

Examining Teacher Verbal Immediacy and Sense of Classroom Community in Online Classes

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This study used quantitative measures to gather data from online students to analyze the effects of perceptions about teacher verbal immediacy and classroom community on students' level of satisfaction, perceived learning, and online discussion frequency. Using convenience sampling, 214 students were recruited from undergraduate and graduate online courses. A bivariate correlation, multiple linear regression, and two-way analysis of variance (ANOVA) were used for data analysis. The Pearson coefficients demonstrated the effects of teacher verbal immediacy and sense of classroom community on satisfaction and perceived learning were positive. Multiple regression analysis revealed that sense of classroom community was the only significant factor able to explain variability of satisfaction and perceived learning. Teacher verbal immediacy was shown to be the only significant predictor of online discussion frequency. The ANOVA results indicated that students in person-oriented courses perceived higher degree of teacher verbal immediacy and sense of classroom community, regardless of their gender. Results of this study suggested that the development of sense of classroom community is critical to enhance students' satisfaction and perceived learning. In addition, the role of teacher verbal immediacy is important in online discussion. Teachers should develop communication behaviors that reduce social and psychological distance in the online learning environment.

With the rapid development of computing and telecommunications technology, online learning has gained popularity in both higher education and the corporate training industry. Continued growth of e-learning in the future is expected in both academic and industrial fields. Online learning, indeed, has the potential to offer a rich and stimulating educational environment (Windschitl, 1998). However, online learning brings opportunities as well as challenges for learners and instructors. One area that has long been neglected by researchers and practitioners is online pedagogy. Online learning should not simply be considered as a delivery system; more importantly, it should be viewed as a form of pedagogy (Meyen, Aust, Bui, Ramp, & Smith, 2002). It is the pedagogy, not technology, that connects teachers, learners, and course content in a meaningful way. Clark (1994) also pointed out the importance of instructional method in technology-based learning. Today, there is a huge rush to put everything online without much consideration of the aspect of effective online pedagogy.

Online learning possesses two distinguished pedagogical features that were inefficient in the earlier generations of distance education. One is interaction; the other one is collaboration. In terms of interaction, teachers may now interact with the individual student or the whole class more effectively compared to the past when distance learning technologies were mainly print, radio, and television. The communication between teacher and student has changed from one-way communication to two-way communication. The Internet makes interaction between geographically separated course participants more effective. In terms of collaboration, students are given more opportunities to learn with the other students, to share ideas, and to create knowledge. At the earlier ages of distance education, there was only one source of learning materials. Now in online learning, students can easily extend their learning experience by linking to other resources. Learning then becomes more authentic and collaborative.

Despite the new teaching and learning experiences derived from these two pedagogical features, there are some challenges associated with them deserving the online instructors' attention. The ultimate challenge for all types of distance education including e-learning is the problem of "transactional distance." Moore defined transactional distance as "...a psychological space of potential misunderstandings between the behaviors of instructors and those of the learners..." (Moore & Kearsley, 1996, p. 200).

Moore's Theory of Transactional Distance stated that distance is a pedagogic, not geographic phenomenon. He then suggested that this distance has to be overcome if effective, deliberate, planned learning is to occur. Based on the idea of transactional distance, Moore (1989) proposed a typology describing three types of interaction in distance education: learner-instructor interaction, learner-learner interaction, and learner-content interaction. Learner-interface interaction, the fourth type of interaction, was later proposed by Hillman, Willis, and Gunawardena in 1994 when distance education used more

telecommunications technologies. The fifth category of interaction, vicarious interaction, was proposed by Sutton (2001) to capture the interaction that “takes place when a student actively observes and processes both sides of a direct interaction between two other students or between another student and the instructor. Interaction in this sense is not first hand, but one level removed, hence the term vicarious” (p. 227). Integrating the ideas from both theory of transactional distance and the first four types of interaction, Chen (2001) proposed a model suggesting that “Transactional distance perceived by learners is a combination of four essential dimensions: learner-instructor, learner-learner, learner-content, and learner-interface transactional distance” (p. 462).

At the same time, Chen (2001) examined Moore’s theory and identified the dimensions constituting transactional distance in the web-based courses. Seventy-one students completed an online survey and a factor analysis was performed at the end of a semester in Taiwan. The four measures of transactional distance were positively intercorrelated. Particularly, students perceived more learner-instructor and learner-learner transactional distance than learner-content and learner-interface transactional distance. In other words, students feel they need more learner-instructor and learner-learner interaction in the web-based course. This finding indicates the importance of two types of interaction: learner-instructor and learner-learner interactions. Besides, research on online learning has shown learner-instructor and learner-learner interactions contribute largely to online students’ course satisfaction level and perceived learning (Fredericksen, Pickett, Shea, Pelz, & Swan, 2000; Fulford & Zhang, 1993; Garrison, 1990).

