual and group needs are met, and holds that community can be linked to a place and time but can also transcend them. Rovai (2002) sees community as a group of individual members of formal and informal organizations, interacting and connecting with each other. With this understanding of community, the link between social presence and community can be explored. Wise, Chang, Duffy, and del Valle (2004) state that the concepts of social presence and community both transmit the sense of relating and caring among participants. Gunawardena (1995) asserts that "The development of social presence and a sense of online community becomes key to promoting collaborative learning and knowledge building" (p. 164). She believes that collaborative learning is possible only if participants have social presence, a sense of community, and a common goal. Rovai (2002) evaluated online and traditional classes of 14 professors, finding that certain online classes had significantly higher ratings from students on feelings of community in the classroom. He asserts that the method of teaching, not the environment for delivering the course, is what influences feelings of community. In a qualitative study, Wegerif (1998) found that students' sense of community affected their success in the course. Students who felt more like insiders in the learning community were more likely to achieve success. In a computer-mediated environment, feelings of community and social presence may be considered to be strongly connected to each other and to online interaction (Tu and McIsaac, 2002, p.131). Reid posits another model<sup>3</sup> of the link between social presence and community (1995, p. 156):



Learning takes place in a social environment, and cognitive understanding and personal construction of knowledge depend on relations with others (Fung, 2004; Richardson and Swan,

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<sup>3</sup> Model diagram by Valerie Decker

2003; Vygotsky, 1978). Creating a safe environment for a learning community in class allows students to take risks and collaborate in an authentic manner (Bonk and Cunningham, 1998). Wegerif (1998) contends that it is essential for students to feel that they are members of a community in order to collaborate and learn, and that computer-mediated communication can provide support for the development of feelings of community.

The nature of an asynchronous online course, with educational opportunity available 24 hours a day, seven days a week, can provide a more rapid responsiveness to students' questions and ideas than the traditional face-to-face class (Wise et al., 2004). Teacher immediacy behaviors and social presence among students can be enhanced in an online course, thus creating a learning community that facilitates educational excellence. However, more studies are needed regarding the relationship between online social presence and student learning satisfaction and outcomes, in order to understand more fully what facilitates excellence in computer-mediated education (Rourke, et al., 1999).

## **II. Purpose of Study.**

The study is designed to understand whether social presence can be established in an online college class, at rates similar to a face-to-face class. In addition, the study is designed to understand the relationship between social presence and student learning satisfaction and outcomes. The paper presents data comparing four sections of an online course with two sections of the same course, delivered in a face-to-face environment. All sections used the identical syllabus and assignments. Social presence is selected as a means to investigate online course delivery because, as Rourke and colleagues wrote, "social presence supports cognitive objectives through its ability to instigate, sustain, and support critical thinking in a community of learners" (1999, p. 52). Understanding the social presence aspect of an online class may help educators better understand how to construct an excellent, engaging online teaching/learning environment. Both quantitative and qualitative data were used to explore students' perceptions of social presence in their classes (the qualitative data are reported elsewhere).

### *Research Questions*

The study addresses the questions:

- 1) Are students' perceptions of social presence in an online class similar to those of students in a face-to-face class?
- 2) Do students' perceptions of social presence in the course have an effect on learner satisfaction?
- 3) What variables affect students' perceptions of social presence in the course?
- 4) Do students' perceptions of social presence in the course have an effect on learning outcomes?

## **III. Method.**

### *A. Procedure.*

The study was conducted over two semesters on two campuses, one urban and the other rural. In each semester, two sections of an undergraduate online course were taught by one author (offered on both the urban and the rural campus), and one section of a face-to-face version

of the same course was taught by the other author (on the urban campus). For all sections, surveys were distributed in the last week of the course. The online students were provided the survey electronically, to complete and email to a research assistant. The face-to-face students were given the survey during class, with an envelope to be delivered by the students to the departmental secretary. It was made clear to both online and face-to-face students that their answers would be anonymous. Completed surveys were returned by 112 out of 128 students, for a response rate of 88%.

### *B. Participants.*

Of the 128 potential participants, 124 were female, and the vast majority were of traditional age. Seventeen percent of the students in all classes were students of color, self-identifying either as African American or Hispanic American. Of the 112 students responding to the survey, 15% were students of color. This number is slightly higher than the nine percent of the student body on both campuses who identify as African American or Hispanic American. Data was not collected on gender or any other demographic information for respondents, due to the risk that such information might inadvertently identify the students.

### *C. Instrument.*

The study used a survey instrument originally designed by Gunawardena and Zittle (1997) and modified by Richardson and Swan (2003)<sup>4</sup>. The wording of the questions was slightly altered to reflect the specific course. Students in the online sections were asked about the number of online courses they had taken. Ten questions were asked about students' perceptions of the class and their expectations for learning, using Likert-scale responses (ranging from 1=Strongly Disagree to 6=Strongly Agree). Two sections of the survey are not presented here. One asked about specific course activities, and the other presented 12 open-ended questions about students' satisfaction, learning, and feelings of community.

