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The Effects of Teacher Social Presence on Student Satisfaction, Engagement, and Learning

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Abstract

This research experimentally manipulated the social presence cues in instructor's messages to students. The context was an online professional development one credit course with one-to-one mentoring of students. Additionally, student learning intentions and levels of trust were examined as factors that may mitigate the effects of social presence. Results indicate that social presence affects the learner's interactions and perception of the instructor but has no effect on perceived learning, satisfaction, engagement, or the quality of their final course product. These findings suggest social presence is a correlational rather than a causal variable associated with student learning. Exploratory analyses suggest that trust and learning intentions are potentially important factors impacting student perceptions of the learning environment, and performance in the course respectively.

The Effects of Teacher Social Presence on
Student Satisfaction, Engagement, and Learning¹

Distance education has a long and venerable history in providing educational opportunities to those who cannot come to a campus. Recently, the emergence of the internet and web based learning interfaces have led to an explosion of interest in distance education (Duffy & Kirkley, 2004). At the University of Maryland, University College, distance education enrollments have grown from 4% of total enrollments in 1997 to 64% or 64,000 students in 2002 (Allen, 2002). In the State University of New York system, distance education has grown from eight courses and 119 students in 1995-1996 to over 1,500 courses and 38,000 students in 2000-2001 (Frederickson, Pickett, Shea & Pelz, 2000; Shea, Frederickson, Pickett & Pelz, 2004). The rate of growth of online courses at University of Phoenix Online appears to be exceeding even the record growth of their face based programs, with the distance courses expanding to serve 49,000 online students in just 3 years. Additionally, the University of Central Florida enrolls approximately 4,000 students each semester in their courses taught fully through the web. (Dziuban & Moskal, 2001). Finally, in 2003 over 3,000 courses were offered online through the Illinois Virtual Campus (<http://www.ivc.illinois.edu>) while the California Virtual campus catalog contained 4,400 courses (<http://www.cvc.edu>).

As distance education has become more widespread, it has begun to lose its status of second class citizen and is even seen by many as capable of providing richer educational experiences than obtainable in the face-to-face classroom (Mikulecky, 1998; Mahesh & McIsaac,

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1999). In large measure, this growth in interest and in respect comes through the improved ability to interact in online courses. While interaction was possible in on a basic level in most postal distance courses, online distance courses offer greatly improved opportunities for interaction in terms of both the quantity and the quality of interaction possible.

Online courses present the opportunity for immediacy in interaction, a responsiveness to ideas, thoughts, and questions that was not possible in traditional postal distance education formats. Both teachers and students value this improved interaction (Soo & Bonk, 1998), and in fact many students laud on-line learning for offering them a greater opportunity for student-teacher interaction than the traditional classroom experience (Mahesh & McIsaac, 1999). Online courses also encourage interaction from those who might not normally interact in a classroom, for example by providing a context in which learners can take their time in composing their contributions and even revise before contributing. In sum, interaction is seen as one of the keys to the success of the Internet based distance education (Picciano, 2002).

Understanding the role that interaction plays in facilitating learning is the focus of the research presented here. Two primary aspects of the interaction have been discussed as being particularly relevant. First, the sense of community or mutual caring that can arise through the interactions is hypothesized to provide the foundation for learning. The greater the sense of mutual caring, the greater will be the effort and the learning. Second, the critical thinking that can arise through the interaction is seen as directly related to learning. Bringing multiple perspectives and different data sources to the discussion is seen to promote deeper consideration of the ideas. Our focus in this research is on the first factor, the sense of community or the social presence established in the learning environment. This has generally been defined in terms of the relations between students in a course, i.e., they form a community. However, the instructor

almost certainly plays a critical role in fostering that sense of community and is a part of that community. Our focus is on the role of the instructor as an agent of community building – as an agent that fosters in the students a sense that there are real people who care about them and about their learning.

A point of clarification is needed before proceeding. We have been using community and social presence interchangeably. The concepts come from somewhat different literatures (see, e.g., Barab, Kling & Gray, 2004, and Gunawardena, 1995, or Rourke, Anderson, Garrison & Archer, 2001) but both are referencing the same sense of relationship and caring that can arise among people and that serves to support participation. Barab and Duffy (2000) have questioned the broad use of community to apply to any group of people that come together around a common issue or need. They argue that community, as used in the sociological literature (and as commonly thought of) has specific characteristics associated with sustainability beyond the initial set of people. Consistent with this concern, we will describe our focus as addressing social presence rather than community since in this study we do not look at the sustainability of community over time.

At its most basic level, social presence is simply the perception that there is another real person taking part in the interaction (Short, Williams & Christie, 1976). More generally, it is considered a continuum reflecting the degree to which participants feel they know one another (Abdullah, 1999; Rourke, et al., 2001). In the strict use of the term, this knowing can be either negative or positive. That is, one can feel they know a person well, and the person is seen as a valuable relation or as someone to be avoided. In this way, social presence has different connotations than community.

This neutrality as to the direction of affect can be seen in the history of social presence as a concept. It was initially considered to be a set attribute of the communication medium itself based on its capacity to transmit secondary communication information such as facial expression and verbal intonation (Short, et al., 1976). Thus from this perspective video provides more social presence cues than audio, which in turn provides more social presence cues than text - and those cues could indicate either positive or negative affect toward the other individuals. However, social presence has evolved to include the cues associated with the specific interactions between people that take place within the medium as well as users' subjective perceptions of those interactions (Walther, 1992). That is, it is not the medium alone that determines social presence but rather what the individuals do in the medium. In this way, social may be seen to be related to, and growing out of, the concepts of intimacy and immediacy as cues in face-to-face learning environments (Rourke, et al., 2001).

With this focus on interaction within the medium rather than the medium itself, social presence has consistently been considered primarily in terms of positive affect. That is, social presence, as reflected in the research on online interaction, considers social presence much as others think of building community. For example, Anderson, Rourke, Garrison and Archer (2001) in their model of online interaction, refer to an overarching community of inquiry where that community is established in part by and reflected in the social presence. Others have focused on defining the cues in online interaction that lead to high social presence, and again, high social presence is considered as positive affect (Swan, 2003; Rourke, et al., 2001, and Abdullah, 1999) These cues, which we will employ in our research, relate to personalization through the personal references and sharing, use of names and personal pronouns, and use of acronyms and symbols that suggest friendliness. Many of these cues coincide with the guidelines

for facilitating online courses to promote learning through a sense of community (Collison, Elbaum, Haavind & Tinker, 2000; Solomon, 2000). However, there is little empirical data to support that guidance, and the findings that exist are almost entirely correlational.

