
Instructor Social Presence within the Community of Inquiry Framework and its Impact on Classroom Community and the Learning Environment

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Abstract

A change in the Community of Inquiry (COI) framework with an addition of an instructor social presence is suggested. The sample included 137 students in the School of Business of an online university. The independent variables were teaching and social presences from the COI framework and instructor social presence from an instrument developed for this study. Dependent variables were community and the learning environment as measured by the Rovai Classroom Community Scale. Instructor social presence reflected a significant impact on community and the learning environment. A need for more research into the impact of instructor social behavior in online and blended formats exists.

The Community of Inquiry (COI) framework has become a significant tool for online and blended educational research (Swan & Ice, 2010). Following the first decade of the framework, Garrison, Anderson, and Archer (2010) noted that the keynote article for the framework was cited in over 600 scholarly publications. Maddrell, Morrison, and Watson (2011) reported that the original article by Arbaugh et al. (2008) had over 1,050 citations in Google Scholar. Recently, researchers have called for a critical examination of the components of the COI framework (Annand, 2011; Shea & Bidjerano, 2009; Xin, 2012). This study followed that call and suggests a COI framework that includes an instructor social presence (ISP).

An Overview of the Community of Inquiry (COI) Framework

The COI framework was first identified in online computer conferences. The framework contained three dimensions or presences: social presence (SP), cognitive presence (CP), and teaching presence (TP) (Xin, 2012). The relationship between these presences has a hypothesized

influence on the learning experience. Figure 1 illustrated the COI framework (Garrison, Anderson, & Archer, 2001).



Figure 1. Community of Inquiry Framework.

The COI framework is grounded in the constructivist philosophy (Swan, Garrison, & Richardson, 2009). As a reflection of its constructivist roots, the COI does not recognize the significant social impact of the instructor within the online classroom and does not include the instructor in social presence in the COI framework (Gunawardena & Zittle, 1997; Rourke, Anderson, Garrison, & Archer, 1999). The COI framework acknowledges the effect of instructor behaviors and attitudes only in teaching presence (Arbaugh & Hwang, 2006). Social presence of the COI framework captures only student social interactions (Swan et al., 2009).

Swan and Shih (2005) questioned whether an instructor social presence should be recognized within the COI framework. Annand (2011) concluded that the influence of social presence within the COI has been overstated and may not fully reflect online learning practices. Shea and Bidjerano (2009) suggested that the present COI model should be reexamined. Likewise, Shea et al. (2010) expressed concern that instructor social presence has not received adequate attention in the research. This study examined an instructor social presence within the COI framework.

Purpose of the Study

This study suggested a modified COI with the addition of an instructor social presence. The study examined the impact of teaching, social, and instructor social presence on two dimensions which contributed to effective learning outcomes: classroom community and the learning environment.

Literature Review

Community of Inquiry (COI) Framework

The COI framework as presented by Garrison, Anderson, and Archer (2000) reflected an interaction of three dimensions or presences: teaching, social, and cognitive (Figure 1). The framework was proposed as a generic model that could provide order and methodology for studying effectiveness of computer conferencing (Garrison et al., 2010). The COI framework is a process model of online learning that has a constructivist view as its core (Swan et al., 2009). The dimensions of the COI reflected the essential prerequisites for successful higher education. Learning is produced through the interaction of these presences (Garrison et al. 2010).

Measurement of the Community of Inquiry (COI) Framework

A team of researchers collaborated to develop a revised instrument to measure the COI. The instrument contained twelve items for measuring cognitive presence, nine items for measuring social presence, and thirteen items for measuring teaching presence (Swan et al., 2009). With the revised COI instrument, Swan et al. (2008) reported Chronbach's alpha of .94 for TP, .91 for SP, and .95 for CP. The authors concluded that the instrument provided a reliable measure of the COI. Arbaugh et al. (2008) presented the seminal article for the revised instrument to measure the COI framework. The authors supported construct validity for the COI model and a three-factor solution. Chronbach's alpha replicated the Swan et al. (2008) results of .94 for TP, .91 for SP, and .95 for CP. The present study used this instrument to examine the teaching and social presences. Social presence in the instrument measured peer social presence. The instrument did not measure instructor social presence. Other studies have used the Arbaugh et al. (2008) instrument for measurement of teaching and social presence (Diaz, Swan, Ice, & Kupczynski, 2010; Shea & Bidjerano, 2009; Swan et al., 2008).

