The Impact of Instructor Immediacy and Presence for Online Student Affective Learning, Cognition, and Motivation

Credence Baker, Tarleton State University

Abstract

This study sought to examine instructor immediacy and presence in an online learning environment in relation to student affective learning, cognition, and motivation. It found a statistically significant positive relationship between instructor immediacy and presence. It also found that the linear combination of instructor immediacy and presence is a statistically significant predictor of student affective learning, cognition, and motivation. However, it did not find instructor immediacy to be a significant individual predictor of the aforementioned variables, whereas it did find instructor presence to be a significant individual predictor. The study also showed that students in synchronous online courses reported significantly higher instructor immediacy and presence. Implications for researchers and practitioners of online instruction are discussed at the conclusion of the paper.

Introduction

The prevalence of the Internet has profoundly affected many aspects of society, including higher education, where the demand for online learning is growing exponentially. Online course enrollments have continued to grow at rates far in excess of the total higher education student population. From fall 2007 to fall 2008, the 12.9% increase for online enrollment far exceeded the 1.2% growth of the overall higher education student population in the U.S. (Sloan, 2008). This growth provides a fertile ground for empirical research on how and why this relatively well-established yet still evolving medium can be used to continually improve the learning experience.

With a plethora of "no significant difference" studies (e.g., Hiltz, Zhang, & Turoff, 2002; Johnson, Aragon, Shaik, & Palma-Rivas, 2000; McLaren, 2004; Vroeginday, 2005), researchers are beginning to move beyond the question of whether the online approach to education is as effective as traditional learning and are now delving into the realm of identifying which instructional strategies are most effective for an online learning environment. Swan (2003) argued that the epistemological problem with the "no significant difference" concept is that it glosses over real differences in the online medium that might be uniquely supportive of particular ways of knowing and learning. Thus, researchers should be less concerned with the comparative value of offering Web-based courses and more concerned with specific learner characteristics, learning models, and curriculum restructuring. Grandzol and Grandzol (2006) asserted that extending the research base beyond "no significant difference" with studies dedicated to empirically validating best practices are the most useful and powerful because they can provide clear guidance for structuring and developing more effective online courses. This shift in the research focus towards effective learning in online instruction is the impetus for this study, which sought to explore the impact of instructor immediacy and presence as a form of andragogy in the online environment.

There is a need to extend the existing research of instructor immediacy in traditional, face-to-face learning environments to online learning environments. In a meta-analysis of 81 studies that examined teacher immediacy in relation to learning outcomes in traditional, face-to-face classrooms, Witt, Wheeless, and Allen (2004) reported a positive and substantial relationship

between overall teacher immediacy and overall student learning (r = .50, var. = .04, k = 81, N = 24,474). The two decades of research on immediacy in face-to-face classrooms provide a foundation of findings from which to begin investigations of implications in online learning environments.

A relatively young and emerging area of research regarding online learning environments is teaching presence. The conceptual underpinnings of teaching presence in e-learning environments were derived from Garrison, Anderson, and Archer's (2000) community of inquiry model. Of the three types of presence in the model (i.e., cognitive, social, and teaching presence), the least researched is teaching presence (Arbaugh & Hwang, 2006). While teaching presence is conceptualized as being just as important as social presence and cognitive presence, motivation to examine its nature had not been high until the adoption of the Internet as a mainstream instructional medium (Garrison et al., 2000). Researchers in the field of online instruction have called for much needed empirical support for the construct of teaching presence. The call for further research regarding teaching presence is a catalyst for this study.

The prevalence of online instruction in higher education, coupled with a need for empirical research on andragogy in online learning environments, is the base from which this study was launched. The study sought to contribute to the growing body of knowledge on effective teaching practices in online learning environments.

Background

Instructor Immediacy

Interaction is at the heart of the learning experience and is widely cited as a defining characteristic of successful learning in both traditional and online learning environments (Picciano, 2002; Swan, 2002; Wanstreet, 2006). Moreover, it is credited as a catalyst for influencing student motivation, active learning and participation among students, and the achievement of learning outcomes (Du, Havard, & Li, 2005; Lam, Cheng, & McNaught, 2005; Sargeant, Curran, Allen, Jarvis-Selinger, & Ho, 2006; Tu, 2005). Two research areas in the field of communications provide a theoretical framework for instructor immediacy as a form of

interaction: Moore's transactional distance theory (Moore, 1973; Moore & Kearsley, 1996) and Mehrabian's (1971) concept of communication immediacy.

Moore's transactional distance theory (Moore, 1973; Moore & Kearsley, 1996) provides an explanation for why the use of electronic communication tools may encourage interactions among learners and the instructor in an online environment. The theory stated that the quality of teaching and interactions among students and the instructor relates less to geographical separation and more to the structure of a course and the interactions that take place within it (Garrison & Cleveland-Innes, 2005; Lemak, Shin, Reed, & Montgomery, 2005; Moore & Kearsley, 1996). Moore (1973) saw distance education as a transaction and asserted that the physical separation in distance education leads to a psychological space of potential misunderstandings and a communication gap (i.e., transactional distance) between the instructor and the learner. According to the theory, increased dialogue between the instructor and student results in a lesser degree of transactional distance, and advances in communications technology have made synchronous and asynchronous interaction more readily available, thus increasing dialogue and decreasing transactional distance. Transactional distance theory is important conceptually because it provides an explanation for why the use of electronic communication tools may bridge the distance between learners and the instructor in an online environment. The electronic communication tools found in most course management systems (e.g., discussion, e-mail, chat, and messaging) increase the level of interaction, thus allowing learners and instructors to reduce the psychological and physical distance between them and achieve levels of social interaction similar to those in face-to-face classrooms (Lemak et al., 2005).

Although Moore's theory seems straightforward, some instructors seem to foster interactions more successfully than others do. A construct from the communications field provides instructors with a framework for fostering psychological closeness through interactions. Communication immediacy, a concept proposed by Mehrabian (1971), refers to physical and verbal behaviors that reduce the psychological and physical distance between individuals. Nonverbal immediacy behaviors include physical behaviors (e.g., leaning forward, touching another, looking at another's eyes etc.), while verbal immediate behaviors are nonphysical behaviors (e.g., giving praise, using humor, using self-disclosure etc.). While verbal and

nonverbal immediacy were sometimes treated as one construct in early research, Robinson and Richmond (1995) asserted that they actually represent two distinct constructs with separate measures. Jensen (1999) noted that verbal immediacy behaviors are especially relevant for online instruction because they are easily controlled and not bound by physical proximity as with nonverbal immediacy behaviors. Thus, much of the immediacy research in web-based courses has centered on the instructor's use of verbally immediate behaviors (i.e. instructor immediacy).