As an example of this correlational work, higher student social presence has been found to be related to greater interaction and use of CMC (Tu & McIsaac, 2002; Perse, Burton, Kovner, Lears & Sen, 1992). Higher levels of social presence, as reflected in the text of the messages, is also associated with higher levels of student satisfaction and perceived learning (Richardson & Swan, 2003). But within a correlational study, it is certainly possible that the causal relation could be in the opposite direction: highly motivated and more able students will participate more and exhibit greater social presence. There may also be other variables impacting both social presence and motivation and learning.

The research on social presence has focused almost exclusively on the social presence exhibited by fellow students. However, there is no reason to suspect the same findings would not be found in examining the social presence exhibited by the instructor. And in fact, it is quite possible that the instructor plays a crucial role in setting the social presence tone for the entire learning experience.

Existing research related to the impact of the instructor has taken place primarily in face-to-face classrooms, where the related concepts of intimacy and immediacy of the instructor were examined. Intimacy refers to a sense of closeness between people created by factors such as eye contact and physical proximity (Argyle & Dean, 1965) while immediacy is the psychological distance between two people involved in a conversation (Wiener & Mehrabian, 1968). Thus, while they focus on different cues, like social presence, the impact of the cues is on the feeling of “knowing” the instructor.

Increased teacher immediacy behaviors are associated with increased affect for the course, its content, and its instructor (Anderson, 1979). Additionally, increased immediacy of the instructor is associated with an increased intent of the students to take related courses and use the knowledge acquired (Kearney, Plax & Wendt-Wasco, 1985), as well as an increase in their perceived learning (Sanders & Wiseman, 1990). However studies using objective measures of student learning, rather than perceptions, have produced mixed results (for example see Kelly & Gorham, 1988 versus Anderson, 1979).

In sum, consistent with the discussion of community, there is a commonsense expectation that students will learn more and be more motivated to the extent that they do not feel isolated. Further, there is considerable correlational evidence to suggest that the social presence of the instructor is an important factor affecting student motivation, satisfaction, and learning. However, while there have been causal inferences made concerning this relationship, as was noted before, it is entirely possible that a third variable is impacting both social presence and performance. For example, we would expect highly motivated learners to both express greater social presence and demonstrate greater learning. Thus, in the work reported here, we have experimentally manipulated social presence in an authentic learning context to examine the causal impact on learning.

The Current Study

The present study seeks to extend the existing research on social presence in three ways. First, this study will use one-to-one mentoring as the learning context with the instructor establishing the level of social presence of the learning environment. Second, this is an experimental test of the effects of social presence. That is, we will manipulate the level of social

presence cues presented by the instructor to determine if we can infer a causal effect of instructor social presence on student interaction, performance and satisfaction. Finally, we will examine the relationship of the learning goals and trust of the students to their response to the social presence cues as well as their performance in the course.

In this study, instructors provided the same quality of feedback and amount of information to learners while varying the quantity of social presence textual cues associated with the feedback. We expect that the modeling of the high social presence instructor will lead to higher social presence in their students' responses. We also expect this higher social presence to lead to a greater sense of learning and higher satisfaction.

However, we certainly would not expect all students to respond to high social presence. Not everyone wants to be part of a community or be social just because they are in a course. Indeed, there are a number of individual difference variables that we would expect to mitigate the response to the social presence cues of the instructor. We will explore two of these variables: the goals the learners bring to the learning environment and the trust they bring to the environment. We consider this work exploratory because these variables will be examined correlationally and we do not have a large enough sample for any detailed partialing out of the variance.

Learning Goals

If students are in a course simply to fulfill a requirement, then we would certainly expect little impact of social presence cues on a feeling of knowing each other or on learning. However, if they have goals that include applying what is being learned, then high social presence may be expected to encourage participation, motivation, and satisfaction.

Trust

Trust is a factor presumed to be central in the willingness of people to discuss openly with a stranger they cannot see. Individuals enter a course with an operating level of trust which may be high or low (Yamagishi & Yamagishi, 1994) and this may be expected to interact with the social presence level presented by the instructor.

We are particularly interested in the measure of trust developed by Yamagishi and Yamagishi (1994) for two reasons. First, conceptually it is designed to assess trust in uncertain situations. That is, the instrument is designed to measure the trust individuals initially exhibit when they are in an unfamiliar situation with others; this is very often the case for students taking an online course. Second, they provide both correlational and experimental data supporting the theoretical framework underlying their concept of trust. (Yamagishi, 2001; Yamagishi & Yamagishi, 1994). Basically, that theory is that trust is based on the ability or tendency of an individual to monitor cues as to whether someone is or is not trustworthy. If there is a tendency or ability to monitor those cues, then individuals begin with a high level of trust, otherwise they enter a situation being suspicious.

The Learning Environment

All too often experimental studies are laboratory based or otherwise set in artificial contexts, limiting the generality, and often the acceptability of the findings. In this research, we tested the effects of instructor social presence in an authentic online learning environment that is particularly suited to the study of mentoring.

LTTS (<http://lts.indiana.edu>) has been offering online courses for teacher professional development since January 2001 (Kirkley, Malopinsky, Graham, Lim, & Duffy 2001). The current catalogue includes 45 one credit courses, all focused on supporting teachers in designing

inquiry lessons, integrating technology as a tool for student inquiry, and meeting curriculum content standards. The course architecture is a guided problem solving approach in which the students begin with a curriculum problem and, through a series of activities, end with a lesson plan that is tailored for the teacher's classroom and meets the three criteria listed above.

Importantly, throughout the process the teacher must provide documentation and reflections that demonstrate an understanding of basic concepts associated with learner centered instruction. A rubric for evaluating student work, shown in Table 1, details the concepts that are central to guiding the design of the activities, and the feedback provided to students. Course work, on average, requires about 30 hours of work, though student's self reported times have ranged from 10 hours to 100 hours. Because the courses are rich in resources and open ended, the students can spend many hours exploring the resources and working on their projects.