Teaching Presence

The three dimensions of teaching presence were identified in a literature search by Anderson, Rourke, Garrison, and Archer (2001) and were defined as design and organization, facilitated discourse, and direct instruction. Shea (2006) identified two factors within teaching presence: design and organization, and directed facilitation. Arbaugh and Hwang (2006) and Swan et al. (2008) found support for the original three-factor structure of teaching presence. The COI model continued to identify three dimensions within teaching presence, but researchers called for further empirical research (Swan et al., 2009). Swan et al. (2009) used the Arbaugh et al. (2008) instrument that presents three components of teaching presence.

Shea (2006) reported that teaching presence predicted scores of connectedness (community) and sense of learning on the Classroom Community Index (Rovai, 2002a). Shea and Bidjerano (2009) reported that teaching presence explained 67% of the variance in cognitive presence, and social presence predicted little additional variance.

Cognitive Presence

Cognitive presence (CP) is described by the practical inquiry model that consists of four phases: triggering event, exploration, integration, and resolution (Garrison, Anderson & Archer, 2001). CP acknowledged a purposeful collaborative construction of knowledge consistent with a constructivist perspective of education (Arbaugh et al., 2008). Using one item as a measure of learning, Akyol and Garrison (2011) concluded that CP was associated with perceived learning. However, Wanstreet and Stein (2011) found that scores of CP were concentrated in the lower levels of learning and did not reflect high levels of integration or resolution with online or face-to-face classes. This study used the Rovai (2002b) Classroom Community Scale as a measure of self-reported learning and did not include CP in the survey instrument.

Social Presence

Short, Williams, and Christie (1976) presented the concept of social presence (SP) while considered the differing capacities of media for transmitting affective and emotional elements of learning interactions. Later, Gunawardena and Zittle (1997) described SP as "the degree to which a person is perceived as a 'real person' in mediated communication" (p. 4). Gunawardena and Zittle (1997) found that social presence was a predictor of student satisfaction. Richardson and

Swan (2003) adapted the instrument used by Gunawardena and Zittle and identified a significant relationship between social presence and a student's reported quality of learning. Hostetter and Busch (2006) administered the Gunawardena and Zittle social presence scale and the satisfaction scale to traditional-age online and face-to-face students. No significant difference in measures of peer social presence was identified between the class formats. Arbaugh et al. (2008) employed social presence survey items from Richardson and Swan (2003) and reported that social presence was a predictor of satisfaction and perceived learning. Cobb (2011) replicated the Gunawardena and Zittle (1997) study with nursing students using the same social presence scale and the satisfaction scale. Cobb (2011) reported a high correlation between social presence and satisfaction. A correlation was observed between social presence and student-perceived learning.

When Joo, Lim, and Kim (2001) examined the presences of the COI and satisfaction, their study observed that social presence was not a significant predictor of student satisfaction. Leong (2011) reported that social presence does not directly impact satisfaction. Wanstreet and Stein (2011) found a high correlation between social presence and cognitive presence. Based on a review of recent literature, Annand (2011) concluded that social presence does not influence cognitive presence in a significant way. Rather, most learning was produced by individual assignments or projects and not through collaboration with other students. Diaz et al. (2010) noted that social presence items from the Arbaugh et al. (2008) COI instrument were rated as least important by students. Likewise, Kellogg and Smith (2009) reported that 64.5% of students surveyed reported learning least from student-to-student activities. Kellogg and Smith (2009) questioned whether constructivist learning describes working adult online students. Although the COI framework asserted that student social presence is the critical link in learning, research findings with SP have been inconclusive. Although the social behavior of the instructor has long been considered within traditional or face-to-face education Gunawardena and Zittle (1997), the COI framework continued to ignore these behaviors.

Instructor Social Presence

Chickering and Gamson (1987) identified a high-level of instructor-student interaction as an element of good learning. Through a meta-analysis of research on distance education, Zhao, Lei, and Tan (2005) concluded that the degree of instructor involvement in content delivery and interactions with students was a significant determinant of effective distance education programs. Swan (2003) presented three interactions of learning: peer interaction, content interaction, and instructor interaction. While social presence research for online education has focused on peer interactions, instructor immediacy behavior that includes giving praise and self-disclosure can promote greater learning (Swan, 2003). Kellogg and Smith (2009) identified three learning interactions: student/student, student/instructor, and student content. Adult college students reported learning primarily from content and reported learning little from other students or the instructor. While peer interactions were used to compensate for inadequate instructor interactions, instructor immediacy is essential in the creation of a sense of community (Conrad, 2005).

