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UNIVERSITY OF OKLAHOMA

GRADUATE COLLEGE

A FRAMEWORK FOR LEARNER-INSTRUCTOR INTERACTION IN THE ONLINE, DISTANCE EDUCATION ENVIRONMENT

A Dissertation

SUBMITTED TO THE GRADUATE FACULTY

In partial fulfillment of the requirements for the

Degree of

Doctor of Philosophy

By

R. CLINTON MINER
Norman, Oklahoma
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A FRAMEWORK FOR LEARNER-INSTRUCTOR INTERACTION IN THE ONLINE, DISTANCE EDUCATION ENVIRONMENT

A Dissertation APPROVED FOR THE

DEPARTMENT OF EDUCATION LEADERSHIP AND POLICY STUDIES

BY

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TABLE OF CONTENTS

LIST OF TABLES.....ix

LIST OF FIGURES.....x

CHAPTER

I. STUDY OVERVIEW.....1

Purpose of Study
Background and Magnitude of the Problem
Significance of the Study
Research Questions
Definition of Terms

II. LITERATURE REVIEW.....20

Distance Education – A Discrete Discipline
Towards a Systems View
Adult Learning Theories and Interaction
Goal Orientation and Interaction
Interaction in Knowledge-Building Communities
Motivation and Interaction

III. METHODOLOGY.....56

Qualitative Methodological Approach
Research Design
Data Collection
Sampling
Data Analysis
Trustworthiness
Internal Review Board (IRB) Procedures

IV. QUALITY LEARNER-INSTRUCTOR INTERACTION.....70

Directing Learning
Providing Performance Feedback
Promoting Content Understanding
Creating Structure
Supporting Learning

V. CONSEQUENCES OF QUALITY LEARNER-INSTRUCTOR INTERACTION.....102

Directing Learning
Providing Performance Feedback
Promoting Content Understanding
Creating Structure
Supporting Learning

VI. A FRAMEWORK FOR QUALITY LEARNER-INSTRUCTOR INTERACTION.....118

Interrelationships among the Categories
Conditions of Online Learning
Variations in Online Learning
Adult Learning Models

VII. SUMMARY AND IMPLICATIONS.....154

A New Perspective of Learner-Instructor Interaction
Implications for Further Research
Summary

REFERENCES.....165

APPENDIX 176

LIST OF TABLES

Table

1. Interaction Strategies Fostering Social Presence 42

2. Initial Categories Emerging from Data 65

3. An Iteration of Grouping Categories by Creating a Tree 66

LIST OF FIGURES

Figure

1. A theoretical framework for quality learner-instructor interaction in the online educational environment 122

2. Creating structure as the infrastructure for quality learner-instructor interaction online 125

3. Supporting Learning as the Central Phenomenon 129

4. Online Conditions and the Framework 134

5. Variations: Intervening Variables 140

ABSTRACT

Current literature argues that learner-instructor interaction is important in distance education, but fails to describe this interaction in a way that provides a theoretical or empirical basis for understanding its contribution to learning. Therefore, the goal of this study was to develop a theoretical framework for defining quality learner-instructor interaction in the online environment. A grounded theory research methodology used theoretical sampling to collect data from graduate students and instructors engaged on online distance education. Data were collected from interviews, observations and records review and analyzed using open and axial coding techniques. This process generated 5 categories that operationalize learner-instructor interaction in the online environment. These categories are directing learning, providing performance feedback, promoting content understanding, creating structure and supporting learning. Together they form the basis of a multi-linkage framework that provides a theoretical description of the complexity of learner-instructor interaction in the online environment and challenges existing thinking and practice.

Chapter 1

Study Overview

The explosion of technology-mediated instruction has created an electronic distance education (DE) environment that is changing the landscape of teaching. Teachers and learners interact in a spatial and temporal discontinuous space mediated electronically such as in online courses delivered through the Internet. This new DE teaching space powerfully influences instructor-learner interaction, instructional design, and instructional delivery (Hiltz, 1995; Keegan, 1995; Moore & Kearsley, 1996).

Distance education is defined by more than the separation of learners and instructors by space and time, however. The distance between the understandings and perceptions of instructors and those of their students also characterizes the DE environment. Moore and Kearsley (1996) refer to this as transactional distance that requires instructors to plan and present instruction and interact with their students in ways different from those required in a traditional classroom setting. Learners in the DE environment interact with the content, instructor, and fellow learners in new and complex ways. For example, they can no longer benefit from the oral and non-verbal communication-laden interactions that take place in a face-to-face classroom.

Educational researchers and practitioners are struggling with the pedagogical issues associated with the unknowns of teaching in a DE learning space. Even with the emergence of research in the field of DE over the past decade, the effectiveness of distance education technologies is relatively untested (Bates, 1994). Distance education research efforts also lack an effective focus. Many argue that researchers are asking the wrong questions and have inappropriately focused on comparative studies (Berge &

Collins, 1995; Diaz, 2000; Saba, 1999). The degrees of variations across and between disciplines make valid comparisons between traditional instruction and distance education impractical. Such comparisons have not helped to inform the practice of DE. Although over 400 studies have attempted to find a difference in the effectiveness between distance and traditional education, the unequivocal findings have shown no significant difference (Diaz, 2000).

There also has been an apparent shift in focus from research on teaching to research on learning. This shift is driven by a necessity to better design practices that promote learning in the online environment (Berge and Collins, 1995). Studies of what happens when technology is introduced into the classroom indicate that teachers fail to use the technology in appropriate and effective ways, often because of ill-informed practices. The paradigm shift towards research on learning rather than on teaching includes an emerging interest in the learners' perspectives of traditional and distance education such as the challenges they face (Hara & Kling, 2000).

A review of the distance education literature reveals that researchers are only beginning to define the challenges. There is a dearth of observations, conclusions, or theories that might guide the development and delivery of distance education (Windschitl, 1998). Current literature provides minimal insights into the use of the emerging DE technologies for effective learning (Haynes & Dillion, 1992). Saba (1999) suggests that an important, largely ignored research theme is interaction between DE learners and instructors and the role that interaction plays in online learning. There is little in the current research that informs the teaching practice with respect to the dynamics of learner-instructor interaction. There are many important unanswered

pedagogical questions associated with interaction, such as how this interaction promotes learning in the DE environment and what constitutes effective interaction. The lack of scholarly studies limits the theoretical and empirical base on which to build effective practice (Hara and Kling, 2000; Romizowski & Mason, 1996; Windschitl, 1998). Therefore, it is necessary to generate theoretical constructs that explain learner-instructor interaction before various hypotheses about interaction can be tested empirically.

Learning is largely a transactional process that requires learner-instructor interaction to foster critical reflection (Galbraith, 1991). Scholars in the field of distance education, as well as scholars of traditional education, argue that instructors must promote sufficient interaction between themselves and their students to foster an exchange of ideas and information (Garrison, 1990; Moore and Kearsley, 1996). Three types of interaction are commonly discussed: learner-content, learner-instructor, and learner-learner (Moore, 1989; Moore and Kearsley, 1996). Learner-content interaction refers to how students construct new knowledge and integrate that knowledge into their existing cognitive schema (Merriam and Caffarella, 1999; Scandura and Scandura, 1980). One of the instructor's roles, therefore, is to present the content in a way that facilitates learner-content interaction and the resultant change in learner knowledge.

Learner-learner interaction has been largely ignored and represents a relatively new dimension in pedagogy (Moore & Kearsley, 1996). This dynamic describes the relationships among learners as they interact with one another and can influence learning outcomes positively or negatively largely through its effects on affect. Learner-learner interaction can also promote cognitive engagement, reflection, synergistic thinking, and other cognitive outcomes. Group interaction in DE can be an effective learner-learner

strategy that fosters the formation of student support groups that compensate for the lack of social presence, stimulate critical thinking, and enhance motivation.

Learner-instructor interaction, the last of the three forms of interaction discussed by Moore, promotes knowledge building and learner motivation to engage in the learning behavior. This form of interaction may include the following instructor behaviors: clarifying information, evaluating, demonstrating, goal setting, humanizing, modeling, encouraging, counseling, and providing feedback (Collins and Berge, 1997; Gunawardena, 1992; Moore & Kearsley, 1996; Wagner, 1994).

The instructor must facilitate all three forms of interaction in the DE environment. Learner-instructor interactive behavior creates an effective learning environment that is the foundation for the other two forms of interaction (Moore, 1993; Moore & Kearsley, 1996). Some argue that the greatest determinant of the extent to which students feel that the online mode of delivery is as good as, better or worse than traditional modes is the amount and quality of learner-instructor interaction (Hiltz, 1995).

While these three types of interaction are the most widely accepted descriptions of interaction, other forms have been suggested. One type, vicarious interaction (Kruh & Murphy 1990) or internal monologue (Howell, 1990), is best categorized as self-talk. It is the process whereby the learner synthesizes the content using self-debate. Fulford & Zhang (1993) discuss the same phenomenon and refer to it as internal conversation.

Another type of interaction is learner-interface interaction (Hillman, Willis, & Gunawardena, 1996), the interaction between the DE student and the medium itself. The medium mediates the learner-content, learner-instructor, and learner-learner interactions, significantly influencing the learning process, student satisfaction, and motivation.

Students react to the learner-instructor interaction through their interface with the technology (Eastmond, 1992; Kahle, 1998). Students' interaction with the technology and software systems that mediate online courses may affect their attitudes and performance. Technical limitations and/or difficulties and delayed interaction cause frustration, at a minimum, and often force students to expend significant energy to overcome the challenges in the DE environment. These dynamics may result in lower motivation to learn as well as anxiety that inhibits performance (Anderson, 1996; LaRose & Whitten, 2000).

In addition to the issues above, learner-interface interaction also affects the instructor's immediacy behaviors such as instructor gaze, facial expressions, lip movements, change in vocal expressions, multiple sensory cues, the vicarious immediacy of being in a live classroom, and the sense of a collective experience. The online technological interface makes such behaviors impossible without the addition of a visual component (LaRose & Whitten, 2000).

Both physical and psychological separation may have an impact on the effectiveness of these interaction modes. Transactional distance is the distance of understandings and perceptions between instructor and student (Moore, 1993; Moore & Kearsley, 1996). Transactional distance is not just a phenomenon in DE; transactional distance increases whenever learners are not actively engaged in meaningful learning and dialogue with their instructors. Some argue that creating course structure that fosters effective interaction between learners and instructors decreases this distance (Saba, 2000). Students' readiness to learn, which includes their prior knowledge of the subject, motivation, and learning skills, also reduces transactional distance (Moore & Kearsley,

1996). The spatial and temporal separation in the DE environment exacerbates the challenges of transactional distance and dictates that instructors plan, present, and interact in ways different from those in the traditional classroom (Moore & Kearsley, 1996).

As reflected above, discussion in the literature about the importance of learner-instructor interaction recognizes that it might be different in the DE environment compared to the traditional classroom environment. For example, Hiltz (1995) offers, from her studies with the New Jersey Technology Institute, that there is a different rhythm to interaction online. The challenge is to operationalize that rhythm so that practitioners can make appropriate decisions about interaction in DE.

There are an increasing number of publications designed for practitioners that espouse the latest in DE best practices. Practitioners are inundated with benchmarks for effective online education such as 'student interaction with faculty and other students is an essential characteristic" for quality online education and "It has become increasingly evident that interactivity is the *sine qua non* for quality in distance learning. It is central to the quality of distance learning" (Phipps & Merisotis, 2000). While these benchmarks and best practices validate our intuitive belief about interaction, they do little to increase understanding about learner-instructor interaction and its impact on online learning. Questions as basic as what learner-instructor interaction is and how it affects learning in DE remain unanswered, as does the more important question of what constitutes effective learner-instructor interaction. Answers to these questions can help operationalize interaction in meaningful ways for researchers and practitioners.

Although the current DE literature is lacking, we can view interaction in the learning environment in terms of learner-instructor, learner-learner, learner-content,

vicarious interaction, and learner-interface interaction. This study focused on learner-instructor interaction in the online environment.

Purpose of this Study

The purpose of this study was to explore a framework for learner-instructor interaction in the online, distance education environment. This study collected and analyzed data to help generate a better understanding of learner-instructor interaction from the perspectives of the students and teachers engaged in the online-learning environment. A grounded theory approach was used to generate a theoretical framework for defining quality learner-instructor interaction in online DE.

Background and Magnitude of the Problem

Scholarly efforts in the areas of learner motivation, learner participation, and learner-instructor interaction have resulted in models, constructs, and theories that include a myriad of learning transaction considerations. Studies have examined learner characteristics such as values, needs, expectancy, and self-efficacy; instructional strategies; and course design to name a few. The preponderance of these research efforts has been conducted in the context of and for practice in the traditional classroom setting.

Much of the current distance education literature reflects education's roots in the traditional classroom and carries forward some of the same suppositions into the field of DE. For instance, many distance education scholars argue, as do scholars of traditional learning environments, that interaction is an essential element for cognition and learning. Effective interaction between the learner and instructor enhances student satisfaction, performance, and motivation (Chen, 1997; Garrison, 1990; Gunawardena, 1992; Hackman & Walker, 1990; Keegan, 1990; LaRose & Whitten, 2000; Weston & Cranton,

1986). However, there are differences between traditional face-to-face and distance education interactions. The nature of the educational process, regardless of the medium, is inherently human-to-human interaction. Scholars and practitioners argue that interaction between learners and instructors is key to the learning process (Chen, 1997; Gunawardena, 1994; Keegan, 1990; Weston & Cranton, 1986; Wlodkowski, 1985), and the differences between traditional and distance education have an impact on the dynamics of human-to-human interaction. The most obvious and core difference between face-to-face and distance education is that in the latter, the human interaction of the educational process is mediated by technology.

DE practitioners face unique challenges in the online environment. The lack of face-to-face interaction makes impractical the use of non-verbal cues that are useful in a face-to-face learning environment. Some of those non-verbal cues that are not possible in online DE include eye-to-eye contact; facial expressions; body movements such as head nods, extended hands or folded arms; voice expressions and inflections; and emotions expressed by laughter or a frown (LaRose & Whitten, 2000). Keagan (1995) argues that distance education lacks the emotional dimension of learner-instructor interaction that promotes effective learning through eyeball-to-eyeball contact. He offers the Russian concept of "Zaochny" which describes the eyes as the window through which effective interaction takes place.

Besides the lack of face-to-face interaction, there are other characteristics of online DE that make it unique and may have implications for instructors' interaction strategies. Social presence is the degree to which the instructor perceives a learner as a real person and vice versa — the student sees the instructor as a real person. Social

presence influences communication and learning in that effective learning occurs when social presence is developed between the learner and instructor (Gunawardena, 1994). One aspect of social presence is that of the individual's sense of identity. Students bring to the classroom or DE environment their sense of identity by which they define themselves in the learning situation. It is what distinguishes them as unique and special individuals. The lack of face-to-face interaction may result in fellow students and the instructor assigning identity characteristics that are inconsistent with a student's own self-view. This can influence social valuing and the degree to which others perceive each learner as a real person (Gunawardena & Zittle, 1997).

Social presence in the traditional classroom is generated through the social and psychological interaction in shared time and space. The absence of that form of social presence in online DE may have a significant impact on the learning experience. One of the potential outcomes of this lack of social presence is the online learner's sense of isolation and inhibited motivation. The psychological dimension of being and/or feeling alone in virtual space is a challenge. Interpersonal interaction communicates personal value to the learner. Learner motivation can be affected adversely by the absence of interpersonal contact that provides for learner support and creates interest. It may also be limited by the absence of peer pressure that encourages persistence (Stelzer & Vogelzangs, 1998).

The nature of the space occupied by a traditional classroom is part of the dynamic of social presence. Physical place, such as a classroom, is humanized space. This space typically has familiar patterns of meanings, familiarity, roles, and communication patterns that are difficult to replicate in online DE. To be present in a humanized space is

personal; all the senses are stimulated in this space providing physical and psychological validation and satisfaction (Bowman, 2002).

Perhaps an effective way to articulate the nuisances of social presence is to do so in the words of one online student who was defining social presence by his experiences:

> When I think about 'social presence' I think about walking into Simon Fraser University (my last face-to-face class) and seeing a non-luxurious classroom that had its own unique character and feel. It was large, comfortable, well stocked with tables and chairs that allowed for a flexible arrangement. We sat in a circle, had eye contact, supported group interaction, and had a sense of togetherness. The nature of the projects and group activities encouraged a variety of groupings among the students and the professor (and tutors). Now and then, I left for the washroom; I moved about people to work in alternate settings, the class took informal breaks (sometimes for a smoke or snack attack). Usually the atmosphere in the group was light-hearted and filled with laughter, even though the activities and discussions were serious and meaningful (Roy, 2002).

Constructing social presence in online DE is important (Gunawardena, 1994; LaRose & Whitten, 2000). The immediacy behaviors of instructors that foster personal rapport, communicate group cohesiveness and connectivity, and reflect instructor understanding of student challenges positively affect learning and satisfaction (Gunawardena & Zittle, 1997; Hackman & Walker, 1990; LaRose & Whitten, 2000).

Space can also be thought of in ways different from the traditional classroom. The size of online DE space is socially limited by technology. There is a point at which the volume of material and text generated results in more information than students can process. There is also a number of learners beyond which it is difficult to create a sense of community. The consequence of online DE courses with too many students is "electronic anomie," or normlessness (Hiltz, 1995, pp 134).

Online DE also differs from the traditional classroom because the educational process takes place through an electronic medium. Learner-interface interaction, the phenomenon of DE students interacting with the medium itself, (Hillman, et al., 1996), creates two factors that affect interaction. First, learners must, by the nature of the environment, interact with the online electronic delivery medium. Second, the manner in which the learning content is communicated is shaped by the medium.

The technology mediates the learner-content, learner-instructor, and learner-learner interactions. As a result, the necessary student interaction with web-based media has an impact on the learning process, student satisfaction, and student motivation (Hillman, et al., 1996). In online DE, learner-instructor interaction occurs through technology. Thus, it does not provide the direct, personal, and immediate interaction and communication exchange of the traditional face-to-face classroom. Rather, the learning transaction and interaction between the learner and instructor in online DE take place indirectly, mediated by the Internet technology (Kahle, 1998).

The online environment also shapes the message. In the traditional classroom, the content is presented directly by the instructor to the students. In online DE, however, the content must be packaged, transmitted, and presented in an electronic format. The online packaging is part of the content and affects the learner's interpretation of the content. To be successful in the DE environment, students, must be efficacious not only in mastering content but also in mastering the technology and learning strategies associated with online DE (Compeau & Higgins, 1995; Webster & Hackley, 1997). The learning skills students have developed through their years as traditional classroom students often do not include the skills needed to learn in online DE (Diaz, 2000). Students' real or perceived

lack of ability to succeed in online DE may adversely influence their performance and motivation to learn (Bandura, 1993; Pajares, 1996).

The asynchronous nature of most learner-instructor and learner-learner interactions is another important difference between online and face-to-face courses. This is especially crucial within the context of transactional distance. The transactional distance between learners and instructors and among learners is increased because of the delay in responses and feedback in asynchronous communications (Bullen, 1998; Moore & Kearsley, 1996). The distance environment, particularly asynchronous interaction, lacks the emotional dimension of learner-instructor collaboration in knowledge building (Keegan, 1990). This increased transactional distance may have an adverse impact on learning because of the lack of traditional feedback interaction that learners use to judge their own performance (Kearsley, 2001). Spatial and temporal separation in asynchronous online DE delays and may distort feedback that students use to judge group norms and regulate risky behaviors (Zimmerman & Martinez-Pons, 1990).

In addition to these issues, student support structures in the online environment are different. Missing from the virtual classroom is the support of classmates physically present in the brick-and-mortar classroom. The DE environment lacks verbal and non-verbal cues (LaRose & Whitten, 2000). Students have developed socially and psychologically by interacting with others in the same physical space that is rich with sensory input. Sensory data provide students with cues about their success and constant feedback that they use to monitor their behavior. Thus, it is not surprising that students often exhibit high anxiety when operating in isolation in an environment that differs from their normal sphere of interaction (Bullen, 1998; McCombs, 1994).

Many students start college ill prepared for independent learning and ill equipped for successful online learning (Diaz, 2000). For many students, learning in the DE environment is analogous to asking them to perform tasks in water that they have only performed on land. Although product developers and technical experts are excited about the many emerging DE technologies, for most students and instructors these media are unfamiliar, cause anxiety and uncertainty, and may lead to poor performance (McCombs, 1994; Rohfeld, Eastmond, Gunawardena, & Davidson, 1991).

Instructors as well as students are affected by the differences between the traditional classroom and online DE that are caused by the introduction of technology. Instructors cannot see students' reactions and judge from those face-to-face reactions the effectiveness of their instruction (LaRose & Whitten, 2000). Instructors' success in online DE is dependent, in part, on how well they use the technology to overcome the lack of face-to-face feedback and non-verbal reactions. Not all instructors easily transition from teaching in the brick-and-mortar classroom to using technology to mediate their interaction with learners in online DE. Teaching in an online classroom requires different design skills and instructional strategies (Moore & Kearsley, 1996). For example, it is more difficult to organize experiential learning activities at a distance than in the traditional classroom. While instructors don't have the content mastery concerns of students, they may share with students a real or perceived lack of skills to use the technology of online DE.

Low student self-efficacy has always been a barrier to student motivation to accomplish learning objectives. Issues of self-efficacy, however, are magnified in the DE environment by the challenges that students face as they deal with both their perceptions

of engaging in the learning activity and doing so in the "water" of the technology mediated classroom. Among the student behaviors manifested as a result of these DE barriers are poor effort and low persistence (Anderson, 1996; Hara & Kling, 2000, LaRose & Whitten, 2000; Saba, 2000). These results are not surprising given an understanding of the unique challenges learners face in online DE.

Other anecdotal studies reinforce the perspective that DE offers unique challenges to learning including the fear of being seen as stupid (Rheingold, 1993), student communication anxiety, and stress from a lack of self-confidence (Ritchie and Newby, 1989). The challenges students and instructors encounter in online DE suggest that practitioners need to think about teaching with technology in ways different from teaching in the traditional classroom (Moore & Kearsley, 1996).

Neither the literature nor current practice in online DE have definitively identified the instructor interaction behaviors that will reduce the barriers to learning that are unique to online DE. The ultimate goal is to understand how to address the distinctive challenges of online DE in ways that student learning and performance are enhanced.

The preceding discussion argues that there are important differences between the environment of the traditional classroom and that of online DE that influence learner-instructor interaction. While the literature presents a strong case for a difference, practitioners are still struggling with how those differences shape the dynamics of interaction in online DE. The challenge is that little is known about this interaction and the phenomenon of learning in electronic space (Beaudoin, 1990; Harasim, 1990; Haynes & Dillon, 1992).

The literature offers little help in understanding how the differences between the traditional classroom and online DE may dictate different approaches to interaction and fostering learner motivation when teaching online. Many acknowledge the importance of interaction in online DE (Althaus, 1997; Bates, 1994; Hiltz, 1995; Keegan, 1995; Moore & Kearsley, 1996; Rohfeld & Hiemstra, 1995; Wolcott, 1995). However, these discussions and the research have not validated these assertions nor tackled the questions concerning what constitutes quality interaction and how to nurture it. The literature argues that learner-instructor interaction is important in distance education, but fails to describe this interaction in a way that provides a theoretical or empirical basis for understanding its contribution to learning (Bates, 1994; Hara & Kling, 2000; Harasim, 1993; Windschitl, 1998).

Merely stating the importance of learner-instructor interaction does not help the practitioner. It suggests that simply the presence or absence of interaction is sufficiently important without understanding the interaction itself. It ignores research questions that should be asked: What constitutes quality interaction? What are the specific instructor behaviors associated with quality interaction? Under what circumstances are which behaviors effective? These and other issues represent the unknowns of the interaction phenomenon in online DE.

The decades of educational research conducted in the traditional classroom on fostering learning motivation and performance through instructional strategies and cognitive processing and interaction may not be entirely generalizable to the online environment. The new physical and psychological learning environment of online DE and the attendant transactional distance exacerbates the challenges that DE students face.

This unique learning environment may require pedagogical approaches not suggested by research in the traditional classroom. Online students must successfully engage in the learning activity, as do students in the face-to-face classroom, but they also must master the class content in the "water" of the technology-mediated classroom. The DE community is left with questions such as those posed above. Some of those questions are the focus of this study: what constitutes quality interaction, what does it look like in the online DE environment and in what ways is it important to the learning experience? Current research in the traditional setting can provide a point of departure for pursuing answers to these and other questions of quality education at a distance, but it falls short in providing theories directly applicable to online DE.

Significance of the Study

This study explored the dynamics of learner-instructor interaction with an interest in how such interaction may affect online learning. The focus of this study went beyond the mere presence or absence of learner-instructor interaction. It attempted to identify what constitutes quality interaction in online DE. Educators are faced with the dilemma of developing distance-delivered programs without theoretical foundations to guide their decisions. The result of such uninformed efforts is, at best, the failure to use the most effective instructional strategies or, at worst, implementing strategies that adversely affect student motivation to engage in learning (Hara & Kling, 2000). However, before practice can be effectively informed, the underlying theory must be understood (Glaser & Strauss, 1980; Tesch, 1990). This study undertook to generate that understanding. It investigated learner-instructor interaction in the online environment from the perspective and meaning of the participants. The end goal of this study was to suggest a theoretical

explanation of learner-instructor interaction that will provide the foundation for future empirical testing. This effort offered both theoretical and practical implications:

Theoretical. A grounded theory approach contributes to understanding learner-instructor interaction in online DE. It attempts to generate the theoretical underpinnings for interaction in the distance education environment and address how learner-instructor interaction is an important factor in student learning.