Established verbally immediate behaviors include initiating discussions, asking questions, using self-disclosure, addressing students by name, using inclusive personal pronouns (we, us), repeating contacts with students over time, responding frequently to students, offering praise, and communicating attentiveness (O'Sullivan, Hunt, & Lippert, 2004). The researchers also noted that visual cues (e.g., color, graphics, or an instructor's picture) signal expressiveness, accessibility, engagement, and politeness. The online learning environment allows instructors to incorporate verbally immediate behaviors easily with careful design of the course content and written interactions with students.

The immediacy research conducted thus far has established that verbally immediate behaviors can be conveyed in mediated forms (O'Sullivan et al., 2004), that instructor immediacy is positively related to student cognition and affect (Arbaugh, 2001; Baker, 2004; McAlister, 2001), and that synchronous online session afford more immediacy than asynchronous communication alone (Haefner, 2000; Pelowski, Frissell, Cabral, and Yu, 2005; Schweier and Balbar, 2002). The research studies have not focused on influences of instructor immediacy on student motivation or variations or reported instructor immediacy based on gender or classification.

Instructor Presence

An emerging research area for the field of online learning is instructor presence, or the virtual "visibility" of the instructor as perceived by the learner. Social presence theory (Short, Williams, & Christie, 1976) is most closely related to instructor presence research in an online environment. Social presence is described as the feeling the that group members communicate with people instead of impersonal objects. As communication channels are restricted, social presence decreases within a group. When social presence is low within a group, group members

often feel disconnected and cohesion levels are low. When social presence is high, however, each group member has the feeling of joint involvement.

Picciano (2002) noted that it is generally accepted that instructors must be "seen" to be perceived as present in online learning communities. In the online world, presence requires action (Blignaut & Trollip, 2003). In order to establish online presence, instructors can develop consistent patterns of interaction, communicate accessibility, provide consistent and substantive feedback, moderate discussions effectively, and provide content expertise through discussion posts to restart stalled discussions (Arbaugh & Hwang, 2006). According to Anderson, Rourke, Garrison and Archer (2001), teacher presence begins before the course commences as the teacher, acting as instructional designer, plans and prepares the course of studies, and it continues during the course as the instructor facilitates discourse and provides direct instruction when required. The researchers asserted that, through adequate teaching presence, formal learning that facilitates personally relevant and educationally defined outcomes are achieved. Swan (2003) called for extended research on differences in the quality and quantity of instructor presence projected by online instructors and how such variations might relate to learning.

The research literature regarding instructor presence has shown mixed results. While Richardson and Swan (2003) found positive relationships with learning, Wise, Chang, Duffy and de Valle (2004) did not. However the latter mentioned researchers did find positive relationships between instructor presence and student satisfaction in online courses. Shea, Li, and Picket (2006) reported positive relationships between instructor presence and sense of classroom community, and Nippart and Murphy (2007) found that teaching presence is established primarily through the use of synchronous two-way audio.

Although initial investigations of instructor immediacy and presence have shown promise, further research is needed to substantiate its importance in online learning environments.

Purpose of the Study

This study sought to explore instructor immediacy and presence in an online learning environment. It employed empirical and quantitative methods to determine how these two

variables are related to three criterion variables in an online learning environment: student affective learning, cognition, and motivation. Furthermore, it sought to discover whether there is any evidence that the reported instructor immediacy and presence differ by student gender, classification (undergraduate or graduate), or course type (synchronous or asynchronous).

Research Questions

The research questions formulated for this study are:

1. Is there a significant correlation between perceived instructor immediacy and perceived instructor presence in online classes?
2. Will instructor immediacy and presence explain significant variance in student affective learning in online classes?
3. Will instructor immediacy and presence explain significant variance in student cognition in online classes?
4. Will instructor immediacy and presence explain significant variance in student motivation in online classes?
5. Is there any evidence that the means of reported instructor immediacy differ by student gender, classification (undergraduate or graduate) or course type (asynchronous or synchronous)?
6. Is there any evidence that the means of reported instructor presence differ by student gender, classification (undergraduate or graduate), or course type (asynchronous or synchronous)?

Method

Participants

All online undergraduate and graduate students (n=699) enrolled in all online courses at a mid-size regional university were asked to participate in a voluntary survey to measure student perceptions of instructor presence, student affective learning, cognition, and motivation. The comprehensive group was made up of 443 females and 256 males and included 416 undergraduate and 283 graduate students. The ethnic profile of the group included 536 Anglo/non-Hispanic students, 81 African American students, 45 Hispanic students, 13 Asian students, 7 American Indian students, and 17 students who did not disclose their ethnicity.

Biographical data were collected on the instrument, including questions soliciting age, gender, and foreign exchange status. Additionally, student classification, online course experience, and course type information was requested.

The data collected for this study included 377 (n=377) uniquely completed surveys submitted online. Of the 377 respondents, 265 were females and 112 were males. A total of 71 students (18.8 %) indicated that this was their first online course, and 306 students (81.2%) indicated that they had had previous online course experiences. One hundred forty-one (141) respondents (37.5%) reported being graduate students, whereas 236 respondents (62.5%) reported being undergraduate students.

Instrumentation

The study employed questions from five instruments to measure student perceptions of instructor immediacy, instructor presence, student affective learning, cognition, and motivation. Biographical data were collected, including questions soliciting age, gender, and foreign exchange status. Additionally, student classification, online course experience, and course type information was requested.

Measurement of Predictor Variables

Instructor immediacy – The Verbal Immediacy Scale. Gorham's (1988) Verbal Immediacy Scale is a commonly used immediacy instrument in the research literature. The study utilized the 17-item Likert-type scale to measure student perceptions of instructor immediacy using statements such as 'The instructor uses personal examples or refers to experiences she/he had outside of class', 'The instructor uses humor in the course', 'The instructor addresses students by name' etc. The split-half reliability from Gorham's initial use of the scale was .94. Subsequent studies have reported high reliability coefficients ranging from .77 to .94 (Christensen & Menzel, 1998; Christophel, 1990; Gorham, 1988; Moore & Kearsley, 1996). The scale has been used to study verbal immediacy in online learning environments with α ranges from .84 to .90 (Baker, 2004; Ni, 2004).