Ice, Curtis, Phillips, and Wells (2007) found that audio feedback produced high student satisfaction. Ice et al. (2007) concluded that the audio feedback made students feel that the instructor cared more about the students. Meyer, Bruwelheide, and Poulin (2009) examined attitudes of 30 online graduate students regarding desirable faculty behaviors. Items reflecting instructor affective social presence were rated highest among the students.

Swan and Shih (2005) investigated student and instructor social presence with 51 online graduate students. Instructor social presence had a significantly greater impact on perceived learning from

online discussions when compared with the impact of student social presence. Swan and Shih (2005) proposed that this finding suggests that student social presence and instructor social presence represent separate constructs. More recently, Morris (2011) used interview questions adapted from Swan and Shih (2005) to investigate 25 community college students' perceptions of social presence. Many students described instructor involvement and support as the most helpful aspect of the course.

Shea et al. (2010) used quantitative content analysis of two online courses to investigate whether instructor social presence produces student social presence. The correlation between instructor social presence and student social presence was greater than between instructor teaching presence and student social presence (Shea et al., 2010). The researchers raised issues about the relation of social presence to learning and the role of social presence in the COI model. Furthermore, Shea et al. (2010) concluded that instructor social presence was not well represented in past research. A need for an examination of instructor social presence still exists.

Mayne and Wu (2011) concluded that instructor social presence techniques could have a significant impact on student social presence and group interaction. This present study expanded the findings of Mayne and Wu and examined the impact of student perceptions of instructor social presence on measures of community and the learning environment as presented by Rovai (2002b).

Classroom Community Scale

Rovai (2002b) presented and validated the Classroom Community Scale (CCS) that includes 20 items on a five-point Likert scale. The instrument contained 10 items that measured sense of community or connectedness. The sense of community reflected dimensions for feelings of cohesion, spirit, trust, and interdependence. Next, the instrument contained 10 items that measured the extent to which the learning needs are being satisfied. Rovai (2002c) examined the relationship between scores on the CCS and self-reported learning among online students. The two components of the scale explained 43% of the variance in self-reported learning. Rovai (2002c) offered support from the literature that self-reported learning could be a valid measure of cognitive learning. Shea, Li, Swan, and Pickett (2005) utilized the CCS to examine the relationship between teaching presence and community. Teaching presence explained 62% of the total variance in learning community. To expand the literature, the present study used the CCS to measure community and student perceptions of the learning environment.

Research Question

Based on a review of the literature, the following research question guided the investigation of the research problem of this study: Will teaching presence, social presence, and instructor social presence explain community and the learning environment?

Hypotheses

Based on the above research question, the study examined the following hypotheses:

H10 Teaching presence, social presence, and instructor social presence does not predict community.

H20 Teaching presence, social presence, and instructor social presence does not predict the learning environment.

Methodology

Survey Instruments

Items adapted from Arbaugh et al. (2008) measured teaching presence and social presence (peer). Teaching presence was measured by 13 items, and social presence was measured by 9 items. Items adapted from Rovai (2002b) measured the classroom community and student perceptions of the learning environment. Classroom community was measured by 10 items, and learning environment was measured by 10 items.

Instructor social presence items were developed from a review of the literature and were validated through two pilot studies. Based on a review of the literature, a list of 32 items that reflected instructor social behaviors and attitudes was developed. The items were formulated into an instructor social presence survey on a 5-point Likert-type scale. Two pilot studies were conducted to examine these items. The pilot studies were examined for factor structure and reliability. It must be emphasized that the instructor social presence scale is an initial attempt at measurement of instructor behavioral qualities in which the instructor is perceived as a real, caring professional who has genuine concern for student learning. Through the pilot studies, the survey was reduced to 10 items with factor scores from .706 to .880. Chronbach's alpha for the final ISP scale was .93.

Survey Administration

An invitation and a link to the survey were sent to department chairs within the School of Business of a single online university. If the department chairs chose to participate, he or she sent the invitation and survey link to his or her faculty members. Participation was optional for the faculty members. Student participation was also optional. A total of 137 students completed the survey.

Results and Findings

Factor Analyses: Exploratory: Teaching and Social Presences

An exploratory factor analysis was conducted with the survey items for teaching presence and social presence. With Varimax rotated factor loadings, strong separation between two factors was found. Specifically, the teaching items loaded strongly upon the first factor with loadings from .565 to .921. The social items loaded strongly upon the second factor in this analysis with factor loadings from .538 to .849. These results supported the use of a two-factor structure with regard to this set of items. Additionally, further analyses were conducted in order to determine the internal consistency reliability of these two factors. Teaching presence was found to have a Cronbach's alpha of .965, while social presence had a Cronbach's alpha of .909. These results indicated very high reliability. Arbaugh et al. (2008) reported a Chronbach's alpha of .94 for TP and .91 for SP.