Practical. The results of this study will provide a meaningful definition of quality learner-instructor interaction to designers of distance education, technology experts and instructors to help guide the development of effective learner-instructor interaction in online DE.

Research Questions

The research questions that guided this study are:

1. What is quality learner-instructor interaction in online DE from the student's perspective?
2. How does the quality of learner-instructor interaction affect the students' perception of learning in online DE?
3. What defines quality learner-instructor interaction in the online environment?

Definition of Terms

1. Distance education: instruction in which the educational process and interaction is mediated by technology.
2. Online distance education: an environment in which a course is delivered to students separated by temporal and/or spatial distance delivered through a web-based

technology that mediates asynchronous and/or synchronous student participation and learner-instructor interaction.

3. Learning: A change in behavior or attitude as a result of an experience.
4. Electronically mediated: Communication that takes place through a delivery technology that does not include face-to-face interaction.

Summary

The explosion of technological advances in distance education has outpaced the knowledge building and research necessary to inform the integration of technology with instructional strategies and learning objectives in the DE environment (Bates, 1994). There are numerous questions concerning the pedagogical dynamics in the on-line environment that have yet to be addressed. The distance education literature argues that learner-instructor interaction is one of the most important dynamics in online DE, yet little research exists to support that proposition or help define what constitutes effective learner-instructor interaction. While the literature from the research of traditional classroom dynamics helps guide inquiry, it does not provide a complete understanding of learner-instructor interaction and its theoretical underpinning as it applies to online DE.

The goal of this grounded-theory qualitative study was to help build the understanding of learner-instructor interaction in online DE from the learners' experiences. This study generated, from those student experiences, a theoretical basis for quality learner-instructor interaction.

This dissertation is organized into seven chapters. Chapter 2 is the literature review that was conducted to identify gaps or voids in the existing body of knowledge and led to the need for a grounded theory approach. Chapter 3 provides a detailed

discussion of the methodology including data collection and analysis. Chapters 4 through 6 are devoted to discussing the three research questions in turn that have guided this study of learner-instructor interaction in online distance education. Chapter 4 describes learner-instructor interaction as generated from the data; chapter 5 provides an examination of the influence of quality learner-instructor interaction on learning in the online environment, and chapter 6 integrates the data from Chapters 4 and 5 to offer a theoretical framework for quality learner-instructor interaction in the online environment. Chapter 7 concludes the study with a discussion of implications and suggested directions for future research.

Chapter 2

Literature Review

A review of the current literature indicates that a working theoretical foundation for the phenomenon of learner-instructor interaction does not exist. Without such a foundation, not enough is known about the dynamics of learner-instructor interaction to study the phenomenon empirically (Gall, Borg and Gall, 1996). Existing research can, however, set the context of the study, help form research questions and methodology, and inform the analysis and interpretation of the data (Glaser & Strauss, 1980; Langenbach, Vaughn & Aargard, 1994).

The literature on learning and interaction was reviewed to help guide this research effort. Specifically, this review was designed to inform the generation of the theoretical underpinnings of the phenomenon of learner-instructor interaction. The influence of interaction strategies on student performance and motivation to learn is an important theoretical argument supporting the need for learner-instructor interaction in online distance education (DE) (Chen, 1997; Fulford & Zhang, 1993; Holmberg, 1989; McCombs, 1994; Moore & Kearsley, 1996; Vrasidas & McIssac, 2001; Weston & Cranton, 1986).

How adults learn has long been a defined area of research and discussion. Scholarly efforts in adult learning have resulted in models, constructs, and theories that include a myriad of considerations related to learner-instructor interaction: learner characteristics, motivation, outcomes, values, expectancy, self-efficacy, instructional strategies, and course design. For example, Wlodkowski (1985) and Cross (1981) address such issues. As Wlodkowski notes, the primary goal of instructional design is to

foster learning (1991). He incorporates the concepts of self-efficacy, valence and expectancy, and reinforcement into his treatment of learner motivation. He suggests that instructor interaction strategies are critical to learner motivation and performance. The instructor is responsible for creating a positive learner attitude toward the content and classroom environment. Techniques to accomplish this include setting expectations for success and demonstrating that success is within the learner's capability, linking learning to valued outcomes, providing feedback that creates learner awareness of mastery and progress, and providing an environment that focuses on learning rather than performance goals. Cross, in her book Adults as Learners, presents interactive teaching strategies that are consistent with theoretical explanations of how people learn.

A common thread in the literature on enhancing learning is that learner-instructor interaction is at the core of the educational process. It fosters student motivation to learn and enhances students' perceptions of their ability to engage in the learning process (Cross, 1981; Garrison, 1990; Holmberg, 1989; Keegan, 1990; Moore & Kearsley, 1996; Wlodkowski, 1985).

This chapter reviews the predominant theoretical approaches in the current literature that may be used to inform an understanding of learner-instructor interaction. It attempts to anchor those suggestions in current theories of adult learning and motivation. While theories cannot provide direct solutions to the challenges faced by practitioners, they can provide a conceptual framework for interpreting observed phenomenon (Merriam & Cafferella, 1999). Theories of adult learning and motivation may facilitate understanding and quantifying observations of learner-instructor interaction.

Distance Education – a Discrete Discipline

The explosive growth of new distributive technologies presents significant challenges to educators, instructional designers, and learners. Practitioners have little research that examines the variables associated with electronically mediated instruction to guide them through the labyrinth of distance teaching and learning (Harasim, 1993). With the exponential increase in programs delivered using electronically-mediated communications, there has been a corresponding, albeit lagging, increase in research efforts in the field of distance education. The emerging findings from these efforts have begun to lay the foundation for a body of literature that describes the dynamics of the online learning environment. This research, however, is not yet rich enough to generate testable propositions that might lead to theories useful in the design and delivery of distance education.

One dilemma faced in research to unlock the descriptive and prescriptive theories and constructs in DE is how to anchor the effort in the existing body of knowledge. There is an ongoing debate on research strategies in distance education represented by the positions of Gibson (1990) on one end of the discussion and Dillon and Aagaard (1990) on the other. Gibson argues that distance education is a discrete discipline that must define its own structure and promulgate its own literature. She warns against borrowing from research in other fields. Dillon and Aagaard, on the other hand, offer that by its nature, the study of distance education is interdisciplinary and, therefore, scholars in the discipline must build upon, validate, adapt, or discard theories from the broader spectrum of research disciplines. This debate continues today (Smith & Dillon, 1999) and has significant implications for this project. Does this study ignore the work completed on

interaction and learning in non-distance education settings or include research findings of these dynamics from a range of disciplines? Literature from across the disciplines was reviewed in order to determine its potential usefulness in framing the context of this study and formulating the research questions.

Towards a Systems View

A misconception exists among many educators that it is possible to benefit from integrating technology into the classroom without making any other changes to the educational process and environment. The complex interaction among the variables in education can be explained better by a systems view (Moore & Kearsley, 1996). A systems view of distance education is more about how the media are used to foster cognitive learning than about the interface with the media and its technical characteristics (Smith & Dillon, 1999). Much of the current research emphasis is on the packaging of the technology, instructor-medium interface, and the technical challenges of delivery. This emphasis ignores the very nature of the educational process and the human-to-human interaction as mediated by the technology (Chen, 1997; Garrison, 1990; Keegan, 1990).

Rather than defining DE in terms of the technology or learner-instructor spatial separation, systems theory defines distance education in terms of several relationships: between dialogue and structure; between instructional strategies and cognitive processing; and between interaction and motivation (Moore & Kearsley, 1996). Every variable in the learning process with all of its permutations cannot be identified or controlled amid the complexity of the interactions among a myriad of variables. However, a schema grounded in rich research can be developed to contribute to a

coherent body of knowledge (Smith & Dillon, 1999). This suggests that a study of learner-instructor interaction should focus on one layer of the complex dynamics of distance education. According to a systems view, the variable of interaction cannot be isolated; however, the study of discrete distance education variables can provide the rich texture that will contribute to a larger systems view of distance education.

Cross (1981) in her discussion of model building in the area of adult learner motivation refers to force field analysis (Lewin as cited in Cross, 1981) as a tool for conducting an examination of how positive and negative driving forces interact and generate motivation to engage in or resist learning. The technique of identifying driving and restraining forces can help generate a systems view of the complex nature of the distance education environment. Thus, it seems appropriate to examine learner-instructor interaction and its effect on learning within the context of force-field analysis. On the one hand, a macroscopic approach to evaluating the dynamics of interaction leads to a broad overview that fails to isolate and study the important discrete variables. Such theoretical overarching studies pose the risk of presenting findings so broad that they are not useful in any context. On the other hand, it may be easy to get lost in the microscopic study of very specific driving and restraining forces (variables) and not be able to determine how they fit into the systems view of distance education. The danger of a microscopic study is that a greater effect may be attributed to any one factor, such as learner-instructor interaction, leading to program changes that exceed the explanatory power of the relationship. However, put in the context of force-field analysis, learner-instructor interaction can be viewed as only one of a myriad of driving forces, layered in numerous mutually supporting levels, that must be translated into a systems view of

distance education. Granted, interaction may be a powerful driving force in learner motivation and performance, but it is still only one of a set of complex interactions of an almost indeterminable number of driving and restraining forces that may differ for each person. Therefore, a study of learner-instructor interaction in the online environment will necessarily take a microscopic view but will be anchored in the larger, macroscopic context through the review of the literature. With this goal in mind, current literature can be reviewed to explore the current theoretical perspectives of learner-instructor interaction.

Adult Learning Theories and Interaction

It is almost assumed as intuitive by scholars and practitioners that learning is fostered by interaction. A large body of research supports this intuition. It has been argued by many renowned scholars that interaction between the instructor and students is a minimum dynamic essential for effective learning in the traditional classroom (Knowles, 1975; Weston & Cranton, 1986). Classroom instruction has been defined as systematically designed learner-instructor interactions developed to promote learning (Wlodkowski 1991). Active learning, the foundation for cognitive development, is fostered by learner-instructor interaction (Keegan 1990). Scholars and practitioners alike have argued that learner-instructor interaction is at the core of the educational process (Cross, 1981; Vrasides, et al., 2001; Weston & Cranton, 1986).

But is this research, most of which has been conducted in the domain of the traditional classroom, generalizable to online distance education? There is a growing number of distance education scholars who suggest through their research that learner-instructor interaction is as critical to learning at a distance as it is in the traditional face-

to-face classroom — perhaps more so (Fulford & Zhang, 1993; Hillman, Willis and Gunawardena, 1996; Hiltz, 1995; Moore & Kearsley, 1996; Shale & Garrison, 1989). Some argue that one of the major contributions of the new education technologies is the possibility of increased interaction between learners and instructors (Bates, 1994).

Verduin and Clark (1991) define teaching as influencing a change in behavior. Influence is achieved through interaction, primarily verbal and nonverbal instructor behavior targeting the student. The effective distance-learning environment, they argue, must include this type of interpersonal interaction. Four pedagogical considerations have been posed for distance educators: instructor-student interaction, instructional strategies, learner motivation, and feedback and evaluation (Chen 1997). Some of these discussions appear to be driving distance education in the direction of replicating the concreteness of the real-time and face-to-face interaction of the traditional classroom in the distance delivery format (Lochte, 1993). Still other DE scholars see the opportunity for the emerging technologies to maintain or increase the level of learner-instructor interaction compared to that in the traditional classroom while increasing the interface with other multimedia formats (Bates, 1994; Wagner, 1994). This suggests the desirability of merging the best of both worlds: the concreteness of the traditional classroom with the access to the interface with multiple resources that online DE offers (Brown & Brown 1994; Lochte, 1993).

However, the emerging findings suggest that instructor behaviors should focus on providing for the dynamics that are necessary within the online learning environment mediated by technology rather than replicating the dynamics of the traditional classroom (Bullen, 1998; Moore & Kearsley, 1996). A systems view of distance education delivery

guides instructors to target the effective use of the media to enhance learning (Smith & Dillon, 1999). The ability to do that is based, in part, upon understanding the dynamics of adult learning. A review five predominant theoretical orientations to adult learning provides an understanding of the conceptual framework within which interaction takes place. Those five orientations are behaviorist, cognitivist, humanist, social learning theorist, and constructivist. These theories share interaction with experience as part of their constructs and have at their foundation the definition of learning as a change in behavior as a result of experience (Merriam & Caffarella, 1999).

The behaviorist orientation argues that learning is manifested by a change in behavior resulting from a stimulus (Merriam and Caffarella, 1999). This theory holds at its core a basic relationship between stimulus and behavioral response (Thorndike, 1986). For the behaviorist, repetitive cycles of stimulus-behavior linked to near-term valued outcomes reinforce the desired behavior. This reinforcement and linkage to valued outcomes also increase the persistent strength of the change.

The behaviorist orientation has evolved over time and continues to do so (Ormrod, 1995). Three behaviorist laws of learning reflect the integration of old and new concepts (Merriam & Caffarella, 1999).

1. Law of effect: learners acquire and remember behavioral responses that are satisfying.
2. Law of exercise: repetition of meaningful stimulus and response connections results in substantial learning.
3. Law of readiness: learners must see the connections between stimuli, response and satisfactory after-effects.

These laws foreshadow what learner-instructor interactions may be effective in enhancing learning from a behaviorist orientation. They suggest that interaction strategies should facilitate the stimulus and its repetition and clarify the connections between student behavioral response to the stimulus and the satisfying effects. Interaction strategies should also help clarify for each learner how the learning behavior will provide them with outcomes that are important to them. The instructor's role is to manipulate the environment so as to elicit the desired learning response (Merriam & Caffarella, 1999). A behaviorist approach calls for interactive strategies that reinforce what the individual is to learn, provide the environmental stimulus to elicit the desired learner behavior, and link the behavior to valued outcomes (Skinner, 1974).

While behaviorists believe that the environment, not forces within the individual, controls behavior, cognitive theory suggests dynamics that include mental schemata. Cognitive learning theory is about information processing and argues against the behaviorist approach of analyzing isolated events or actions to understand learning (Merriam & Caffarella, 1999). The behaviorists posit that a stimulus elicits a response from the individual. Cognitive theorists argue that a person's perceptions and insights mediate the stimuli-response dynamic. Through perceptions and insights, a person assigns meaning to events. Learning involves the reorganization of experiences to make sense of the stimuli from the environment (Gagne, 1965).

The unique characteristic of cognitive learning theory is the focus on the learner's mental processes. The learner ponders the problem or stimuli and puts together experiences in ways that result in behavioral decisions (Hergenhahn, 1988). Therefore, the learner's cognitive ability to assimilate and process stimuli increases with maturity

and increased experiences. Cognitive learning is an internal mental process of insight, memory, and information processing. This concept of cognitive learning helps distinguish between deep (meaningful) and surface (rote) learning. Meaningful learning takes place when it can be related to and integrated into a person's cognitive structure. Such learning is retained and contributes to a person's cognitive growth. Rote learning is the result of memorization without integrating such learning into one's cognitive structure (Ausubel, 1967; Merriam & Caffarella, 1999). This suggests that learners are most receptive to new knowledge if it is related to existing concepts within a person's mental schemata.

Understanding the dynamics of cognitive orientations provides some insights into the types of interaction that are consistent with this view of learning. Instructors can foster learning by helping students organize data within their internal schema (Garrison, 1990; Merriam & Caffarella, 1999). Research suggests that interactive and experiential strategies are effective in supporting higher-levels of learning and promote cognitive growth (Haynes & Dillon, 1992; McCroskey & Anderson, 1976; Weston & Cranton 1986). Learning takes place when students can link new information to their existing schema in meaningful ways (Little, 1995).

Garrison (1990) posits that the role of instructor interaction with students is to guide the cognitive processes of the educational experience and help students build on their existing cognitive structures in meaningful ways. Interaction that supports cognitive learning will target problem-solving skills, abstract thinking skills, self-efficacy, and motivation (Biner, Bink, Huffman, & Dean, 1995; Dille & Mezak, 1991; Oxford, Park-Oh, & Ito, 1993). The instructor takes advantage of learner life experiences, guiding students from known to unknown and simple to complex tasks. Interaction might include

elaboration, clarification, and closure aimed at promoting information processing and insights (Wagner, 1994). The instructor's primary role is to structure the content of the learning activity to foster cognitive development. Schema building strategies and learner preparation activities such as advanced organizers are part of this role.

The humanist learning orientation builds on the cognitivist concept of learner determination and suggests that self-actualization is the primary goal of learning as defined in Maslow's hierarchy of needs (Maslow, 1954). Rooted deeply is the idea that people possess unlimited potential for growth (Rogers, 1983). Humanists focus on individual self-development and the learner's primary responsibility for his or her own learning. The learning process is centered on the learner's needs and is fostered by a sense of discovery from within the learner (Knowles, 1978; Rogers, 1983). Learning takes place when the outcome is perceived as relevant to the learner and the content itself is valued in its own right (Cravener & Michael, 1997).

Humanists view learning, as do cognitivists, as building upon a person's experiences captured within cognitive structures (Merriam & Caffarella, 1999). However, the humanist orientation also suggests an affective dimension to that of cognition. Learning for the humanist is based on the individual's freedom and responsibility in making behavioral decisions.

Within the humanist context, instructors act as facilitators and guides. They assist with the development of the self-directed learning skills important to learning at a distance (Seaton, 1993). Appropriate humanist interactive strategies include class discussion, discussion groups and group projects, synthesis, and learning at the valuing and responding levels of the affective domain. Providing goal orientation, clarifying

opportunities for success, and pointing students towards the positive consequences of successfully engaging in the learning activity also influence students to engage in the desired learning behavior (Keller, 1987). Humanist oriented instructors also focus on helping students become better self-directed learners.

Social learning theory explains learning as a result of observing others. This observation and subsequent learned behavior take place in a social setting. The social learning orientation integrates the concept of the influence of the learner on the environment with the behaviorist's view of the environment influencing the learner (Merriam & Caffarella, 1999). Social learning theory is often described as a three-way interactive model of learners influencing their environment which in turns influences their learning which increases their ability to influence their environment (Bandura, 1994). Learning can be vicarious by observation and characterized by self-regulation through the visualization of the consequences of the behavior.

A critical component of social learning theory is the concept of locus of control. Within the explanatory framework of social learning theory, learners are more likely to engage in learning if they have a strong sense of internal locus of control. This is contrary to the behaviorist concept of responding to stimuli that suggests an external locus of control. Internal locus of control is tied to self-efficacy. Self-efficacy is one's sense of personal competence in a particular environment (Bandura, 1994; Pajares, 1996). The four steps of attention, retention, behavioral rehearsal, and motivation characterize social learning (Merriam and Caffarella, 1999). In the social learning orientation, instructors create and model the desired behavioral outcome. They utilize interaction

strategies that facilitate the four-step process and help learners visualize the consequences of engaging in the observed behavior.

A crucial role of instructors within the social learning orientation is to promote learner self-efficacy. Students' perception of their ability to engage in the learning activity will determine their level of motivation to learn (Bandura, 1994; Pajares, 1996). In the online environment, this includes promoting the learners' confidence in their ability to interact with the medium (Hillman, et al., 1996).

Other interactive strategies that may be congruent with social learning theory include providing encouraging feedback, influencing aptitude perceptions, and providing emotional support (Wagner, 1994). Related to the issue of learner support is the whole arena of social presence. Many scholars argue that one of the important instructor roles is fostering a social presence that helps create the environment necessary to the fundamentally human-to-human interactive process of learning (Gunawardena, 1994; Gunawardena & Zittle, 1997; Hachman & Walker, 1990; LaRose & Whitten, 2000; Richie and Newby, 1989).

Constructivists believe that learning is a process of constructing meaning from experiences that results in the internal construction of reality by the individual learner. It involves experiential learning. For the constructivist, learning is situationally dependent (Merriam & Caffarella, 1999). It takes place within a specific context, and what is learned is indexed by the learner's experience within context (Jonassen, Davidson, Collins, Campbell, & Haag, 1995). The constructive learning orientation includes both individual (cognitive) and social construction of meaning. Individual construction of meaning is an internal cognitive activity in which meaning is dependent on the learner's

knowledge structure. Social construction of meaning is based on social interaction with others focused on a specific learning activity. Both the cognitive and social constructionist views reflect the characteristics of active inquiry, independence, and individuality in the learning process (Merriam and Caffarella, 1999). Transformational learning theory (Mezirow, 1991) integrates both individual and social construction of meaning. Schema transformation is a process in which meaning perspectives undergo significant change through social interaction (Merriam & Caffarella, 1999).

From the constructivist perspective, the instructor's primary function is to facilitate and negotiate the construction of meaning with learners. The instructor creates an environment that cognitively engages learners. Interactive strategies within this orientation include presenting perplexing alternatives, critical questioning, case studies, and problem solving activities (Jonassen, 1994; Jonassen, et al., 1995). Knowledge building communities in which learners collaborate to build knowledge provide a positive learning environment from the constructivist viewpoint (Scardamalia & Bereiter, 1994).

These five theories on the nature of learning are based on different assumptions, and the implications for interaction strategies are significant. The instructor's understanding and perception of adult learning influence the interaction strategies that each would use in online DE. The interactive strategies used to enhance learning depend on the instructor's theoretical orientation to adult learning. Although instructors may not be able to label their orientation, they tend to choose strategies for teaching and interacting that reflect one or more of the orientations, with some adhering to a single orientation and others being more eclectic and, perhaps, situational in their orientation.

Goal Orientation and Interaction

To interpret the phenomenon of learner-instructor interaction, it is useful to understand the difference between performance-oriented and task-oriented learning and between deep and surface learning. The premise of a systems view of the distance education environment suggests that DE variables such as learner-instructor interaction cannot be truly isolated. It is helpful, therefore, to understand the other system variables that may influence the framework of learner-instructor interaction and consider the systems view when interpreting the collected data. Learner orientation and depth of learning should be considered along with the theoretical orientations to adult learning discussed above.

Performance-goal oriented learners are ego-differentiated and generally engage in surface learning strategies. These learners are concerned with performance relative to peers or others and act in accordance with stimulus-reaction. They tend to exhibit an external locus of control and are focused on immediate outcomes. These learners also tend to avoid risks and are inhibited by fear of failure or embarrassment. Because of that risk avoidance, they will retreat from an activity when faced with the prospect of negative judgments of their competence (Dweck & Leggett, 1988; Nicholls, 1984).

Learning-goal oriented learners are task focused and generally engage in deep cognitive learning strategies. These learners are driven by achievement and personal accomplishment. They engage in learning for skill and knowledge building and are less concerned about performance comparisons. As a result, they are less inhibited by fear of failure or embarrassment than are performance-oriented learners. They also tend to be more future and outcome oriented (Dweck & Leggett, 1988; Nicholls, 1984). This means

that they can link current learning behavior to long-term outcomes. A performance-goal learner may focus on performing well on a test to pass a course. A learning-goal learner can see the linkage between the content and future skill needs or succeeding in a course leading to graduation and ultimately success in a future career.

Research points to the need for instructors to engage in a wide range of interaction strategies while fostering learning-goal versus performance-goal orientation (Galbraith, 1991; Saba, 2000; Tough, 1978; Weston & Cranton, 1986). Learner-instructor interaction is served by a myriad of instructional behaviors: clarifying, elaboration, closure, fostering participation, synthesizing, guiding, providing for social presence, organizing, goal setting, facilitating, and motivating (Bates, 1994; Collins and Berge, 1997; Green, 1999; LaRose & Whitten, 2000; Wagner, 1994). These instructional behaviors are not an end to themselves. What is not clear in the translation from theory to practice is how each of these behaviors should be integrated specifically into the online course delivery with the goal of promoting learning. How do learner-instructor interactive behaviors promote learning in online DE?

Interaction in Knowledge-Building Communities

Much of the distance education literature argues that learner-instructor interaction is crucial to learner success. However, theories of the knowledge-building community take exception to that argument and posit a minimized role for learner-instructor interaction. Knowledge-building research argues that the critical interaction in a learning environment is learner-learner rather than learner-instructor interaction (Scardamalia & Bereiter, 1994).

Knowledge-building theory suggests that learner-instructor interaction is a vestige of the traditional classroom process that is better replaced by strategies that foster knowledge building through group synthesis. The theory proposes that students can learn in a distance environment as part of knowledge-building communities. This model for distance education supports an environment that promotes learning through learner-to-learner and learner-to-content interaction and minimizes the role of instructor-to-student interaction.

Knowledge building requires students who are extremely skilled as self-directed learners, are self-efficacious with respect to both the content and the medium, and have an internal locus of control. Students who are not so self-directed are likely to do poorly in an online environment without the structure that learner-instructor interaction provides. Effective learner-instructor interaction promotes understanding, motivation, satisfaction, and persistence, and, therefore, performance (Moore & Kearsley, 1996). This proposition leads back to the relationship between learner-instructor interactive strategies and learning.