Instructor presence – Teaching Presence Scale. The Teaching Presence Scale (Shea et al., 2006) was used in the present study to measure instructor presence. The measure is designed for the three teaching presence constructs of course design and organization (6 items), facilitating discourse (8 items), and direct instruction (6 items) anchored on a 7-point scale ranging from *Strongly Agree* to *Strongly Disagree*. The initial reliability coefficients of the Teaching Presence Scale and its components, instructional design and organization, and directed facilitation were .98, .97 and .93, respectively (Shea et al., 2006). Arbaugh and Hwang (2006) conducted a study to establish construct validity for the components of teaching presence using the Teaching Presence Scale, reporting reliability coefficients of .90, .94 and .89, respectively. In a follow-up study utilizing the Teaching Presence Scale, Arbaugh (2007) reported a cronbach alpha of .97.

Measurement of Criterion Variables

Affective learning - Six-Scale Measure of Affective Learning. The most prevalent measure of affective learning in the existing communication immediacy research is the six-scale measure of affective learning first created by McCroskey et al. (1985). The scale was later modified by Gorham (1988) to delineate between the affective and behavioral learning components. It includes six statements regarding attitudes towards the course content, the instructor, and behaviors recommended in the course, with four semantic differential pairs for each statement, one of which is reverse coded. There are seven selections between each continuum (Good/Bad, Worthless/Valuable, Fair/Unfair, Positive/Negative etc.). A composite affective learning score was computed by assigning a score of 1 through 7 to each of the paired selections and summing the 24 items (with reverse coded scores for Items 2, 6, 10, 14, 18, and 22 considered accordingly) to produce a single affective learning score. Higher scores indicate higher affective learning. Gorham's use of the scale resulted in a split-half reliability of .98. Successive research studies (Baker, 2001; Christensen & Menzel, 1998; Christophel, 1990; McCroskey et al., 1996; Teven & McCroskey, 1996) employing the scale to measure affective learning have resulted in reliability scores ranging between .82 and .98.

Cognition - Learning Loss Scale. Perceived cognition is measured via the Learning Loss Scale (Richmond et al., 1987). The scale is predicated upon the assumption that a subjective measure of cognitive learning is as valid as an objective measure (Baker, 2001). It consists of two

questions designed to produce a measure of learning loss (i.e., the difference between what a student believes that she or he learned in the course and how much the same student could learn in the same course with the ideal instructor). Since it was first used in 1987, the Learning Loss Scale has been used in numerous studies related to instructor immediacy (e.g., Baker, 2001; Christensen & Menzel, 1998; Christophel, 1990; Frymier, 1994; Rodriguez et al., 1996; Sanders & Wiseman, 1990) and almost exclusively in instructional communication research to measure cognitive learning with moderately strong ($r = -.50$, $p < .001$) indications of concurrent validity (Chesebro & McCroskey, 2000).

Motivation - Motivation Scale. Motivation is measured via the Student (end-of-course) Motivation Measure (Christophel, 1990). The measure consists of 12 bipolar adjectives. The scale has a 7-point range with bipolar adjectives at either end of the scale (ex. 1=motivated, 7 = unmotivated, 1=excited, 7=not excited, 1=interested, 7=not interested etc.), with five numbered choices between the two opposites. Christophel (1990) observed reliability coefficients ranging from .95 to .96. Rubin, Sypher, and Palmgreen (2004) noted that Christophel's 12-item scale resulted in higher reliability estimates than did prior versions, which contained only three, four, or five items. McCroskey, Richmond, and Bennett (2006) reported a Cronbach alpha of .95 for the scale.

Data Collection Procedures

Data were collected from a single-administered online instrument, using the secure survey collection software tool Enterprise Feedback Management (EFM). During the first week of the summer 2008 semester, instructors who were delivering long-summer (10-week) semester online courses were asked for permission to have their students participate in the study. There were 65 long-semester online courses identified with a total of 699 individual students enrolled. Of the 65 courses, only four were being offered for the first time. Undergraduate courses averaged 20 to 21 students per online course, while graduate online courses averaged 13 to 14 students during the data collection period. One hundred percent of the online instructors agreed to allow their students to be invited to participate. No extra credit was offered to students to complete the survey. During the 7th week of the summer semester, an e-mail was sent to students in their course inviting them to participate in the study. Waiting until the 7th week of the long-semester

ensured that students had enough time in the course to observe their instructor in the course and to evaluate their own learning experiences. Students were asked to complete the survey one time and not to evaluate the immediacy and presence of an instructor in more than one course. In order to safeguard against multiple submissions from a student, the EFM survey tool capability to allow students to complete the survey only once based on their IP address and Internet cookies was used. The survey instrument was available for students to complete for a two-week period. At the middle of the 2nd week of availability, and again two days prior to the submission deadline, a reminder announcement and e-mail identifying the deadline for completion was sent to students in each course.

Treatment of Data

The predictor variables in the study are instructor immediacy and instructor presence in an online course. The criterion variables are students' affective learning, cognition, and motivation.

Bivariate correlation analysis was employed for testing research question 1 to test for possible relationships between instructor immediacy and instructor presence and to measure the magnitude of any possible connections.

Multiple regression analysis was conducted for testing of research questions 2, 3, and 4. For research question 2, multiple regression analysis was used to determine the degree to which the two predictor variables (instructor immediacy and presence) might explain variance in student affective learning. For research question 3, multiple regression analysis was conducted to determine the degree to which the two predictor variables might explain variance in student cognition. Finally, for research question 4, multiple regression analysis was utilized to determine the degree to which the two predictor variables might explain variance in student motivation.

Analysis of Variance (ANOVA) procedures were used to test research questions 5 and 6. For research question 5, factorial ANOVA was conducted to evaluate whether there is any evidence that the means of reported instructor immediacy differ by student gender, classification (undergraduate or graduate) or course type (asynchronous or synchronous). Similarly, for research question 6, factorial ANOVA was employed to evaluate whether there is any evidence

that the means of reported instructor presence differ by student gender, classification (undergraduate or graduate), or course type (asynchronous or synchronous).

Findings

All of the variables in this study were found to be significantly positively correlated. Table 1 presents the results of an initial Pearson correlation analysis of the five variables.

TABLE 1: Initial Pearson Correlations

	Instructor immediacy	Instructor presence	Affective learning	Cognition	Motivation
Instructor Immediacy (II-SCORE)	1				
Instructor Presence (IP-SCORE)	.75	1			
Student Affective Learning (AL-SCORE)	.56	.72	1		
Student Cognition (COG-REVCODE)	.53	.68	.62	1	
Student Motivation (MOT-SCORE)	.47	.60	.79	.53	1

All correlations are significant at the 0.01 level (2-tailed).

Bivariate correlation was used to examine possible relationships between instructor immediacy and instructor presence, and a statistically significant correlation was found ($r = .75$, $p < .01$).