Another distance education theory that is related to interaction and collaboration is Holmberg’s (1960) “Guided Didactic Conversation” theory. Since most of the online courses use text-based asynchronous communication methods, Holmberg’s theory can be used as a guide to the design of online course content as well as text-based communication between teacher and learner online. He argued that if the typical traits of conversation are felt by the students, learning will occur. According to his theory, there are two types of conversations: the real conversation and the simulated conversation. The real conversation is the communication reflected by correspondence, telephone, personal contact, . . . and so forth. Simulated conversation is achieved by internalized conversation in a text and the conversational style of course authors. More precise details of this theory are presented in his later publications (Holmberg, 1986, 1995). He believed that the feeling of a personal relationship between teacher and learner is the most influential factor in distance education. The atmosphere, language, and friendly conversation favor feelings of a personal relationship that is important for learning motivation. Holmberg stated his theory relates “teaching effectiveness to the impact of feelings of belonging and cooperation as well as to the actual exchange of questions, answers and arguments in mediated communication” (1986, p. 123).

In web-based courses, if students are only allowed to passively learn from the materials posted on the web site, didactic conversation between teacher and learner is impossible. As a result, “real learning,” as Holmberg called it, will not occur. The central idea in his teaching theory is that learning pleasure will be promoted if personal relations, study pleasure, and empathy exist between students and teachers. Because of the personal learning atmosphere, language, and conversation, students will be able to learn to make decisions, construct meaning, and solve problems. Since currently most communication in online courses is text-based, Holmberg’s (1986) guided didactic conversation fits well with such an online learning environment.

To sum up, both Moore’s (1989) theory of transactional distance and Holmberg’s (1986) theory of guided didactic conversation point to the importance of communication and interaction in distance education. Moore’s theory examines the original concept of transactional distance perceived as a psychological distance and communication gap between instructor and student. Holmberg’s theory of guided didactic conversation specifically focuses on the role of interaction between teacher and students in distance education. He further argued that the dialogue between teacher and students must create rapport, a feeling of belonging, and empathy, so “real learning” will occur. His theory fits well into asynchronous online learning since most of instructor-learner and learner-learner communications are currently through written language. However, neither Moore nor Holmberg presented the specific practical instructional strategies that will decrease the sense of transactional distance and carry out the effective didactic conversation.

Accordingly, the purpose of this study was to investigate two practical instructional strategies that may decrease the transactional distance and promote the personal feeling in online interaction and collaboration with the aim of determining how these two strategies are related to online learners’ level of overall course satisfaction, perceived learning, and online posting frequency. The first strategy is using teacher verbal immediacy behaviors in the process of learner-instructor interaction; the second one is building a sense of classroom community in the process of collaborative learning among students (learner-learner interaction). Based on the theories of Transactional Distance and Guided Didactic Conversation, learning will be improved if sufficient dialogue and personal relationship are presented in geographically separated classes. The use of teacher verbal immediacy and sense of classroom community may be able to provide such kind of dialogue and personal relationship in online classes.

Teacher Verbal Immediacy

Teacher verbal immediacy refers to teachers’ verbal communication behaviors that reduce psychological distance in the interaction between teacher and student. Immediacy is defined as “communication behaviors that reduce social

and psychological distance between people” in the field of interpersonal communication (Mehrabian, 1971). Andersen (1979) was the first scholar to connect the construct of immediacy with instructional communication. Immediacy behaviors are often divided into two categories: verbal (e.g., using humor, personal example, “our” instead of “my”) and nonverbal immediacy (e.g., eye contact, smiling, positive head nods). Both teacher nonverbal and verbal immediacy have shown to have a positive influence on students’ affective (Baker, 2004; Gorham & Christophel, 1990; Pogue & Ahyun, 2006; Sanders & Wiseman, 1990) and cognitive learning (Allen, Witt, & Wheelless, 2006; Baker, 2004; Christophel, 1990; Sanders & Wiseman, 1990). However, the relationship between teacher immediacy and cognitive learning is less clear than with affective learning, especially in the online learning environment.

In the online learning environment, verbal immediacy may be more relevant as most of the online communication is through text, such as, email and threaded discussion. However, it is only in recent years that the construct of immediacy has been studied in the field of online learning. In the present study, the context of verbal immediacy behavior is defined as text-based computer-mediated communication behaviors contributing to psychological closeness between teacher and student. Examples include: using personal examples, using humor, providing and inviting feedback, and addressing and being addressed by students by name.

Sense of Classroom Community

Sense of classroom community refers to the feeling of belonging, trust, and commitment in the interaction between and among students. While the construct of teacher immediacy is mainly associated with the interaction between teacher and student, the sense of classroom community is related to not only the interaction between teacher and student but also the collaboration between students. Rovai and Lucking (2000) defined sense of classroom community as a feeling members have of belonging, a feeling that members matter to one another and to the group, that they have duties and obligations to each other and to the school, and they possess shared expectations that members’ educational needs will be met through their commitment to shared goals. Specifically, according to Rovai and Lucking, the most essential elements of classroom community are spirit, trust, interaction, and learning. Spirit denotes recognition of community membership, the feelings of friendship, cohesion, belonging, and group identity. Studies demonstrate that students’ senses of classroom community influence the learners’ attitude toward the learning experience (Anderson & Garrison, 1995) and perceived cognitive learning (Rovai, 2002).