Motivation and Interaction

There is research that suggests a possible relationship between instructor interactive strategies and performance mediated by student motivation to learn. Studies of student satisfaction, persistence, and barriers to learning in the DE environment offer a glimpse into the existence and explanatory and descriptive power of such a relationship. A study of undergraduate students studying online found a positive correlation between students' overall evaluation of the quality of the online course and learner-instructor interaction. The greater the interaction, the more likely the student rated the course as a

quality experience. The correlation was .60 at p=<.001 (Hiltz, 1995). The same study found a similar positive correlation of .43, p=<.001, between learner-instructor interaction and learner motivation. Motivated learners can overcome instructional design and technology shortfalls (Haynes and Dillon, 1992), but it is unclear if they can overcome a lack of effective learner-instructor interaction.

A study of students enrolled in a state televised instruction system might provide some insights. Over 80% of the 193 respondents cited learner-instructor interaction as critical to their learning (Dillon, Gunawardena, & Parker, 1992). Interestingly, when the performance of this group of DE students was compared to that of on-campus students, the distance education students out-performed their traditional classroom counterparts (t=2.28, p=.02). This is not so much a comparative study of traditional classrooms and online distance education as it is a study that provides insights into the role and form of interaction. One of the outcomes of this study is an insight into the importance of interaction to student performance. This study found that students defined important learner-instructor interaction in terms of interpersonal communications rather than course content delivery. It may be that students cannot overcome poor learner-instructor interaction. A significant number of learners in this study found that ineffective learner-instructor interaction hindered their performance.

A case study of an online graduate course found that a lack of learner-instructor interaction contributed to learner frustration and ultimately to a decrease in learner motivation (Hara & Kling, 2000). This qualitative study used observations, interviews, and document review to collect data. The data indicated that the participants perceived that learner-instructor interaction was poor. The instructor failed to clarify, elaborate,

foster participation, provide for social presence, and help with goal setting. The students were not motivated to learn and perceived that the instructor was not sensitive to their needs or concerned with their success. While only using a small sample, this study suggests that a lack of effective learner-instructor interaction has an adverse impact on motivation to learn. Of the six course participants, two dropped the course and two others said that they would never take an online course again.

The effectiveness of the educational transaction depends on the involvement of the learner (Garrison, 1990). One of the observations from the 1997 case study of an online course discussed above is that the students perceived that the instructor appeared to attribute lack of learner interaction to the students rather than to the instructor's interaction strategies (Hara & Kling, 2000). Dismissing the lack of participation as a student problem condemns students to failure in the learning environment and fails to acknowledge barriers to student participation in the learning activities. Instructor interaction strategies can help remove barriers to learning (Wagner, 1994). The proposition that instructor interactive strategies can influence students' learning behavior suggests a role more than just guiding student knowledge building.

Faculty should undertake the task of teaching students how to learn and should remove barriers to learning (Wagner, 1994). Motivation to learn is an internal, naturally occurring capacity (McCombs, 1994). However, efficacy barriers may impede that internal drive. Self-efficacy is an important concept that contributes to an understanding of student motivation to engage in any learning activity and may help to predict motivation (Bandura, 1994; Pajeras, 1996). The literature suggests, as discussed in Chapter 1, that there are differences between the traditional classroom environment and

that of the virtual space classroom. The most significant difference is the mediation of what are typically face-to-face interactions by distributive technologies.

Ultimately, scholars and practitioners are interested in influencing learner performance. Motivation is typically viewed as an intermediate variable affecting learner effort and performance (Wlodkowski, 1985). A 1997 study of 142 undergraduate students examined the relationship between learner-instructor interaction and performance. The independent variable was learner-instructor interaction, and the dependent variable was performance on the course final examination. The study found that those who engaged in online interaction scored an average grade of "A" on their final examination while the average final exam score of those who did not was "B", t (92) =2.88, $p<.01$ (Althaus, 1997).

Variation in student participation and performance can be explained, in part, by students' perception of their ability to engage in the learning process (Bandura, 1994; Pajares, 1996). Self-efficacy is one learner variable considered in a study of 73 undergraduate students in a chemical engineering course. This study looked at students' learning, motivation, and attitudes towards using CD-ROM technology. One of the measures tested the relationship between student perceptions of their ability to learn in a CD-ROM mediated environment and achievement. Two self-efficacy variables were evaluated and both positively correlated with achievement as defined by performance on the course final examination ($r=.32$ for general self-efficacy and $r=.22$ for background knowledge self-efficacy). A regression analysis was conducted to determine if the measure subscales were predictors of achievement. Self-efficacy was one of only two of

the eight scales with a significant Beta value and the only one with a positive value (.349, p=.04) (Crynes, Greene, & Dillon, 2000).

Assessments of self-efficacy are task-specific and, in the DE environment, that self-assessment includes the perception of ability to learn the subject material and to interface with the technology that is mediating the content delivery. These assessments are specific to two domains: learning the content and the ability to learn in an online environment. Hiltz (1995) suggested that the relationship between self-efficacy and performance increases as the domain becomes more specific. The domain was varied from a broad-based generic web-based technology to the narrow focus of a specific software package. Pajares (1996) supports Hiltz's assumptions about self-efficacy. He argues that self-efficacy is based on student self-assessments of their ability to engage in very specific behaviors such as to master content and engage in online learning.

Student attitudes, such as their disposition towards the electronic medium, are crucial in DE (Bullen, 1998). This issue of disposition is different from that of self-efficacy. Self-efficacy as it pertains to technology addresses students' perceptions of their ability to use the technology to learn. Technology disposition addresses students' attitudes towards learning in an online environment. Disposition asks, "Is it a comfortable and pleasing experience?" rather than, "Do I have the ability to use the technology?"

As discussed earlier, online DE differs from the traditional classroom in many ways, most notably because the educational process takes place through an electronic medium (Hillman, et al., 1996). The technology mediates the learner-content, learner-instructor, and learner-learner interactions. The necessary student interaction with a web-

based medium affects the learning process, student satisfaction, and motivation (Hillman, et al., 1996). Students engaging in distance learning must have positive attitudes about interacting not only with the course content but with the technology as well.

Poor disposition towards interacting through the technology can result in lower motivation to learn and anxiety that inhibits performance (Anderson, 1996; LaRose & Whitten, 2000). Students with low self-efficacy with respect to the technology and who are ego-differentiated will avoid risks and reduce their exposure to criticism by minimizing their participation. These students are likely to not persist in the face of academic challenge and will become frustrated by technology failures. On the other hand, learners who have confidence in their ability to use the technology and who are performance-oriented will be motivated to engage actively in the learning activities. These students will accept risks and respond positively to technological challenges without becoming frustrated by failures (Nicholls, 1984; Dweck & Leggett, 1988).

Student motivation to learn is also influenced by social presence in a classroom that is exhibited by valuing and supporting behaviors (Gunawardena & Zittle, 1997). Social presence is the degree to which a learner is perceived as a real person (Gunawardena, 1994). Table 1 depicts learner-instructor interaction strategies that foster social presence in online DE. The strategies target four areas that promote the degree to which students are perceived as real people and they perceive that they are valued.

Table 1

Interaction Strategies Fostering Social Presence

Value Goal	Instructor Behaviors
Social approval, socially rewarding	Use approval, demonstrate interest; smile
Social interest	Solicit student opinions, address students by first names
Status recognition	Lower status barriers by sharing personal information and using personal examples
Status enhancement	Create a relaxed environment, use humor, treat learner as equals, value their input

Source: LaRose & Whitten, (2000)

Other interaction strategies include digressing to respond to student comments, using "we," affirming students, providing specific feedback to individuals, making personal announcements, and soliciting student biographical briefs and interests.

Online DE may not be able to replicate the group support, social structure, and humanized space of the traditional classroom. However, learner-instructor interaction can create humanized space unique to the online environment using the strategies discussed above. Interaction provides for the structural definition required to convert virtual space into humanized space (Bowman, 2002). This concept of developing instructional strategies to support the building of social presence may be important to knowledge building and appears to be critical to fostering learner motivation (Hackman & Walker, 1990).

Motivation in the online environment may also be enhanced by interaction strategies that reduce anxiety, perceived risks, and fear of failure. Those strategies

coupled with behaviors that encourage and reinforce success may enhance student self-efficacy and their motivation to learn (Schunk & Gunn, 1986).

Persistence is also an indicator of learner motivation. A study of the relationship between student attitudes and persistence found that learner-instructor interaction could foster positive student attitudes towards the educational experience and result in greater persistence and increased learner engagement (Richie & Newby, 1989). A review of the literature (Chu & Schramm 1967) offered the same conclusions about the similar effect of instructional strategies on performance and motivation in both traditional and televised instruction.

The current literature offers only implicit rather than explicit possibilities of the relationships between instructor interaction strategies and motivation. The challenge is further complicated by the suggestion that situational variables preclude a "one-shoe-fits-all" approach to the development of instructor interaction strategies (Gibson, 1990). These situational factors may include learner style, experience, and other learner characteristics. Not all students respond favorably to the same instructional interactive strategies. The success of learner-instructor interaction strategies is related to matching appropriate strategies with situational variables such as learner characteristics (McCroskey & Anderson, 1976; Wells, 1990).

At one end of the continuum of learner characteristics are students who possess the skills to build upon their cognitive structures with almost no interaction. At the other end, are students who may be so disadvantaged in the DE environment as to require a wide range of learner-instructor interaction behaviors because of low self-efficacy, poor

learning/study skills, poor disposition towards online learning, perceived external locus of control, and ineptness at self-directed learning behaviors.

Motivation

The above discussion provides some possible relationships between learner-instructor interaction and motivation. That discussion also provides a glimpse into what some of the attributes of effective interaction might be. While the phenomenon of learner-instructor interaction is far from clear, it is clear that some relationship exists between learner-instructor interaction and students' motivation to learn. Thus, one way to frame learner-instructor interaction is from the perspective of students' motivation to learn. An understanding of some of the overarching motivational concepts might prove useful when interpreting data on interaction and motivation collected from student participants.

Motivation is a student's willingness to commit effort in the learning process (Wolters, 1998). The motivation to learn, the learner's willingness to engage in effort, is a complex, multidimensional interaction of numerous variables (Hotho & Reimann, 1998). Learner motivation can affect academic performance (Cross, 1981; Fortier, Vallerand & Guay, 1995; Wlodkowski, 1985). The vexing question is, "Can learner-instructor interaction affect student motivation to engage in learning, and if yes, how?"

Motivational theories can be viewed from a variety of perspectives including attribution, social learning, goal orientation, self-regulation, and expectancy and valence theories.

The literature on motivation may sensitize the research to the benefits of learner-instructor interaction. One school of motivational theories attempts to predict motivation

to learn through an analysis of individual perceptions of their capabilities, outcome value, and contingent relationship between behavior and outcomes. The motivation to act is linked to one's perceptions about the capacity to act, the need to act, the results of the acting, and the cost of acting or not. Actual outcomes are important in how they may influence a person's future perceptions. A variety of perceptions are linked to motivation:

- Perception of capacity and capability to engage in a behavior;
- perception that there is the potential for valued outcome;
- perception that the valued outcome is contingent upon the behavior;
- perception that engaging in the behavior has costs in terms of some loss of value sufficing.

Self-efficacy. Motivation to engage in learning depends, in part, upon an individual's perception of his or her competence to engage in a specific behavior. These include students' perceptions of competence to master the course content or to engage in learning activities mediated by web-based technology. Perception of capability, the ability to engage successfully in a behavior, is a critical aspect of student motivation to commit effort to learning (Wolters, 1998). An individual's perception of his or her capabilities to organize and execute courses of action required to engage in a specific activity and reach a designated level of performance is self-efficacy (Bandura, 1994). Self-efficacy, as compared to other expectancy theories, is defined in terms of perceived capability. It is domain-specific and sensitive to the task and contextual factors such as course content and the technology. For instance, a student may perceive a high degree of competence interacting with fellow students and the instructor in a traditional face-to-face setting but may feel inadequate in the identical course that requires electronically

mediated interaction at a distance. Likewise, a student may perceive that he or she has sufficient ability to complete a graduate-level leadership course successfully but lacks the confidence to do well in a statistics course from the same degree program. The former reflects the student's differentiated self-efficacy with respect to the medium, the latter with respect to the content. The results of such perceptions of inefficacy will often be low motivation and performance or complete avoidance (Garcia & Pintrich, 1996). Both students' ability to engage in these learning activities and their perception of their abilities are crucial to successful learning behavior (Ornstein, 1995).

One of the key dynamics in determining the level of students' motivation is their perception of their ability with respect to the specific task. Self-efficacy is not based on a global set of competencies or a result of general self-perceptions. Beliefs of competence are assessed against each situation and, therefore, can vary from situation to situation (Pajares, 1996). Students make judgments about their capabilities in terms of a specific reference, not only in terms of a specific course but even specific learning activities within a course such as giving presentations, writing, test taking, or engaging in class discussions. The specific circumstances against which students judge their competence change when the media through which a course is delivered are changed or when the social dynamics vary such as when students feel isolated temporally or spatially in online DE.

The relationship between knowledge and action is mediated by self-efficacy. A student with a high level of domain-specific self-efficacy (given the other variables of valued outcome contingent upon behavior with acceptable costs) will try harder, persist longer, and take on greater challenges (Schunk, 1989; Wood & Locke, 1987). Self-

efficacy is not about intelligence but rather about attitude (Ornstein, 1995). It is operationalized in terms of attitudes towards possible success. High self-efficacious learners are self-regulated learners in control of their performance and learning (Zimmerman, Bandura & Martinez-Pons, 1992). They tend to be task-differentiated students who are learning-goal oriented. While not necessarily always true, they also tend to engage in deep learning activities and use a greater variety of cognitive learning strategies. They also will persist longer and are likely to be more motivated by learning and by future goals than by performance goals (Garcia & Pintrich, 1996; Pajares and Miller, 1994; Schunk, 1989).

Self-efficacy is only one of the factors that determine learner motivation. In conjunction with perceptions of the value of outcomes, the contingent relationship between actions and outcomes and the opportunity costs helps explain and predict student decisions (Ryan, Connell & Deci, 1985; Fox & Miner, 1999; Knox, 1969; Rubenson, 1977; Vroom, 1964). The complex dynamics associated with a series of decision points cannot be ignored when studying motivation of adult learners. The above discussion established the context for the study of one driving force in the motivation "force field" – self-efficacy. But that discussion should not result in the perception of dichotomous "yes" or "no" decisions about engaging in specific learning activities. The result of a student's analysis of personal competence creates a degree of commitment to a specific behavior that varies along a continuum from total commitment to not engaging in the activity at all. That continuum is characterized by level of effort, persistence, cognitive strategies, and task acceptance or avoidance behaviors. Self-efficacy is an important

concept in understanding learning because it influences learning and achievement (Fortier, et al., 1995; Ryan, et al., 1985; Schunk, 1989; Zimmerman, et al., 1992).

Valence. An individual's perception of the outcome value associated with a specific behavior also has an impact on motivation to learn. Students engage in learning behavior if they perceive that the outcome is value satisfying (Cross, 1981; Wlodkowski, 1985; Pajares, 1996). They are motivated to learn when they are engaged in a learning activity that they value.

Valued outcomes relate to both performance and learning oriented goals. Performance goals are typically extrinsic rewards and include peer recognition, credentialing, and monetary rewards. Selection to the dean's list and earning a scholarship also fall into this category. These goals are in close temporal proximity with the learning behavior. Learners who are performance-goal oriented link behavior to immediate value satisfying. They tend to be ego-differentiated students who define their success in comparison to how others perform (Dweck & Leggett, 1988).

These learners will engage in learning behaviors that will increase their recognition and gain favorable judgment of their competence. They take failure as a personal shortcoming rather than an opportunity to learn. Performance-oriented learners tend to engage in surface learning strategies. They interpret learning tasks as a means to other goals rather than learning as a rewarding end in itself. They are concerned with time-on-task and typically engage at the rote learning level rather than seeing the task as a conduit to personal learning and growth (Entwistle, 1988; Joughin, 1992).

Future or learning-goal oriented students are more likely to engage in deep learning strategies that will increase their competence, provide a sense of

accomplishment, and enhance their self-esteem. These students are likely to be task-oriented defining their success in terms of doing the best they can on each task, not comparing their performance to others (Dweck & Leggett, 1988).

Students using deep approaches to learning perceive the task as important to their learning and self-growth, and they are generally interested in the task itself. They strive to integrate new knowledge into their cognitive structures and realize personal growth (Entwistle, 1988; Joughin, 1992). Valued outcomes for learning oriented students include intrinsic satisfaction such as increased self-esteem, sense of accomplishment, and affiliation. These are related to future goals such as financial security, retirement, personal growth, and self-actualization. A learning goal of increasing competency can be a valued outcome and intrinsically rewarding (Deci, Vallerand, Pelletier & Ryan, 1991).

Performance-goal orientation is focused on validating competency while learning-goal orientation focuses on improving competency. Both can be valued outcomes (Dweck, 1992). As goals become more temporally distant, valued outcomes lose power to motivate learners. Students are more likely to enroll in a program that offers a degree that is immediately applicable in their life than a program that does not meet perceived needs until some years later (Bandura, 1994). Students will be more persistent and active in learning when they perceive that the content is proximally relevant to them (Rogers, 1983; Zimmerman, et al., 1992). However instructors can overcome temporal distance by demonstrating a strong relationship between a student's present learning behavior and future valued outcomes. Future goals, those that are temporally distant, can influence learning behavior when the learner perceives those future goals as personally valuable. The key here is that students are able to see the instrumental value of proximal tasks for

attaining the more distal valued goal. The present task must be perceived as relevant to future goal attainment (Miller & Brinkman, 2001). These valued outcomes then are perceived to be more powerful and, therefore, compensate for the temporal distance. Instructors can help learners make the connection between their learning behavior and valued future goals. Under these circumstances, future goals can be powerful predictors of performance.

Expectancy. Another motivation dynamic is expectancy or trust. Expectancy or trust is operationalized by a contingent link between the valued outcome and the specific behavior. There are two issues associated with trust as used in this context: environment stability and locus of causality. A stable environment disconnects the relationship between student effort and outcome. In a stable environment, the outcome remains the same regardless of effort or competence; outcomes are not influenced by student behaviors (Hotho & Reimann, 1998; Weiner, 1985). An example of a stable environment is one in which the professor always assigns the same grade regardless of performance. In a stable environment, the outcomes are neither malleable nor affected by student behavior.

The construct of locus of causality ascribes outcomes to behavior. In an environment with high or internal locus of causality, variance in learner efforts results in variations in outcome that are predictable and consistent over time (Bandura, 1993; Weiner, 1979). With low causality or external locus of control, there is not a strong link between behavior and outcomes. As an example, there is low or external causality between student performance and grades if the professor randomly assigns grades. In this scenario, because grades do vary and there is a change in the outcome, the environment is

not considered stable. However, since there is not a predictable and consistent relationship between student behavior and outcome, the environment is described as having low or external causality.

Students are unlikely to be motivated to engage in a behavior if they perceive that outcomes are not contingent upon their actions whether due to stability or lack of causal relationships. The dynamics of environmental stability and locus of causality adversely affect motivation when students perceive that their behaviors do not have an impact on valued outcomes. Under these circumstances, students will not engage in the learning behaviors even though they may perceive that they have the ability and that the outcome is valued because they perceive that the outcomes are not tied to their efforts.

Expectancy also includes an element of potential cost associated with a behavior. Cost refers to the loss of some potential value satisfaction when pursuing other needs. Most behavioral decisions have both valued outcomes and opportunity costs. Students may perceive that they are capable of completing a graduate program, that earning the degree has value and that the awarding of the degree is contingent upon their behavior. However, even when these three elements are favorable from a learner's perspective, one last dynamic may inhibit learner motivation to engage in a behavior. Value cost inhibits students' motivation to learn when they perceive the costs associated with the loss of other value satisfaction outweigh the perceived value satisfaction. For example, the cost of loss of family time outweighs the value of going to night school; learning to fly a helicopter is outweighed by the perceived cost of high risk behavior; or buying new computer equipment is outweighed by the use of money that is better spent buying clothes for the children. These examples assume that all of the outcomes cited are

valued. The decision revolves around whether the costs of the loss of other valued outcomes such as family time, risk avoidance, and clothes for the children are too high.

Like valued outcomes, those value costs are differentiated by ego and task involvement (Nichols, 1984). Learners' perceptions of costs are influenced by whether they tend towards performance or learning goal orientation (Dweck & Leggett, 1988). Performance oriented students whose differentiated conception is ego-based may find that the risk of doing poorly in class presents the potential cost of negative judgment and loss of self-esteem. These perceived costs might result in a decision not to engage in the educational activity even if the student believes that it offers a valued outcome. In other words, the potential costs of engaging in the behavior and failing outweigh the potential benefits of engaging in the behavior and succeeding. Avoiding challenging work, low persistence, and pursuing easy tasks may be evidence of a performance-oriented student. Decreasing effort to minimize exposure to a failure that a student believes will be judged negatively is also a coping mechanism for avoiding costs (Nichols, 1984).

Learning-oriented students also make decisions that include value cost considerations. Participation in a graduate degree program, with intrinsically valued outcomes, may negatively affect other value satisfying activities such as time with family, work commitments or discretionary spending money. The decision to engage in a learning activity includes weighing the perception of value outcomes against value costs.

These distinctions are consistent with the construct of deep and surface learning. Task and performance goal orientations are aligned with cognitive student strategies of deep and surface learning respectively (Anderman & Midgley, 1998). Learners engaged in surface strategies will avoid ego costs and tend to view learning from a performance-

based orientation. Deep strategy students are learning-goal oriented and tend to be less concerned with ego risk, negative judgments or relative ability.

This discussion provides an overview of the important concepts associated with theories of motivation and suggests that a student's motivation to engage in a learning activity is based upon the analysis of

- ability to engage in the learning activity
- perception of the value of the outcome
- the strength of the contingent relationship between student action and realizing the outcome
- the potential loss of other value satisfying outcomes.

Not any one element is sufficient to describe learner motivation. The learner's decision to engage in a learning behavior is determined by the impact of outcome and efficacy expectations (Miller & Brickman, 2001). Learner-instructor interaction may foster self-efficacy, demonstrate valence of the outcomes and provide the contingent relationship between learner behavior and the outcomes (Ushioda, 1996). Interaction behaviors designed to enhance motivation must be planned with an understanding of learner characteristics and the domains of the student behavior.

Chapter Summary

The purpose of this review was to examine the literature on interaction, adult learning and motivation to learn in order to inform this research effort. Specifically, this review examined the current understanding of learner-instructor interaction in the online environment and identified possible gaps in the research.

There is significant research that supports the premise that students value learner-instructor interaction, and there is considerable anecdotal data that argues that learner-instructor interaction is the core of the educational process. However, there is little research that operationalizes learner-instructor interaction, explains the relationships between instructor interaction strategies and learning or guides the development of informed practices in the online environment. Learner-instructor interaction may be explored from a variety of perspectives. This chapter has explored a number of these. The review of adult learning theories indicates that learner-instructor interaction strategies vary with different orientations to learning, i.e., behaviorist, cognitivist, humanist, social learning, and constructivist. Humanists have introduced the concept of interaction to create social presence; the sense of being part of a group and perceive each member as a real person. Cognitivists have suggested learner-instructor interaction that integrates a learner's life experiences and provide for elaboration, clarification, weaving, and closure.

Learner characteristics associated with their goal or performance orientation to learning may determine the appropriate learner-instructor interaction. Instructors may need to tailor their instructional strategies based on whether students are focused on ego-differentiated outcomes such as recognition and favorable judgment or are task-differentiated and motivated by sense of accomplishment and intrinsic satisfaction.

Finally, this chapter has introduced learner motivation for the purpose of offering a perspective that learner-instructor interaction may have a role in promoting motivation. Interaction strategies may be necessary to foster a sense of self-efficacy, promote

understanding of valued outcomes, clarify the linkage between learner behavior and value outcomes and help students understand the costs and benefits of the learning activity.

The literature has offered perspectives to provide insights into the role that interaction may have on learning. However, while there are strong arguments throughout the literature that learner-instructor interaction is critical to the learning experience why it is critical and what constitutes quality interaction is not clear. Merely stating the importance of learner-instructor interaction does not inform the practitioner in useful ways. There is a need to understand learner-instructor interaction in ways that the literature does not provide. What is quality learner-instructor interaction? How might that interaction affect learning? What is a framework for learner-instructor interaction online? Although these issues are not adequately addressed by the current research, the literature does identify gaps in the theory and informs this research effort.

Chapter 3

Methodology

This chapter discusses the methodological approach of this study beginning with a discussion of how and why the methodology was selected. This is followed by a description of the design of the study, sampling technique, data collection, and data treatment.

The purpose of this study was to explore the phenomenon of learner-instructor interaction in online distance education (DE). The current literature suggests that interaction between the student and instructor in the DE environment is important (Chen, 1997; Garrison, 1990; Hackman & Walker, 1990; Moore & Kearsley, 1996). However, there is little empirical research that answers questions of why learner-instructor interaction is important in online DE and under what circumstances (Beaudoin, 1990; Harasim, 1993; Haynes & Dillon, 1992). The current research leaves two major issues unaddressed:

1. What defines quality learner-instructor interaction?
2. How is learner-instructor interaction operationalized in ways useful to practitioners?