Multiple linear regression analysis was used to determine whether the linear combination of instructor immediacy and presence caused significant variance in student affective learning, cognition, and motivation. For all three of the aforementioned dependent variables, the linear combination of instructor immediacy and presence was found to cause statistically significant variance (affective learning, F (2, 372) = 221.77, p <.001, R^2 = .56; cognition, F (2, 360) = 152.60, p <.001, R^2 = .46; motivation, F (2, 371) = 114.79, p <.001, R^2 = .38). Variance inflation

factors (VIF) and condition indexes were examined to investigate the possibility of multicollinearity of the variables in all three models. In the model with affective learning as the dependent variable, the VIF score was 2.34 for both instructor immediacy and presence, and condition indexes ranged from 1.0 to 16.97. In the model with cognition as the dependent variable, the VIF score was 2.26 for both instructor immediacy and presence, and condition indexes ranged from 1.0 to 17.16. Finally, in the model with motivation as the dependent variable, the VIF score was 2.34 for both instructor immediacy and presence, and condition indexes ranged from 1.0 to 16.95. Therefore, multicollinearity was not identified in any of the models (Table 2).

TABLE 2: Combined Regression Results for Explaining Affective Learning, Cognition and Motivation From Instructor Immediacy and Presence

	Unstandardized coefficients		Standardized coefficients			Collinearity statistics	
	B	Std. Error	Beta	t-value	p	Tolerance	VIF
Affective Learning							
(Constant)	36.55	5.29		6.91	.00		
II-SCORE	.06	.13	.03	.46	.64	.43	2.39
IP-SCORE	1.53	.11	.72	13.42	.00	.43	2.39
Cognition							
(Constant)	3.75	.27		14.04	.00		
II-SCORE	.01	.01	.06	1.02	.31	.44	2.26
IP-SCORE	.06	.01	.63	10.84	.00	.44	2.26
Motivation							
(Constant)	16.33	3.11		5.25	.00		
II-SCORE	.07	.08	.06	.93	.35	.43	2.34
IP-SCORE	.62	.07	.57	9.19	.00	.43	2.34

Note. Dependent variables: AL-SCORE, COG-REVCODE, MOT-SCORE

However, while the overall regression models were significant in all three tests, instructor immediacy was not found to be a significant individual predictor for causing variance (affective learning, t = .46, p = .64; cognition, t = 1.02, p = .31; motivation, t = .932, p = .35). Conversely,

instructor presence was found to be a significant individual predictor of all three (affective learning, t = 13.4, p = .00; cognition, t = 10.84, p = .00; motivation, t = 9.19, p = .00).

Finally, factorial ANOVA was used to examine whether gender, classification, or course type explained significant variance in students' perceptions of instructor immediacy and presence.

Perceptions of Instructor Immediacy

A factorial ANOVA was used to address the question of whether the means of instructor immediacy differ by student gender, classification, or course type. Levene's Test for Equality of Variance was not significant, F (7, 355) = .26, p = .12, providing evidence that the ANOVA assumption of homogeneity of variance across all groups was tenable. The analysis showed a significant small main effect for course type, F (1, 355) = 19.93, p = .00, partial η^2 = .05, but no significant main effect for gender, F (1, 355) = .66, p = .42, η^2 = .00, or classification, F (1, 355) = .15, p = .70, η^2 = .00. No significant interactions were found between gender and classification, F (1, 355) = .65, p = .42, η^2 = .00, gender and course type, F (1, 355) = 3.27, p = .07, η^2 = .01, or classification and course type, F (1, 355) = 1.25, p = .26, η^2 = .00. No significant interaction was found between gender, classification, and course type, F (1, 355) = .02, p = .88, partial η^2 = .00 (see Table 3).

TABLE 3: Factorial ANOVA Results for Instructor Immediacy and Gender, Course Type, and Classification. Dependent Variable: II-SCORE

	Sum of squares	*df*	Mean Square	*F*	p	Partial Eta Squared
Corrected Model	4358.30 (a)	7	622.62	5.09	.00	.09
Intercept	556887.75	1	556887.75	4553.18	.00	.93
Gender	80.13	1	80.13	.66	.42	.00
Classification	18.71	1	18.71	.15	.70	.00
Course Type	2436.96	1	2436.96	19.93	.00	.05
Gender * Classification	79.73	1	79.73	.65	.42	.00
Gender * Course Type	399.95	1	399.95	3.27	.07	.01
Classification * Course Type	153.31	1	153.31	1.25	.26	.00
Gender * Classification * Course Type	2.88	1	2.88	.02	.88	.00
Error	43419.16	355	122.31			
Total	1270534.00	363				
Corrected Total	47777.46	362				

* R Squared = .091 (Adjusted R Squared = .073)

In order to control for overall Type I error given a multiple hypothesis test looking at both instructor immediacy and presence as correlated dependent variables, the Bonferroni procedure was used (see Table 4).

TABLE 4: Pairwise Comparisons – Bonferroni Procedure. Dependent Variable: II-SCORE

(I) Course Type	(J) Course Type	Mean Difference (I-J)	Std. Error	Sig.(a)	95% Confidence Interval for Difference(a)	
					Lower Bound	Upper Bound
Sync	Async	8.07 (*)	1.81	.00	4.52	11.63

Based on estimated marginal means

* The mean difference is significant at the .05 level.

(a) Adjustment for multiple comparisons: Bonferroni.

This pairwise comparison shows that course type was found to explain significant variance in student perceptions of instructor immediacy, (course type, *adjusted p* = .00), with students in asynchronous courses reporting significantly lower instructor immediacy, and students in synchronous courses reporting significantly higher instructor immediacy.

Perceptions of Instructor Presence

A factorial ANOVA was used to address the question of whether the means of instructor presence differ by student gender, classification, or course type. Levene's Test for Equality of Variance was not significant, F (7, 355) = 1.49, p = .07. The analysis showed a significant small main effect for course type, F (1, 355) = 17.01, p = .00, partial η^2 = .05, but no significant main effect for gender, F (1, 355) = .19, p = .66, partial η^2 = .00, or classification, F (1, 355) = 2.03, p = .16, η^2 = .01. No significant interactions were found between gender and classification, F (1, 355) = .00, p = .97, η^2 = .00, gender and course type, F (1, 355) = 1.99, p = .16, η^2 = .01, or classification and course type, F (1, 355) = .04, p = .85, η^2 = .00. Also, no significant interaction was found between gender, classification, and course type, F (1, 355) = 1.49, p = .22, partial η^2 = .00, (see Table 5).