There is not enough research done to understand these two constructs in online learning. The present study has made progress towards a better understanding of the effects of teacher verbal immediacy and sense of classroom community in online learning.

METHODOLOGY

Purpose of the Study

The purpose of this research is to study how verbal immediacy and sense of classroom community together are related to students' satisfaction, perceived learning and posting frequency in online courses. Accordingly, this study responds to the following research question:

1. How is teacher verbal immediacy related to course satisfaction, perceived learning, and posting frequency in online courses?
2. How is sense of classroom community related to course satisfaction, perceived learning, and posting frequency in online courses?
3. How do gender and course type influence perception of teacher verbal immediacy and sense of classroom community in online courses?

Subjects and Data Collection

Participants in this study consist of 214 undergraduate and graduate students enrolled in college level courses delivered on the Web. Convenience sampling was used in this study. Females represented 69% of the participants while 29% of the participants were males. The participants' ages ranged from 18 to 61 ($M = 38.1$, $SD = 10.4$). Four respondents failed to report their gender and age.

A single-administered online survey was used to collect data in this study. Data were collected from students who had completed online courses between 1999 and 2004. Instructors from those 11 participating online courses emailed their students to recruit them to take the online survey. In addition to the targeted online courses, the researcher also posted an invitation message to four major email list serves which are related to the field of educational technology. The participants' responses were automatically sent to a management folder in an email account created by the researcher.

Measurement

Besides of the demographic questions, the online survey consists of the other five scales to measure participants' perceptions on teacher verbal immediacy, sense of classroom community, course satisfaction, and posting frequency.

1. *Teacher verbal immediacy*: The scale to measure teacher verbal immediacy was modified from Gorham's (1988) original immediacy scale and McAlister's (2001) online immediacy scale. This scale used a five-point Likert type scale ranging from "1=Never" to "5=Very often." Higher score indicated the higher degree of immediacy the teachers had shown in classes.
2. *Sense of classroom community*: Sense of classroom community was measured using Rovai's Classroom Community Scale (CCS)

(Rovai, 2002). This 20-item scale employed a five-point Likert type scale ranging from 1 (strongly disagree) to 5 (strongly agree). Ten out of the 20 questions were reverse-coded in data analysis.

3. *Course satisfaction*: Course satisfaction was measured by Arbaugh's satisfaction scale (2001, 2002) with slight changes in wording. Some of the words were taken out in order to fit the sample characteristics of the present study.
4. *Perceived learning*: Perceived learning was measured by the extended perceived learning scale (T. Russo, personal communication, September 1, 2003). The foundational concept for this scale comes from the learning loss scale (Richmond, Gorham, & McCroskey, 1987), which was intended to measure the student's cognitive learning. The 2-item learning loss scale asked students to measure themselves, on a scale of 0-9, about how much they learned and how much they could have learned with an *ideal instructor*. The difference between their ideal and actual learning is called learning loss. The smaller number of the learning loss indicates greater perceived cognitive learning. The possible learning loss score ranges from -9 (0-9 = -9) to 9 (9-0 = 9) meaning greatest learning and lowest learning respectively.

Based on the theory of distance education, there are at least four types of interaction: learner-instructor, learner-learner, learner-content (Moore, 1989), and learner-interface (Hillman et al., 1994). The 2-item learning loss scale was expanded to 6-items asking students to measure themselves, on a scale of 0-9, about how much they learned and about how much they could have learned with an *ideal instructor*, *classmates*, *interface*, *content*, and the *learner* himself/herself. For each of five categories (*ideal instructor*, *classmates*, *interface*, *content*, and *learner*), a perceived learning loss score was calculated by subtracting the response on the first item from the response on each of the five items. As a result, five perceived learning loss scores were computed. Cronbach's alpha for overall perceived learning scale in this sample was found to be 0.88, indicating excellent reliability. With this coefficient alpha, the perceived learning scale was considered as reliable.

5. *Posting frequency*: Online posting frequency was measured by a scale created by the researcher of this study. Students were asked to give estimation on the quantity of their posting in the threaded discussion in one semester.

Data Analysis

The predictor variables of this study are online students' perceptions of teacher verbal immediacy and classroom community. The criterion variables are students' course satisfaction, perceived learning, and online posting fre-

quency. Bivariate correlation analysis was used to find out the possibility of any correlation between teacher verbal immediacy and sense of classroom community. Multiple linear regression analysis was conducted to test the degree to which these two predictor variables predicted course satisfaction, perceived learning, and posting frequency. In addition, two-way analysis of variance procedures were carried out to evaluate whether there is any evidence that the means of teacher verbal immediacy and sense of classroom community differ by student gender and course type.