Factor Analyses: Exploratory: Instructor Social Presence

Unrotated factor loadings of instructor social presence items produced factor loadings from .810 to .928. These high unrotated factor loadings suggest that all items load upon a single factor. Rotated factor analysis was deemed unnecessary. Instructor social presence was found to have a Cronbach's alpha of .971, indicating extremely high reliability.

Factor Analyses: Exploratory: Community

Unrotated factor loadings of community items produced factor loadings from .634 to .834,

however, one item was problematic with a factor loading of .382. All other items loaded upon a single factor. To remain consistent with prior administrations of the instrument, all survey items were included in the analysis. Including this item in the analysis did not reduce the alpha score for community. This scale was found to have a Cronbach's alpha of .876, indicating very high reliability.

Factor Analyses: Exploratory: Learning Environment

The unrotated factor loadings of the learning environment items produced factor loadings from .640 to .829. These high unrotated factor loadings suggest that all items load upon a single factor. Additionally, this scale achieved a Cronbach's alpha of .884, which indicates very high reliability.

Hypothesis Testing

In order to test hypothesis 1, a linear regression analysis was conducted including teaching presence, social presence, and instructor social presence as predictors of community. Table 1 summarized the results of this analysis. Social presence (peer) and instructor social presence demonstrated a significant and positive impact on community. However, teaching presence was not found to achieve significance in this analysis. Additionally, the adjusted *R*-squared was found to be .58 in this analysis, indicating that approximately 58% of the variation in community was explained based on these three predictors. This result indicates that overall, these independent variables are strong predictors of community.

In order to test hypothesis 2, a linear regression analysis was conducted including teaching presence, social presence, and instructor social presence as predictors of the learning environment. Table 2 summarized the results of this analysis. Teaching presence, social presence, and instructor social presence demonstrated a significant and positive impact on the learning environment. In this analysis, an adjusted *R*-squared of .68 was found, which indicates that approximately 68% of the variation in learning environment is explained on the basis of teaching presence, social presence, and instructor social presence. This result indicated that these three predictors constitute strong predictors of the learning environment.

Further tests were conducted in order to determine whether multicollinearity was present within these regression analyses. First, measures of tolerance and variance inflation factors were calculated for these two regression analyses. All measures of tolerance were found to be above .2, while all variance inflation factors were found to be below 5. These results indicate the lack of substantial multicollinearity within these two regression analyses. Furthermore, correlations were also conducted between these three predictor variables in order to determine the extent of the association between these measures. The highest correlation found consisted of the correlation conducted between teaching presence and instructor social presence, $r(135) = .868, p < .001$. While high, the measures of tolerance and variance inflation factors calculated with respect to these regressions indicate that this correlation, while very strong, did not produce unacceptable levels of multicollinearity.

Discussion of Findings

The researchers for this study examined a modified COI framework which included an instructor social presence. Regression analyses included TP, SP, and ISP as independent variables, and used either community or the learning environment as the dependent variable. Results indicated value for the addition of an instructor social presence to the COI framework. In the tests of the

hypothesis, instructor social presence displayed a significant impact on community and the learning environment.

Hypotheses

The null hypothesis was partially rejected on hypothesis 1. Regression analysis indicated that social presence and instructor social presence were significant predictors of community. However, teaching presence was not a significant predictor of community. This finding supported the inclusion of instructor social presence within the COI framework. These results indicated that teaching presence does not have a significant impact on classroom community. Social presence (peer) does have a significant impact on the classroom community. Instructor social presence has less impact on the classroom community that does the peer social presence.

The null hypothesis was rejected on hypothesis 2. Regression analysis indicated that teaching presence, social presence and instructor social presence were significant predictors of the learning environment. Again, this finding supports the inclusion of instructor social presence within the COI framework. Particularly noteworthy is the significant impact of social presence (peer) on the learning environment.

Limitations and Future Research

All of the subjects who were used for this study were online students in the School of Business at the same institution. These students may not be representative of students in other programs of study or students who attend other institutions. The instructor social presence scale used in this study is an exploratory instrument which requires replication in additional studies. Consequently, any conclusions regarding instructor social presence that are based on this survey instrument must be considered tentative until researched further.

This study used only online students. A study using face-to-face or blended could provide valuable information about instructor social presence in those formats. The dependent variables in this study were community and the learning environment. These variables did not measure actual learning. A study which includes a measure of actual learning would be desirable.