TABLE 5: Factorial ANOVA Results for Instructor Presence and Gender, Course Type, and Classification. Dependent Variable: IP-SCORE

	Sum of squares	*df*	Mean Square	*F*	p	Partial Eta Squared
Corrected Model	4835.276(a)	7	690.75	4.10	.00	.06
Intercept	652407.89	1	652407.89	3871.08	.00	.92
Gender	32.35	1	32.35	.19	.66	.00
Classification	341.94	1	341.94	2.03	.16	.01
Course Type	2867.37	1	2867.37	17.01	.00	.05
Gender * Classification	.19	1	.19	.00	.97	.00
Gender * Course Type	335.57	1	335.57	1.99	.16	.01
Classification * Course Type	6.31	1	6.31	.04	.85	.00
Gender * Classification * Course Type	251.77	1	251.77	1.49	.22	.00
Error	59829.53	355	168.53			
Total	1510330.00	363				
Corrected Total	64664.81	362				

* R Squared = .075 (Adjusted R Squared = .057)

A Bonferroni procedure was used (see Table 6) in order to control for overall Type I error given a multiple hypothesis test examining both instructor immediacy and presence as correlated dependent variables.

TABLE 6: Pairwise Comparisons – Bonferroni Procedure. Dependent Variable: IP-SCORE

(I) Course Type	(J) Course Type	Mean Difference (I-J)	Std. Error	Sig.(a)	95% Confidence Interval for Difference(a)	
					Lower Bound	Upper Bound
Sync	Async	8.76 (*)	2.12	.00	4.59	12.93

Based on estimated marginal means

* The mean difference is significant at the .05 level.

(a) Adjustment for multiple comparisons: Bonferroni.

This pairwise comparision shows that course type was found to explain significant variance in student perceptions of instructor presence, (course type, *adjusted p* = .00), with students in asynchronous courses reporting significantly lower instructor presence, and students in synchronous courses reporting significantly higher instructor presence.

Discussion

It is important to note that random selection and assignment were not used in this study. The randomization process was beyond the researcher's control, as is customarily the case in educational settings, since the participants belong to an "intact group" and are administratively defined (Gall et al., 1996). Another limitation of the study is the self-reporting nature of the measurement instrument, which hinders the ability to control errors and bias in the participants' responses.

The analysis of the data for this study showed similar findings in prior immediacy and presence research in terms of simple Pearson correlations between variables (see Table 1). Previous research on instructor immediacy in online learning environments has also shown positive relationships with student affective learning and cognition (Arbaugh, 2001; Baker, 2004;

McAlister, 2001; Ni, 2004), and this study supports those findings, with a positive correlation between instructor immediacy and student affective learning, and between instructor immediacy and student cognition. Student motivation was an outcome variable that had not been widely examined in relation to instructor immediacy in the online learning environment. The data analysis adds a positive correlation between instructor immediacy and motivation to the growing body of research. Similarly, instructor presence has been shown in previous studies to be positively related to cognition and affective learning (Richardson & Swan, 2003; Russo & Benson, 2005; Wise et al., 2004), but few studies have examined the construct in relation to student motivation. The data analyzed in this study revealed a significant positive relationship between instructor presence and student motivation and reiterated previous studies' reports of positive relationships with student affective learning and cognition. The findings lend credence to the assertion that further investigations into how these simple correlations might impact the online learning environment is needed.

In this study, a statistically significant correlation was found between instructor immediacy and presence. This is not surprising given the nature of the two constructs. Garrison et al. (2000) described three components of instructor presence in an online course; instructional design and organization, facilitating discourse, and direct instruction. Among the three components that make up instructor presence, verbal immediacy behaviors support the component of facilitating discourse. As Arbaugh and Hwang (2003) noted, instructors who have well-established presence in online courses have developed consistent patterns of interaction, communicated accessibility, provided consistent and substantive feedback, moderated discussions effectively, and provided content expertise through discussion posts to restart stalled discussions. Immediacy appears to fit well into this construct and includes specific behaviors that decrease the psychological distance between instructor and learner and also correlate positively with instructor presence. This study adds a new correlational finding to the existing literature on both immediacy and presence and how the two constructs are related.

Student Affect

The analysis in this study also delved further into the positive correlations reported in this and other studies using multiple linear regression to determine how well instructor immediacy and

presence might explain variance in student's affective learning. While the overall regression model did show that the linear combination of instructor immediacy and presence caused significant variance in the dependent variable of affective learning, instructor immediacy was not shown to be a significant individual predictor, and instructor presence was shown to be a significant individual predictor. This finding supports an existing study regarding instructor presence and its predictive influence on affective learning (Wise et al., 2004), however further studies are needed to substantiate its predictive validity.

While positive correlations were found in this study that support previous immediacy research (Arbaugh, 2001; Baker, 2004; McAlister, 2001; Whyte et al., 2003), instructor immediacy was not found to be a significant individual predictor of student affective learning. This adds a new finding to this growing body of literature regarding the predictive value of instructor immediacy in online courses on student affect. Despite research that has suggested that verbal and nonverbal behaviors are two separate constructs for face-to-face environments (Robinson & Richmond, 1995) and that immediacy can be conveyed in mediated forms (O'Sullivan et al., 2004), the online environment may skew a student's perception of this. In other words, it may be harder (without the enhancement of nonverbal cues such as smiling, nodding, leaning in, etc.) for an instructor to convey and for students to interpret verbally immediate behaviors as well as they could in a face-to-face learning environment.

Another plausible explanation for the finding from this study regarding instructor presence and student affect is that instructor presence encompasses a larger group of instructor behaviors than immediacy, and even includes immediate behaviors in the realm of facilitating discourse. The characteristic of facilitating discourse is associated with sharing meaning, identifying areas of agreement and disagreement, and seeking to reach consensus and understanding. Therefore, within the construct of instructor presence, facilitating discourse requires more from an instructor than using verbally immediate cues alone. Moreover, Anderson et al. (2001) noted that it requires the instructor to review and comment upon student comments, raise questions and make observations to move discussions in a desired direction, revive a stalled discussion, and draw in non-participative students. Thus, instructor presence is a broader construct with more ways of influencing student affective learning than instructor immediacy.

Student Cognition

While the overall regression model in this study showed that the linear combination of instructor immediacy and presence caused significant variance in student cognition, it did not show instructor immediacy to be a significant individual predictor. However, it did show instructor presence to be a significant individual predictor. The literature regarding instructor presence and its predictive influence on student learning has shown mixed results. This study supports Richardson and Swan's (2003) finding that significant variance in learning could be predicted by student perceptions of the presence of the instructor, but refutes a similar study from Wise et al. (2004) that reported that instructor presence had no effect on student learning.