RESULTS

Hypothesis One: Teacher verbal immediacy and sense of classroom community are significantly correlated in online classes

The first hypothesis was supported in this study. Correlation coefficients were computed among all variables: teacher verbal immediacy, sense of classroom community, satisfaction, perceived learning, and posting frequency. Using the Bonferroni approach to control for Type 1 error across the 10 correlations, a *p*-value of less than .005 (.05/10 = .005) was required for significance. Table 1 presents the results of the correlational analysis. According to Cohen (1988), a correlation of 0.5 is large, 0.3 is moderate, and 0.1 is small. The Pearson coefficient demonstrated a large positive correlation between teacher verbal immediacy and sense of classroom community (*r* = 0.60, *p* < .001) and between sense of classroom community and satisfaction (*r* = 0.71, *p* < .001). A moderate positive correlation (*r* = 0.48, *p* < .001) was found between teacher verbal immediacy and satisfaction. The Pearson coefficient indicated a negative correlation between teacher verbal immediacy and perceived learning loss (*r* = -0.22, *p* = .002) and between sense of

Table 1
Pearson Correlations of Teacher Verbal Immediacy, Sense of Classroom Community, Satisfaction, Perceived Learning, and Posting Frequency

Immediacy	Community	Satisfaction	Learning	Posting
Immediacy				
Community	0.60 *			
Satisfaction	0.48 *	0.71 *		
Learning**	-0.22 *	-0.27 *	-0.41 *	
Posting	0.23 *	0.19	0.14	-0.08

* Significance < .001 (2-tailed)

** Perceived learning loss

classroom community and perceived learning loss ($r = -0.27, p < .001$). Posting frequency was found to be significantly correlated with verbal immediacy ($r = 0.23, p = .002$). A negative correlation ($r = -0.41, p < .001$) was found between satisfaction and perceived learning loss.

Hypothesis Two: Teacher verbal immediacy and sense of classroom community explain significant variance in course satisfaction in online classes

This hypothesis was partially supported in this study. A multiple regression analysis was conducted to explore the relationships between teacher verbal immediacy, sense of classroom community, and course satisfaction. The results of this analysis indicated that the linear combination of teacher verbal immediacy and students' senses of classroom community was significantly related to students' level of course satisfaction, $F(2, 211) = 110.54, p < .001$. The sample multiple correlation coefficient was $R = .72$ with R^2 of .51, indicating that approximately 51% of the variance of the level of satisfaction in the sample can be accounted for by the linear combination of teacher verbal immediacy (beta = .08) and sense of classroom community (beta = 0.66). Although the overall regression model was significant, teacher verbal immediacy was not found to be a significant individual predictor, $t = 1.4, p = .16$. Table 2 summarizes the results of the regression analysis. Variance inflation factors (VIF) and condition indexes were examined to identify multicollinearity. Large VIF values indicate a high degree of multicollinearity among variables. According to Garson (2004), it is possible for the rule of thumb for condition indexes (no index over 30) to indicate multicollinearity, even when the rules of thumb for VIF ($= 4$) are met. Therefore both VIF and condition index are reported in this study. Here, VIF score was 1.57 for both teacher verbal immediacy and sense of classroom community, and condition indexes ranged from 1.0 to 10.17. Therefore, multicollinearity was not identified.

Table 2

Regression Results for Predicting Satisfaction From Teacher Verbal Immediacy and Sense of Classroom Community

Model	Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.
1 (Constant)	1.921	.153		12.581	.000
Immediacy	.093	.067	.084	1.397	.164
Community	.735	.067	.661	10.977	.000

Criterion Variable: Satisfaction

For the sake of parsimony, a model including only sense of classroom community as predictor was tested. The results of this analysis indicated that sense of classroom community was significantly related to students' level of course satisfaction, $F(1, 212) = 218.14, p < .001$. The sample correlation coefficient was $R = .71$ with R^2 of .51, indicating that approximately 51% of the variance of the level of satisfaction in the sample can be accounted for by sense of classroom community (beta = 0.71). Table 3 summarizes the results of the regression analysis.

Hypothesis Three: Teacher verbal immediacy and sense of classroom community explain significant variance in perceived learning in online classes

Hypothesis three was partially supported in this study. A multiple regression analysis was conducted to explore the relationships between teacher verbal immediacy, sense of classroom community, and perceived learning. The results of this analysis indicated that the linear combination of teacher verbal immediacy and sense of classroom community was significantly related to students' perceived learning, $F(2, 206) = 8.52, p < .001$. The sample multiple correlation coefficient was $R = .28$ with R^2 of .08, indicating that approximately 8% of the variance of the perceived learning in the sample can be accounted for by the linear combination of teacher verbal immediacy (beta = -0.08) and sense of classroom community (beta = -0.22). Although the overall regression model is significant, teacher verbal immediacy was not found to be a significant predictor, $t = -.999, p = .32$. Table 4 summaries the results of the regression analysis. Variance inflation factors (VIF) and condition indexes were examined to identify multicollinearity. VIF score was 1.57 for both teacher verbal immediacy and sense of classroom community, and condition indexes ranged from 1.0 to 10.11. Therefore, multicollinearity was not identified.