Conclusions

Would an instructor social presence dimension contribute to the value of the COI framework for understanding online learning? This research found support for inclusion of an instructor social presence within the COI framework. Both social presence (peer) and instructor social presence were significant in explaining the classroom community (Table 1). Teaching presence was not significant in explaining the classroom community. All presences (teaching, social, and instructor) were significant in explaining the learning environment (Table 2). These findings supported an instructor social presence dimension within the COI framework. These findings suggested that the social role of the instructor in online courses deserves greater consideration.

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APPENDIX A

Survey Instrument

All items were measured on a 5-point Likert-type scale as follows:

1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree.

1. The instructor clearly communicated important course topics.
2. The instructor clearly communicated important course goals.
3. The instructor provided clear instructions on how to participate in course learning activities.
4. The instructor clearly communicated important due dates/time frames for learning activities.
5. The instructor was helpful in identifying course topics in a way that helped me to learn.
6. The instructor was helpful in guiding the class towards understanding course topics in a way that helped me clarify my thinking.
7. The instructor helped to keep course participants engaged and participating in productive activity.
8. The instructor helped keep the course participants on task in a way that helped me to learn.
9. The instructor encouraged course participants to explore new concepts in this course.
10. Instructor actions reinforced the development of a sense of community among course participants.
11. The instructor helped to focus the course on relevant issues in a way that helped me to learn.
12. The instructor provided feedback that helped me understand my strengths and weaknesses.
13. The instructor provided feedback in a timely fashion.
14. Getting to know other course participants gave me a sense of belonging in the course.
15. I was able to form distinct impressions of some course participants.
16. Online or web-based communication is an excellent medium for social interaction.
17. I felt comfortable conversing through the online medium.
18. I felt comfortable participating in the course discussions.
19. I felt comfortable interacting with other course participants.
20. I felt comfortable disagreeing with other course participants while still maintaining a sense of trust.
21. I felt that my point of view was acknowledged by other course participants.
22. Online discussions help me to develop a sense of collaboration.
23. My Instructor is a caring person with the students.
24. My Instructor is a "real person" with the students.
25. My Instructor is NOT professional with the students.
26. My Instructor is humble with the students.
27. My instructor does NOT provide open communications.
28. My instructor does NOT create unity.
29. My instructor creates an attitude of sharing.
30. My instructor creates an attitude of group encouragement.³¹ My instructor does NOT draw the class together.
32. My instructor grades my performance fairly.
33. I feel that students in this course care about each other.
34. I feel that I am encouraged to ask questions.
35. I feel connected to others in this course.
36. I feel that it is hard to get help when I have a question.
37. I do not feel a spirit of community.
38. I feel that I receive timely feedback.
39. I feel that this course is like a family.
40. I feel uneasy exposing gaps in my understanding.
41. I feel isolated in this course.
42. I feel reluctant to speak openly.
43. I trust others in this course.
44. I feel that this course results in only modest learning.
45. I feel that I can rely on others in this course.

- 46. I feel that other students do not help me learn.
- 47. I feel that members of this course depend on me.
- 48. I feel that I am given ample opportunities to learn.
- 49. I feel uncertain about others in this course.
- 50. I feel that my educational needs are not being met.
- 51. I feel confident that others will support me.
- 52. I feel that this course does not promote a desire to learn.

The following items were reverse coded: 37, 39, 40, 43, 48, 49, 52, 53, 54, 56, 58, 61, 62, and 64

Items 1-13 on the survey were the teaching presence items on the COI instrument of Arbaugh et al. (2008).

Items 14-22 on the survey were the social presence items on the COI instrument of Arbaugh et al. (2008).

Items 23-32 are the instructor social presence items that were developed for this study.

Items 33-52 measure community and the learning environment. These items were reproduced from Rovai (2002b).

Table 1
Regression Analysis of Community

Measure	Coefficients				
	Unstand.	SE	Beta	t	p
(Constant)	.144	.259		.56	.579
Teaching Presence	.053	.099	-.063	-.53	.595
Social Presence	.678	.084	.628	8.11	.000
Instructor Social	.209	.093	.255	2.25	.026

Note: R = .77, R2 = .59, Adj. R2 = .58; F (3, 133) = 63.359, p < .001.

Table 2
Regression Analysis of the Learning Environment

Measure	Coefficients				
	Unstand.	SE	Beta	t	p
(Constant)	.536	.228		2.36	.020
Teaching Presence	.305	.087	.361	3.50	.001
Social Presence	.289	.073	.265	3.94	.000
Instructor Social	.237	.081	.286	2.91	.004

Note: R = .83, R2 = .69, Adj. R2 = .68; F (3, 133) = 98.587, p < .001.