A possible explanation for this study's finding that instructor presence is a significant predictor of student cognition, whereas instructor immediacy is not, is that instructor presence includes more instructional facets than immediacy. Of the three components of instructor presence (i.e. instructional design, facilitating discourse, and providing instruction), instructional design may have the strongest impact on student cognition. In the realm of instructional design, the instructor plans and prepares a formal path of study designed to foster learning. This supports Anderson's et al. (2001) assertion that, through adequate teaching presence, formal learning that facilitates personally relevant and educationally defined outcomes are achieved.

While almost all of the studies regarding instructor immediacy in online learning environments have reported positive correlations with student cognition (Arbaugh, 2001; Baker, 2004; McAlister, 2001; Ni, 2004), it has yet to be shown as a statistically significant predictor of cognition. This study supports the correlational findings, but calls into question the predictive validity of instructor immediacy on student cognition.

Student Motivation

The overall regression model used to determine how well instructor immediacy and presence might explain variance in student's motivation showed that the linear combination of instructor immediacy and presence caused significant variance in student motivation. However, it did not show instructor immediacy to be a significant individual predictor, whereas it did show instructor

presence to be a significant individual predictor. Prior to this study, specific research regarding instructor immediacy as a predictor for motivation in an online learning environment had not been conducted, nor had any studies surfaced in the literature that investigated online instructor presence in relation to student motivation. While much of the research regarding instructor immediacy has reported positive correlations with student motivation like the one demonstrated in this study (Arbaugh, 2001; Baker, 2001; Christophel, 1990), the data analyzed for this research did not show that instructor immediacy was a statistically significant predictor of student motivation in an online course. However, it did find instructor presence to be a statistically significant predictor of student motivation. As with the other dependent variables in this study, motivation seems to be significantly impacted by the multiple dimensions of instructor presence, whereas verbally immediate cues have not shown to be a significant predictor.

Perceptions of Instructor Immediacy

Factorial ANOVA was used to examine whether gender, classification, or course type explained significant variance in perceptions of instructor immediacy. Only course type was found to explain significant variance, with students in asynchronous courses reporting significantly lower instructor immediacy. The data showed that the perception of instructor immediacy is enhanced in synchronous courses. The importance of course type (synchronous and asynchronous) on a student's perceptions of instructor immediacy, coupled with the positive correlations between immediacy, presence, student affective learning, cognition, and motivation, illuminate the necessity of incorporating synchronous activities into the online learning environment.

Perception's of Instructor Presence

The data analysis for research question 6 revealed that students in synchronous courses tended to rate their instructors as having higher presence than did students in asynchronous courses. This directly supports research by Nippard and Murphy (2007), who found that manifestations of instructor presence occurred primarily through the use of synchronous activities. This finding further substantiates the importance of synchronous activities in an online course, and demonstrates that synchronous activities do play a role in how instructor presence is perceived.

Implications for Future Research

As with many research paths, the findings from this study introduce many more divergent areas of inquiry that other researchers can follow. This section describes some of the relevant issues that might be pursued in future research regarding online learning and the impact of instructor immediacy and presence.

A major finding of this study was that, while instructor immediacy was shown to be positively related to student affective learning, cognition, and motivation, it was not shown to be a significant predictor. Follow-up studies at different institutions and/or with larger student populations are necessary to continue investigations into the nature of the relationships previously reported. Because of the findings in this study, it would be useful for future online immediacy research to examine how well immediate behaviors are actually conveyed in an online course. The researcher might examine the importance of different verbal cues and how various online media or live video Web conferences might better convey them. The opportunity for experimental research to determine the most effective mix of immediate behaviors on student learning outcomes is another obvious direction for future research. It is also important to examine variables not investigated in this study (e.g., sense of learning community, generational differences, types and frequency of interaction) and how they might be influenced by instructor immediacy. Another obvious area of research involves examining immediacy within a blended learning environment. Blended courses combine traditional face-to-face instruction with online components, allowing an instructor to utilize both verbal and nonverbal cues in the immediacy construct. Since this study found that verbal cues alone may not be enough to predict student affective learning, cognition, and motivation, an investigation into instructor immediacy in the blended learning environment is fertile research territory to explore.

The major finding in this study with regard to instructor presence was that it is a significant predictor of student affective learning, cognition, and motivation. The regression analysis in this study should be replicated to substantiate these findings, and further research should be conducted to extend the regression testing by using different covariates in the models. The analysis in this study showed that the linear combination of instructor immediacy and presence significantly increased student's level of reported affective learning, cognition, and motivation.

The results showed that 56% of the variance in student affective learning scores, 46% of the variance in student cognition scores, and 38% of the variance in student motivation scores could be accounted for by the linear combination of instructor immediacy and presence, with presence being the single significant predictor. Future research should focus on other indicators that can explain possible variance in the dependent variables in this study. Possible variables not examined in this research (e.g., the student's sense of learning community, student commitment to the class, perceived instructor credibility) and how they are influenced by instructor presence should be examined. Studies that examine different institutions and larger populations of students to investigate the nature of the impact of instructor presence on the student experience in online courses are necessary. Studies that individually manipulate the three components of instructor presence (i.e. instructional design and organization, facilitating discourse, and direct instruction) in relation to the variables in this study and others will be a vital contribution as well. Besides looking at attributes of the online course, investigations into specific learner characteristics (e.g., culture, technology proficiency, computer anxiety, etc.) and how this influences perceptions of instructor presence would be of value in this field of research.

Thus, the findings from this study regarding instructor immediacy and presence can serve as a springboard from which to launch further investigations into how they might influence online learning. Researchers and practitioners should examine varying populations and dependent variables in relation to immediacy and presence. The opportunity for experimental research to determine the most effective instructional strategies for improving student learning outcomes is another obvious direction for future research. Finally, a divergent area of inquiry recommended in this study involves examining instructional strategies like instructor immediacy and presence in the blended learning environment.

Practical Implications

The results of this study provide insights for online instructors looking for specific indicators to improve their student's learning experience. In this study, instructor presence was shown to positively impact student's affective learning, cognition, and motivation. Practitioners can establish presence in their online learning environments by engaging students through the methodical design, facilitation, and direction of the course (Picciano, 2002).

For the instructional design and organization component of establishing teaching presence, practitioners can set curriculum, design methods, establish time parameters, utilize the medium effectively, and establish group norms via conventions of "netiquette" prior to the course commencing. According to Anderson, Rourke, Garrison and Archer (2001), building a course in digital format requires instructors to think through the process, structure, evaluation and interaction components of the course prior to its delivery. Instructors can be more explicit, deliberate, and transparent in the design process in order to convey a sense of instructor presence from the onset of the course.