Quantitative approaches most commonly used in the existing research are not suited to answer these questions because the focus of quantitative efforts is on empirically validating hypotheses not on generating theory. The research questions that guided this study, which are aimed at generating theory are:

1. What is quality learner-instructor interaction in online DE from the student's perspective?
2. How does quality of learner-instructor interaction affect the students' perception of learning in online DE?
3. What defines quality learner-instructor interaction in the online environment?

Qualitative Methodological Approach

The challenge is that little is known about the phenomenon of learning in electronic space and the role of the instructor in promoting academic performance (Harasim, 1990). The literature does not provide any operational definition of the variables associated with learner-instructor interaction. Without defined variables, it is difficult to develop an understanding of the dynamics of a phenomenon by empirically manipulating variables and examining its structure. Quantitative research can lead to the error of striving to realize some value in generalizable results but often at the cost of failing to realize a true understanding of the phenomenon (Tesch, 1990).

A rich and meaningful understanding of the dynamics of learner-instructor interaction in an online environment is best achieved by pursuing the participants' perspective and the observed phenomenon of interaction in online DE. Quantitative research is well suited for translating theoretical concepts into research operations and rigorously testing theory (Glaser and Strauss, 1980). However, in the absence of defined variables and a theoretical anchor, the research focus is more appropriately on generating theory not validating it. In such instances, the correct approach for generating a useful theory is a research methodology based on a perspective-seeking ontology which

attempts to describe and predict the effect of learner-instructor interaction based on data derived from the participants (Langenbach, et al., 1994).

The choice of methodology, however, requires more than just resolving the ontological issue involved with selecting a perspective-seeking (qualitative) or truth-seeking (quantitative) seeking approach. Perspective-seeking ontology includes both research inquiries of capturing the participants' ascribed meaning of a specific phenomenon and inductively generating theory grounded in the immediate data associated with the phenomenon (Langenbach, et al., 1994). The difference between these approaches has significant implications for this study. The purpose of phenomenological studies is to seek to understand the meaning of a phenomenon from the participants' perspective. The purpose of grounded theory is to generate systematically a theoretical explanation of a phenomenon derived from the data associated with it (Gall, et al., 1996). Both strategies share the primary tactics of interviews and observations. The former uses these approaches to collect personal perspectives and meanings while the latter uses the same techniques to collect data on how people act and react to the phenomenon (Creswell, 1998).

The purpose of the research effort determines whether a perspective-seeking or truth-seeking ontology is the most appropriate for a specific research project (Langenbach, et al., 1994). The goal of this study was to identify a theoretical framework to improve our understanding of learner-instructor interaction in online DE. Without developing this working theoretical foundation, isolating elements of the learner-instructor phenomenon and manipulating variables as part of a quantitative attempt to

validate a theory would offer little opportunity to contribute to the understanding of this phenomenon.

Generating an understanding of learner-instructor interaction in online DE is best accomplished by systematically pursuing the discovery of theory from the contextual data of the phenomenon. A systematic research approach to generating theory from environmental data such as participants' perspectives and observations is a grounded theory methodology (Glaser & Strauss, 1980).

Research Design

The methodology used for this study was grounded theory, a theory generation technique anchored in the data utilizing a systematic, constant comparative analysis (Strauss & Corbin, 1990). The elements of this investigative technique are

- Collecting data
- Selecting the sample
- Analyzing the data
- Generating the theory

(Langenbach, et al., 1994; Glaser & Strauss, 1980)

The initial focus of the investigating strategy was on developing an understanding of the elements of the phenomenon (Moustakes, 1990). The primary method for garnering this understanding was learning how people react to the phenomenon using personal interviews with participants in online DE (Creswell, 1998). Observations of learner-instructor interactions supplemented the interview data.

Data Collection

Interviews, observations, records, and audiovisual recording are often identified as representative of the four types of information in data collection (Creswell, 1998). This study synthesized data collected from three of these four information sources. All three types of information were integrated into the data analysis to generate a holistic picture that led to the generation of a theoretical framework for quality learner-instructor interaction in online DE.

Interviews. Interviews were conducted with students who were enrolled in or who had recently completed graduate online courses and with a sample of instructors of online courses. The preferred method of data collection was conducting the face-to-face interviews. However several telephone and online interviews were conducted with those for whom in-person interviews were not possible. Rapport building included explaining the purpose of the interview and how it fits into the study, assuring confidentiality, establishing common interests and experiences and creating a relaxed, first-name relationship. The open-ended, unstructured design allowed participants to describe and explore the phenomenon of learner-instructor interaction in their own words and in their own way. The use of open-ended questions facilitated this discussion, and the use of probing and clarifying questions helped elicit rich data. The interviews were guided by a series of main, probing, and follow-up questions using the interview guide at appendix A. The main questions were based upon the perspectives and proposed relationships found in the current literature. The guide was designed to keep the interviews focused on the research questions, not to structure the interview discussion in some artificial way or influence the participants' perspectives.

Interviews were tape recorded and transcribed into a written record. The researcher completed transcription within 48 hours of completing each interview. This immersed the researcher immediately in the data promoting familiarity and cognitive engagement with the data.

Observations. Learner-instructor interaction took place in the online learning space such as provided by Blackboard and WebCT products. The phenomenon of learner-instructor interaction was observed by logging into these learning spaces without participating in the interaction. The observations were non-intrusive. The data helped inform the synthesis of the data gathered through interviews and also helped guide subsequent interviews.

Records. This last type of data came from a review of course documents such as the syllabus and outline of learning objectives. This review provided insights into the structure used in the various courses. This review also helped with the selection of participants and helped inform subsequent interviews.

The core research function of this grounded theory methodology was categorizing and analyzing the data in order to establish interrelationships from the data that led to theory generation (Glaser & Strauss, 1980; Moustakes, 1990). One of the critical elements of this process was the continual systematic comparative analysis during data collection. The data were subject to continual analysis and comparison to determine voids and emerging categories and to focus subsequent data collection. The data analysis identified differences and similarities that guided the data collection process and ultimately led to the creation of categories through coding. The ongoing comparative analysis was conducted simultaneously with the collecting, coding and categorizing of

the data. This integrated analysis informed the continued gathering of data to fill voids and reach sample saturation (Glaser & Strauss, 1980). The selection of participants and questions explored were guided by the continual comparative analysis.

Saturation was the point in data collection when the collection process failed to add anything new to what had been discovered about the phenomenon. Saturation was reach by 15 student interviews. An additional five interviews validated saturation. This number is consistent with the number of interviews that typically results in saturation (Creswell, 1998).

Sampling

Theoretical sampling was used in this study. This sampling approach is a process of collecting data for the purpose of generating theory. Data were collected, coded, and analyzed simultaneously and continuously. This continuous process of data collection and analysis informed subsequent data collection as the theory began to emerge. This methodology is congruent with the grounded theory approach of continual comparative analysis that challenges the completeness and validity of the data and emerging theory. It focuses subsequent data collection to fill data voids found in that analysis (Glaser and Strauss, 1980).

The sampling focused on collecting data from graduate students who are generally educationally more mature than undergraduate students. That is to say, they are likely to be more experienced as independent learners (Hiltz, 1995; Diaz, 2000). This was important because the study's participants were able to articulate their experiences and observations effectively because of their extensive learning experiences.

A criterion sampling technique was used to identify the initial sample (Creswell, 1998). The purpose was to select participants who were best prepared to synthesize their experiences in the on-line environment and to articulate their perspectives of the nature of learner-instructor interaction.

Randomization was not a consideration in this type of educational research, especially given that students self select into classes for reasons such as they like the teacher, schedule, major, format, course requirements, or its availability (Diaz, 2000). Graduate-level students bring with them a certain level of educational maturity that results in perspectives informed by comparisons with previous educational experiences.

Using theoretical sampling, the data analysis dictates the direction of subsequent sampling. Sampling was guided by the basic question posed with theoretical sampling: from where does one collect data next? This question was asked after every interview and was answered by the data voids identified through the continuous data collection and analysis.

The theoretical sampling began with several students involved in graduate online courses with the University of Oklahoma. Courses were selected based upon the differences in structure identified during a analysis of course documents. The data analysis and coding suggested that the next sample should be drawn from courses outside the University of Oklahoma to determine if emerging categories and properties are applicable elsewhere. Students in graduate programs with the Universities of Maryland and Phoenix, two institutions with extensive online programs, were interviewed.

Most of the participants initially interviewed had completed only one or two online courses. Subsequent sampling included participants with more online experience.

Differences in course interaction were also a consideration that evolved from the sampling. Analysis of course documents indicated that courses differed significantly in the amount of learner-instructor interaction. On a continuum, courses ranged from electronic correspondence courses with little learner-instructor interaction on one end to fully integrated student-student and student-professor interaction on the other. Sampling was adjusted to purposefully include participants from courses at points along the continuum. The theoretical sampling continued by conducting this type of continuous analysis and using the voids in the data to guide subsequent sampling.

Courses were selected to represent a range of interaction dynamics with respect to the quantity and quality of learner-instructor interaction with the intent of ensuring the sample was sufficiently diverse. This supports theory that can be both explanatory and predictive.

Data Analysis

The data were captured from interviews with students and instructors, from records review, and from online class observations. All interviews were tape recorded and transcribed within 48 hours. Demographic data associated with the individual participants were also collected and used to help direct the theoretical sampling.

This analysis adhered to the grounded theory methodology as a systematic study with operational elements directed towards theory generation (Creswell, 1998; Strauss & Corbin, 1990). The data analysis converted the raw data into categories of like information manifested by specific properties. These categories were studied to define relationships among categories and to identify the critical dynamic of the phenomenon. Throughout this process of collecting, coding, and analyzing, a continual comparative

analysis was conducted to identify similarities, differences, and voids. These, in turn, guided the subsequent data collection and were used to generate a model of relationships and theoretical framework.

As data collection and coding continued, tentative propositions that defined the categories and properties began to emerge. Categories and properties are concepts indicated by the data (Glaser & Strauss, 1980). Open and axial coding was used to develop categories and properties from the data. The literature did not predispose the research by leading it in any specific direction or by suggesting a theoretical framework. Rather it did help inform the potential categories and properties. This coding process was both parallel and circular: A NUD*IST qualitative analysis software product, Nvivo, was used for the data analysis, category building, modeling, and framework development.

Open coding. Open coding was accomplished by the technique of capturing significant statements associated with learner-instructor interaction. NVivo converted those significant statements into categories through this coding process. 17 categories were developed from the initial data coding. These are shown in Table 2.

Table 2

Initial Categories Emerging from Data

1. Providing technical support	10. Required professor skills
2. Supporting learning	11. Professor barriers to online learning
3. Enhancing motivation	12. Online challenges to learning
4. Fostering self-efficacy	13. Creating structure
5. Serving learning orientation	14. Directing learning
6. Serving performance orientation	15. Providing performance feedback
7. Promoting student to student interaction	16. Fostering affiliation
8. Promote content understanding	17. Other
9. Focus on learning levels	

These categories were analyzed for emerging meanings that provided an understanding of learner-instructor interaction. Based on the identification of emerging meanings, categories were analyzed for interrelationships in a process that NVivo classified as tree creation. Creating a tree groups categories based on possible relationships and depicts a potential hierarchy of those relationships. Categories are labeled as parents and descendants. Categories that are direct descendants of a parent category are called children. This was an iterative process conducted over and over as the data were interpreted and relationships explored. Table 3 below depicts one iteration of this tree creation process.

Table 3

An Iteration of Grouping Categories by Creating a Tree

1. Supporting learning
   - ➢ Enhancing motivation
     - ▪ Fostering self-efficacy
     - ▪ Satisfying learning orientation
   - ➢ Fostering affiliation
2. Promoting student to student interaction
3. Required professor skills
4. Creating structure
5. Directing learning
6. Providing performance feedback
   - ➢ Focus on learning levels
   - ➢ Promote content understanding

Note: number is a parent; ➢ is a child; • is a dependent

This process of creating tree relationships among the categories generated reconstructed categories of quality learner-instructor interaction online that emerged from the data coding. The result of this open coding was the development of five categories of quality learner-instructor interaction online. These five categories are listed in Table 4.

Table 4

The Five Categories Of Quality Learner-Instructor Interaction Online

1. Supporting learning
2. Creating structure
3. Promoting content understanding
4. Directing learning
5. Providing performance feedback

Axial coding. The analysis next examined relationships among the categories. The relationships that emerged were complex and dynamic, not linear. It was during this phase that the accumulating interrelationships among categories started to form the beginnings of a theoretical framework. As the literature of grounded theory suggests (Creswell 1998; Strauss & Corbin, 1990), this data analysis led to the formation of a central phenomenon that became the foundation of the theoretical framework.

Selective coding. The NVivo software supported the continuous coding and comparison process. This process of data collection, coding, and analysis continued until saturation was reached. As saturation was realized, the central phenomenon and categories were integrated into a framework that explains and describes the phenomenon of learner-instructor interaction. This took place using the modeling function of NVivo.

This modeling occurred simultaneously with the axial coding. The key activity was exploring interrelationships, how they function and how to best represent them. Variations, consequences, and conditions were also identified and explored throughout this coding and modeling process. The goal was to generate a theoretical framework that would account for many of those variables.

Trustworthiness

Trustworthiness is the determination that the data are dependable, confirmable and credible (Langenbach, et al., 1994). This is analogous to validity in quantitative, truth-seeking epistemology. There were several techniques used to determine the trustworthiness of the data collection and coding. One technique was the triangulation of data from observations, interviews, and document analysis. Trustworthiness is supported if the three sources of data are consistent with each other. This was the case. What was gathered from direct observation, from records, and from interviews was consistent and in agreement.

Having an independent researcher review and code the data also enhanced trustworthiness. The coding from the primary and independent researchers was compared and differences explored and reconciled. The primary researcher also coded one third of the transcripts twice to validate consistency.

Another technique to assess trustworthiness was the use of member checks. Participants were asked to review the data that were collected from them and confirm that the data accurately reflect their perceptions and experiences, and differences were reconciled.

Finally, after the generation of the theory, the transcripts were reviewed one more time to check the degree of support for the developed theory retrospectively. This was accomplished by analyzing how many of the participants described the critical components of the theory during their interview.

Internal Review Board (IRB) Procedures

This research conformed to the University of Oklahoma's IRB procedures. IRB-directed procedures protected the interests of the participants and their rights to privacy. The researcher removed all personal identifying information from the data collected from participants. This research only included volunteers.

Summary

The phenomenon of learner-instructor interaction in online distance education still is largely not understood. Existing research fails to explain this phenomenon. The focus of this qualitative effort was on theory generation rather then theory validation. The goal was to generate a theoretical framework that explains quality learner-instructor interaction in the online DE environment. Without a working theoretical foundation, research cannot explain the role of learner-instructor interaction in student performance. A theoretical framework for quality learner-instructor interaction in online DE will help improve our understanding of phenomenon. That goal was accomplished by using a grounded theory methodology to pursue systematically the discovery of theory from the contextual data of the phenomenon through participant interviews and online observations.

Chapter 4

Quality Learner-Instructor Interaction

This chapter addresses research question 1: What is quality learner-instructor interaction in online DE from the student's perspective? It focuses specifically on the categories, properties, and conditions of quality learner-instructor interaction derived from student data. The literature review indicates that there is significant research that supports the premise that learner-instructor interaction is important to learning at a distance (Fulford & Zhang, 1993; Garrison & Shale, 1990; Hiltz, 1993; Hillman, et al., 1996; Moore & Kearsley, 1996). However, merely arguing that learner-instructor interaction in the online environment is important does not inform teaching practice or explain the phenomenon in online DE.

The perspectives of the online participants were collected and analyzed to help validate or dismiss the importance of the interaction and, equally important, to capture the elements of quality learner-instructor interaction. The research question, "What is quality student-instructor interaction in online DE from the student's perspective?" guided the data collection and generation of the categories, properties, and conditions associated with this phenomenon. Throughout the next chapters, numerical indicators (e.g., 3, 10 or 15) refer to participants in this study.

In this chapter the following categories of quality learner-instructor interaction generated from the data are discussed:

- Directing learning
- Providing performance feedback
- Promoting content understanding
- Creating structure
- Supporting learning

Directing Learning

Within this category of learner-instructor interaction, instructor behavior helps students effectively channel their learning activities and time. The properties of this category are

1. Focus students' learning efforts.
2. Keep students' efforts on track.
3. Link students to useful resources.

Focus student's learning efforts. Students expect learner-instructor interaction to help focus their learning efforts. Student learning effort is analogous to a beam of light. Focusing students' learning efforts is the instructor pointing that beam on the content to be illuminated. Without the instructor's guidance, the beam -- the learning effort -- may be too diffuse or focused incorrectly. Almost every participant expressed an expectation such as, "The professor should guide my learning" (14).

Helping students focus their learning effort is important in any environment. However, the data suggest that in online DE, learner-instructor interaction to focus students' learning must be purposefully designed and continuously implemented to make up for the lack of face-to-face immediacy and non-verbal cues. A student explained the difficulties that many expressed facing in online learning, "You are separated from

everyone. Information is harder to get.... I can't just grab the professor after class in the online environment to get directions as in a regular classroom"(2).

This property emerges from students' need to channel their efforts effectively and use their time wisely. Some professors argue that it is up to the students to manage their time, as one professor offered, "These are graduate students. They should know how to use their time effectively and direct their learning." Most students, however, did not agree.

> The professor knows the pitfalls (in the course); it makes sense for him to tell us what to pay attention to. It helps us determine where we should focus our time. The professor knows what is important; otherwise we can get lost in the content (14).

Helping students focus their learning efforts is especially important in the online environment precisely because of the nature of that environment. The lack of cues and immediacy makes it difficult for students to understand where to commit their efforts to learn. Most students described being lost and feeling isolated as one of the biggest challenges unique to learning in the online environment. Strategies that focus students' learning efforts help anchor students to the course. Students feel comfortable when they understand where they are going and what they should study. Without interaction that directs learning and focuses students' efforts, students can be lost in the virtual learning space. "It [interaction] is also about telling me what the hell I am supposed to learn. Otherwise I'm lost" (9).

This is not to suggest that students wish to abdicate ownership for their learning; rather, the data indicate that students need learner-instructor interaction that focuses their energies in order to orient their efforts on appropriate content. Student responsibility for learning is not sufficient for success in online learning. Learner responsibility indicates a

student's commitment to learn but does not mean that students know how or where to commit their learning efforts. Without learner-instructor interaction that helps students focus their learning efforts, even the most committed learner becomes frustrated.

> It is important that the professor makes sure that I navigate the material and hit all of the checkpoints. I know that I have to take responsibility for my own learning, but one online course I took was so loose. I was excited about the course when I signed up, but once I got in there I didn't have a clue how the course was going to unfold; it was terrible (5).

Quality student-instructor interaction in online DE from the student's perspective includes directing learning to focus their learning efforts. This property helps students effectively focus their effort, reduces the transactional distance of online learning by decreasing the learners' sense of being lost, and helps students navigate difficult content. Perhaps one student best captured student expectations of directing learning with respect to this property of focusing learning efforts:

> It was just a little hard understanding how we were starting. You can really feel alone- just out there in nowhere land - in the online class. I felt like that a bit in this course.... In my perfect world, it is not only feedback but being proactive to direct and guide the learning. It focuses my learning and connects what I am doing (8).

Keep students' efforts on track. The second property of directing learning is learner-instructor interaction that keeps students' learning efforts on track. The distinction between the first two properties is that focusing students' learning efforts requires proactive instructor behavior and keeping the students on track requires reactive professor behaviors. From the students' perspective, keeping students on track in an online environment means ensuring students are studying or discussing the appropriate course content and drawing the correct conclusions.

> Sometimes you have a tendency to go off track of what you are really supposed to be talking about and the professor comes in and kind of summarizes and gets everyone back on track and refocused (15).

This type of interaction provides students with a sense of security. They can engage in online learning in virtual space with the confidence that if they are missing the learning objectives and class goals, the instructor will react and take steps to help bring their learning activities back in line with the learning objectives. A typical comment was, "I want the freedom to learn, to have some control, but the professor is there as a safety net when I get lost or go off track" (2).

Keeping students on track helps students use their critical learning time effectively. Students want to spend their energies on productive learning engaged in the correct content. Students become frustrated, exacerbated by the sense of being isolated, when instructors allow them to engage in the wrong content or draw incorrect conclusions from their interaction with the content.

> In an online course you feel isolated; out there by yourself. I feel a little alienated. It is kind of weird going from the classroom to solitary confinement (of the online classroom)." It is frustrating to sense that you're out there spending time and energy studying a subject only to find out that you have been studying the wrong content (8).

A student who dominates the online discussion and takes it in directions counter to the course focus also frustrates online learners. Students feel helpless in dealing with such circumstances and expect the instructor to get those people and the discussion back on track.

> The instructor has to step in when things get out of hand, when the online discussion is getting off track. Sometimes the discussion gets off track or someone dominates the discussion. The instructor has to step in and fix those problems. If the discussion is off track, try summing things up or raising a question or point that brings the discussion back on track. If the

> student persists, deal with them privately so that they don't disrupt the class (6).

For instructors, it is a balance between employing interaction strategies that ensure that students stay on track and avoiding micromanaging and inhibiting their learning. Most students in this study self-selected into online courses and self-reported that they were self-directed learners who assumed responsibility for their own learning. Most indicated that they want some degree of control over their learning and flexibility. However, they don't want to waste their learning time wandering around content not germane to the learning objectives. This student's comments reflect that sentiment: "Don't stifle communications and interaction but also keep it on track and moving. I'm not sure that the balance of the two is easy, but it is important" (6). For most students, instructors should err on the side on keeping students on track even at the expense of some learning autonomy. Students felt extremely frustrated and disenfranchised when they found that they had engaged in learning activities not related to the course objectives. This is undoubtedly more pronounced in the online environment given the time lag and difficulty in determining when one is off track. The following comment reflects the perceptions of many of the study's participants:

> There is a lack of emphasis with correctness in the online classroom. Make sure that you (professor) are helping students understand the materials correctly. Don't let me just go along not knowing that I'm off track. I'm frustrated that professors don't pay attention to my learning. That is a killer (16).

The data suggest that students expect that learner-instructor interaction facilitate their interaction with the content. They expect the instructor to react when students are engaging in the wrong content or drawing incorrect conclusions. In their words, quality

learner-professor interaction strategies must " help keep me on track" (7). The data support the importance of the property of learner-instructor interaction that keeps students on track, thereby ensuring that they are interacting with the appropriate content.

Link students to useful resources. The last property of directing learning is linking students to useful resources. Like the previous properties, it is related to students' expectations that the instructor help them effectively use their learning time and energies.

Online students need and expect professors to provide access to resources that enrich their learning. The state of the current technology makes accessing useful supplemental resources difficult. It is not that the Internet restricts access to resources; in most cases, the opposite problem exists. There are too many resource possibilities, many of which are not useful. Students often find it difficult to narrow their online search to a reasonable number of resources and, when they do so, they often find many of those resources are not germane to the learning objectives. In many cases, they don't know where to start looking for resources that are outside the virtual learning space of the specific online course. Many respondents reflected that:

> Guiding you to those additional, external resources are important. That would be a great launching pad to go out there. As you know, the Internet is such a wide-open area that you could spend hours searching and not come up with relevant material on the topic. So the professor can kind of point you in the right direction and help you get the most out of your time (15).

Students define the instructor's role as the expert with respect to both learning and the content. This role expectation is an important concept that supports the category of learner-instructor interaction that directs learning. "It may an old-world perspective, but my view is that the professor is the expert. He or she should be the guiding light and should be very much involved and be a presence in the course" (17). The instructor not

only teaches but also directs learning by providing links to resources. "I really see the instructor as someone who is a resource person" (13).

This role as the expert includes, from the student's perspective, helping students locate useful resources. Participants suggested that the instructor's use of additional resources and links to other sites bring some excitement to the class. It may be analogous to taking electronic field trips that are related to the course. One of the participants explained his expectations this way:

> The instructor is the primary resource in learning. The material is important but is inanimate. The professor brings it to life and helps if all fit together. I want to enjoy what I'm learning and the professor can help by providing resources and interesting links. This is one form of effective interaction that creates a positive learning environment (20).

Directing learning emerged from the student data summarized above as a category in a theoretical scheme for quality learner-instructor interaction in online DE. The properties of directing learning are focusing students' learning efforts, keeping students' efforts on track, and linking students to useful resources. These properties represent specific aspects of directing learning, but they are not as discrete as discussed above. Rather they are interconnected by the common consequence of helping students effectively channel their learning activities and time. How these strategies specifically affect learning is discussed in the next chapter.

Providing Performance Feedback

Providing performance feedback is the category of learner-instructor interaction that informs students of the correctness and completeness of their learning activities. It answers the questions for a student: How am I doing? Am I meeting the learning objectives?

The properties of this category are

1. Provide specific and constructive feedback.
2. Personalize the feedback.
3. Avoid too much feedback.

Provide specific and constructive feedback. This is the first property in the category of providing performance feedback. Students identified lack of quality performance feedback as a major barrier to effective online learning. In many cases, it is solely the absence of any feedback. "I get frustrated because I'm not getting the feedback that I want and need. Sometimes I put so much work into it and just get a pat on the head and I think that's it. After all that, nothing" (14).