Critical to this research, the courses are designed to be supported by one-on-one mentoring in a self-paced context. A student may enroll and begin work at anytime and move at his or her own pace with a limit of 12 weeks to complete the course. Upon enrollment, an experienced teacher on the LTTS staff is assigned to welcome, motivate, and provide feedback to the student. Thus, the instructor offers the context for the social aspect of the learning experience. In evaluations, 92% of students have indicated that they agree or strongly agree with the statement that the instructor was "a big help to me in this course". Furthermore, only 27% of students agreed or strongly agreed with the statement, "I would prefer going through this course with other students", while 94% felt that the self pacing was important to them (Duffy, Del Valle, Malopinsky, & Kirkley, 2003). Thus the instructor plays an important role in this self-paced environment and the lack of other students is seen as a shortcoming by only a quarter of the students. Students also report they learn a lot in the courses (89%) and expect to or have

used the lesson they produced in the course in their own classroom (90%), confirming that students perceive it to be an effective learning environment.

While students in this study were taking LTTS courses as part of a graduate course requirement, we permitted students to choose any course from the catalogue in order to maximize the likelihood that the courses would be useful. Post course surveys confirmed that most students saw the courses as relevant to their studies. In fact students selected 13 different courses showing that a personal decision was made in order to select a relevant course. This was corroborated by statements like this one provided on the final survey: “It was a requirement for a class I'm taking at IU. I'm delighted with the course however.”

Method

Participants

The participants were graduate students enrolled at a large Midwestern university in the graduate course “Elementary and Secondary School Curriculum”. Twenty of twenty-three students selected LTTS as their option to fulfill the technology requirement in the course and all twenty agreed to participate in the study.

Fifteen of the twenty participants were between the ages of 20 and 30 while five were over 40. Eight of the participants had been or were full time teachers returning to school while the other twelve had only field work and student teaching experience. Of those with no full time teaching experience, one was a technology coordinator and one was a library specialist. A wide range of subject areas and grade levels were represented and this is reflected in the fact that thirteen different LTTS courses were selected by the twenty students.

Participants were randomly assigned to the high and low Social Presence conditions with the exception that those with no teaching experience were evenly distributed across the high and low Social Presence conditions.

Instructors

Two instructors were randomly assigned to five students in each condition. The instructors each had over five years teaching experience, were well versed in the use of technology and in learner centered instruction, and had at least six months experience mentoring students in LTTS courses. The instructors introduced the course and themselves to the students at the beginning of the course, encouraged them in their work on the course, answered questions and interacted in response to students, and provided feedback to students on their work.

Instructors were trained in the manipulation of social presence cues and were given a reference guide detailing eight social presence cues drawn from the literature with examples in order to keep their use of the cues consistent. There was an emphasis in the training that the feedback had to remain of high quality for both groups— only the social presence was to be manipulated. Because of the experience of these instructors with LTTS and as teachers, assuring the quality of the information was easily complied with. More difficult was providing the information in a low Social Presence frame, since as instructors they are naturally friendly and engaging. Consistent with this, we found that even in the low social presence condition, the instructors were perceived as somewhat friendly. Instructors continued to compare and critique each other's messages throughout the study to assure consistency of response types.

Social Presence

Instructors always provided the information and guidance they felt the student needed but varied the style of interaction that they used to convey this information. One might think of this as an engineering versus liberal arts style of communication. In the low Social Presence condition, the instructor provided the encouragement and feedback to students in a formal, efficient way but consciously avoided using the identified social presence cues. In the high Social Presence condition, the interactions were enhanced to make them more friendly and personal. Eight social presence cues identified in the research of Abdullah (1999) and Rourke et al. (2001) were used by the instructors with the high social presence group:

1. Humor / Playful asides
2. Emotions
3. Self-Disclosure
4. Support or agreement for an idea
5. Addressing people by name
6. Greetings / Phatics
7. Complimenting another's idea
8. Allusions of physical presence

Thus the cues ranged from sharing personal experiences in teaching as well as home life (stories about family events or how someone felt at the moment), to personalizing through greetings and use of names. Of course, not all of these were used in every message. The emphasis was on keeping the interaction natural with the eight social presence cues applied at the discretion of the instructors.

Moderating Variables

We examined two variables that may moderate the effect of social presence. Our sample size is not adequate for detailed analysis, thus the examination of these variables is considered exploratory.

Trust

Yamagishi's (2001) extensive work on trust in uncertain situations is consistent with our interest in the importance of trust in student participation in online courses. Their measure of Generalized Trust consists of six Likert scale items with internal consistency of .72 to .79 (Yamagishi & Yamagishi, 1994). Internal consistency in the present study is .87.

Learning Intentions

We sought to understand if the student was taking the course for purposes of learning or for some other non-learning reason, e.g., to complete a course requirement. A series of six questions asked students to rate their goals and expectations for taking the course on a five point Likert like scale. Goals presented involved learning about technology integration, creating a lesson plan, and getting credit with the latter reverse-scored. Expectations asked about were that the content would be valuable, if they were excited about working on this course, and if they were not expecting to learn much, with the last item reverse-scored. The Cronbach alpha reliability for this construct was .81.

Outcome Variables

While we manipulated the social presence of the instructor, it is important that the students perceived the instructors as exhibiting high or low Social Presence. Thus, one set of

outcome variables focused on assuring that our manipulation was appropriately perceived. Here we looked at three constructs related to the perceived social presence of the instructor. A second interest is whether the social presence of the instructor provided a model for the student, i.e., did students respond with higher social presence. Here we looked at the length and social presence of the student's responses to the instructor. Finally, the critical effect of social presence is on the outcomes of the course. Here we evaluated the final product (lesson plan) the students produced, as well as their satisfaction and perceived engagement.

Perceived Instructor Social Presence

Twenty six items, representing three subscales, were used to measure the perceived social presence of the instructor

Message Friendliness.

This is the most direct index of whether the manipulation of social presence was successful: was the formality or friendliness of our instructor's messages noticeable? Four items, with a five point Likert scale asked students about the friendliness of the messages (e.g., Messages from my facilitator were friendly). One item on the scale was reversed. The scale has an internal consistency (Cronbach alpha) of .85.

Instructor Friendliness.

Social presence theory suggests that the interaction in the text messages should impact the perception of the individuals. A series of seven items asked participants to rate their instructor on a five point scale anchored by two bi-polar adjectives (e.g. personal/impersonal). These bi-polar adjectives were adapted from Short, Williams and Christie (1976). In addition, four items, asked participants' to rate on a five point Likert scale the degree to which they

enjoyed interacting with their instructor e.g., I enjoyed working with my facilitator in this course. The combined scale has an internal consistency (Cronbach alpha) of .96.