Another component of instructor presence is facilitating productive discourse. The task of facilitating discourse is necessary to maintain learner engagement and refers to "focused and sustained deliberation that marks learning in a community of inquiry" (Anderson et al., 2001). The indicators that reflect successful discourse facilitation include the instructor identifying areas of agreement and disagreement and seeking to reach consensus and understanding; encouraging, acknowledging, and reinforcing student contributions; setting the climate for learning, drawing in participants, prompting discussion, and assessing the efficacy of the process (Shea, Li, and Pickett, 2006).

Finally, according to Anderson et al. (2001), indicators for establishing instructor presence during direct instruction include presenting content and questions, focusing the discussion on specific issues, summarizing discussion, confirming understanding, diagnosing misperceptions, injecting knowledge from diverse sources and responding to student's technical concerns.

References

Allen, I. E., & Seaman, J. (2008). *Staying the course: Online education in the United States*. The Sloan Consortium. Retrieved January 2, 2008, from http://www.sloanconsortium.org/publications/survey/pdf/staying_the_course.pdf

Anderson, T., Rourke, L., Garrison, D. R., & Archer, W. (2001). Assessing teaching presence in a computer conferencing context. *Journal of Asynchronous Learning Networks, 5*(2), 1-17.

Arbaugh, J.B. (2007). An empirical verification of the community of inquiry framework. *Sloan-C View, 11*(1), 2-12.

Arbaugh, J. B. (2001). How instructor immediacy behaviors affect student satisfaction and learning in web-based courses. *Business Communication Quarterly, 64*(4), 42-54.

Arbaugh, J. B., & Hwang, A. (2006). Does "teaching presence" exist in online MBA courses? *The Internet and Higher Education*, *9*(1), 9-21.

Baker, J. D. (2001). The effects of instructor immediacy and student cohesiveness on affective and cognitive learning in the online classroom education (Doctoral dissertation, Regent University, 2001). *Dissertation Abstracts International, 62*, 2081.

Baker, J. D. (2004). An investigation of relationships among instructor immediacy and affective and cognitive learning in the online classroom. *The Internet and Higher Education,* 7(1), 1-13.

Benson, A. D. (2003). Assessing participant learning in online environments. *New Directions for Adult and Continuing Education, 100*, 69-78.

Berge, Z. L. (1995). Facilitating computer conferencing: Recommendations from the field. *Educational Technology, 35*(1), 22-30.

Blignaut, S., & Trollip, S. R. (2003). Developing a taxonomy of faculty participation in asynchronous learning environments-an exploratory investigation. *Computer and Education, 41*, 149-171.

Chesebro, J. L., & McCroskey, J. C. (2000). The relationship between students' reports of learning and their actual recall of lecture material. *Communication Education, 49*, 297-301.

Christensen, L. J., & Menzel, K. E. (1998). The linear relationship between student reports of teacher immediacy behaviors and perceptions of state motivation, and of cognitive, affective, and behavioral learning. *Communication Education, 47,* 82–90.

Christophel, D. M. (1990). The relationship among teacher immediacy behaviors, student motivation, and learning. *Communication Education, 39,* 323-340.

Du, J., Havard, B., & Li, H. (2005). Dynamic online discussion: Task-oriented interaction for deep learning. *Educational Media International, 42*(3), 207-218.

Frymier, A.B. (1994). A model of immediacy in the classroom. *Communication Quarterly, 42*, 133-144.

Gall, M.D., Borg, W.R., and Gall, J.P. (1996). *Educational research* (sixth edition). White Plains, NY: Longman Publishers.

Garrison, D. R., Anderson, T., & Archer, W. (2000). Critical inquiry in a text-based environment: Computer conferencing in higher education. *The Internet and Higher Education, 2*(2-3), 87-105.

Garrison, D. R., & Cleveland-Innes, M. (2005). Facilitating cognitive presence in online learning: Interaction is not enough. *The American Journal of Distance Education, 19*(3), 133-148.

Gorham, J. (1988). The relationship between verbal teacher immediacy behaviors and student learning. *Communication Education, 37*, 40-53.

Graham, J. W., Cumsille, P. E., & Elek-Fisk, E. (2003). Methods for handling missing data. In J. A. Schinka & W. F. Velicer (Vol. Eds.), *Comprehensive handbook of psychology: Volume 2. Research methods in psychology*. New York: Wiley.

Grandzol, J., & Grandzol, C. (2006). Best practices for online business education. *The International Review of Research in Open and Distance Learning, 7*(1).

Hiltz, R., Zhang, Y., & Tuross, M. (2002). Studies of effectiveness of learning networks. *Elements of Quality Online Education: Volume 3 in the Sloan-C Series*. Needham, MA.

Jensen, K. K. (1999). Training teachers to use verbal immediacy. *Communication Research Reports, 16*(3), 223-232.

Johnson, S. D., Aragon, S. R., Shaik, N., & Palma-Rivas, N. (2000). Comparative analysis of leaner satisfaction and learning outcomes in online and face-to-face learning environments. *Journal of Interactive Learning Research, 11*(1), 29-49.

Kearney, P., Plax, T. G., & Wendt-Wasco, N. J. (1985). Teacher immediacy for affective learning in divergent college classes. *Communication Quarterly, 33*(1), 61-74.

Lam, P., Cheng, K. F., & McNaught, C. (2005). Asynchronous online discussion: Empirical evidence on quantity and quality. In G. Richards & P. Kommers (Eds.), *ED-MEDIA 2005* (pp. 3209-3215). Norfolk, VA: Association for the Advancement of Computers in Education.

Lemak, D., Shin, S., Reed, R., & Montgomery, J. (2005). Technology, transactional distance, and instructor effectiveness: An empirical investigation. *Academy of Management Learning & Education, 4*(2), 150-158.

McAlister, G. (2001). Computer-mediated immediacy: A new construct in teacher-student communication for computer-mediated distance education (Doctoral dissertation, Regent University, 2001). *Dissertation Abstracts International, 62,* 2731.

McCroskey, J. C. (2006). Reliability and validity of the Generalized Attitude Measure and Generalized Belief Measure. *Communication Quarterly, 54,* 265-274.

McCroskey, J. C., Richmond, V. P., Plax, T. G., & Kearney, P. (1985). Power in the classroom: Behavior alteration techniques, communication training and learning. *Communication Education, 34,* 214-226.

McCroskey, J. C., Richmond, V. P., & Bennett, V. (2006). The relationship of student end-of-class motivation with teacher communication behaviors and instructional outcomes. *Communication Education, 55*(4), 403-414.