The characteristics of the online environment heighten the need for written feedback. Online DE does not offer the rich environment of non-verbals and other cues that provide students with indications of how they are performing in the traditional classroom. In online DE, a lack of performance feedback can exacerbate the students' feeling of being disconnected and isolated. "The only thing that I can think of that would inhibit my learning is not having any feedback. Turning something in or asking a question and not hearing anything back, for me that would be discouraging. You start to wonder if there is anyone out there on the receiving end or are you in some virtual black hole" (15).

The unique intervening conditions of the online environment shape this property. Learning online is mediated by a technology that reduces immediacy and the personal nature of the interaction. It can be cumbersome and constrained by the written form, and it requires instructor skills that are different from those needed in the traditional

classroom. In the traditional classroom, the instructor can mark up student papers. The classroom allows for the immediacy of the instructor explaining what a student has missed. The instructor can provide immediate feedback to the entire class, for example, by writing on the board, or the instructor can sit down individually with a student and go over some learning activity. By watching the student's reaction, the instructor can assess whether or not the student understands the feedback, and, if not, the instructor can try another approach to feedback. In the online environment, that immediacy and the rich nature of the interaction are missing. Students recognize this difference.

> In every (online) course that I have taken, I have only received a very brief note and a grade with my paper. I think this deficiency is because in the classroom the professor picks up a red pen and just marks all over the paper. But in the online classroom, he has to read and type on the computer. It is more difficult (16).

Providing feedback, in and of itself, does not contribute to quality learner-instructor interaction. The data clearly support that students expect feedback that is meaningful, constructive and specific to their work, and they insist that instructor comments should respond directly to the student's work. It should provide students with the instructor's assessment of how well they are meeting the learning objectives and what to do if they are failing to meet those objectives. This student's comments were echoed by many of the participants.

> A lot of times, I find that the instructors are responsive in terms of 'oh, yes, I agree' or 'interesting thought', but they don't provide specific feedback, personally or on the discussion board, that addresses what I have posted and the quality of what I have done. I don't know how I am doing unless I get specific feedback from the instructor on my work. I just had the experience last semester in a course in which I got feedback on APA style, but that is not what the course was about. I never received any feedback... although there was a lot of feedback; none of it was about the course. It left me unsure how I was doing. Quality of interaction is about feedback on the quality of what I have done (10).

Students understand and appreciate the difference between minimal feedback that is pro forma and constructive feedback. "Too many times you just get back 'Good job.' That is not interaction or at least not worth much. That appears to be pro forma without any thought. That's terrible. I would rather not receive any feedback" (5). Time and time again during the data collection, the importance of specific performance feedback was emphasized. Minimal feedback of "good work" or "you're doing well" was not useful to students. Students can easily identify effective performance feedback. "She [professor] takes time to review what you submit. The feedback is specific. What she likes and what she thinks needs more work. It is in a way that is constructive. I know how I am doing and what to pay attention to but feel good about it" (3). This student's comments succinctly sum up the performance feedback property of specific and constructive feedback. "Quality of interaction is about specific feedback on the quality of what I have done. Tell me how am I doing" (10).

Personalize the feedback. Providing performance feedback also includes the property of personalizing feedback. For some students, their level of acceptance of instructor feedback was based on the degree to which it is personalized. Several students indicated that they give less credence to performance feedback that is impersonal or appears to be computer-generated. Many students were turned off by impersonal feedback as illustrated by this comment:

> You can really feel alone; well I just felt that way, just a little. Little real feedback and encouragement. More like cryptic feedback and a cold note of good work. But no personal or useful feedback in any way. It could as well been generated by the computer (9).

Personalizing feedback may be more about generating student satisfaction than performance feedback. It is important, however, to recognize that the data support student perceptions that quality learner-instructor interaction includes personalized feedback. Delivering constructive feedback in a personalized tone can help meet the students' need to understand how they are doing. Several students expressed satisfying experiences such as this one:

> In X's course, there was complete feedback on the assignments. The feedback was excellent. The responses were almost immediate. She obviously reads the assignment very carefully and is very thorough in her comments. She also included a personal touch. That was a tremendous help. It really made the difference in the class (5).

Avoid too much feedback. In addition to the properties of providing specific and constructive feedback and personalized feedback, providing performance feedback is also characterized by the property of avoiding too much feedback. Too much feedback can inundate students with information. They become overwhelmed or discouraged because they have to sift through it all. It is counter-productive to helping students direct their learning and may inhibit their learning efforts.

> I hate it when the feedback or message from the professor is too long. I want good feedback but figure out how to write is concisely. These screens and screens of comments drive me crazy. I don't even pay attention to it all. It is like the professor hides the few important nuggets of information in this haystack and it is my job to find them. I don't want to play (9).

Many students found that instructors attempted to write feedback as if they were speaking in the traditional classroom rather than recognizing the differences in the media and writing concisely. The concern of too much feedback was common to a number of participants. "He [the professor] believes the best approach is to let the students sort through it and pick out what they need, to use lengthy, long paragraphs. Online that is a

bit cumbersome" (12). Part of quality learner-instructor interaction that provides performance feedback is avoiding burying students in screens of comments that require them to sort through what is useful. Such instructor behavior, according to the data, inhibits effective learning by derailing focused student learning.

> Feedback may be the most important, but not too much. I don't want to be inundated with stuff from the instructor. That can be distracting and frustrating. I would spend more time answering those questions and messages from the professor than studying the course stuff (21).

From the students' perspective, quality learner-instructor interaction includes the category of providing performance feedback. Feedback provides information that students need to assess their progress in the course, their level of understanding, and the degree to which their work is correct. The properties of providing performance feedback that emerged from the data are providing specific and constructive feedback, personalizing the feedback, and avoiding too much feedback.

Promoting Content Understanding

The third of five categories that define quality learner-instructor interaction is promoting content understanding. This category includes instructor interaction strategies that foster learner understanding of the content. This category of promoting content understanding differs conceptually from the category of providing performance feedback in that promoting content understanding is about specific strategies that help students gain an understanding of the material while providing performance feedback tells them how successful they have been in gaining understanding. There are several properties that emerged from the data that define promoting content understanding:

1. Teaching by the instructor.
2. Using effective instructional strategies.

3. Promoting understanding interaction dependent upon various online conditions.

Teaching by the instructor. The first property, teaching by the instructor, seems almost too intuitive to emerge as a definable property; however, there were numerous student experiences in online DE during which instructors did not teach. Quality learner-instructor interaction that promotes content understanding starts with the instructor teaching. Many students expressed a similar concern: "I need to benefit from the professor's knowledge, but it seems that in online courses, professors often forget to profess" (10).

This, in part, reflects students' expectation of the instructor's role as the expert and the learner's need for the instructor to use that expertise to promote learning. We have already seen data that reflect students' struggle with being lost in the virtual learning space. Students do not expect online learning to be a solitary learning activity. Those that have experienced the absent professor observe:

> I call it the instructor-on-auto-pilot mode. The instructor is not involved in the day-to-day activities of the course and you have very little sense of a presence there. It [the online course] was effectively a glorified correspondence course. I don't get the benefit of the professor's experience and knowledge. It is especially important in the online environment because they [the instructor] are not physically there and you don't have all the cues of the classroom. What is he getting paid for? I may have an old-world perspective but my view is that the professor is the expert (17).

The online students expect instructors to help them successfully engage with the content and to understand — to be active in their learning. It is not surprising, then, that teaching by the instructor emerged as a property of promoting content understanding. While it appears that such an expectation of quality learner-instructor interaction is

almost intuitive, the data reflect that without learner-instructor interaction that includes professors professing, the online experience is akin to an electronic correspondence course. Participants were clear: this is not an effective learning environment.

Using effective instructional strategies. The second property of promoting content understanding is using effective instructional strategies. The data suggest that the intervening condition of instructor diagnostic skills is very important. The instructor must be able to assess student learning accurately before being able to decide which instructional strategies are appropriate.

Determining student understanding is certainly made more difficult by the transactional distance typical of the online environment with its lack of rich non-verbal cues and immediate feedback. Most students interviewed acknowledged their responsibility for their learning and would ask questions when they think that they don't understand. "If the prof [sic] goes over something that is important and I'm thinking, 'What is he talking about?' then I should ask a question" (9).

However many students talked about not realizing that they need help. This comment was a common observation: "Sometimes you can't pull things out of it [material] because you don't know. Don't know what to ask" (8). In these circumstances, the instructor has to diagnose the level of the students' understanding. The data suggest that asking questions and monitoring learning are effective diagnostic techniques.

One technique an instructor can use to assess student understanding is to ask questions. Students suggested professors interact with them for the purpose of determining how they are doing. This student's observation is one made by many

students: "I need the professor checking several times a day and querying students to see if they are having a difficult time and if they are, clarify those points" (13). Another diagnostic technique is for instructors to monitor student-learning activities. This requires instructors to be involved and present in the online learning environment. They must enter the virtual learning space regularly and observe student-learning activities. This was a common expectation of online learners. "The professor watches how I'm doing and jumps in when I need it. What is good and what is off, helping with understanding" (9).

These diagnostic skills are critical to the success of the second property of promoting understanding: using effective instructional strategies. The instructional strategies that promote content understanding that have emerged from the data include summarizing, clarifying, explaining the relationships between concepts and promoting critical thinking. Lecturing did not emerge as a significant teaching strategy in the online environment. Not all of the participants used the same terminology, nor did they all agree on the degree of importance of the teaching strategies above. However, there was sufficient support for these techniques to include them as elements of quality learner-instructor interaction that promotes content understanding.

Aspects of summarizing, clarifying, and explaining the relationships between concepts were evident in nearly every interview. Participants experienced increased understanding of the content as a consequence of these instructional strategies. There were numerous examples of how instructional strategies promoted understanding. This quote is representative of those experiences.

> We were talking about Socrates, Plato, Aristotle, a lot of the great thinkers. It was difficult, but it was terrific when the professor

> periodically summarized what we had discussed and studied. It helped make sense of it all to me. She also clarified the concepts and discussion points. That helps so much, pulls it together for me. I would not have gotten it without that (14).

Another student related her positive experiences: "She (the instructor) often brings everything together by kind of explaining what we have covered and summarizing. She explains the content, wraps up the discussion, covers points that might be confusing. This is important" (3).

The data also reflect the negative effect on learning when the instructor does not promote understanding through instructional strategies. When these teaching strategies are not used, participants had difficulty understanding the content. Comments like this were common:

> There was little teaching by the professor. I was confused. It was frustrating. I don't think we ever showed any real understanding of the material. I think that really inhibited my learning, and it was also frustrating not being allowed or encouraged to do some personal thinking, creativity, our own thoughts. There is no understanding for application with that. There is just poor learning without teaching (?).

Many participants discussed the importance of another teaching strategy, fostering understanding through critical discussion. Exploring, challenging or discussing concepts and ideas was a powerful instructional technique for many of the study participants. It was perceived as important to effective learning. There is a connection between this type of interaction and promoting deep learning. "The classroom is about human interaction. Learning is about human interaction. But still the most important thing is learning content. Therefore, I want the professor focusing on bringing new ideas and allowing me to challenge my ideas" (6).

Only one participant referred to lecturing online as a potentially useful strategy for promoting content understanding. But most disagreed: "Often the professor would just serve up their classroom lecture notes. Those are very deficient in getting the point across" (16). It appears that there is the need to blend teaching strategies to overcome the challenges of the online environment. Lecturing may be one of a number of effective online teaching strategies if combined with discussion groups or other teaching strategies that help students synthesize the material. Otherwise the course may be nothing more than an electronic correspondence course with the content served in the form of a written lecture with the professor, as one student characterized it, on auto pilot.

Promoting understanding interaction dependent upon various online conditions. This is the last property within the category of promoting understanding. It suggests that the determination of effective instructional strategies is dependent upon whether the student is a novice or expert with respect to the content and also upon whether the student is engaged in deep or shallow learning.

The data suggest that students perceive that they always need some form of learner-instructor interaction that provides performance feedback that lets them know that they are meeting the learning objectives. However, the data indicate that the need for learner-instructor interaction that promotes content understanding is more variable. One cause for the variation is the students' experience with the content. Students in the study tended to discuss this issue in terms of content that was difficult or easy for them. The data show that students perceived a greater need for interaction that promotes understanding when the content was difficult for them compared to content that was easy for them. This student's experience was common to many students:

> I need a lot more help with the difficult material. In the XX course, the material was more difficult than the other courses, and I needed more help from the instructor. She was more active, responding to questions, helping clarify difficult points, and wrapping things up so that we could understand them. I could not have succeeded without the professor's help (5).

Of course, students may be self-efficacious with respect to specific content and perceive that they are expert and the content is easy. However, their personal assessment may be incorrect, and they may not correctly understand the content. The instructor should diagnose student learning and engage in appropriate instructional strategies that promote understanding even if students perceive that they don't need that type of interaction.

The data indicate that students' perception of their need for learner-instructor interaction that promotes understanding also varies between deep and shallow learning objectives. Students generally drew a distinction between "check-the-box-and-go" classes and those classes in which their goal was to learn and understand the material.

Students want little learner-instructor interaction to promote understanding when engaged in shallow learning. They were not interested in the instructor teaching under these circumstances. What they wanted from the instructor was to know how to get through the class as quickly and painlessly as possible. This is accomplished by learner-instructor interaction that directs learning and perhaps some performance feedback. The opposite is true for students who want to master the material. When engaged in deep learning, the students needed and expected the types of effective instructional strategies discussed above to support their understanding. It is important to note that students made a conscious distinction between want and need. They may need help in understanding

course content, but if they are focused only on getting through the course, then they don't care about understanding. This statement was a common observation:

> For the check-the-block course, just give me structure. Tell me what I have to do, when and be done with it. However if I really want to learn, then I need the interaction we have talked about to help my learning and understanding of the content (15).

The third category of learner-instructor interaction, promoting content understanding, encompasses specific strategies that help students gain an understanding of the material. From the participants' points of view, what constitutes quality learner-instructor interaction to promote content understanding are those instructor behaviors that help them learn. The professor must profess. Students look to instructors as the subject experts and expect them to share their knowledge for the purpose of helping students understand. Instructors must be able to diagnose the students' level of comprehension and engage in effective teaching strategies to increase the students' understanding if they are not meeting the learning objectives.

Students believe that summarizing, clarifying, explaining the relationships between concepts, and promoting critical discussions promote their understanding of the content. Lastly, the data suggest that students' need for interaction that promotes content understanding varies based on the students' experience with the content and their focus on deep or shallow learning. Participants believe that learner-instructor interaction designed to promote understanding is part of quality interaction and that they cannot succeed in online DE without it.

Creating Structure

Creating structure includes instructor behaviors that provide information on the conduct of the course, the flow of the course, the course requirements, and how to use the

learning space. This category is unique in that some of the dynamics of creating structure are associated with the design and building of the learning space. Students see the structure of the learning space as learner-instructor interaction mediated by the technology.

The category of creating structure should not be confused with the first category of directing learning. Directing learning is about learner-instructor interaction that helps students effectively channel their learning activities and time. It focuses on guiding their learning activities. Structure focuses on guiding students in and around the learning space and through the administrative management and requirements of the course. The latter may help facilitate the former, but the two are different.

It is useful to look at this category in terms of its properties:

1. Facilitate course navigation.
2. Reinforce course administrative requirements.

Facilitate course navigation. Structure is also learner-instructor interaction that guides students through the course requirements and how to use the learning space. Online learning sites are virtual spaces that must substitute for the brick-and-mortar classroom. They should be structured to include course instructions, learning objectives, content areas, discussion areas, links to other resources, grades, and sources for help. While this list is not all-inclusive, it represents the most common functions many students indicated help compensate for the isolation of the virtual learning site. This student's explanation was one common to most participants:

> In an online course you feel isolated; out thereby yourself, so some structure is good to hang onto. That would include timelines, where to go, are we using a chat, discussion board, PowerPoint presentations. Are there certain sections of the site I should check regularly? The structure

> stuff helps keep me focused or understanding how the course will work. That helps my learning; if nothing else makes the course comfortable for me (21).

Creating structure for the online learning site should be purposeful. When students talked about where to go, what to do, and when, they were referring to the administrative flow of the course and what requirements they must meet. Students are especially anxious about when assignments are due and the policies associated with not meeting those deadlines. The site structure should fit together in a way that makes it possible for students to navigate the site and understand how to use the site.

> It [useful structure] is how the professor sets up the course. What you [the professor] posts on the site; assignments, messages, power points, announcements; are all part of interaction and in the online class the professor needs to think about how all these go together (4).

A poorly structured learning space and failure to ensure that students can use the site effectively can exacerbate the transactional distance associated with distance learning. The result will likely be student frustration and a sense of being isolated.

> I know that I have to take responsibility for my own learning, but one online course I took was so loose, almost no structure. I was excited about the course when I signed up, but once I got in there I didn't have a clue how the course was going to unfold. I was lost (5).

Reinforce course administrative requirements. Students' experiences demonstrate how a poorly structured site can adversely affect the online learner. It also segues to the second property of this category: reinforcing the administrative requirements of the course through professor interaction directly with the students. This was one of the most important issues for online students participating in this study. Even when students benefited from well-structured learning sites, most still wanted the personal contact with the professor to reinforce the site instructions and validate their understanding of the course requirements.

One conclusion from the data is that students want to avoid the risk of misunderstanding the course requirements. Students expect the professor to explain the course structure.

> Provide clear guidance. Outline the course objectives, assignments, what you (professor) want from me, when and how; you know email, discussion attachment etceteras. I know that much of that is in the course structure of the site. That is fine but the professor should clarify (5).

Some students distrust the information on the site and lack confidence that they can find and understand all of the course function instructions. The information may be provided on the learning site, but students want the personal interaction with the professor and confirmation.

> A simple orientation message from the professor. Just bullet points that electronically provide an overview. It says, 'hey, this is grad class 1234. Here is a brief overview. This is what you are going to be getting into. This is what you should be thinking about.' In a lot of ways this course is kind of fragmented on the site. I think it would be better from the instructor. Right now you have to dig it out of the site (8).

For many students, this introduction of the course structure by the professor opened the channel of communication between the students and the instructor. It set in motion the learner-instructor interaction and established a presence. This could be related to the concept of social presence that is defined as perceiving a person as real with personal characteristics. These two comments reflect the dual function of explaining the course requirements and establishing the social presence for subsequent learner-instructor interaction:

> Covering the administrative tasks and everything are all part of the relationship that the professor is establishing with the students (7).

> The course site structure helps and is important, but it is the professor presence and interaction that provides the real structure. Her interaction

drives what we do, how we interact, what we focus on, how we feel about what we are learning (3).

Structure focuses on guiding students in and around the learning space and through the administrative management and requirements of the course. It includes properties of building a learning space that helps students navigate the course and reinforces the administrative requirements of the course through instructor interaction with the students. Students perceive that learner-instructor interaction that creates structure opens up communications between learners and the instructor and helps establish a social presence.

Supporting Learning

This category of learner-instructor interaction is defined as instructor behaviors that indicate that the instructor is there to support the students' learning, is attentive to the students' learning needs, is responsive to the students, and is focused on student success in the online environment. Supporting learning is about the professor being actively engaged in the learning process. It is monitoring student progress, responding and teaching. This is the category that emerged first and is overwhelmingly the most powerful. Simply stated, but more complex to operationalize, supporting learning is the category of learner-instructor interaction typified by the instructor being there to support students' success in the online learning environment.

Supporting learning emerges from the following properties:

1. The instructor is available, responsive and attentive to students.
2. The instructor helps students learn online.
3. The instructor fosters students' motivation to learn.

There were a few comments about the need for learner-instructor interaction that provides technical help; however, there was not enough data to generate a significant property statement.

The instructor is available, responsive and attentive to students. "Being there" aptly captures the essence of this first property of supporting learning. The instructor is available, responsive, and attentive to students. As a matter of fact, that phrase, the professor "being there," was the most common first response of participants to the question, "What does quality learner-instructor interaction mean to you?" It appears that the students' expectation that the professor "be there" is, in part, a need to overcome what they identify as the major challenges to learning online.

The lack of immediacy and the distance are, from the participants' perspective, the major barriers to online learning. Students miss the immediate face-to-face interaction with and responses from instructors that exist in the traditional classroom. This comment established the context from which this category emerged. "Can you imagine sitting in a classroom asking a question and waiting two to three days for the answer? That's what it is like online. It really interrupts your learning" (19).

This disruption of the learning process contributes to transactional distance in online DE. The transactional distance of online learning can be frustrating to students. "Everything is electronic. I feel alienated. The relationship with the professor breaks down at a distance. In your mind, no matter where he really is, the professor seems miles away, even a country away"(8). "Online is so distant, you are really out there by yourself" (3).

The immediacy and the richness of the face-to-face classroom is what students miss most in the online environment. It is why they need the instructor to "be there." Students perceive that they "can't just grab the professor and say I don't get this, can you explain it to me" (2) in the online environment. They want to reach out and get help immediately when they need it.

And what do they expect the instructor who is just "being there" to do? The short answer is anything they (students) need to be successful learning online. The "being there" element of the supporting learning category may provide a sense of security and comfort to online students who often feel alone and isolated in virtual learning space. Instructor involvement can be reassuring. It tells students that they are not alone, that there is someone watching over them to protect them from failure. Being there means that the instructor is available, out there somewhere, to respond to questions, to provide help and just to validate that the student is doing well. In order for quality learner-instructor interaction online to take place, the instructor must show up. When the student reaches out to grab the instructor, he or she should be there.

> It is especially important in the online environment that the professor be available because they are not physically there. It can be very frustrating when you don't have a sense that the professor is actively involved in the learning (17).

Sometimes just a response demonstrates that the professor is there to support learning.

> It really frustrates me when I was trying to express an opinion about something and it was just disregarded. Or you submitted something that you thought you did really well and you never hear anything. You feel that you get some kind of message that at least acknowledges that someone is out there. That you're not out in space by yourself (7).

Supporting student learning by being available, attentive, and responsive is not only about being there. It is also about responding quickly; students do not consider two to three days responsive enough. Most expect a response within 24 hours. This was a common comment: "The professor should be there when I need help, not three days later" (2).

Example after example, story after story validated that the professor being there and being involved in the student learning is the key element, not by itself sufficient, but crucial to quality leaner-instructor interaction in the online environment. The data suggest that the adverse impact of the professor not being there and not being responsive is significant. For most students, this story reflects the worst online learning scenario.

> I had a horrible experience. This was a graduate-level course. The instructor supposedly had experience in online courses, but you could never have told it by me. There were about 15 people in the course. The course was set up and the discussion board was already setup. For the next few weeks, people would try to have discussions but there was no moderator, no facilitation by the professor. He never showed up (10).

The instructor helps students learn online. The second property of supporting learning is that the instructor helps students learn online. This is not to be confused with promoting content understanding. This property is about instructors being available to help students *learn to learn* online when necessary. It may also include interaction that promotes meta-cognition by helping students *think about thinking*.

Online learning is new. The literature suggests that not only is teaching online new, but also certainly learning online offers new challenges. The data provide specific examples of the challenges to learning online and the differences between learning online and in the classroom. Most students find online learning a new experience and look to the instructor for cues on effective learning strategies. This one comment gets to the point

of the data: "It is important that the professor promote learning strategies [online]" (7). And this student explains that the professor's role includes "modeling good behaviors and learning strategies" (10).

Many students experienced a difficult time getting engaged in the online learning because they were unfamiliar with or uncertain about effective online learning strategies. Some found that they wasted precious learning time trying to figure out how to become involved in the course and its learning activities.

> The very first class was very tough for me. The reading was tough for me and the environment was new. It would have really helped if the professor was able to coach a bit on how to learn online or build on the syllabus providing learning tips and hints for online learners. Especially being our first experience. It might not have taken us half of course to figure things out (20).

Other students, however, benefited from an instructor who practiced supporting learning interaction that helped them learn online. The data indicate that students perceived that their learning experience was more successful and satisfying when the instructor helped them understand effective online learning strategies. "The professor helped me understand how to operate in the online environment. I don't think I could have been successful without the professor. Definitely not" (15).

The instructor fosters student motivation to learn. The first two properties of supporting learning advocate that the instructor must be available, responsive and help students be successful online including helping them learn to learn online. As one student sums up quality interaction for most of the participants: "(Professor) just being there and really interested in my learning and doing whatever it takes to help me get there" (2). The data produce the aspect of supporting learning that fosters motivation.

Learner-instructor interaction that fosters students' motivation to learn is the last property of the supporting learning category. A number of observations emerged related to enhancing learner motivation. Some were related to self-efficacy. For example, some students were reluctant to engage in online learning because they lacked confidence in their ability to learn the content or operate in the online environment. Most students had some anxiety about online learning. Supportive learner-instructor interaction could help overcome a lack of confidence.

> In one class the instructor was so encouraging. I was having trouble with this paper, and if it wasn't for her encouragement, I know I would have given up. She would say, 'I can see how hard you are working and I know that you are going to get it. You are doing great. Keep at it.' It was her encouragement that kept me motivated to get through that (14).