## **IV. Results.**

### *A. Factor Analysis.*

A factor analysis was performed to help determine the factors underlying the 10-item scale; two factors were identified. One factor (Social Presence) has to do with students' perceptions of social presence, which accounts for the items:

- I felt comfortable conversing through this medium/in class.
- I felt comfortable participating in course discussions.
- I felt comfortable interacting with other participants in the course.
- I felt that my point of view was acknowledged by other participants in the course.
- I was able to form distinct individual impressions of some course participants.

The second factor (Learner Satisfaction) was students' satisfaction with their expectations of the learning community. The following questions are related to this factor:

- The instructor created a feeling of community

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<sup>4</sup> Permission was given by Gunawardena and Zittle, and Richardson and Swan, for use of the instrument.

- The instructor facilitated discussions in the course.
- My level of learning that took place in this course was of the highest quality.
- Overall this course met my learning expectations.
- Overall the instructor for this course met my expectations.

The reliability for the 10-item scale is a Cronbach’s alpha of 0.87. Table 1 shows the means for the two factors. The mean response for the individual Social Presence statements was 5.17, and the mean response for the individual Learner Satisfaction statements was 5.34. Both sets of means indicate that students, on average, rated the items between “agree” (5) and “strongly agree” (6).

**Table 1. Means and Standard Deviations for Social Presence Scale.**

<b>Factor</b>	<b>Mean</b>	<b>Std. Dev.</b>
Social Presence overall	25.83	3.28
Social Presence per item	5.17	0.62
Learner Satisfaction overall	26.69	3.08
Learner Satisfaction per item	5.34	0.66

N=112

*B. Results for Research Questions.*

The first question asks if online students’ perception of social presence is similar to those of face-to-face students. An independent samples t-test was conducted, with no significant difference found between the online and face-to-face classes ( $t = 1.87$ ,  $p > 0.05$ ). This is important information not in terms of which course environment is superior, but in terms using the face-to-face version as a benchmark for how much social presence is needed to facilitate a feeling of community in an online course.

The second research question is concerned with whether Social Presence scores have an effect on Learner Satisfaction scores. Table 2 shows an ordinary least squares (OLS) regression test of the effect of Social Presence on Learner Satisfaction, indicating that Social Presence is a predictor of Learner Satisfaction (0.60,  $p < 0.001$ ). Social Presence explained 40% of the variance in the Learner Satisfaction scores. This finding suggests that facilitating social presence in an online class is important for students’ satisfaction in their learning.

**Table 2. OLS Regression Analysis for the Effect of Social Presence on Learner Satisfaction.**

<b>Variable</b>	<b>B</b>	<b>SE B</b>	<b>β</b>
Social Presence	0.60***	0.07	0.64
R <sup>2</sup>	0.40		

N=112

\*\*\*  $p < 0.001$

The third research question asks what variables affect students’ perceptions of Social Presence. Many potentially influential variables, such as demographic information, were not tested in the study due to the need to protect students’ anonymity. However, it was possible to observe students’ previous online experience, as well as the campus at which each student was enrolled. Students in the online sections were asked if this was their first online course, if they

had taken two online courses including the current one, or if they had taken more than two online courses including the current one. Table 3 shows the results of an OLS regression test. The higher the number of online courses students had taken, the more positive their perceptions of Social Presence (0.82,  $p < 0.05$ ) in this online course. Very little of the variance in the scores is explained by the number of online courses, but the effect is statistically significant. To examine the differences between the students at different campuses, an independent samples t-test was performed to compare the means of the Social Presence scores of the two groups. The results are shown in Table 4. This test included all urban students and all rural students, as opposed to the regression test above which included only students in the online courses. A significant difference was found ( $t = 2.81$ ,  $p < 0.01$ ), indicating that students on the urban campus had significantly higher Social Presence scores than students on the rural campus.

Finally, the fourth question addresses whether students' perceptions of social presence have an effect on learning outcomes. An OLS regression test was performed to test the effects of the Social Presence factor on students' scores on their individual papers. No significant effect was found.

**Table 3. OLS Regression Analysis for the Effect of Number of Online Courses on Social Presence.**

Independent Variable	Social Presence		
	<i>B</i>	<i>SE B</i>	$\beta$
Number of online courses	0.92*	0.39	0.26
$R^2$	0.07		

N=80

\*  $p < 0.05$

**Table 4. Independent Samples T-Test of the Social Presence Scores of Rural vs. Urban Students.**

Students' location	Group Mean	SD	t
Urban (N=71)	26.50	2.82	2.81**
Rural (N=41)	24.68	3.73	