Knowing Instructor.

Social Presence theory predicts that high social presence will lead to a feeling that one “knows” that person better (Abdullah, 1999). That is, the sense of sharing and openness leads to a belief as to “who the person is.” Eleven items asked students how well they felt they knew what their instructor was like as a person and how confident they were that the instructor did or did not possess particular characteristics (e.g., I am able to form a definite impression of my facilitator’s personality, even though we only communicated online; My facilitator is an interesting person). The scale has an internal consistency of .93.

Student Social Presence

We expected that students in the high Social Presence condition would interact more with the instructor and that their messages would reflect a high level of Social Presence. The exchanges in LTTS tend to be instructor initiated and thus we focus on the message level, expecting student messages to be longer and having higher social presence as measured by our indicators.

Message Length.

Message Length was indexed by words per message.

Level of Student Social Presence.

The level of Social Presence in the student messages was indexed as follows: each student message was divided into idea units and each idea unit was scored as to whether or not it included one of the social presence cues identified earlier. Inter-rater reliability of scoring social

presence calculated as percent agreement was .82.

Student Satisfaction

Eleven Likert items assessed Student Satisfaction in terms of perceived course quality, satisfaction with course features, and benefits of the learning experience. The internal consistency of the scale was .96.

Student Engagement

Thirteen items assessed four dimensions of Student Engagement: engagement in the course; amount of effort put forth; the value placed on the effort; and the relevance to their learning goals. The internal consistency of the scale was .94.

Perceived Learning

Four items assessed the amount students felt they learned and the impact they felt that the course had on them. The internal consistency of the scale was .92.

Quality of Final Course Product

The final course product (a completed lesson plan) was assessed by two raters using the rubric presented in Table 1. As shown in Table 1, sixteen features of the lesson plan in eight categories were rated using a four point scale.

Insert Table 1 about here.

The raters were trained in scoring using products from LTTS students who were not part of this study. There were several revisions and refinements of the rubric resulting from several iterations of the training process. After training, both raters independently scored all products with an inter-rater reliability of .89 calculated as percent agreement between raters.

Disagreements between raters were discussed and resolved.

Procedure

The researchers met with students in their class to solicit participation. It was explained that we were offering this learning experience and we are always looking at strategies to improve our courses. Thus we were not explicit as to the manipulation. All other contact was web based; the professor and students did not discuss the LTTS courses in class until the work was completed. In the final debrief with the whole class, the interactions and reactions suggested that they were unaware of the manipulation. Students moved at their own pace in beginning and moving through their course. However, they were constrained by the semester time frame and they were encouraged to enroll and begin within a week of the orientation. They began by going to the LTTS site and choosing and enrolling in a course from the online catalogue. They could choose any one of 36 courses available in the catalogue at that time. They were then asked to go to a survey website to complete a basic demographic survey and the items on trust and learning intentions.

Students could then begin their course and had six weeks to complete their work. In the course, students had five to seven tasks to complete as part of the guided problem solving approach. During the course, instructors provided welcoming messages, encouragement as necessary, answered questions, and provided feedback on each task.

Upon completing the course, students completed the standard course evaluation and were then asked to complete the post surveys on perceived instructor social presence, perceived learning, satisfaction, and engagement. As in the pre-assessment, these items were accessed in a web based environment.

Results and Discussion

Was the Manipulation of Social Presence Perceived by the Participants?

Before we can look at outcome effects, we must assure ourselves that the students did in fact perceive the manipulation of social presence. The most direct test of this is the response of participants to the assessment of Message Friendliness. A one-tailed t test of the mean rating of the “friendliness” of the instructor’s messages yielded a significant effect ($t=2.15, p<.05$). Using the square root of the pooled variance, the effect size was calculated to be .88. As shown in Table 2, both groups saw the messages as friendly (a score of less than 3) but the high social presence participants saw them as more friendly.

Insert Table 2 about here.

Less direct tests of the perception of social presence comes from an analysis of the ratings of Instructor Friendliness and Knowing Instructor. That is, social presence theory suggests that the friendliness of the messages should transfer to the perceived friendliness of the instructor and even to the perception of how well they feel they know the instructor (Abdullah, 1999). The effect of social presence on the perception of Instructor Friendliness approached

significance ($t=1.99$, $p<.06$) while the effect on Knowing Instructor failed to achieve significance ($t=1.18$). In both cases, the effect size calculated using Cohen's K was reasonable large, .79 and .53 respectively. Thus, even the failure to achieve significance for Knowing Instructor may be a function of the small sample size. In fact, a power analysis (Rosner, 1995), setting power at $\geq .80$ and significance at $p < .05$, indicated that a sample size of only 44 participants would be necessary to achieve significance. These findings are consistent in suggesting the manipulation of social presence was perceived by the participants but the effects were weaker the more distal the indicator from a direct measure of message perception.

 Insert Table 3 about here.

Did the Instructor Successfully Model Social Presence?

If individuals perceive high social presence, we would expect them to respond in kind. Hence we would expect the student messages to be longer and exhibit greater social presence. There is indeed a strong effect on student Message Length, with messages from participants in the high Social Presence condition being over twice as long as those in the low condition (see Table 3). A one-tailed t test ($t=2.56$, $p<.05$) revealed this difference to be significant, with an effect size of 1.0. Additionally, an analysis of the idea units in the messages indicated that students in the high Social Presence condition showed a higher degree of social presence in their messages to the instructor. Each idea unit was scored for the presence or absence of at least one social presence cue. A one-tailed t test of this data indicated that the proportion of idea units containing social presence cues was greater for the high Social Presence condition ($X=.58$) than for low Social Presence ($X=.44$) ($t=2.21$, $p<.05$; effect size of .88) The results indicate that the

social presence of the instructor was perceived by the students, somewhat impacted their perception of the instructor, and did impact their interaction with the instructor. That is to say, the manipulation of social presence was successful and seems to have created a more social and friendly atmosphere in the high Social Presence condition.

Does Social Presence Impact Instructional Effectiveness?