Table 3
Regression Results for Predicting Satisfaction
From Sense of Classroom Community

Model	Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.
2 (Constant)	1.999	.143		14.023	.000
Community	.791	.054	.712	14.770	.000

Criterion Variable: Satisfaction

Table 4

Regression results for predicting learning from immediacy and community

Model	Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.
1 (Constant)	2.356	.448		5.264	.000
Immediacy	-.195	.196	-.084	-.999	.319
Community	-.507	.195	-.218	-2.601	.010

Dependent Variable: Perceived learning loss score

For the sake of parsimony, a model including only community as predictor was tested. The results of this analysis indicated that sense of classroom community was significantly related to students' perceived learning, $F(1, 207) = 16.04$, $p < .001$. The sample correlation coefficient was $R = .27$ with R^2 of .07, indicating that approximately 7% of the variance of perceived learning in the sample can be accounted for by student's sense of classroom community (beta = -0.27). Table 5 summarizes the results of the regression analysis.

Hypothesis Four: Teacher verbal immediacy and sense of classroom community explain significant variance in posting frequency in online discussion

This hypothesis was partially supported in this study. A multiple regression analysis was conducted to explore the relationships between teacher verbal immediacy, sense of classroom community, and posting frequency in online discussion. The results of this analysis indicated that the linear combination of teacher verbal immediacy and sense of classroom community was significantly related to students' posting frequency, $F(2, 176) = 5.32$, $p = .006$. The sample multiple correlation coefficient was $R = .24$ with R^2 of

Table 5

Regression results for predicting learning from sense of classroom community

Model	Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.
2 (Constant)	2.189	.415		5.273	.000
Community	-.624	.156	-.268	-4.005	.000

Dependent Variable: Perceive learning loss score

.06, indicating that approximately 6% of the variance of posting frequency in the sample can be accounted for by the linear combination of teacher verbal immediacy (beta = 0.07) and sense of classroom community (beta = 0.19). Although the overall regression model was significant, sense of classroom community was not found to be a significant predictor, $t = .71, p = .48$. Teacher verbal immediacy was found to be a significant predictor, $t = 2.02, p < .05$. Table 6 summarizes the results of the regression analysis. Variance inflation factors (VIF) and condition indexes were examined to identify multicollinearity. VIF score was 1.67 for both teacher verbal immediacy and sense of classroom community, and condition indexes ranged from 1.0 to 10.42. Therefore, multicollinearity was not identified.

For the sake of parsimony, a model including only teacher verbal immediacy as predictor was tested. The results of this analysis indicated that teacher verbal immediacy was significantly related to students' posting frequency, $F(1, 177) = 10.18, p = .002$. The sample correlation coefficient was $R = .23$ with R^2 of .05, indicating that approximately 5% of the variance of posting frequency in the sample can be accounted for by teacher verbal immediacy (beta = 0.23). Table 7 summarizes the results of the regression analysis.

Table 6
Regression Results for Predicting Posting Frequency From Teacher Verbal Immediacy and Sense of Classroom Community

Model	Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.
1 (Constant)	1.155	.431		2.676	.008
Community	.136	.193	.067	.705	.481
Immediacy	.398	.197	.191	2.021	.045

Dependent Variable: Posting frequency

Table 7
Regression results for predicting learning from sense of classroom community

Model	Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.
2 (Constant)	1.297	.381		3.403	.001
Immediacy	.486	.152	.233	3.190	.002

Dependent Variable: Posting frequency

Hypothesis Five: The perception of teacher verbal immediacy will vary by gender and course type

The fifth hypothesis was partially supported by the findings of the present study. A 2X2 ANOVA was conducted to evaluate the effects of gender and course type on teacher verbal immediacy. Based on Kearney, Plax, and Wendt-Wasco's (1985) classification of course type, participating courses in this study were divided into two groups. They were person-oriented (p-type) and task-oriented (t-type) courses. P-type courses ($n = 37$) included students in the Medicine courses that offered fewer opportunities for interaction; while t-type courses ($n = 162$) includes students from the classes that required more interaction, such as Education, English composition, and Communication studies. The Levene's Test for Equality of Variance was not significant, $F(3, 195) = 2.0, p = .12$, providing evidence that the ANOVA assumption of homogeneity of variances across all populations was tenable.

The ANOVA results revealed a significant and large main effect for course type, $F(1, 195) = 29.3, p < .001$, partial $\eta^2 = .13$, but no significant main effect for gender, $F(1, 195) = .97, p = .33$, partial $\eta^2 = .005$. No significant interaction was found between gender and course type, $F(1, 195) = .11, p = .75$, partial $\eta^2 = .001$. No post hoc tests were performed since course type had only two levels: p-type and t-type. The main effect associated with course type indicated that students in p-type and t-type courses differed significantly in their perception of teacher verbal immediacy. In other words, the results showed that students perceived less teacher verbal immediacy in courses that required less teacher-student interaction. The strength of relationship between the course type and teacher verbal immediacy, as evaluated by η^2 , was strong, accounting 13% of the variance of teacher verbal immediacy.