N=112

\*\*  $p < 0.01$

*C. Discussion.*

The findings from this study show that an online class can be designed that facilitates students' perceptions of social presence at rates similar to those in a face-to-face class. In fact, the social presence scores for both types of courses are relatively high, with a mean of 5.17 overall. This number is between "agree" and "strongly agree" on the six-point scale. These findings are relevant to those of a study of graduate students in an online conference, Gunawardena and Zittle (1997). The authors apparently summed all the items in the social presence scale to obtain an overall mean of 3.5. This number is halfway between "uncertain" and "agree" on a five-point Likert scale (strongly disagree to strongly agree). The reliability for the

social presence scale in their study is a Cronbach's alpha of 0.88 Gunawardena and Zittle (1997). Similarly, Swan and Richardson's (2003) study of returning students in a variety of online courses combined several survey items regarding social presence, and obtained a mean of 4.4. This figure lies between "somewhat agree" and "agree" on their six-point Likert scale. The findings of the current study also are similar to those comparing students' attitudes in face-to-face class versus a hybrid (online with three face-to-face sessions), in which the students in the hybrid class felt it was more personal than previous face-to-face courses they had taken (Mama, 2001). These results may be seen as encouraging evidence for those teaching online courses who have been concerned that the human contact and sense of a learning community might be hindered by a computer-mediated environment.

The measure Learning Satisfaction was also relatively high in the current study, with an overall mean of 5.3 (between "agree" and "strongly agree"). The study suggests that students' perceptions of social presence in an online course positively influence their satisfaction with their learning in the course. This is similar to the study by Gunawardena and Zittle (1997), in which social presence scores strongly predicted student satisfaction scores. Their study obtained a mean for summed items in the satisfaction scale of 3.3, just over "uncertain," and the reliability for the satisfaction scale was a Cronbach's alpha of 0.87. Their students' social presence scores explained 60% of the variance in satisfaction scores, whereas in the current study social presence scores explained 40% of the variance. A study by Swan (2002) indicated that online class discussions appeared to students to be more egalitarian than those in face-to-face classes. Richardson and Swan's study (2003) also found that social presence was positively correlated with students' perceived learning.

The third research question asks what variables affect students' perceptions of social presence in the course. It was found that for students in the online class, taking more online classes positively influenced their Social Presence scores. It may be that students with more experience in online courses have developed specialized learning skills and thus are better able to utilize the computer-mediated learning environment. Perhaps they understand the necessity for students to contribute to the learning community, since there is no "sage on the stage" (King, 1993, p. 1). In addition, they may have a better perspective on how people "project their identities" (Gunawardena, 1995, p. 151) in an online course.

In the next part of the third research question, Social Presence scores were compared by campus. The results showed that students on the urban campus had significantly more positive perceptions of social presence in their courses, whether they were face-to-face or online. This is a perplexing finding which clearly requires further research.

The final research question found that students' perceptions of social presence had no significant effect on learning outcomes. This stands in contrast to studies by Picciano (2002), Schutte (1997), and Rodriguez, Plax and Kearney (1996). An explanation may be that the course is a senior seminar in which students generally earned high grades on their papers. Perhaps there is not enough variation in their grades to adequately test this question. Further research should be done with students in introductory courses, where a greater range of grades is found.

The current study sought to examine students' perceptions of social presence for traditionally-aged undergraduates in a course offered both online and face-to-face. In this study, the social presence scale, as originated by Gunawardena and Zittle (1997) and modified by Richardson and Swan (2003), is clarified and extended. Neither of the prior studies used factor analysis to understand the themes underlying the items in the instrument. Gunawardena and Zittle (1997) summed all the items in the scale; Richardson and Swan (2003) combined the



answers to several survey items, although it is not apparent which individual items were used. The use of factor analysis in the current study should help other researchers utilize the scale to study social presence in computer-mediated learning environments. Further, the study finds results for traditionally-aged undergraduate students that are similar to those with graduate students and returning students, in that Social Presence is a predictor of Learner Satisfaction.

#### *D. Limitations.*

The generalizability of these findings is affected by several limitations. The sample is somewhat small and was not randomly selected. This is consistent, however, with much of the research in the scholarship of teaching and learning. The statistical tests used were appropriate for the sample size and a Levene's test suggested that the variance of the scores was approximately equal for the groups under comparison. Another potential limitation of these results is that the measures use self-report and thus respondents may be providing socially desirable answers. Assuring students of their anonymity was used to minimize this possibility, but it is granted that the amount of social desirability is unknown.

#### **V. Conclusion.**

A strength of the study is the use of the social presence scale originated by Gunawardena and Zittle (1997) and modified by Richardson and Swan (2003). The previous two studies examined the perceptions of students in computer-mediated environments, the former in a graduate conference and the latter in several courses taken predominantly by students not of traditional college age. Applying the scale to undergraduate education, both online and face-to-face, extends the knowledge developed in the previous studies. Performing a factor analysis to identify the two factors underlying the scale, Social Presence and Learner Satisfaction, hones the usefulness of the scale for future researchers.

The study has implications for educators teaching online courses. Information provided by the study may be used to support pedagogy that increases social presence. Many authors see the benefit provided to students who interact with faculty and each other in a learning community. Each learning community, then, has the opportunity to increase students' collaborative skills in future social environments. As more courses are offered entirely online, it clearly is important to establish standards for excellence in computer-mediated education.

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