The benefit of social presence should be in the improved learning or at least a sense of learning. The most direct test here is an examination of the quality of the products the students produce in the course, that is, the learning outcomes. The outcome for all the LTTS courses is a lesson plan tailored to that teacher's classroom which should be inquiry based, address curriculum standards, integrate technology as a tool for student inquiry, and offer authentic and/or competency based assessments. Each product was scored on each of the 16 criteria presented in Table 1 using a four point rating where 0 is poor and 3 is excellent. A mean score for each of the eight primary categories was then calculated. The mean score of these eight categories was the index of the quality of the final product. Application of the rubric yielded mean rating scores ranging 1.30 to 2.63 with means of 2.23 and 2.14 for the high and low Social Presence conditions respectively. A t test comparing these means failed to yield a significant effect ($t < 1$), thus failing to support the direct educational benefit of social presence (see Table 4). An effect size of only .24 indicates that the lack of significance is unlikely to be an artifact of the small sample size.

Insert Table 4 about here.

We next turn to the perception of learning. Did the students feel they learned more in the high Social Presence condition? One tailed t tests on student's ratings of Perceived Learning failed to yield a significant effect ($t = -1.01$). Surprisingly, low Social Presence participants tended to yield higher ratings of Perceived Learning (see Table 4). An examination of Student Satisfaction also failed to yielded a significant effect, ($|t| < 1$), and again, the differences that do exist are in the wrong direction. Finally, we look at Student Engagement. There were four types of questions in this instrument, asking about amount of effort put forth, the value placed on the effort, and the relevance to their learning goals. A one-tail t test on Engagement failed to yield a significant effect ($t = -2.09$). As with the other perception variables, this effect is in the wrong direction, with low Social Presence yielding higher ratings of engagement. Indeed, if we had a two-tailed hypothesis, the Engagement effect would have reached significance. The reversal is unexpected and unexplained at this time.

The results are consistent. Social Presence impacts the atmosphere of the course as indexed by the perceptions of the instructor and the nature of the interaction, but there is no identifiable effect on the overall impact of the course as indexed by learning or perceived learning, engagement, or satisfaction.

Do Trust and Intentions Impact Perceptions of the Instructor or Outcomes?

Both trust and intentions were seen as variables that might counteract the manipulation of social presence. That is, both low trust and a non-learning (e.g., grade focused) intention in taking the course would both serve to moderate the effect of the manipulation of social presence in that students would be less likely to notice or respond to the social presence. However, we did find a robust effect of social presence in both noticing the instructor's friendliness and

responding in kind. Thus, the purpose of the analysis at this point is simply to explore the relation of these variables to student performance regardless of the level of social presence.

A lack of trust on the part of the students would lead to a prediction of less participation and less social presence exhibited on the part of those students. However, we found a high level of trust in the entire sample, with little variability. Scores ranged from 1.0 to 3.0 on a five point scale with a sample standard deviation of .55, where a score of 1.0 indicates very high trust. Thus we would expect very little effect of trust. Nonetheless, the Pearson product moment correlation analysis indicated a significant relationship between trust and Instructor Friendliness ($r=.474$, $p<.05$). However, trust does not seem to be related to the length or social presence of the messages students wrote, nor to any of the outcome variables (see Table 5). Thus while high trusting participants saw the instructor as more friendly regardless of treatment condition, it is not related to any performance measure. In particular it is not significantly related to the student's interaction in the course. This may well be due to the high level of trust exhibited by all participants. Indeed, the Yamagishi and Yamagishi (1994) theory and data predict that more educated individuals, like our graduate student participants, would be expected to exhibit higher level of trust.

Learning Intentions was measured by six items asking about why the participants were taking the course and how much they expected to learn. Scores ranged between 1.33 and 4.0 on a five point scale, with a mean and standard deviation of 2.23 and .63 respectively. Thus there was a considerably wider range of scores on this variable. We would expect that students who took the course more seriously and saw more value would both participate more and learn more. The correlation of Learning Intentions with each of the variables in presented in Table 5, where it can be seen that there is a significant correlation between Learning Intentions and the score on

the final product ($r=-.758$, $p<.01$); the negative correlation is due to the opposite directionality of the scales. However none of the other effects were significant.

Insert Table 5 about here.

In sum, these exploratory analyses confirmed the basic expectations for the constructs. Trust impacts perceptions of the instructor while Learning Intentions impacts performance. The greater the trust of the individual, the more friendly the instructors is seen to be, while the greater the intention to learn, the better the quality of the final product.

General Discussion and Conclusions

Social Presence

Social presence has been viewed as a critical factor in the success of online learning. High social presence is thought to create an approachable environment and hence more satisfying learning experience and greater learning. Additionally, it is believed to create an atmosphere where students are more willing to ask questions and interact, again, with the expectation that this interaction will promote learning. Correlational studies have offered support for these hypotheses. However, the casual approach in this study, with the manipulation of social presence, failed to support a causal relationship. While social presence increased the amount written by the students and influenced their perception of the instructor, it had no effect on perceived learning, satisfaction, engagement or the quality of the final course product.

One explanation of our results is that social presence may be more of a binary variable

where some threshold level of social presence is important, but once the threshold is reached there is little additional impact. In practical terms, a learner must feel there are other people involved who are invested to some degree, but that is all that is necessary in terms of the impact of the “social” environment. It is important to note that while a significant difference was found in the level of social presence perceived between conditions, both groups did see the instructor messages as friendly. Thus both conditions may have exceeded the threshold level of social presence necessary. This interpretation, of course, is considerably different from the more general view that the higher the degree of social presence (and thus the bonding of individuals) the greater will be the level of learning in an online environment.

However, there are certainly cautions in drawing the conclusions we have drawn. In particular, we have looked at social presence and community under a very restricted time frame: six weeks at most. Certainly over years, as for example in being a part of a program, we might expect high social presence to be an important (though certainly not the only) variable in developing ones identity as a member of a profession, e.g., in the case of our participants as a teacher engaged in professional considerations of pedagogy and theories of how people learn. We certainly are focused on the short term, course based environment.

Another constraint is that we are looking at a cognitive apprenticeship relationship between instructor and student rather than a larger community as reflected in a classroom cohort where most discussion of social presence occurs. These are certainly different relationships and require detailed exploration, though we do not see any reason to suggest social presence would be a more important factor in one or the other.

Trust and Learning Intentions were also expected to impact student performance. We included these measures to explore their relationship to the outcome measures and offer some suggestions for future research. We found trust to be an effective variable for predicting participant perception of the instructor's friendliness, an effect consistent with the concept of trust. Future research might usefully look at trust in undergraduate and continuing education courses where, based on the theory, it should be an important variable. From the Yamagishi and Yamagishi (1994) theoretical framework, it would be predicted that those with low trust would not notice cues related to trust and hence would not be impacted by cues suggesting a trusting situation; a potential dilemma for distance education.