Hypothesis Six: The sense of classroom community will vary by gender and course type

The sixth hypothesis was partially supported by the findings of the present study. A 2X2 ANOVA was conducted to evaluate the effects of gender and course type on students' sense of classroom community. The Levene's Test for Equality of Variance was significant ($p = .02$), as such the two variances were significantly different; that is, the two variances were approximately not equal. Consequently, the assumption of equal variances was not met for the two-way analysis of variance with the sample sizes being different in two course types and two gender types. Although the Leven's Test for Equality of Variance indicated a statistically difference between variances, the standard deviations appeared relatively equal.

The results revealed a significant and small main effect for course type, $F(1, 195) = 6.3, p < .05$, partial $\eta^2 = .03$, but no significant main effect for gender, $F(1, 195) = 2.1, p = .15$, partial $\eta^2 = .011$. No significant interaction was

found between gender and course type, $F(1, 195) = .74, p = .39$, partial $\eta^2 = .004$. No post hoc tests were performed since course type had only two levels, p-type and t-type courses. The main effect associated with course type indicated that students in p-type and t-type courses differed significantly in their sense of classroom community. In other words, the results showed that students perceived lower sense of classroom community in courses that required less teacher-student interaction. The strength of relationship between the course type and sense of classroom community, as evaluated by partial η^2 , was small, accounting 3% of the variance of sense of classroom community.

INTERPRETATIONS OF RESULTS

Overall the research confirmed the prior studies and yielded several significant new findings. The results that were consistent with previous studies include: (a) the correlations among teacher verbal immediacy, sense of classroom community, satisfaction, and perceived learning were positive; and (b) students in different course types perceived different degree of teacher verbal immediacy and sense of classroom community. The new findings from the present research were revealed from the regression analyses which indicated that sense of classroom community was the only significant predictor on both learner satisfaction and perceived learning. In contrast, teacher verbal immediacy was the only significant predictor of learners' posting frequency in the online discussion board.

Teacher Verbal Immediacy in Online Class

In this study, the significant positive correlation (Pearson's $r = 0.48$) between teacher verbal immediacy and satisfaction confirmed results of previous studies indicating higher teacher verbal immediacy was correlated with higher satisfaction (Arbaugh, 2001; Gorham & Christophel, 1990; Sanders & Wiseman, 1990). The significant negative correlation (Pearson's $r = -0.22$) between teacher verbal immediacy and perceived learning indicated that there was a positive relationship between these two variables. In other words, higher teacher verbal immediacy was associated with the lower perceived learning loss score. This finding adds to the slight literature on the relationship between teacher verbal immediacy and perceived learning. In addition, the significant positive correlation (Pearson's $r = 0.23$) between teacher verbal immediacy and posting frequency contributes a new finding to the literature of instructional communication.

In sum, teacher verbal immediacy was found to be positively correlated with satisfaction, perceived learning, and posting frequency in online courses. However, the subsequent multiple regression analyses revealed that teacher verbal immediacy was not a significant predictor of satisfaction and perceived learning, but was a significant predictor of posting frequency.

Although including teacher verbal immediacy in the regression model produced 1% increase of overall variance accounted for perceived learning and satisfaction respectively, it was not a significant unique predictor. Thus teacher verbal immediacy did not significantly increase the predictive power.

One explanation for teacher verbal immediacy not being the significant predictor of satisfaction and perceived learning is that the behaviors measured in the teacher verbal immediacy scale may not be applicable to online classes where most of the students are adults. In this study, 75% of the respondents are at the age of over 30. Adult learners may not care much about the specific verbal immediacy behaviors from the teachers; instead, they may focus more on the content. Teacher verbal immediacy might be more important for younger students who need more instructor-learner interaction. In addition, the nature of text-based courses also may minimize the effect; students may not see as much immediacy. When students cannot see their teachers and teachers' nonverbal immediacy behaviors, they may generalize that there are fewer verbal immediacy behaviors.

One implication resulted from this findings is that the direct association between teacher immediacy, satisfaction, and perceived learning reported in the earlier studies may have been oversimplified. There might be many unidentified factors that contribute to satisfaction and learning. For instance, sense of community might be a factor that contributes to immediacy, which then influences satisfaction and learning. Otherwise, immediacy contributes to sense of classroom community, which then contributes to satisfaction and learning. Another possibility is that sense of classroom community directly contributes to satisfaction without immediacy being the medium. The results of this study emphasized the importance of sense of classroom community in online course satisfaction and perceived learning.

Another interesting finding from this study concerns the effect of teacher verbal immediacy on posting frequency in online discussion. Although including sense of classroom community in the regression model produced 1% increase of overall variance accounted for posting frequency, teacher verbal immediacy remained the only significant predictor. One plausible explanation is that when teachers' posing messages are more inviting, students will perceive higher degree of teacher immediacy and then they will be more likely to post more often. Students may also like to impress their teacher by posting more messages on the discussion board. Therefore, teacher verbal immediacy appears to be a more significant predictor of posting frequency.