The data also suggest that encouragement and supportive instructor behavior not only overcome a lack of self-confidence and anxiety but may also foster motivation and interest in participating in the online learning experience. "Encouragement is all about motivation. It helps get and keep me excited about the course and tells me that the professor thinks I can be successful. Eliminates any doubts that I may have about my success" (9).

Student learning can be characterized as task or performance orientation. Performance-oriented learners judge their success against others in the class. Their learning tends to be motivated, at least in part, by striving to do well against the class standard and avoiding risk of failure. There were only a few students who exhibited a performance learning orientation. This comment is representative of those students:

> The only way that I feel connected is when I finish a course; I check my grade against the class average. Something that I don't always have the opportunity to do in the real classroom. But in the virtual world, I can also check my grades against the class average. That is motivation for me. It is

> kind of strange to say this, but even if the class average was fake; even if the professor just plugged a number in there, just having that number there when I finish my quiz is a motivational tool. Because I have something to measure my performance against (11).

Task-oriented learners tend to engage in deep learning strategies and define their success in terms of doing the best that they can, realizing personal growth and gaining new knowledge. They are not as risk-adverse as performance-oriented learners and tend not to define their success in comparison to others. For them, grade comparisons are not useful.

> Knowing how I'm doing was difficult in the course. I could do a self-check with the web page. Check grades and learning objectives. You know after each unit they have the obligatory after you complete this unit you will be able to blah, blah, blah. But I'm not sure I can make that judgment of what I have learned against those take-aways (8).

For 11, who is perhaps performance-oriented, the comparison of his grade against the grades of the rest of the class is an acceptable measure of performance; but for 8, who appears to be more task-oriented, grades do not motivate her performance. She is motivated by successfully learning the content not necessarily by grade comparisons.

Understanding the value of the course and how it could benefit the student can also motivate performance. Interaction that supports learning effectively, for some students, is helping them understand the value of the course. It makes the connection between their learning performance and a desirable outcome. Many students expressed this same sentiment:

> It is really helpful when the professor explains the value of the course, how it benefits me. I think sometimes that students don't know how to integrate this particular course into their major and goals. Like how does this fit in? I think that is important. For me it helps focus learning and motivates learning (13).

Lastly, the data identified learner-instructor interaction that creates affiliation and social presence. Creating a friendly environment that meets the affiliation needs of students may foster student motivation. This creates a sense of belonging to the group (affiliation) and projects the student as a real person to others (social presence).

> You can really feel alone - just out there in no-where land in the online class. If you are out there, and if you feel that way you are, out there by yourself, you feel alone, almost depressed. But if you feel connected, you are excited about coming to class, virtually, enjoy visiting, look forward to logging in (19).

Creating a supportive learning environment can reduce the perceived risk of participating in learning activities, provide support groups and encourage performance. It provides an environment that reduces the sense of isolation and cuts down the transactional distance.

> We had introductions and the professor created a friendly environment, used humor and there was low risk in public. People weren't afraid to engage in the discussion. It helped moving together as a class. We had group projects that helped. It was just the encouraging environment. All of these things helped. Creating a friendly environment, feedback, keeping the class together and moving in the right direction, the glue, always being there to help. It is important to make students feel comfortable and that can lead to their success (3).

The supporting learning category defines quality learner-instructor interaction that promotes student success in the online environment. It requires the professor to "be there." Supporting learning means the instructor is responsive to students' learning needs, monitors their learning progress and provides what they need to be successful online learners. For many students, supporting learning means helping them learn how to learn online and fostering motivation to learn. This category is characterized by a philosophy of teaching as defined by the participants of this study. It means, to the

participants, that the professor is fully engaged in the students' learning and focused on their success.

Summary

Five categories that define quality learner-instruction interaction online emerged from the data. While this coding did not result in theory generation, the resultant categories do provide specific insights into the phenomenon of quality online learner-instructor interaction and lay a potential foundation for a theory. The properties represent multiple aspects of each category. The coding process reduced the data to a small set of categories that characterize the online interaction process. The next chapter will explore the consequences of the behaviors associated with each category.

Chapter 5

Consequences of Quality Learner-Instructor Interaction

The need for learner-instructor interaction in online distance education (DE) is supported theoretically by the influence of interaction strategies on student performance and motivation to learn (Holmberg, 1985; Weston & Cranton, 1986). Chapter 4 examined the data with the goal of describing quality learner-instructor interaction in the online environment. The data suggest that quality learner-instructor interaction is best understood in terms of the following categories:

1. Directing learning
2. Providing performance feedback
3. Promoting content understanding
4. Creating structure
5. Supporting learning.

These categories and their properties represent the phenomenon of quality learner-instructor interaction as perceived by graduate students in online DE courses. This chapter focuses specifically on the second research question: How does quality of learner-instructor interaction affect the students' perception of learning in online DE?

The categories of quality learner-instructor interaction that have emerged from the data analysis provide a basis on which to examine the consequences of learner-instructor interaction. Learning is a change in behavior as a result of an experience (Merriam & Caffarella, 1999). Online, the experiences that change behavior are the student's interaction with the content, the instructor, and other students. This study investigated the impact of learner-instructor interaction on learning in online DE from the students'

perspectives. Student learning was not measured directly; rather the data were analyzed to determine if students perceived that quality learner-instructor interaction fosters learning in the online environment.

Directing Learning

This is the category of learner-instructor interaction that directs learning, helping students effectively channel their learning activities and time. The properties of this category are focusing students' learning efforts, keeping students' efforts on track, and linking students to useful resources. It seems almost intuitive that directing learning has an impact on student learning. Students who face barriers such as being lost in the course work or in the virtual classroom, having insufficient resources, missing critical aspects of the content, or focusing on the wrong course content are not likely to master the learning objectives. Interaction that directs learning removes or reduces those barriers to learning. An instructor cannot expect students to meet the course learning objectives if they are not engaging in the correct material associated with those objectives. "Point the student to the materials and have them learn the concept by reading and studying" (16).

As 16's comment indicates, students understand their responsibility for learning. For students, effective focus of their energies on the task of learning is the consequence of interaction that directs learning. This requires an integration of the instructor interacting with the students to direct their learning and the students following that direction in order to learn. From the students' perspective, this takes place at the point of interaction – the point between the instructor guiding students in their learning and the students making the effort to learn. In other words, instructors help students identify the appropriate material to master, and the learners engage that material. Some instructors do

not share this view. One explained, "Students are responsible for their learning. I'm not going to hold their hand. The material is out there. It is their job to figure it out" (22). However students do not agree. They perceive that they need the instructor's help directing their learning to be successful online. This was a common observation: "The instructor is responsible to direct my learning. I'll do the work, but the professor can add so much to the learning. Sometimes you need the instructor to guide, hold your hand" (17).

The data suggest that the challenges to learning online are significant and that interaction that guides learning is crucial to success in online learning. Navigating the course and the material can be difficult. As one student explained, "I'm the student. I need the professor to guide me through learning. It [learning] is more difficult in a online course and the instructor has to do extra things when I need help" (2).

Learning is not only a consequence of guiding students to the appropriate content, it is also a product of keeping students on track. The dearth of cues, the large transactional distance, and the lack of immediacy make it more difficult for students to keep their learning on track. They are largely on their own engaging in the content in the isolation of the virtual learning space. Learning is inhibited when students drift off the content. Existing research also proposes that instructors are responsible for keeping student learning and discussions on track (Rohfeld & Hiemstra, 1995). The data from this study support the same conclusions. As this student observed,

> Keeping students on track is absolutely critical (to learning). That is something that the students should expect from the professor. The professor should be keeping students on track. Without that, those (learning) objectives won't be achieved (10).

When the focus of students derails, the consequences are that the students are unlikely to meet the learning objectives. There were numerous student examples where learning was adversely affected by the lack of interaction to direct learning. Pointing students in the right direction and making sure that their learning is on track have consequences for online learning. This was a common issue as reflected by this student's observation: "I couldn't really figure out the course. I seemed lost. I really missed the point (of the material) during the course and missed stuff in learning that I wished I had focused on" (14).

The data indicate that there are barriers to student learning that are unique to the online environment. Barriers such as transactional distance, lack of cues, and lack of immediacy can inhibit learning. However, based on their online experiences, students believe that learner-instructor interaction that directs their learning can help overcome these barriers. Students take responsibility for engaging in learning but expect instructors to guide that learning. The data analysis indicates that learner-instructor interaction is the mechanism through which students negotiate learning. Through the interaction, instructors help students engage and remain engaged in the correct content. As a result of that interaction, students are able to target their learning efforts accurately. Therefore, the consequence of directing learning is that students understand where they should focus their learning effort, thereby contributing to more efficient and effective learning. This student voiced what almost every student said: "I need the acknowledgment that I'm on track or clues to how to get on track, what to look at. I think that is really important for someone really engage in the learning in the online class" (7).

Providing Performance Feedback

This category of learner-instructor interaction informs students of the correctness and completeness of their learning activities. It answers the questions for a student: How am I doing? Am I meeting the learning objectives? The properties of providing performance feedback are providing specific and constructive feedback, personalizing the feedback, and avoiding too much feedback.

As a consequence of providing performance feedback, students understand whether or not they are meeting the learning objectives. Interaction that provides performance feedback helps students assess their success in meeting the course learning objectives. Students can adjust their efforts and enhance their learning based on this feedback. "Critical to learning is feedback on assignments. What is correct or incorrect? What have I missed or not considered? It helps me get through the content" (4).

Performance feedback that supports learning is specific and responsive to the students' learning activities. This is consistent in studies that have found that student learning improved with feedback that was corrective, direct, specific, and individualized (Riccomini, 2002). The data from this study clearly reflect that vague feedback, such as "good job" is just not useful. "The professor absolutely must tell me how I'm doing. 'Good job" doesn't work, that's not real feedback" (8). The data were clear that effective feedback is tailored to the specific activity of the student and is constructive. It should be focused on the student's performance with respect to the learning objectives. Many participants shared their frustration with feedback that was neither specific nor linked to the learning objectives. "I just had an experience last semester in a course in which I got

feedback on APA style but not on what the course was about. I never received any feedback; although there was a lot of feedback, none of it was about the course" (10).

That is not to say that the instructor should not correct APA style. However, performance feedback that influences learning focuses on how the student is performing with respect to the course objectives. The primary desired consequence of feedback is student learning. Since learning is an individual process, the feedback generally should be addressed individually. "Take time to tailor the feedback to me. Read what I have done and respond specifically to that" (9).

The data indicate that feedback that enhances learning has two primary elements: it is specific as discussed above, and it is constructive. Constructive feedback provides students with an assessment of how they are doing in terms of learning, and, if they are not meeting the performance objectives, tells them what changes they need to initiate to be successful. This type of example was common: "We had one instructor who came back and said maybe I should look at this or this and made me rewrite the paper. I appreciated it in the long run" (14). As another student offered, "I also expect more than just, 'Good job.' I need to be told what I missed and how to fix it or what to study" (16).

Lastly, performance feedback can also be dysfunctional and inhibit learning. This is an unintended consequence when there is too much of it, especially in the online environment in which feedback is all written. Several students shared this concern:

> Feedback may be the most important -- but not too much. I don't want to be inundated with stuff from the instructor or constantly be pulled to participate in online discussions or some other thing. That can be distracting and frustrating. I would spend more time than studying the course stuff (9).

The online learning space provides instructors with an opportunity to interact personally with their students and to provide the specific and constructive feedback that students need to be successful online. However, just as the instructor does not have the richness of the face-to-face interaction that includes non-verbal cues, neither do the students. They cannot assess the success of their learning efforts without performance feedback from the instructor.

The consequence of providing performance feedback is that students understand the success of their learning efforts. It helps students make the critical assessments of the correctness and completeness of their learning activities and helps them determine if they are meeting the course learning objectives. Simply put, "Feedback needs to be specific and address what the student needs to be successful (learning) online" (7).

Promoting Content Understanding

This category of learner-instructor interaction enhances student mastery of the content and learning objectives. The properties that help define promoting content understanding are teaching by the instructor, using effective teaching strategies, and varying the degree of promoting understanding depending on the complexity of the content and student learning goals.

Active learning, understanding, is fostered by learner-instructor interaction (Keegan 1990). The data support this premise. "The professors are very knowledgeable. They need to share their knowledge. More discussion of the topic between me and the professor. It contributes to learning. I need it to succeed" (14). Instructors need to teach. Overwhelmingly, students perceive that their success in understanding the content depends, in large measure, on the instructor teaching – the instructor promoting content

understanding. Ultimately, all categories of learner-instructor interaction support the goal of active learning, of understanding, since the overriding objective of interaction is student success. The category of promoting content understanding includes the specific instructor interaction behaviors that help students learn what they are supposed to learn from the course. It means that the instructor assesses what students have mastered and what they have not and then implements teaching strategies to help students learn. Students perceive that promoting understanding is critical to their learning. Several student comments illustrate this. "Clarification and sharing (knowledge) is so critical. I want to the benefit of the professor's knowledge" (10). "The professor can add so much to the learning, critical thinking, synthesizing" (17). "She (professor) often brings everything together, explains the content, wraps up the discussion, and explain points that might be confusing" (3).

The comments also indicate a wide range of specific teaching strategies that promote learning: elaboration, clarification, closure, summarizing, synthesizing, and weaving (Bates, 1994; Wagner, 1994). Learning is realized when the teaching task is matched with the learner need. Instructors must analyze the learner's status and determine how best to help that student understand the material and master the content. If the student needs help understanding the depth and details of the subject, then elaboration is the most appropriate strategy. If a course has a number of complex but related concepts, then weaving them together is critical. Sometimes just clarifying a point of confusion is all that is necessary. The data propose that instructors are required to engage in different teaching strategies to promote learning through understanding: "I

learn better when I understand how everything is connected" (2). "The professor should look for opportunities to clarify" (4). "Summarizing is great" (5).

It is clear that matching teaching strategies to learner needs is crucial. Thus, the instructor needs to be able to assess learning and initiate the appropriate teaching strategy. However, the challenges of online learning make this task difficult. Within a face-to-face classroom, techniques such as asking questions, listening to the class discussion, and monitoring body language all provide clues to the success of the teaching effort. The online DE instructor, on the other hand, must overcome the transactional and spatial distance in both assessing student learning and using appropriate teaching strategies. When instructors do not match teaching strategies appropriately with learner needs, students are often frustrated and their learning may be inhibited. "If I don't get it, then continually summarizing doesn't help me. I need clarification or something. It is just frustrating. Like one shoe is supposed to fit all" (20).

The consequence of learner-instructor interaction that promotes content understanding is student mastery of the content and meeting the course learning objectives.

Creating Structure

This category includes instructor behaviors that provide information on the conduct of the course, the flow of the course, the course requirements, and how to use the learning space. The properties of this category are building a learning space that helps students navigate the course and reinforcing the administrative requirements of the course through instructor interaction with the students. The consequence of creating structure is

the establishment of a virtual learning space that supports online learning success and reduces the barriers to online learning.

Structure defines where online learning takes place and distinguishes, in part, online learning from traditional classroom learning. Structure defines the boundaries of a virtual learning space by providing some concreteness for a space with out place, distance or time. It anchors students to the nebula of online learning. In their own words, "It organizes my learning environment" (16).

Creating structure supports online learning by providing focus for the students' learning activities. It creates a learning place for students where they find the learning objectives, course schedule, and calendar of assignments. It is a place where students can meet with each other or the instructor any time from any place. "The way the course is structured sets the interaction both ways" (12). It facilitates interaction that directs learning, provides feedback, and promotes understanding through mechanisms that are the conduit for communications, knowledge building, and exploration. Some of these mechanisms are chat rooms, discussion boards, links to resources, group project forums, presentation areas, shared documents, student critiques, and online debates.

Structure provides the mailbox through which assignments are turned in and returned with comments, the rooms where concepts are explored, and the space for counseling and help from the instructor. Structure can reduce the transactional distance of online learning (Moore & Kearsley, 1996). Providing an online environment rich with opportunities for interaction using a range of mechanisms reduces the distance of understanding and perceptions. The data suggest that student understanding is enhanced when learning takes place in a virtual space that supports the full range of learner-

instructor interaction. Well-planned structure supports students' learning in online DE by providing an effective learning space that integrates all of the learning activities and facilitates interaction. These two comments reflect the overall consensus of all participants: "The structure stuff helps keep me focused and understand how the course will work; helps my learning" (5). "Course organization keeps everything hanging together. Everything I do goes through the course site. Can't get through the course without it" (20). Thus, one consequence of creating structure is providing a virtual learning space that supports learning success in online DE.

Another consequence of creating structure is reducing barriers to learning. Part of creating structure is helping online learners understand how to use and navigate the online learning space. Comments like, "lack of face-to-face;" "the delay, lag time in communications just makes it difficult;" " information is harder to get;" "feel out there alone;" and "you feel isolated" all reflect some of the major barriers to online learning. Creating structure can reduce those barriers in several ways: 1) by creating a sense of community that reduces the sense of isolation; 2) by facilitating interaction among students and with the instructor that creates a sense of belonging to a class and increases information sharing; and 3) by personalizing space that also reduces the sense of isolation. Well-designed structure can also make it easier for the instructor to manage interaction and to provide timely feedback.

> The online class site helped me feel part of the class. That made a big difference in my learning experience. I could ask my classmates questions, visit with the professor or just listen to the online discussion and learn. It [course structure] was well laid out (22).

If not done well, however, structure may exacerbate barriers to learning. All of the rich capability that supports learning online can result in a complex learning space.

Online learning spaces are not intuitive to many learners. Some feel lost and unsure of how the course works. Several students expressed this concern: "I was lost. I could not begin the learning process. I had a hard time figuring out what I was suppose to do. I was pretty anxious" (8). Students who cannot effectively use the course structure to support their learning become frustrated learners. Students had a frustrating experience in an online course when they did not understand the structure and how it supported their learning. Students need help understanding how to use the learning area effectively. They expect the instructor to "Guide me through the online learning process and using the learning area" (15).

The consequence of learner-instructor interaction that creates effective structure is a virtual learning space that supports learning success and reduces the barriers to learning in online DE. The consequences of ineffective structure are additional barriers to learning.

Supporting Learning

This category of learner-instructor interaction includes instructor behaviors that supports student learning success through being attentive to the students' learning needs, being responsive to their inquiries and assignments, and by engaging in strategies that ensure student success in the online environment. The properties of this category include being available, responsive and attentive to students; helping students learn online; and fostering students' motivation to learn.

In a broad sense, the consequence of supporting learning interaction is learner success in online DE. More specifically, this category defines instructor interaction that provides what each student needs to mastery the content and to be successful.

The specific consequences of supporting learning can be as many and varied as the needs of the individual online learners. For some, enhancing motivation can be an important consequence. There were many comments like those of this student, "Online brings challenges more than just content. It is good to have encouragement from the professor. Keeps you going" (15). Or " I feel like I'm getting individual attention, and it increases my motivation" (3). There are many motivation strategies, a full discussion of which is beyond the scope of this study; however, the data indicate that one of the consequences of supporting learning for many students, is increasing student motivation to learn. "It (encouragement) is all about motivation. It helps get and keep me excited about the course and tells me that the professor thinks I can be successful" (9). The data support the premise of Richie & Newby (1989), who in their study of the relationship between student motivational attitudes and persistence, found that learner-instructor interaction could foster positive student motivation towards the educational experience resulting in increased leaner persistence and cognitive engagement.

Creating affiliation and fostering social presence are other possible consequences of supporting learning. The data are consistent with the literature that suggests that for many students, affiliation and social presence are important and foster learner motivation (Gunawardena & Zittle, 1997; Hachman & Walker, 1990). Many students in this study believed that affiliation and a sense of social presence motivated their learning. One representative comment was, " We need human interaction, socialization. The more of that I can get, the better quality experience and the more I'm going to learn" (14). Supporting learning helps create affiliation and a sense of social presence through strategies such as personalizing the learning space, fostering student-to-student

interaction, making participants come to life by posting photos, sharing stories, and using first names.

Supporting learning interaction that fosters social presence also helps increase students' comfort level. Because of increased comfort, students are more likely to interact and participant. " I think it [feeling connected to the class] is important. It helps foster group work, cooperation and open communications. You can judge the comfort by that conversation" (18). These data were consistent with a recent study that found that social presence positively influenced online interaction (Tu & McIssac, 2002).

Increased learner self-efficacy is another potential consequence of supporting learning interaction that is consistent with the literature. Self-efficacy influences learning behaviors and achievement (Zimmerman, et al., 1992). Self-efficacy is the confidence learners have in their ability to be successful, and in this specific case, to be successful in online DE. Learner-instructor interaction that supports learning may include such strategies of having peers demonstrate that success is possible, guiding the low self-efficacious learner gradually through the course, and looking for opportunities for success. While students do not talk in terms of self-efficacy, the data clearly indicate that learner-instructor interaction that supports learning can increase students' perceptions of their ability to learn online.

> It is kind of like, 'hold hands and walk through this.' She (the professor) tells us not to worry about mistakes right now. The key is just to get involved. I need the instructor to do things to reduce my anxiety. I need more feedback that I am on task and on track. I want encouragement that I can do it and that I am doing it (6).

Students learning how to learn online is the last consequence of supporting learning interaction addressed here. Learners not only have the typical challenges of

learning, but in online DE, they must do so by interacting in virtual space through an electronic medium. It cannot be assumed that students have the skills to learn successfully online (Diaz, 2000). Helping students understand how to manage content, time, and their learning activities may help them be more effective learners online. Many students expressed this sentiment: "It would really have helped if the professor was able to coach a bit on how to learn online-providing learning tips and hints for online learners" (14).

Learner-instructor interaction that supports learning has positive consequences when the specific strategies are geared to the unique needs of each individual student. From the students' perspective, this category of learner- instructor interaction can be quite powerful in promoting learner success in online DE.

Summary

Chapter 4 introduced the five categories of quality online learner-instructor interaction that emerged from the data. The chapter findings were descriptive in that the data presented examples of specific behaviors participants expected from their interaction with the instructor.

Chapter 5 explored the potential consequences of those five categories. It looked at the same data but from a slightly different perspective. It drew conclusions about the outcomes of the learner-instructor interaction defined in chapter 4. The data, from a macro perspective, support the general consensus of the literature that quality learner-instructor interaction promotes effective learning. This chapter viewed the data from a micro perspective in an attempt to provide explanations that may be more descriptive and

prescriptive. This approach was intended to provide some insights into specific consequences of specific interaction strategies that can inform the DE practitioner.

The data from which each category was generated were examined to gain an understanding of how each would specifically affect learner performance in the online environment. The result was the emergence of a series of outcome propositions that will help the practitioner be more effective in the task of fostering learning in online distance education.

Chapter 6

A Framework for Quality Learner-Instructor Interaction

The theory-generating methodology of grounded research was used to analyze and interpret the data collected from graduate students and professors in online distance education (DE). Chapter 4 discussed the categories of quality learner-interaction that resulted from the open coding of student perspectives. The categories are

1. directing learning
2. providing performance feedback
3. promoting content understanding
4. creating structure
5. supporting learning.

Chapter 5 examined the same data from a slightly different perspective; that of consequences with respect to learning associated with each of the five categories. This study did not attempt to measure or quantify learning performance; rather it used the data generated from the participants' experiences and descriptions to determine if there is a potential relationship between learner-instructor interaction and learning in online DE. This study makes an assumption about learners, as have others such as Tough's research on self-directed learning (Cross, 1981), namely, that learners understand their behavior and expectations and are able to articulate them. The data from those learner-articulated experiences and expectations generated the framework for learner-instructor interaction. It offers a new perspective of quality learner-instructor interaction online and new directions for continued research on the relationship and dynamics between learner-instructor interaction and learning in online DE.

This chapter addresses the study's third research question: What defines quality learner-instructor interaction in the online environment?

This chapter integrates the presentation of the theoretical framework that emerged from the data and possible prescriptions. This approach to presenting the findings of this study allows the reader to evaluate the framework within the context of operationalized examples and prescriptions for instructor interaction behaviors. This discussion is based upon data generated from student descriptions and the researcher's experience with the phenomenon. This framework represents an emerging theory generated principally from students. The instructor behaviors presented are useful in explaining and understanding this framework however care must be taken in drawing conclusions for practice before faculty descriptions are considered and this theory is tested.

This chapter describes a framework for quality learner-instructor interaction in an online environment from the perspective of the learner. The framework described is based upon the data generated from interviews with students and supplemented with interviews from instructors, observations of some online discussion, and an analysis of course documents. This framework represents an emerging theory generated principally from the students' perspective of quality interaction. Prescriptions for practice are offered based upon the data collected from students and are useful in explaining and understanding this framework. However care must be taken in drawing conclusions for practice before the theory is tested further.

A framework emerged as the properties of each category were generated. Within the framework categories are described as functions. Data analysis and modeling generated the central phenomenon and identified potential interrelationships among the

functions. Supporting learning emerged as the central phenomenon. All other functions are dependent upon effective supporting learning interaction. Supporting learning drives the teaching strategies used in directing learning, providing performance feedback, and promoting content understanding. Learner-instructor interaction that supports learning results in effective learner diagnosis and selection and implementation of teaching strategies. It is the mechanism by which the instructor makes informed decisions about appropriate teaching strategies, monitors the effects of those strategies and makes adjustments to subsequent interaction. Thus, supporting learning is the integrating function, the glue of the framework.