Learning Intentions, as one might expect, was strongly related to the quality of the final product produced in the course. Of course most views of learning would identify the learner's intentions as a critical variable determining what is learned. Unfortunately it is too seldom assessed.

A Need for Richer Theory and Measures

While we are focused on social presence in this research, the findings raise questions about the larger research agenda and the underlying theory and models related to the study of online interaction. The research we are concerned about involves those efforts to analyze entire online discussions, determining the types of contributions participants make (Rourke et al., 2001; Gunawardena & Zittle, 1997; Henri, 1992). This work is primarily focused on understanding learning experiences with the expectation that increased collaborative critical thinking and increased sense of community lead to greater learning. However, this work seldom tests this underlying assumption nor does it make clear the mechanisms through which community and

critical thinking impact learning. These are non-trivial relationships that need to be made explicit. For example, both community and critical thinking are generally assumed to lead to greater learning, but certainly we would expect each to operate in a different way.

There is a considerable amount of research on the role of community in student persistence in college (Kuh, 2002). In that research, a distinction has been made between social and academic community. Membership in an academically related community is one of the best predictors of student persistence through the freshman year in college. Academic communities include groups of students who share a dormitory floor, form a special interest group, or take a set of classes together. In contrast, social community, e.g., membership in fraternities and sororities, is not associated with persistence. Reinforcing this view, research on orientation programs at college suggest that the programs are more effective if the social component is short and the orientation is focused on academics. If the emphasis is socializing --- more emphasis on BBQ's than on learning about the academic setting – the orientations are less effective (Kuh, 2002).

If we now consider these findings from higher education in terms of online learning, we can hypothesize that we want to distinguish between types of social presence, looking at social presence that is in the context of the course and study material rather than pure socializing. Warm up activities, so common to establishing community in online environments, will be more effective, this other stream of research suggests, if they are used to engage the subject matter while getting to know the other students, rather than just being social.

In addition to distinguishing the importance of the context of social presence, the higher education research also suggests that the impact of social presence is on persistence. Persistence in turn provides the opportunity for learning – but does not cause learning. The issue of

persistence is an especially salient one in online education where drop-out rates are often extremely high. Research on using personable motivational messages in traditional postal-based distance education provides some evidence for the role of social presence in encouraging persistence (Visser, Plomp, & Kuiper, 1999). We note that this discussion is of a theoretical framework, a set of hypotheses that arise from a more detailed consideration of how interaction impacts learning.

The problem of theory and predictions extends beyond social presence. There are many frameworks for analyzing online discussions, but Garrison, Anderson, and Archer (2001) provide what we think is a very useful classification. In addition to social presence, they suggest that an important component of discussion is cognitive presence – a critical, reflective discourse (Garrison et al., 2001). Certainly one would think that if students are engaged in critical thinking they will learn more. However, it is necessary to test that hypothesis and to the best of our knowledge that has not been done. There are two important considerations in thinking about how critical thinking influences learning: how we measure critical thinking and what we already know about collaborative work. While critical thinking, the construct, may be related to learning, it is questionable that the measures currently used would be related. This is important, because the research tends to bless those discussions where the measures defined as critical thinking are high, and there is the expectation that the design of discussions that increase those measures is “good”.

But consider that these measures of critical thinking currently do not attend to the quality of the argument or even the relevance of one statement to another. They may classify text statements as referencing another statement, but there is no consideration as to whether or not that reference makes sense from an argument perspective. For example, in the case of Garrison

et. al. (2001), cognitive presence or critical thinking is indexed by the number of text statements that trigger inquiry, or reflect exploration, integration, or resolution of an inquiry. Can we assume that a counting of these isolated statements, without looking at the cohesion of an argument, i.e., if the statements are even related to the argument, really reflect critical thinking such that the more there are of such statements, the better? While this is possible, it is not necessarily true, and thus this is a hypothesis that needs to be tested.

Thus far we have focused on the validity of the measures of critical thinking that have been used. However, there is also research which leads us to question under what circumstances collaboration is valuable, even when there is a high level of critical thinking present. For example, Stasser and his colleagues (1999, 2000) report a series of studies that consistently suggest that people in a group tend to share what they know in common rather than the unique knowledge they each bring to the situation. The task is one in which three people must decide who is the best candidate to be hired. They each study 18 characteristics of the three candidates, but each is a specialist on one of the candidates, i.e., they have unique information on that candidate. After studying the three candidates individually, they meet to discuss the candidates and decide, but have to rely on their memory in the discussion. An analysis of the discussion and of the ratings of important characteristics after the discussion consistently indicate that that participants do not naturally share their unique information – and when they do, there is a tendency for the others to ignore it, ostensibly because it is not something they all “know”. These participants were certainly involved in critical thinking as they were trying to weigh the features, but we wonder how much learning occurs as a function of collaboration when the focus is on what they already know.

From a non-research perspective we can also imagine many situations where there is

considerable critical thinking exhibited by the participants but it is a matter of the “blind leading the blind”. Thus, this critical thinking could even be detrimental to learning in that the students are reinforcing and elaborating their current misconceptions and there is certainly a rich research base on the difficulty of changing misconceptions. But in like manner we can also imagine rich critical thinking sessions that are not particularly collaborative but rather reflect a lot of posturing and arguing from emotions rather than reason. Again, we would measure high levels of critical thinking, but we wonder about the relationship to learning.

Conclusions

There are four conclusions we draw from this research and discussion. First, social presence does not appear to be causally related to learning. While students recognize and respond in kind to social presence, they do not learn more, feel they learned more, or feel the experience was more useful when social presence is high.

Second, trust and learning intentions are potentially important factors impacting student perceptions of the learning environment and performance.

Third, we need richer theoretical frameworks to guide our research on online discussion in learning contexts. Activities in a learning environment must be conceptualized in relation to their effect on learning and must be tested in terms of their impact on learning and motivation. We need to move away from seeing discussions as ends in themselves if our focus is on learning. We also need to reach out to other areas of research looking at similar concepts to help enrich the thinking. Certainly the work on persistence and communities in higher education offers insights into conceptualizing social presence. The research on collaborative decision making also yields hypotheses as to limitations in the impact of collaboration and critical thinking. However, like

the higher education research, this work does not examine the impact on learning.