McCroskey, J. C., Sallinen, A., Fayer, J. M., Richmond, V. P., & Barraclough R. A. (1996). Nonverbal immediacy and cognitive learning: A cross-cultural investigation. *Communication Education, 45,* 200-211.

McLaren, C. H. (2004). A comparison of student persistence and performance in online and classroom business statistics experiences. *Decision Sciences Journal of Innovative Education, 2*(1), 1-10.

Mehrabian, A. (1971). *Silent messages*. Belmont, CA: Wadsworth.

Moore, M. (1973). Toward a theory of independent learning and teaching. *Journal of Higher Education, 44*(12), 661-679.

Moore, M. (1973). Toward a theory of independent learning and teaching. *Journal of Higher Education, 44*(12), 661-679.

Moore, M. G., & Kearsley, G. (1996). *Distance education: A systems view.* Belmont, CA: Wadsworth.

Ni, S. (2004). Teacher verbal immediacy and sense of classroom community in online classes: Satisfaction, perceived learning, and online discussion (Doctoral dissertation), The University of Kansas, Lawrence, Kansas. Retrieved October 9, 2007, from *ProQuest Digital Dissertations database*. (Publication No. AAT 3185200)

Nippard, E., & Murphy, E. (2007). Social presence in the web-based synchronous secondary classroom. *Canadian Journal of Learning and Technology, 33*(1)

O'Sullivan, P. B., Hunt, S. K., & Lippert, L. R. (2004). Mediated immediacy: A language of affiliation in a technological age. *Journal of Language and Social Psychology, 23*(4), 464-490.

O'Sullivan, P. B., Hunt, S., Lippert, L., Owens, S., & Whyte, A. (2001, November). *Mediated immediacy: Affiliation at distance in educational contexts*. Paper presented at the annual meeting of the National Communication Association, Atlanta, GA.

Pelowski, S., Frissell, L., Cabral, K., & Yu, T. (2005). So far but yet so close: Student chat room immediacy, learning, and performance in an online course. *Journal of Interactive Learning Research, 16,* 395-407.

Picciano, A. G. (2002). Beyond student perceptions: Issues of interaction, presence, and performance in an online course. *Journal of Asynchronous Learning Networks, 6*(1), 21-40.

Richmond, V. P., Gorham, J. S., & McCroskey, J. C. (1987). The relationship between selected immediacy behaviors and cognitive learning. In M. McLaughlin (Ed.), *Communication Yearbook, 10*, Beverly Hills, CA: Sage.

Richardson, J. & Swan, K. (2003). Examining social presence in online courses in relation to students' perceived learning and satisfaction. *Journal of Asynchronous Learning Networks, 7*(1), 68-88.

Robinson, R. Y., & Richmond, V. P. (1995). Validity of the verbal immediacy scale. *Communication Research Reports, 12,* 80–84.

Rodriguez, J., Plax, T. G., & Kearney, P. (1996). Clarifying the relationship between teacher nonverbal immediacy and student cognitive learning: Affective learning as the central causal mediator. *Communication Education, 45*, 293-305.

Rubin, R. B., Sypher, H. E., & Palmgreen, P. (2004). *Communication research measures: A sourcebook.* New York: Routledge.

Russo, T., & Benson, S. (2005). Learning with invisible others: Perceptions of online presence and their relationship to cognitive and affective learning. *Educational Technology & Society, 8* (1), 54-62.

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

Sargeant, J., Curran, V., Allen, M., Jarvis-Selinger, S., & Ho, K. (2006). Facilitating interpersonal interaction and learning online: Linking theory and practice. *The Journal of Continuing Education in the Health Professions, 26*, 128-136.

Schulman, A. H., & Sims, R. L. (1999). Learning in an online format versus an in class format: An experimental study. *The Higher Education Journal, 26*(11), 54-56.

Shea, P., Li, C. S., & Pickett, A. (2006). A study of teaching presence and student sense of learning community in fully online and web-enhanced college courses. *The Internet and Higher Education, 9*(3),175-190.

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

Sidelinger, R. J., & McCroskey, J. C. (1997). Communication correlates of teacher clarity in the college classroom. *Communication Research Reports, 14*(1), 1-10.

Stein, D. S., Wanstreet, C. E., Calvin, J., Overoom, C., & Wheaton, J. E. (2005). Bridging the transactional distance gap in online learning environments. *The American Journal of Distance Education, 19*(2), 105-118.

Styer, A. J. (2007). A grounded meta-analysis of adult learner motivation in online learning from the perspective of the learner (Doctoral dissertation), Capella University, Minneapolis, Minnesota. Retrieved March 28, 2008, from *ProQuest Digital Dissertations database*. (Publication No. AAT 3249903)

Swan, K. (2002). Building learning communities in online courses: The importance of interaction. *Education, Communications, & Information, 2*(1), 23-49.

Swan, K. (2003). Learning effectiveness: What the research tells us. In J. Bourne & J.C. Moore (Eds), *Elements of quality online education, practice and direction* (pp. 13-45). Needham, MA: Sloan Center for Online Education.

Tello, S. F. (2002). *An analysis of the relationship between instructional interaction and student persistence in online education.* Unpublished doctoral dissertation, University of Massachusetts, Lowell.

Teven, J., & McCroskey, J. (1996, November). *The relationship of perceived teacher caring with student learning and teacher evaluation*. Paper presented at the Annual Meeting of the Speech Communication Association. San Diego, CA.

Tu, C. H. (2005). From presentation to interaction: New goals for online learning. *Educational Media International, 42*(3), 189-206.

Vroeginday, B. J. (2005). Traditional vs. online education: A comparative analysis of learner outcomes (Doctoral dissertation, Fielding Graduate University, 2005). *Dissertation Abstracts International, 66,* 10A.

Walther, J.B. (1992). Interpersonal effects in computer-mediated interaction: A relational perspective. *Communication Research, 19*(1), 52-90.

Wantstreet, C. E. (2006). Interactions in online learning environments. *The Quarterly Review of Distance Education, 7*(4), 399-411.

Whyte, A., O'Sullivan, P. B., & Hunt, S. (2003, May). *Double strangeness: Anxiety and uncertainty in web-based instruction*. Paper presented at the annual conference of the International Communication Association, San Diego, CA.

Wise, A., Chang, J., Duffy, T. & del Valle, R. (2004). The effects of teacher social presence on student satisfaction, engagement, and learning. *Journal of Educational Computing Research, 31*(3), 247-271.

Witt, P. L., Wheeless, L. R., & Allen, M. (2004). A meta-analytical review of the relationship between teacher immediacy and student learning. *Communication Monographs, 71*(2), 184-207.