In addition, Menzel and Carrell (1999) found that teacher verbal immediacy promotes students' willingness to talk. Another explanation might be associated with the prior finding that teacher verbal immediacy decreases students' communication anxiety (Ellis, 1995) in the traditional classroom. The present study reveals that such connection seems to be applicable to online learning.

Sense of Classroom Community in Online Class

In this study, the significant positive correlation (Pearson's $r = -0.27$) between sense of classroom community and perceived learning confirmed Rovai's study that demonstrated that a higher sense of classroom community was correlated with better perceived cognitive learning measured by the original learning loss scale. Moreover, the strong positive correlation (Pearson's $r = 0.71$) between satisfaction and sense of classroom community provided additional support for Anderson and Garrison's study (1995) that showed the positive effects of sense of community on the learning experience.

Furthermore, the regression analyses indicated that sense of classroom community alone was the most significant predictor of both students' satisfaction and perceived learning. As high as 51% of the variance in course satisfaction in this study can be accounted for by sense of classroom community. By comparing the standardized coefficients (betas), the present data indicated that sense of classroom community contributed eight times of predictive power on course satisfaction compared to teacher verbal immediacy. Specifically, when sense of classroom community was held constant, satisfaction only increased by 0.08 a standard deviation. In comparison, when teacher verbal immediacy was held constant, satisfaction increased by 0.67 a standard deviation.

One possible explanation for sense of classroom community being the better predictor of both satisfaction and learning is that some of the adult learners in online classes may be independent learners who do not require much interaction with instructors. Research shows that one of the reasons that adult learners choose to take online courses is the availability of collaboration with other online students (Bischoff, 2000). Therefore, if students feel a sense of classroom community with other fellow students, they will be more satisfied with their online courses and learn better. Interaction with teachers may not be such a critical need for some adults who consider themselves as independent learners.

Although the results from both simple correlation and regression analyses demonstrated that sense of classroom community had a greater effect on perceived learning in this study, caution must be exercised in interpreting the results. First, one must be cautious to interpret the results due to the weak magnitude of the simple correlation and the small explainable variance. Again, it suggests that there are many more factors that contribute to perceived learning in online classes. As indicated in the perceived learning scale used in the present study, there are at least five more possible components (i.e., teacher, classmate, interface, learner, and content) that may contribute to perceived learning. Secondly, caution must be exercised to interpret this result due to the measurement scale itself. Rovai's scale, used in the present study to measure sense of classroom community, was composed of two subscales: connectedness and learning. If students indicated that their

learning goals had been achieved in the sense of classroom community scale, they would probably reveal the same perceptions in the perceived learning scale. As a result, sense of classroom community appeared to have a greater effect on perceived learning than teacher verbal immediacy did in this study. In Rovai's (2002) words, "...a positive bias influences the strength of relationship between these variables because of the inclusion of the learning subscale in the analysis" (p. 328).

The nonsignificant simple correlation between sense of classroom community and posting frequency found in this study did not support the findings of Rovai (2002, 2003) that showed a significant moderate positive correlation between sense of community and online discussion frequency in courses where discussion was a required component. In the present study, 73% of the sample indicated that they were required by the instructor to post discussions. However, the relationship was not found in this study in either simple correlations or regression analyses. One possible reason is that when an online discussion board is not designed specifically for group project work, students may merely post procedural message to clarify course requirements instead of participating in the group discussion. In that case, sense of classroom community has less relevance with posting frequency. In this study, the content of each message was not one of the variables examined. Further investigations are needed to better understand the relationship between sense of classroom community and online discussion performance.

Gender and Course Type

Participant gender did not appear to change the perceptions of teacher verbal immediacy and sense of classroom community. However, significantly different perceptions of both teacher verbal immediacy and sense of classroom community were found in two types of course: people-oriented (p-type) and task-oriented (t-type) courses.

The finding of no gender difference was consistent with previous research on teacher immediacy (Guerrero & Miller, 1998) and sense of classroom community (Rovai, 2002). Although Rovai indicated that female students felt more connected to the virtual classroom community than did their male counterparts, the overall score of classroom community showed no gender difference in his study.

In the present study, students in the p-type courses (e.g., Education) perceived significantly higher degree of immediacy and classroom community than students in the t-type courses (e.g., Medicine). This finding provided evidence to support the findings of Kearney, Plax, and Wendt-Wasco (1985) that teacher immediacy varied by course types in the traditional college classroom. Their findings seem to be applicable to the online classes as evidenced in the present study.