Finally, we need to approach the research agenda with more rigorous research paradigms. This is a very difficult area of research. We need to explore both experimental and qualitative strategies. Collaborative environments are extremely complex and there are many potential covariates in the natural learning environment. The present research demonstrated the importance of testing assumptions in an experimental paradigm. But as we have argued, it is also important to obtain a richer understanding of the interactions that occur in online discussions. Thus, we might usefully supplement the counting of types of interactions with rich qualitative interviews to help enrich our understanding of what is happening from the participant perspective. After all, this is a very new area of research, and we are certainly still early in the theory and hypothesis generation phase.

References

- Abdullah, M. H. (1999). An examination of social presence cues in online conferences. (Doctoral dissertation, Indiana University, 1999). *Dissertation Abstracts International*, 60, 11.
- Allen, N. (2002) *Climbing a mountain (and finding a range!)*. Paper presented at the annual meeting of the Western Cooperative of Educational Telecommunications, Denver, CO.
- Andersen, J. F. (1979). Teacher immediacy as a predictor of teaching effectiveness. In D. Nimmo (Ed.), *Communication Yearbook*, 3, (pp. 543-559). New Brunswick, NJ: Transaction Books.
- Anderson, T., Rourke, L., Garrison, D.R., & Archer, W. (2001). Assessing teaching presence in a computer conferencing context. *Journal of the Asynchronous Learning Network* 5(2). [Electronic version]. Retrieved May 10, 2004 from http://www.sloan.org/publications/jaln/v5n2/v5n2_anderson.asp
- Argyle, M., & Dean, J., (1965). Eye-contact, distance and affiliation. *Sociometry* 28, 289-304.
- Barab, S. A., & Duffy, T. M. (2000). From practice fields to communities of practice. In D. Jonassen & S. Land (Eds.), *Theoretical foundations of learning environments*. Mahwah, N.J: Lawrence Erlbaum Associates.
- Barab, S., Kling, R., & Gray J. (2004). *Designing virtual communities in the service of learning*. New York: Cambridge University Press.
- Collison, G., Elbaum, B., Haavind, S., & Tinker, R. (2000). *Facilitating online learning: Effective strategies for moderators*. Madison, WI: Atwood Publishing.
- Duffy, T. M., Del Valle, R., Malopinsky, L., & Kirkley, J. (2003) *Teacher professional development: The practical and the pedagogical in meeting teacher's needs*. Manuscript

in preparation.

- Duffy, T. M., & Kirkley, J. (Eds.) (2004) *Learner centered theory and practice in distance education: Cases from higher education*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Dziuban, C., & Moskal, P. (2001). Evaluating distributed learning in metropolitan universities. *Metropolitan Universities, 12*(1). Indianapolis: Indiana University-Purdue University Indianapolis (IUPUI) Press.
- Frederickson, E., Pickett, A., Shea, P., & Pelz, W. (2000). Factors influencing faculty satisfaction with asynchronous teaching and learning in the SUNY learning network. *Journal of the Asynchronous Learning Network, 4*(3) [Electronic version]. Retrieved May 10, 2004 from http://www.sloan-c.org/publications/jaln/v4n3/v4n3_fredericksen.asp
- Garrison, D. R., Anderson, T., & Archer, W. (2001). Critical thinking, cognitive presence, and computer conferencing in distance education. *The American Journal of Distance Education 15*(1), 3-21.
- Gunawardena, C. N. (1995). Social presence theory and implications for interaction and collaborative learning in computer conferences. *International Journal of Educational Telecommunications 1*(2/3), 147-166.
- Gunawardena, C. N., & Zittle, F. J. (1997). Social presence as a predictor of satisfaction within a computer-mediate conferencing environment. *The American Journal of Distance Education 11*(3), 8-25.
- Henri, F. (1992). Computer conferencing and content analysis. In A. R. Kaye (Ed.), *Collaborative learning through computer conferencing--The Najaden papers* (pp. 117-136), Berlin: Springer-Verlag.
- Kearney, P., Plax, T.G., & Wendt-Wasco, N. J. (1985). Teacher immediacy for affective learning

- in divergent college classes. *Communication Quarterly* 33, 61-74.
- Kelley, D. H., & Gorham, J. (1988). Effects of immediacy on recall of information. *Communication Education*, 37(3), 198-207.
- Kirkley, J. R., Malopinsky, L., Graham, C., Lim, B., & Duffy, T. M. (2001). *Supporting preK-12 teachers in designing online, inquiry-based instruction*. Paper presented at the Annual Meeting of American Educational Research Association, Seattle, WA.
- Kuh, G. (2002). *From promise to progress: How colleges and universities are using student engagement results to improve collegiate quality*. (National Survey of Student Engagement Annual Report). Bloomington, IN: Indiana University.
- Mahesh, V., & McIsaac, M. S., (1999). *Distance education: Learner-teacher interaction and time spent teaching*. Paper Presented at the National Convention of the Association for Educational Communications and Technology, Houston, TX.
- Mikulecky, L. (1998). Diversity, discussion, and participation: Comparing web-based and campus-based adolescent literature classes. *Journal of Adolescent & Adult Literacy*, 42(2), 84-97.
- Perse, E. I., Burton, P., Kovner, E., Lears, M.E., & Sen, R.J. (1992). Predicting computer-mediated communication in a college class. *Communication Research Reports*, 9(2), 161-170.
- Picciano, A. G. (2002). Beyond Student Perceptions: Issues of Interaction, Presence, and Performance in an Online Course. *Journal of the Asynchronous Learning Network* 6(1), 21-40.
- Richardson, J. C., & Swan, K. (2003). Examining social presence in online courses in relation to students' perceived learning and satisfaction. *Journal of the Asynchronous Learning*

Network 7(1): 68-88.

Rosner, B. (1995). *Fundamentals of Biostatistics* (4th ed.). Belmont, CA: Duxbury Press.

Rourke, L., Anderson, T., Garrison, D. R., & Archer, W. (2001). Assessing social presence in asynchronous text-based computer conferencing. *Journal of Distance Education* 14(3), 51-70.

Sanders, J., & Wiseman, R., (1990). The effects of verbal and nonverbal teacher immediacy on perceived cognitive, affective and behavioral learning in the multicultural classroom. *Communication Education* 39(4), 341-353.