Creating structure provides the infrastructure for the central phenomenon of supporting learning as well as for the implementation of the specific teaching strategies defined by the other three functions of learner-instructor interaction (directing learning, providing performance feedback, and promoting content understanding). It provides the virtual learning space in which all learner-instructor interaction takes place and guides learner in the effective navigation and use of that space. Without interaction that creates structure, there is not a learning space or protocols that guide interaction within that space.

It is clear from the data that these functions of creating structure and supporting learning provide for the organized learning space and the instructor support and attentiveness that facilitate the teaching strategy functions. On the one hand, learner-instructor interaction strategies that direct learning, provide performance feedback and promote content understanding are dependent on providing structure and supporting learning. On the other hand, providing structure and supporting learning are in and of

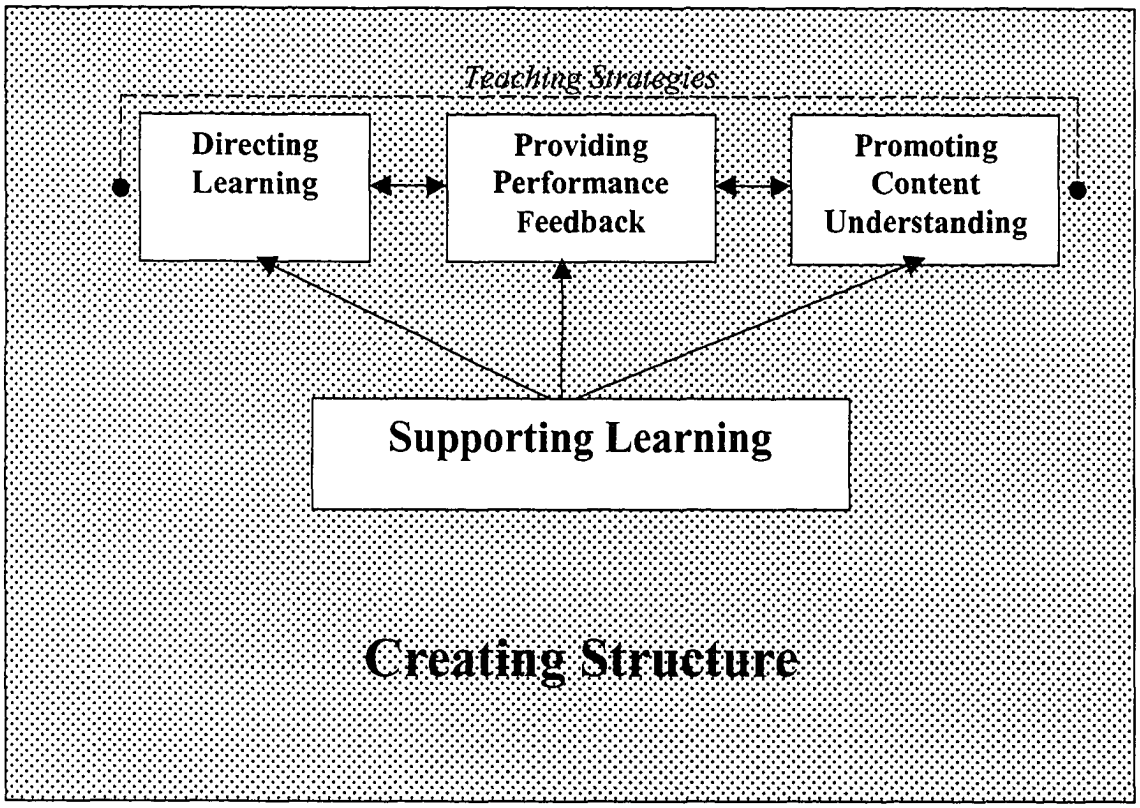
themselves important learner-instructor interaction functions. As discussed in Chapter 5, they provide more to the framework than the infrastructure and glue necessary for the teaching strategy functions.

The framework for quality learner-instructor interaction is designed to reflect the interrelationships among the functions with respect to the central phenomenon and the wide range of conditions and learner variables operating within the online environment. The phenomenon of quality learner-instructor interaction was analyzed throughout the data collection until saturation was obtained. The result was the emergence of a framework consisting of five interrelated functions that define quality learner-instructor interaction in the online environment. However, there were variations based on leaner differences that include, but are not limited to, self-directedness, self-efficacy, content difficulty, learner experiences, professor skills, and barriers to learning. This theoretical framework accounts for those variations. The consequences of this theoretical framework are multiple and varied and validate that the axial coding has been fully developed (Creswell, 1998; Strauss & Corbin, 1990).

Teaching strategies comprise another important dynamic of this framework. The functions of quality learner-instructor interaction that directs learning, provides performance feedback, and promotes content understanding are teaching strategies that directly influence online learning. Overall, the framework consists of the meta-function of structure that provides for the learning space, supporting learning which integrates all of the functions and provides the framework glue, and the functions that comprise the teaching strategies. The interrelationships will be discussed in the context of this theoretical framework depicted in figure 1.

Figure 1

A theoretical framework for quality learner-instructor interaction in the online educational environment



A fundamental premise of this framework is that learner-instructor interaction must be planned and purposeful. As one student suggested, "Professors should develop a teaching plan that plans interaction" (19). Planning for learner-instructor interaction online is not rigid. It is planning for a wide range of contingencies — contingencies that are based upon what each student needs to be successful in the online learning space. Those needs will vary by student, content, learner focus, online barriers, and other conditions. As an example, purposely planning to use only summarizing as a strategy to promote content understanding might not be effective. While this reflects purposeful planning for interaction, it does not account for the variations and conditions of online

learning. Some students may need more weaving of concepts or help with critical thinking and synthesis. Other students may need more structure and feedback. Some students need encouragement and affiliation. Thus, one of the underlying key aspects of planning for interaction is that professors must have the skills to both diagnose the students' needs for interaction and implement the appropriate interaction strategies.

This framework represents a progression in theory building. The framework functions much like Cross's (COR) model for adult learners (Cross, 1981). The framework includes within the function of supporting learning the COR dynamic of instructor behavior that both reacts to and influences learner responses and behavior through interaction. The data from this study suggest that the most effective online instructors come to the online teaching space with a toolbox of interaction strategies to promote student success and the skills to know when and how to use each. This model represents both the toolbox and the skill set that may be help teachers react to and influence students' chain of responses and learner behavior.

Interrelationships among the Functions

The strong interrelationships among the functions suggest that effective learner-instructor interaction requires instructors to understand and take advantage of these connections. Creating structure provides the organized learning space necessary for effective interaction while supporting learning is the instructor behavior that facilitates the teaching strategies that direct learning, provide performance feedback, and promote content understanding.

The generation of a theoretical framework for learner-instructor interaction in online DE has resulted in a model may potentially adapt to a wide scope of conditions

and variations, and ultimately, it may prove useful to the practitioner as a guide for the design and delivery of online DE. The integrating function of providing structure and supporting learning is one of the important aspects of the framework. Both are, in and of themselves, important functions of quality learner-instructor interaction, but they also play a predominant role in facilitating the other functions.

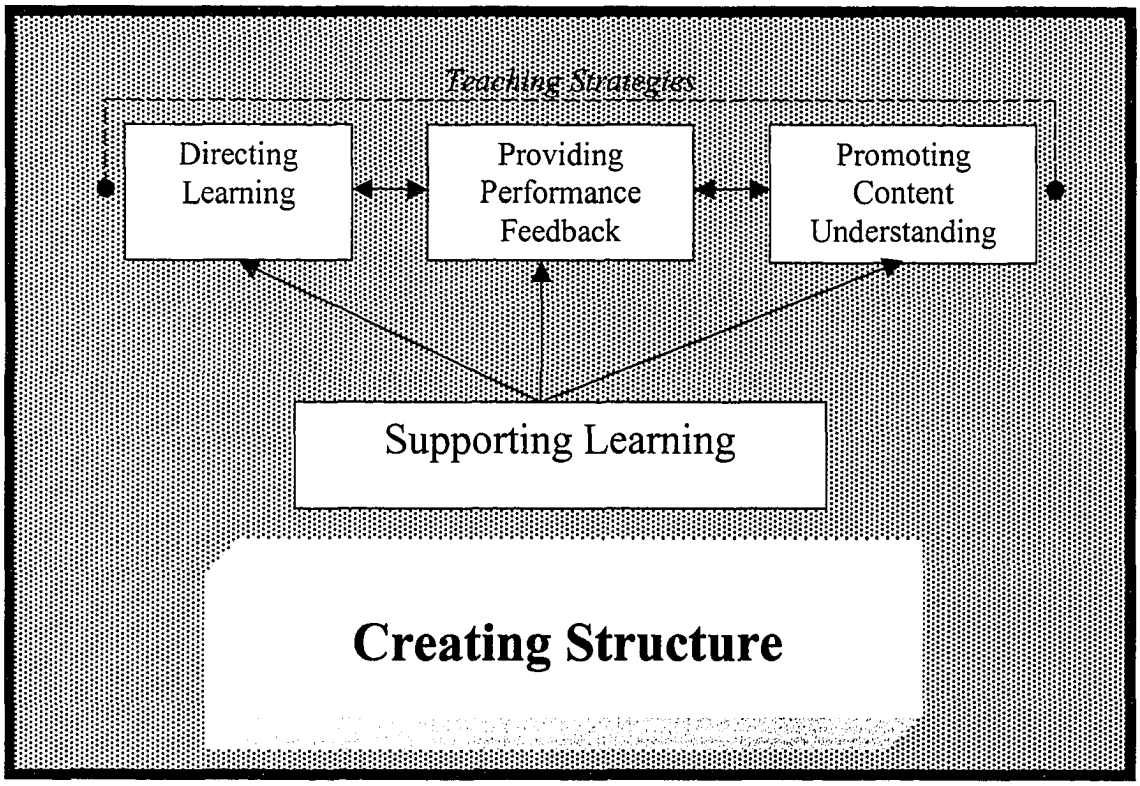
Creating structure as the infrastructure for interaction. According to the proposed model, this function defines instructor behaviors that provide information on the conduct of the course, flow of the course, course requirements, and how to use the learning space. Creating structure also provides the virtual learning space and protocols that are necessary for effective implementation of the other functions of interaction. Structure focuses on creating the learning space and guiding students in and around the learning space and through the administrative management and requirements of the course. Structure includes building course objectives, assignments, performance criteria, deadlines, and course navigation.

Quality learner-instructor interaction that creates structure facilitates learner-instructor interaction that supports learning, directs learning, provides performance feedback, and promotes content understanding. This is a new perspective of the concept that technology mediates learner-content, learner-learner, and learner-instructor interaction (Hillman, et al., 1996).

Figure 2 reflects creating structure and its function as the infrastructure for quality learner-instructor interaction online. It is the vehicle through which all other interaction takes place.

Figure 2

Creating structure as the infrastructure for quality learner-instructor interaction online



Course objectives, a component of course structure, can help both focus student learning and provide performance feedback. Some students use the objectives as the litmus against which to judge their own learning performance. Objectives can help students understand where they should put their efforts. Supplementing the course objectives with important learning points, discussion points of the lesson, or main talking points can also facilitate directing learning. Announcements can be used to direct learning in addition to creating structure. For example, an announcement that creates structure is one that reminds students when an assignment is due. An example of an announcement that directs learning is one that tells students that for the upcoming segment of the class they should focus on chapters one and six and the handout. A course

calendar is primarily a structure tool but can be used for directing learning as well. The instructor can post the list of outcomes for each class segment on the calendar. Links can also be built into the calendar so that when students check the calendar for due dates and lesson pacing (structure), they can also review a list of the major study points and links to other resources.

The current literature urges instructors to think about teaching online in ways different from teaching in the traditional classroom (Moore & Kearsley, 1996). It is precisely because of the nature of the online virtual learning space that this is necessary, and creating structure is the foundation for those new ways of teaching. It is not that the concept of learning is different in the online environment; it is that the ways in which learning is fostered and promoted are different.

Discussion areas and chat rooms, part of structure, provide a learning space for performance feedback, directing learning, and promoting content understanding. Structure tools that allow for private interaction between a student and the instructor can also serve those purposes. The data suggest the importance of creating both a private and a public area within the virtual learning space. While students believe that most learning, interaction, and feedback takes place in the public areas, there are occasions when some students need a private area to communicate with just the instructor. "In one of our classes the assignments were very personal and it was best that we were able to keep them private with the professor" (14).

Links to important resources should be built into the learning space. Creating structure can include a list of readings or resources central to the learning objectives and a list of supplemental resources so that students can direct their efforts based on their

interests and time. Self-tests can provide performance feedback. Links within the test can point students back to the appropriate material and help promote content understanding. For some, especially those who are performance-oriented, their performance relative to others is very important, so class averages for tests can be posted.

These are just some examples of how the creating structure function of the model may help teachers design an infrastructure for the teaching strategies of learner-instructor interaction. It is difficult to provide learner-interaction that directs learning, provides performance feedback, and promotes content understanding if instructors do not create the infrastructure to facilitate and provide a virtual place in which they can occur.

The model also suggests that a relationship exists between creating structure and supporting learning. Quality learner-instructor interaction that supports learning includes instructor behaviors that are attentive and responsive to students' learning needs and support learners' success online. The concept of the instructor "being there" to diagnose, to monitor, to react, and to "proact" dictates the necessity for a place in which the instructor can "be there." That place is the virtual learning space provided for by creating structure.

Online forums, discussion areas, group areas, and assignment areas provide virtual places in which the instructor can "be there" creating a presence and supporting learning. The current literature introduces the concept of social presence and its potential influence on learner motivation in the online environment. Social presence is the degree to which a learner is perceived as a real person with specific characteristics and needs (Gunawardena, 1994; Gunawardena & Zittle, 1997).

Building a place into the learning space for posting personal stories and pictures can enhance social presence and affiliation. Discussion boards can include a social area where students can visit. Structure can facilitate introductions. Notes of interest to the group such as what is happening on campus can be posted to the announcements. The degree to which social presence and affiliation is fostered is directly related to the effectiveness of creating structure.

Clearly, an important feature of the model is the interrelationship between creating structure and supporting learning is the property of "being there." According to the model, structure should be designed to create the vehicle by which the instructor can monitor student performance, be readily available, and be responsive to students. In a broad sense, structure is the only vehicle through which an instructor can "be there," responsive to the students' learning needs.

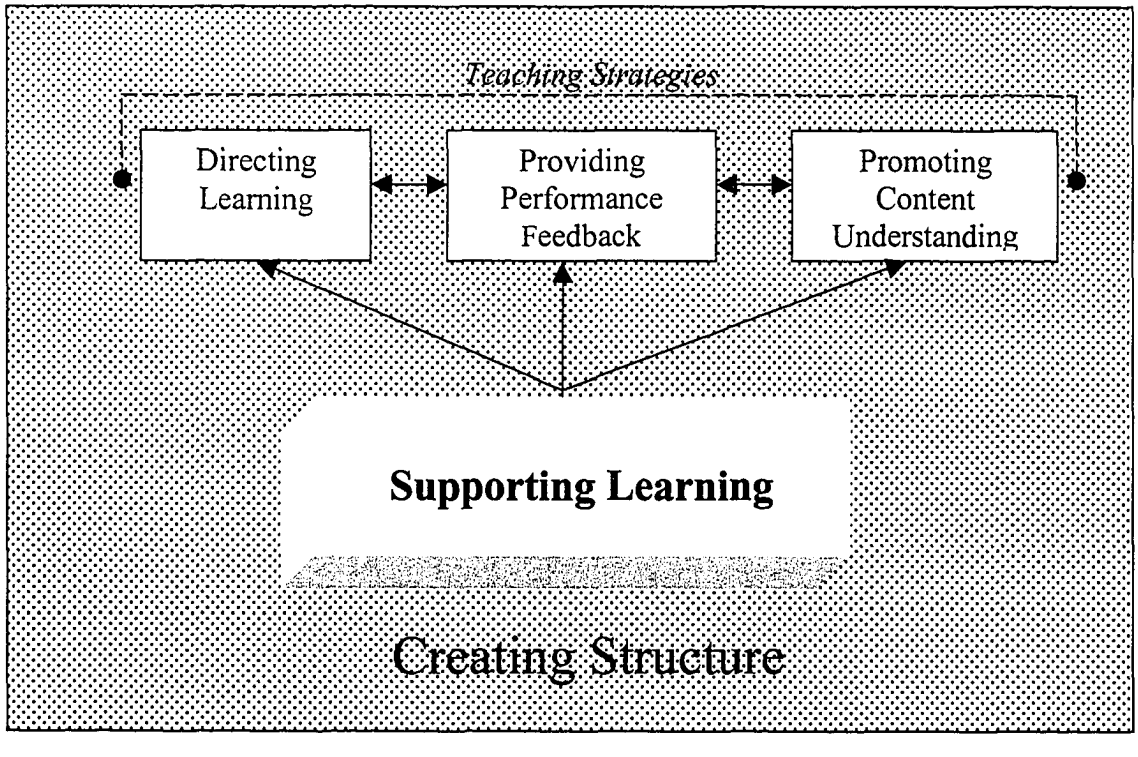
The key point is that creating structure should be purposeful. The properties of the function include building a learning space that helps students navigate the course and providing the administrative requirements of the course. The goal of creating structure is to ensure that students clearly understand the requirements of the course, what is expected of them, and how to learn in the learning space. But the interrelationship with other functions of quality learner-instructor interaction should be considered when planning how to create structure. The data suggest that as instructors consider how to plan for directing learning, providing performance feedback, promoting learning, and supporting learning, it will be useful to think of how creating structure supports those teaching strategies.

Supporting learning integrates the teaching strategies into the framework for quality interaction. Supporting learning is the central phenomenon of the framework for quality learner-instructor interaction. This function also defines the fundamental premise of quality learner-instructor interaction in an online environment — supporting learning is interaction that promotes student success. It is consistent with the literature that argues that learner-instructor interaction is central to learner success online (Galbraith, 1991; Garrison, 1990; Keegan, 1990; LaRose & Whitten, 2000).

However, this framework operationalizes instructor interaction in new ways while retaining the idea of instructor involvement being core to the learning process. Figure 3 is a visual depiction of the framework for quality learner-instructor interaction represents supporting learning as the glue that integrates all functions into the framework.

Figure 3

Supporting Learning as the Central Phenomenon



One of the properties of supporting learning is that the instructor is available, responsive, and attentive to student's learning. This reflects the participants' expectation that the professor is fully engaged in their learning and focused on their success. As many of the participants put it, the instructor needs to "be there." Supporting learning, according to the data, means the instructor is responsive to student learning needs, monitors their learning progress, and provides what they need to be successful online learners.

The data provides some insights into possible ways to operationalize supporting learning. For some students, supporting learning could mean helping them learn how to learn online. The current literature suggests that the characteristics of online learning dictate that instructors think of teaching in news ways and that students need to think of learning in new ways (Hiltz, 1995). Many students need help understanding how to become effective online learners. Supporting learning may also include promoting metacognition or helping students to think about thinking. Metacognition can be critical in promoting integrative learning (Halpern, 1996; Livingston, 1996). For others, supporting learning means providing encouragement, fostering motivation, and creating a supportive environment.

Supporting learning facilitates the teaching strategies of directing learning, providing performance feedback, and promoting content understanding. Each of those functions is operationalized by a set of properties. Supporting learning is interconnected with these functions by the concept of the instructor being fully engaged in the learning of online students. The framework suggests that the degree to which the instructor is fully engaged in the online learning will largely determine his or her success in instituting

strategies of quality learner-instructor interaction that direct learning, promote content understanding, and provide performance feedback. Fully engaged may not mean that the instructor is always actively participating in discussions, posting comments, or sending emails to individual students. The students' descriptions indicate that it means that the instructor is cognitively tied into student activities, progress, attitudes, and sense of motivation so that he or she is there to assess what a student needs and initiate learner-instructor interaction to promote learner success.

Several examples will illustrate how this framework might be operationalized into practice. Supporting learning facilitates directing learning such as when an instructor who is fully engaged in the class online discussions can assess how well the discussion is addressing the issues important to the learning outcomes. If the discussion is not dealing with the appropriate issues the instructor can direct the learning to guide the discussion back on track. Providing performance feedback requires interaction that supports learning. The instructor observes group project activities ongoing in the virtual learning space. By virtue of being there and attentive, the professor is able to provide specific and responsive performance feedback to the group. The data are clear that students expect feedback on the quality of their work. This allows them to adjust their efforts and learning behavior if necessary. Supporting learning also integrates promoting content understanding into the framework of quality learner-instructor interaction online. In an online business class, the professor concludes from student journals, discussions, or other learning activities that the students do not understand the concept of mergers. The professor interacts with the class by clarifying, explaining, or helping students synthesize to promote content understanding.

When an instructor is not there and not supporting the students online success by being actively engaged in their learning, there are negative consequences. This student related an experience that was common to many.

> You wouldn't get a reply [from the professor] and you would email him again, several weeks later you would get a 'I'm busy, I'll get to this later' response. I was just so floored by that whole course. So we didn't connect at all as learners. Everyone just started to drift away. It was just a lack of responsiveness." If the professor is "not there," not fully engaged in the online learning environment, focused on student learning, then he or she is not able to provide the quality learner-instructor interaction that is necessary for learning success in online DE (10).

The example above reflects the relationships among the functions of learner-instructor interaction. Quality learner-instructor interaction in the online environment that supports learning is about instructors being fully engaged with their students. This is the central phenomenon of the framework. It suggests that the instructor is fully engaged in the students' learning so that he or she can assess learning progress and initiate strategies to direct learning, promote content understanding, and provide performance feedback. However, strategies to support learning do not lead automatically to specific strategies to provide content understanding.

Rather, the properties of promoting content understanding determine how an instructor should engage in that interaction, and the instructor must decide if summarizing, clarifying, or other strategies associated with this function are most appropriate.

This theoretical framework captures two important dynamics:

1. Supporting learning is the central phenomenon of the framework. The degree to which the instructor is engaged in students' learning will largely determine the instructor's effectiveness in instituting the strategies of learner-instructor interaction that direct learning, promote content understanding, and provide performance feedback.
2. Creating structure provides the learning space in which interaction takes place and guides the students through that learning space. When purposefully planned, creating structure can facilitate the other interaction functions.

Creating structure and supporting learning are what distinguish quality learner-instructor interaction in the online environment from interaction in the traditional classroom. Directing learning, providing performance feedback, and promoting content understanding are fundamentally the same in the traditional classroom and in the online environment. The data indicate that instructors need specific skills to implement those strategies, and the skills for teaching online differ in some respects from those required for teaching in the traditional classroom. However, from the students' perspective, creating structure and supporting learning differ significantly between face-to-face and distance education. This is due to the unique conditions of online learning that are also incorporated into the framework.

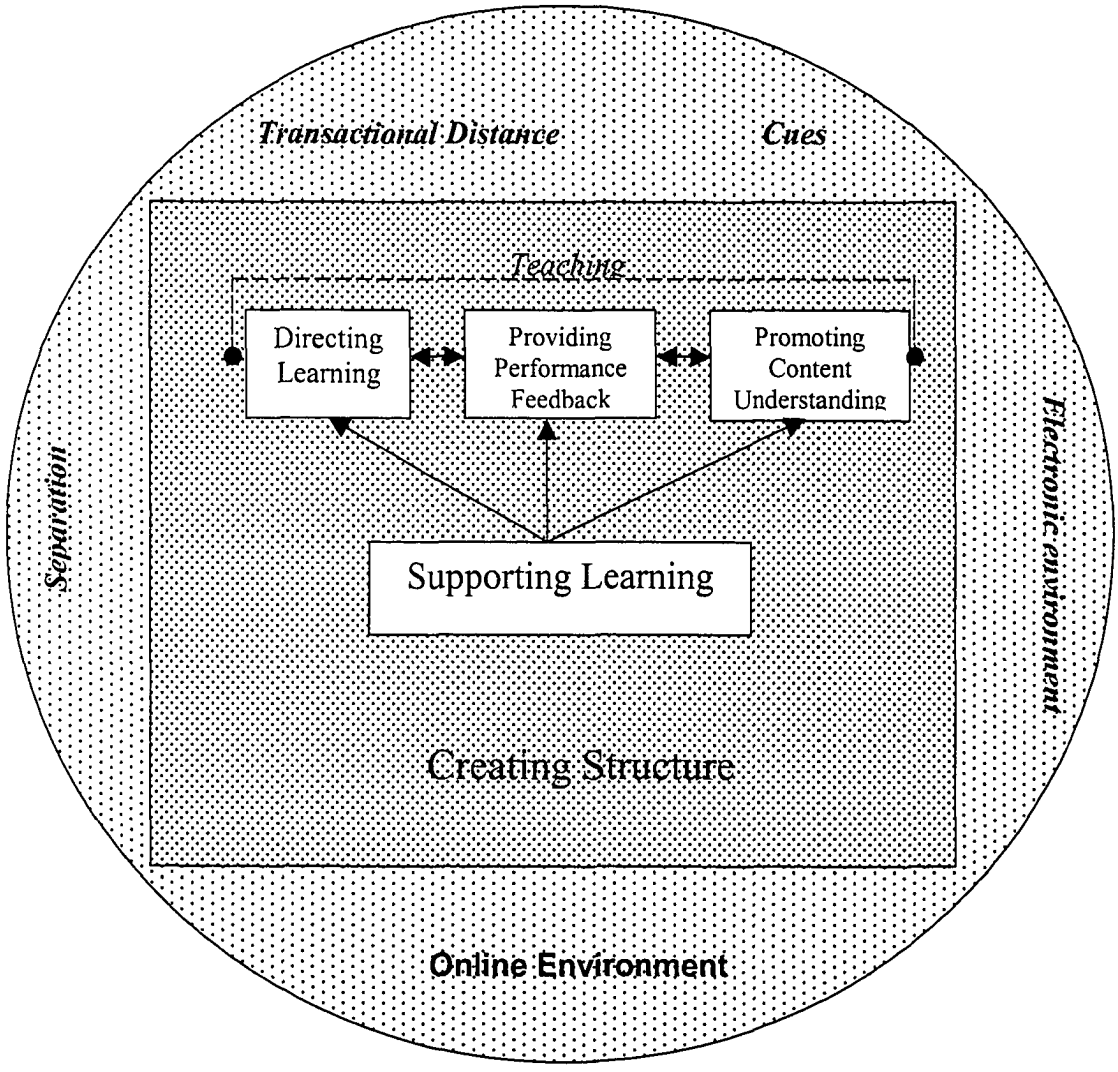
Conditions Of Online Learning

The data are consistent with the literature that suggests that instructor behaviors should be focused on what works in the online environment rather than attempting to replicate the dynamics of the traditional classroom (Bullen, 1998; Moore & Kearsley,

1996). This theoretical framework for interaction holds up under the conditions of the online learning space. Conditions are the contextual dynamics that influence and shape the phenomenon and mediate the consequences (Creswell, 1998). Figure 4 depicts the framework within the online environment defined by its conditions.