Course difference in perceptions of teacher verbal immediacy and sense

of classroom community may be attributed to two factors. The first factor concerns the course design of each type of course. The t-type courses in this study, which are nontraditional medical advanced courses, were designed purposefully to minimize class interaction. On the other hand, the p-type courses in this study offered more opportunities for student-student interaction and teacher-student interaction. Such differences in course design will result in different perceptions of immediacy and classroom community. The second factor concerns students' attitude toward their courses. Most of the students in the task-oriented courses are busy professional adults who might devote much of their time to learning course materials without paying much attention to the interpersonal interaction with teacher and fellow students. Therefore, their perceptions of teacher verbal immediacy and sense of classroom community will be lower than students in the people-oriented courses.

IMPLICATIONS

Given the findings discussed in the previous section, the following implications should be considered. The primary implication drawn from the results of this study concerns the effects of teacher verbal immediacy and sense of classroom community in online classes. In general, the combination of teacher verbal immediacy and sense of classroom community predicts satisfaction, perceived learning, and posting frequency. However, the parsimonious model with only sense of classroom community better predicts satisfaction and perceived learning. The parsimonious model with only teacher verbal immediacy better predicts posting frequency.

Although most of the prior research has shown that immediacy has positive effects on satisfaction and learning, the regression analyses of the present study showed that teacher verbal immediacy was not a significant predictor of student satisfaction and learning in online classes when controlling for sense of classroom community. Teacher verbal immediacy did, however, have a small meaningful effect on students' posting frequency in online discussion. This suggests that as online asynchronous discussion has become a popular instructional component in online courses, it is important for instructors or discussion facilitators to develop and exhibit appropriate verbal immediacy behaviors in order to encourage students' participation in online discussion.

The present study also indicates that students in person-oriented courses perceive more teacher verbal immediacy than those in task-oriented courses. As teacher verbal immediacy was predictive of posting frequency in this research, it is important for course designers and teachers in the task-oriented course to not neglect the development of teacher verbal immediacy strategies to close the potential transactional distance between instructor and student in the online educational setting.

On the other hand, sense of classroom community was found to be a significant consistent predictor of satisfaction and perceived learning. However, the results also showed that sense of classroom community was not predictive of posting frequency in online discussion. To promote students' satisfaction and learning, this finding suggests that it is essential for online courses to be designed in a way that provides sufficient opportunities for student-student interaction and for online instructors to facilitate a sense of classroom community in their classes. This finding reinforces the importance of student-student interaction in online classes as being evident in prior studies.

Finally, students in the person-oriented courses were found to perceive better sense of classroom community compared to students in the task-oriented courses. It is critical that online teachers build a sense of classroom community in both types of courses to enhance learning and satisfaction.

SUGGESTIONS FOR FUTURE RESEARCH

Further research is needed to better understand the relationship between teacher verbal immediacy, satisfaction, and perceived learning in online courses. This study found that teacher verbal immediacy was only predictive of posting frequency. Further research needs to be done to determine under what circumstance and in what ways teacher verbal immediacy influences online learning. Studies are also needed to further investigate the relationship between teacher verbal immediacy and participation of online discussion. Content analysis of both teachers' and students' messages might reveal more insights into this relationship. In addition, while a large body of literature in immediacy has been focused on teacher immediacy, future researchers may want to shift their attention to student immediacy, especially in the online learning environment.

This study revealed that the overall degree of sense of classroom community had a positive effect on satisfaction and perceived learning in online classes. As stated in the literature review section, many practical suggestions for building an online community are available in this field. However, empirical studies on the construct itself and its effect in online learning are scarce. This provides a number of potential research topics for future researchers. This study showed a small but significant effect of sense of classroom community on perceived learning. Future research is needed to understand this relationship better by analyzing the five components of the perceived learning: ideal instructor, ideal classmates, ideal interface, ideal learner, and ideal course content. Their relationships with sense of classroom community also deserve further exploration.

One limitation of this study is that it did not consider many of the individual differences of learner characteristics that might have influenced per-

ceptions of teacher verbal immediacy and sense of classroom community. As many of the online learners are working adults, it is clearly important to better understand adult learners' learning styles when designing an online course. In addition, future researchers should consider including the principles of androgogy (Knowles, 1970) in their studies as it might relate to course satisfaction and perceived learning in online courses.

CONCLUSION

This study confirms the importance of both teacher verbal immediacy and sense of classroom community in online courses. Sense of classroom community appears to be the significant predictor of online students' satisfaction and perceived learning; on the other hand, teacher verbal immediacy is shown to predict the online posing frequency better.

Over half of the variance in online students' satisfaction can be predicted by sense of classroom community alone. Although sense of classroom community is shown to be a significant predictor of perceived learning in this study, there appear to be other unidentified factors contributing to perceived learning. Similarly, the only significant variable that relates to posting frequency is teacher verbal immediacy; however, there may be additional factors that affect students' posting frequency in online discussion.

Overall, the results of this study provided some evidences to support the principles of the theories of Transactional Distance (Moore, 1973) and Guided Didactic Conversation (Holmberg, 1986). The quality of instructor-learner and learner-learner interactions appears to influence students' online learning experience. To better understand online pedagogy, more research is still needed in the areas of learner-instructor and learner-learner interactions.

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