Shea, P., Frederickson, E., Pickett A., & Pelz, W. (2004). Faculty development, student satisfaction, and reported learning in the SUNY Learning Network. In T. M. Duffy & J. Kirkley (Eds.), *Learner-Centered Theory and Practice in Distance Education* (pp. 343-379). Mahwah, N.J: Lawrence Erlbaum Associates.

Short, J., Williams, E., & Christie, B. (1976). *The social psychology of telecommunications*. New York: Wiley.

Solomon, G. (2000). *E-Moderating: The key to teaching and learning online*. London: Kogan Page, Ltd.

Soo, K. S., & Bonk, C. J., (1998). *Interaction: What does it mean in online distance education?* Paper presented at ED-MEDIA/ED-TELECOM 1998 World Conference on Educational Telecommunications, Freiburg, Germany.

Stasser, G. (1999). The uncertain role of unshared information in collective choice. In L. Thompson, J. Levine, & D. Messick (Eds.), *Shared knowledge in organizations*. Mahwah, N.J: Lawrence Erlbaum Associates.

Stasser, G., Vaughan, S. I., & Stewart, D. D. (2000). Pooling unshared information: The benefits

- of knowing how access to information is distributed among members. *Organizational Behavior and Human Decision Processes*, 82, 102-116.
- Swan, K. (2003). Developing social presence in online discussions. In S. Naidu (Ed), *Learning and Teaching with Technology: Principles and Practices* (pp. 147-164). London: Kogan Page.
- Tu, C. H., & McIsaac, M. S. (2002). The relationship of social presence and interaction in online classes. *The American Journal of Distance Education* 16(3), 131-150.
- Visser, L., Plomp, T. & Kuiper, W. (1999). *Developmental research applied to improving motivation in distance education*. Paper Presented at the National Convention of the Association for Educational Communications and Technology, Houston, TX.
- Walther, J. B. (1992). Interpersonal effects in computer-mediated interaction: A relational perspective. *Communication Research* 19(1), 52-90.
- Wiener, M., & Mehrabian, A. (1968). *Language within language: Immediacy, a channel in verbal communication*. New York: Appleton-Century-Crofts.
- Yamagishi, T. (2001). Trust as a form of social intelligence. In K. S. Cook (Ed.), *Trust in society* (pp. 121-147). New York: Russell Sage Foundation.
- Yamagishi, T., & Yamagishi, M. (1994). Trust and commitment in the United States and Japan. *Motivation and Emotion*, 18(2), 129-166.

Table 1

Rubric Criteria for Judging Quality of Final Course Product

Rubric Criteria
1. Learner-Centeredness
<ul style="list-style-type: none"> __ To what degree does the lesson encourage students to be involved in critical thinking decisions? __ To what degree does the lesson support student choice by providing open-ended sections related to pacing, selection of topic or end design of the end product?
2. Inquiry-Based
<ul style="list-style-type: none"> __ To what degree does the lesson require students to address a <u>semi</u>-structured question, exploration, issue or problem? __ To what degree is the problem meaningful to the student and grounded in the life and work beyond the school? __ To what degree does the lesson provide steps for helping students identify relationships between different topics or subject areas? __ To what degree does the lesson help students develop habits of mind that encourage them to ask questions about evidence, viewpoint, pattern and connection, supposition and why things matter?
3. Engagement
<ul style="list-style-type: none"> __ To what extent does the lesson provide opportunities for <u>all students</u> to be actively engaged in constructing, connecting and applying their knowledge? __ To what extent does the lesson require a high level of interaction, communication and/or collaboration with others?

4. Goals/Objectives

- Are the lesson goals consistent with an inquiry-based/problem-solving outcome?
- To what extent does the lesson content address course goals and objectives?
- To what extent are assessments aligned with content goals and objectives?

5. Curriculum and Standards

- To what extent does the lesson support local, state and/or national curriculum standards appropriate to the targeted student group?

6. Assessment

- To what extent are non-traditional (individualized task-work based) assessment strategies described?
- To what extent do evaluation criteria state what students must know and be able to do to successfully accomplish the task/s?

7. Role of the Teacher

- To what extent does the lesson describe how the teacher supports student inquiry?

8. Use of Technology

- To what extent is technology used as a tool to support student inquiry?

Note. Each criterion was scored on a four point scale with a maximum possible score of 3.

Table 2

Mean (Standard Deviation) of Rating of Perceived Instructor Social Presence by Condition

Condition	Message Friendliness**	Instructor Friendliness*	Knowing Instructor
High Social Presence	1.41 (0.67)	1.77 (.64)	2.10 (.73)
Low Social Presence	2.24 (1.01)	2.53 (1.02)	2.51 (.80)

Note. All measures used a five point scale where a score of 1 indicated that the mentor or message was warm and familiar.

* $p < .10$, ** $p < .05$

Table 3

Mean (Standard Deviation) of Student Social Presence by Condition

Condition	Message Length ^{a **}	Level of Student Social Presence ^{b **}
High Social Presence	77.8 (60.0)	58% (14%)
Low Social Presence	43.6 (23.5)	44% (15%)

^a Message Length was measured as the average number of words per message.

^b Level of Student Social Presence was measured as the percentage of ideas units written by the student containing one or more social presence cues.

**p<.05

Table 4

Mean (Standard Deviation) of Student Outcome Measures by Condition

Condition	Quality of Final Course Product ^a	Perceived Learning ^b	Student Satisfaction ^b	Student Engagement ^b
High Social Presence	2.23 (.33)	2.27 (.73)	2.42 (.83)	2.51 (.64)
Low Social Presence	2.14 (.42)	1.90 (.89)	2.14 (1.1)	1.84 (.78)

Note. No differences between groups was found to be significant using a one-tailed t test.

^a This measure was scored on a four point scale with a maximum possible score of 3.

^b This measure was scored on a five point scale where a score of 1 indicated a positive response.

Table 5

Correlations Between Individual Difference Variables and Outcome Variables.

Outcome Variable	Individual Difference Variables	
	Trust	Intention
Message Friendliness	.296	-.028
Instructor Friendliness	.474**	.062
Knowing Instructor	.257	.121
Length of Message	.251	-.084
SP of Message	.145	-.309
Satisfaction	.418	.287
Engagement	.256	.377
Perceived Learning	.250	.232
Quality of work	-.028	-.758***

** p < 0.05, *** p < 0.01