Figure 4

Online Conditions and the Framework



As depicted in Figure 4, conditions are best thought of as the environment in which the phenomenon, in this case learner-instructor interaction, takes place. They

define that environment and influence the phenomenon that occurs within that environment.

Separation. One of the conditions of online DE is the physical and spatial separation that inhibits immediacy and causes a sense of isolation. Students perceived this separation to be a condition that offers significant challenges to online learning. "You are separated from everyone. Can't just grab the professor" (2). "We never see the professor. Everything is electronic. I feel a little alienated. The big thing is missing your classmates comments and interaction" (8). Online is different because learner-instructor interaction is mediated by the technology (Hillman, et al, 1996). The rhythm and immediacy are disrupted by technology (Hiltz, 1995; Kahle, 1998).

A goal of the proposed framework is to guide practitioners through what works in the online environment. Creating structure addresses this condition of separation by reducing the sense separation and isolation of the online environment. As students have described, structure can include personal pictures, chat rooms, places for introductions, and personal vignettes. Interaction behaviors that support learning such as personalizing communications, being responsive within 24 hours, and guiding learner-learner interaction can reduce the sense of isolation and promote social presence and a sense of being connected to the class. Congruent with the literature, the framework provides for learner-instructor interaction that fosters personal rapport, communicates group cohesiveness and connectivity, and reflects the instructor's understanding of the challenges students face, all of which have a positive impact on student learning and satisfaction (Gunawardena & Zittle, 1997; Hackman & Walker, 1990; LaRose & Whitten, 2000).

Lack of verbal and non-verbal real time interaction. Another condition that poses unique challenges to online instructors and learners is the lack of richness in terms of verbal and non-verbal real time interaction between the students and the instructor. As the literature indicates, instructors cannot see student reactions to judge the effectiveness of their interaction (LaRose and Whitten, 2000). Student observations were congruent with this literature. In DE there is a "lack of richness of the media and the ability to have instant feedback" (11). The online environment is not able to provide the concreteness that is gained from nonverbal cues in a face-to-face setting. While the technology cannot support that type of richness, it is possible to create other types of richness in the learner-instructor interaction in the online environment. Instructors can be fully engaged in the students' learning activities, monitoring their progress and providing specific and targeted learner-instructor interaction. Structure can help instructors direct learning in ways unique to the online environment such as through links to learning resources, daily announcements, and individual e-mails. Unlike in the traditional classroom, the online environment can be structured in ways to allow instructors to monitor student performance and progress regularly and to direct learning, provide feedback, or promote content understanding at almost any time.

Although it requires a high level of interaction strategies to support learning, the instructor's ability to "be there" provides richness not normally possible in the traditional classroom. Being there allows students to "reach out and grab" their instructor from the comfort of their homes rather than doing so only once a week before or after a classroom session. Students do not need to set up an appointment and drive to campus for a one-on-one meeting with the professor. It can be done online, asynchronously. Feedback on

papers, journals, and online discussions can be shared in public areas of the learning space to promote collaborative knowledge building. Feedback and student ideas remain in the learning areas for students to revisit, and the nature of asynchronous discussions allows students to think through their responses and comments.

These dynamics do not replicate or substitute for the lack of non-verbal communication. However this framework for learner-instructor interaction may prescribe interaction behaviors that are designed to accommodate these online learning conditions. While not replicating the face-to-face interaction of the traditional classroom, this framework suggests alternatives for providing a different richness that is effective in the virtual learning space.

Electronic environment. The online environment is an electronically mediated environment. This condition of the environment challenges the character of learning as defined by the current body of knowledge. The nature of the educational process is inherently human-to-human interaction that provides for the richness of the interaction. The physical setting of the traditional classroom is humanized space and contributes to the psychological validation of students (Bowman, 2002).

The data indicate that humanized space is important for online students as well. Students believe that instructor presence is a crucial aspect of quality learner-instructor interaction online that humanizes that space. "If the instructor is not involved in the day-to-day activity of the course, you have very little sense of a presence there" (17). Being there and being responsive are a part of generating a presence. Another aspect of presence is being specific when providing performance feedback, directing learning, and promoting content understanding. Students "want to know that they (the professors) are

responding to me personally and that they understand what I said" (10). Interacting in a way that acknowledges the specific work of a student, rather than responding "good job" creates a sense of instructor presence for that student. Students sense, even though they cannot see or hear the instructor, that there is a real person at the other end of the virtual interaction, not just a computer. This helps create the social presence that many scholars find so important to the learning environment (Gunawardena & Zittle, 1997).

Transactional distance. Transactional distance is the distance of understandings and perceptions between instructor and student (Moore, 1993; Moore & Kearsley, 1996). Transactional distance is not just a phenomenon in distance education, but the physical and spatial distance of online education exacerbates it. Transactional distance increases when learners are not actively engaged in meaningful learning and dialogue with their instructors. Creating course structure that fosters effective interaction between learners and instructors decreases this distance (Saba, 2000).

The challenge presented by the distance of understandings and perceptions between instructors and students may be overcome by instructors assessing learners' understandings and perceptions and implement interaction strategies to reduce the distance. The framework suggests that promoting understanding and clarifying perceptions reduce transactional distance. For example, an instructor may help students clarify a perception about gender issues in the work place by directing them to a site such as Third World Network: Women's Rights and Gender Issues 2000. Another student may not grasp the relationship between influence and power. The professor may decide to use a clarifying strategy in a personal email through a one-on-one dialogue or open up a class discussion and exploration of the topic.

Learner-instructor interaction that creates structure and supports learning also reduces transactional distance by providing a connectedness between students and the instructor. This increases the potential for understandings and reduces the chances of misperceptions. Interaction to reduce transactional distance should be purposeful and specific to the individual needs of the students. Transactional distance is not static; rather, it varies from individual to individual and from circumstance to circumstance for the same individual.

The effects of the conditions discussed above are dependent, to some extent, upon individual perceptions. For example, the data suggests some students are more affected by the lack of face-to-face interactions than others. Interaction that supports learning includes the ability to influence those perceptions. Often just encouragement can help students overcome some of the online conditions that create barriers to learning. "Online brings challenges more than just the content. It is good to have encouragement from the professor; encouraging you to keep going, that you can do it" (15). Encouragement, a property of supporting learning, helps reduce real and perceived barriers to learning. In terms of overcoming the potential adverse impact that online conditions may have on learner success, the key is to first address the condition specifically and, second, to address the perceptions of the condition.

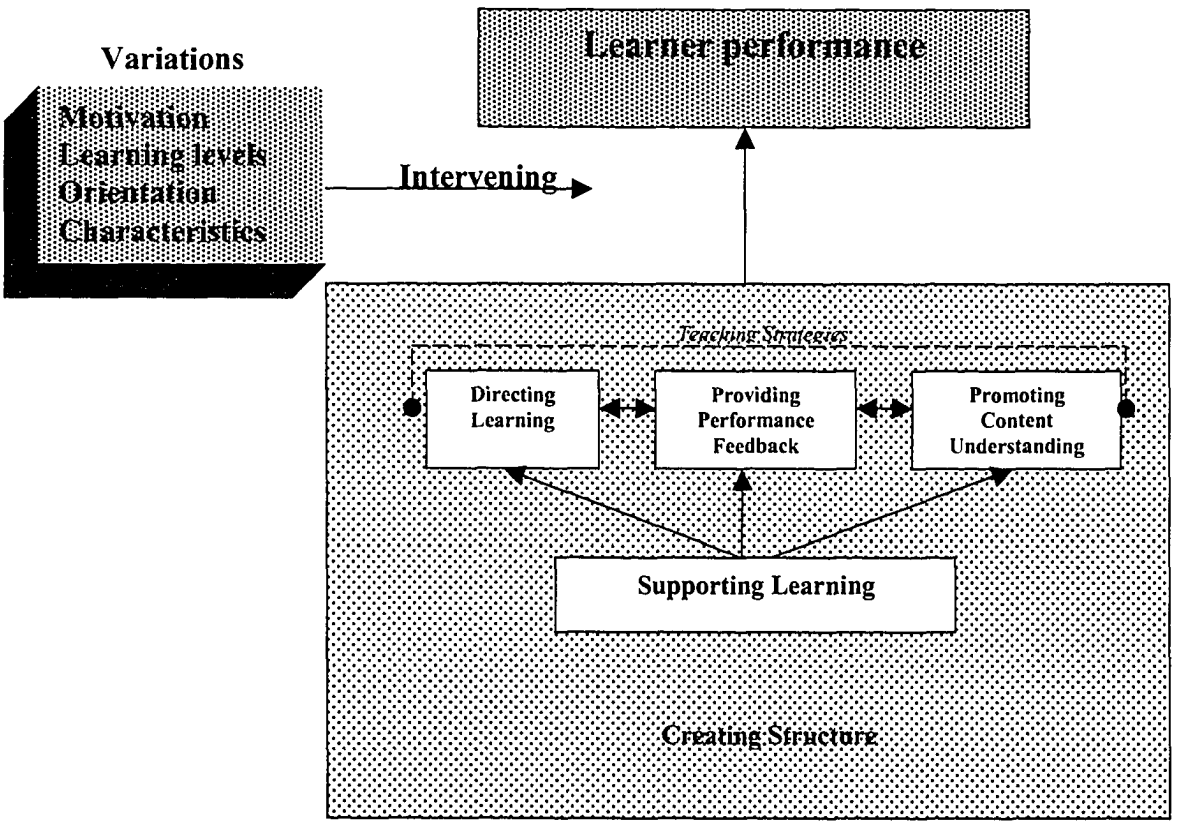
Variations in Online Learning

Variations represent the intervening variables in the dynamic between learner-instructor interaction and learning. A proposed theoretical framework for quality learner-instructor interaction online should account for many learner variations. The power of a theory depends, in part, on the degree to which it can hold up against variations.

Variations in this context refer largely to learner characteristics. As conceived, this framework is robust to variations in learner characteristics. A few variations demonstrate how well this framework holds up conceptually. Figure 5 depicts learner variations and how they mediate the relationship between learner-instructor interaction and learning.

Figure 5

Variations: Intervening Variables



The central phenomenon of supporting learning is the key dynamic of the framework that accounts for variations. As an integrating framework in which the functions are interrelated, any number of combinations of functions within the framework can account for variations. The following is an overview of several representative

variations to demonstrate the potential strength of this emerging framework to address numerous variations.

Motivation. Motivation is a student's willingness to commit effort in the learning process (Wolters, 1998). Students' perceptions of their ability to engage in the learning activity will determine their level of motivation to learn (Bandura, 1994; Pajares, 1996). In the online environment, this includes promoting the learners' confidence in their ability to interact with the medium (Hillman, et al 1996).

A student with a high self-efficacy will generally try harder, persist longer, and take on greater challenges (Schunk, 1989; Wood & Locke, 1987). Self-efficacy is not about intelligence, but rather about attitude (Ornstein, 1995). As explored in chapter 4, student self-efficacy can vary in terms of their perception of their ability to learn the content and their ability to learn online. Self-efficacy can be in the context of the content. "For a difficult content course, like math, I would need more professor support especially with the problems. The professor needs to check my work often. I need more feedback and help" (15). Self-efficacy may also be in the context of the online environment itself. "I guess I lack some self-confidence learning online" (3).

Confidence in learning the content can be increased by interactions that provide performance feedback and promote content understanding. The data indicate that students who are anxious about the content want more feedback and help understanding the content. They expect the instructor to monitor their learning continuously and let them know often that they are meeting the learning objectives. Promoting student-student interaction also may increase confidence in dealing with the content as the low

self-efficacious learner observes others they perceive to be of equal ability being successful.

Student confidence in dealing with the technology online may be increased by strategies to support learning that are encouraging, teaching learners how to learn online, and providing constructive feedback that assures them that they can be successful leaning online. According to the proposed framework, creating structure that is easy to navigate also should also help reduce anxiety learners have about technology. Motivation to engage in learning can also be explained in terms of attributional theory (Weiner, 1985). Performance feedback can be used to help frame the causes of successful performance or failure. While learners did not make this explicit connection, the data was clear that students expect feedback that links their behavior to performance and interaction that helps improves their performance. This indicates that they think in terms of learner ability and effort linked to outcomes implying attribution associated with outcomes that are unstable and internal locus of control. Based on the data and the literature, it is appropriate to consider that feedback which frames performance this way is likely to positively influence the learner's self-efficacy and increase motivation. It may be concluded that feedback that indicates that outcomes are stable or not linked to learner performance or that failure is a result of a lack of learn ability will have the opposite effect (Lyden, Chaney, Danehower, & Houston, 2002).

The framework suggests that learner-instructor interaction which supports learning plays a significant role in influencing self-efficacy. Self-efficacy is about learner perceptions of their ability to engage in a behavior (Pajares, 1996). Encouraging interactions, building successes, and demonstrating that the instructor is engaged in the

student's learning focuses on the student's success. The objective of the interaction is to change the learners' perceptions that the content or the electronic learning space is too difficult for them.

According to expectancy-valence theory motivation is a product of individual perceptions that their performance will result in a valued outcome. Students engage in learning behavior if they perceive that the outcome is value satisfying and related to their effort (Cross, 1981; Fox & Miner, 1999; Pajares, 1996; Vroom, 1964; Wlodkowski, 1985).

One aspect of influencing expectancy-valence includes making the connections between learner behavior and outcomes. Creating structure that defines requirements combined with providing performance feedback reinforces the link between learner performance and outcomes. This is consistent with concepts of causality and environment stability that ascribe behavior outcome relationship (Bandura, 1993; Weiner, 1979).

The other aspect of expectancy-valence is communicating the value of the learning outcomes. Some students expect the instructor to clarify the outcome value "The professor explaining the course is important. It helps keep me motivated" (20). Others make the valence assessment themselves. "I understand the value of the course before I start the course, so the professor doesn't need to explain it to me" (15). Regardless, value satisfying is an important dynamic of motivation. The instructor can monitor student motivation and determine if there is a need to clarify the value of the course and make the connection between student behaviors and the outcomes. Monitoring motivation to learn is an interaction strategy to support learning.

This framework also suggests that the instructor could also use creating structure to clarify value. For example, the course site could include a brief overview that presents not only the learning objectives but also why those objectives are important and how students will put them into practice. The structure could describe specific learner behavior expectations and draw the connections between performance and outcomes.

Strategies for learning. Shallow and deep processing represent the ends of a learning continuum. Learners engaged in shallow learning tend to focus more on rote memorization and not on content understanding. Typically, they are more interested in just passing the course. For those engaged in deep learning, learning and self-growth are important. They strive to understand and integrate new knowledge into their cognitive structures (Entwistle, 1986; Joughin, 1992).

The data collected for this study include examples of both. It is important to recognize that shallow and deep strategies are learning behaviors not types of learners. Students may engage in deep or shallow learning depending on the situation. Sometimes students just want to pass. Value satisfying is "checking the box" and passing. "For a 'check-the-box course,' I just need to pass. Just give me structure. Tell me what I have to do, when and be done with it" (15). This student expects and wants little quality learner-instructor interaction except for what is absolutely necessary to pass. As she stated, this typically means creating structure and providing performance feedback that says students are meeting the performance objectives.

On the other hand, strategies that promote content understanding or direct them to other resources, if not directly related to just passing, can be frustrating for the student. According to the proposed theoretical framework, the instructor would determine that the

student in this example is engaged in shallow learning behavior and only needs some structure and perhaps some feedback. Of course the instructor can take on the task of attempting to encourage students to engage in deep learning strategies.

Students using deep approaches to learn perceive the task as important to their learning and self-growth, and they are generally interested in the task itself. They strive to integrate new knowledge into their cognitive structures and realize personal growth (Entwistle, 1986; Joughin, 1992). For example, one student observed, "I'm excited about the course; want to learn and understand. I need the professor to help with critical thinking, synthesizing. There is more than is in the book and the professor can bring so much to the learning" (20). For these students, creating structure may be important to help them understand the learning area, but what is most important to them is cognitively engaging in learning. Typically important to these students are strategies of learner-instructor interaction that support learning and promote content understanding. Supporting learning is important because of the need for the instructor to be engaged in their learning, attentive to their learning needs, and responsive. Promoting content understanding is needed to help them cognitively engage the content and integrate it into their internal knowledge structure. Directing learning and providing performance feedback may also play a role in satisfying students' desire for deep learning.

Learners are not necessarily shallow or deep learners, but rather change based on their perception of the value of the content. Therefore, interaction strategies to support learning could vary for the same person with respect to learning level even during the same course. The learner could be engaged in deep learning in one portion of the course and shallow learning in another. Conversely, an equally important implication is the

notion that instructors should promote learning goals over performance goals. Performance goals lead to shallow learning engagement and negatively influences achievement. Learning goals are related to deep learning strategies and lead to positive learner perceived ability and improved achievement (Greene & Miller, 1996). This suggests that instructors should plan supporting learning and teaching interaction strategies that promote learning goals.

Learning and performance orientation. Orientation is another variation taken into account by the proposed framework. Performance-goal students focus on validating competency while learning-goal students focus on improving competency. Both can be valued outcomes (Dweck, 1992). Learners who are performance-oriented tend to be ego-differentiated students who define their success in comparison to how others perform. Learners who are task- or goal-oriented define their success in terms of doing the best they can on each task, not comparing their performance to others (Dweck & Leggett, 1988).

Both types of learners were found in this study. The performance-oriented students were interested in comparing their grades with the class average and explained that being able to do so was motivation enough for them. The majority of the participants appeared to be learning-oriented and motivated more by course mastery and feedback than they were by doing well.

Performance-oriented learners focus on performance with respect to extrinsic measures such as grades, the performance of others, and risk avoidance. For these students, interaction that creates structure may be most appropriate such as posting online grade sheets that allow learners to compare their performance with others. Creating a

private discussion area minimizes risks to student egos. Critical feedback should be done privately. Positive feedback should be constructive and done in public areas. Strategies to promote content understanding should minimize the risk of learner failure. To do otherwise may well alienate the student. Students who are performance-oriented tend to withdraw when faced with the risk of failure.

Learning-oriented students respond to content mastery and learning that is interesting and challenging. They are eager to explore the content and tend towards deep learning. Creating structure that facilitates discussions, synthesis, and critical thinking supports learning-oriented students. This type of learner expects interaction that directs their learning, especially to interesting material; provides feedback that helps them assess their learning progress; and promotes content understanding that focuses on student mastery and cognitive engagement with the content.

Strategies of learner-instructor interaction that support learning for both performance and learning orientations include assessing the learner and determining the appropriate teaching strategies of directing, providing feedback, and promoting understanding.

Learner Characteristics. Learners vary with respect to motivation, self-efficacy, and outcome needs. They also differ in terms of the degree to which they are self-directed learners and possess learning skills and technology skills. Lack of those skills may inhibit learning and, therefore, may require instructor intervention.

Learner-instructor interaction that creates structure can provide tips for learning online, tutorials, and technical support as well as facilitate using the technology to learn. Interactions to support and direct learning can help students learn to learn in the online

environment. One technique suggested by the data is for the instructor to model learning strategies and guide students towards effective learning behavior. Building the course so that content progresses from simple to complex and known to unknown can help promote more self-directed learning. Another important strategy to support learning is to foster learner-learner cooperation. Learning teams can provide support groups, model learning behavior, and help fellow students cope with the new technology.

This research indicates that the keys to ensuring that learner characteristics and other variations do not negatively intervene in the student's online learning is for the instructor to monitor students, understand their learner characteristics, and engage in appropriate interaction strategies that ensure learner success. While that appears simplistic, it reflects the strength of the framework through its potential to accommodate a range of variations in the learning phenomenon. The central phenomenon of the framework is the key to using the framework effectively to respond to any number of variations with the appropriate interaction behaviors. In that sense, the framework is situational and flexible because quality learner-instructor interaction depends, in part, on the conditions and variations of the specific learning situation. This reflects the findings from a recent study that indicates that learner success online does not vary with learner styles but rather with other characteristics such as those discussed here. Creating structure around adult learning theory and sound instructional design is critical to learner success (Aragon, et.al., 2002).

The theoretical framework for quality learner-instructor interaction can be applied to numerous other variations. It is important to recognize that variations are not singularly independent, and learners should not be viewed in a simplistic way. Learner

characteristics, learning models, and motivation are complex concepts and interact in complex ways. The prescriptive and descriptive capacity of this framework will determine ultimately determine its usefulness in practice. The key to the strength of this framework is the instructor's ability to diagnose each learner, determine what interaction strategies each student needs to be successful online, implement those strategies and be there, proactive in the online learning space so as to have the opportunity to aid students.

Adult Learning Models

The literature review included a discussion of the principle adult learning theories. The emergence of distance education concepts has been influenced by the theoretical views of learning. Considering DE practice through the lens of learning theory helps inform that practice (Dillon, 1996). This framework suggests a way to integrate learning theories into the practice of learner-instructor interaction online. The behaviorist theory is based on the premise that learning is manifested by a change in behavior resulting from a stimulus (Merriam and Caffarella, 1999). Cognitive theory stipulates that learning results from a person's perceptions and insights mediating the stimuli-response dynamic. Through perceptions and insights, a person assigns meaning to events (Gagne, 1965). The humanistic theory focuses on individual self-development and the learners' primary responsibility for their own learning. The learning process is centered on the learner's needs and is fostered by a sense of discovery from within the learner (Knowles, 1978; Rogers, 1983). Learning takes place when the outcome is perceived as relevant to the learner and the content itself is valued in its own right (Cravener & Michael, 1997). Social learning theory explains learning as a result of observing others. This observation and subsequent learned behavior takes place in a social setting. The constructivist theory

posits that learning is a process of constructing meaning from experiences. It results in the internal construction of reality by the individual learner (Jonassen, et al., 1995; Merriam & Caffarella, 1999).

A few scenarios demonstrate how the framework may potentially accommodate these theories. Creating structure may be able to provide a stimulus that engenders a response. The learning space can be constructed to promote a behavioral response through repetition. An online course that functions as an electronic programmed instruction course could be an example of a behaviorist approach.

Learner-instructor interaction that supports a cognitivist approach might include creating structure to support building knowledge from known to unknown and simple to complex concepts. Promoting content understanding would include strategies to help students with information processing, generating insights such as by clarifying and elaborating, and helping students organize data within their cognitive schema. Cognitivist strategies to support learning could include helping students learn to learn in the online environment and being active in the students' learning. The cognitivist focus on mental processes means that metacognitive exercises are also useful.

From a humanist perspective, interaction that creates structure would allow self-directed learners to explore the content based upon their needs. Interaction that directs learning would provide learners rich outlets for exploration in terms of resources. Structure and directing learning should foster and support a sense of discovery. Interaction that directs learning also provides goal orientation and clarifies opportunities for success in the humanist context. Supporting learning will also help students

understand the positive consequences of successfully engaging in the learning activity and guide them in becoming effective self-directed learners.

Social learning theory explains learning as a result of observing others. This is thought of in terms of learning vicariously from observations within the environment. Interaction behaviors that provide performance feedback and support learning are the most useful within the social learning model. The focus is on providing encouraging feedback, influencing perceptions of self-efficacy, and providing emotional support. While perhaps difficult, social learning spaces through interaction that creates structure can be developed and provide opportunities for learners to observe behavior. Simulations, demonstrations, case studies, and role-playing may promote vicarious learning and the visualization of consequences.

Constructivist learning presents unique challenges to online learning. Constructivism is based upon building meaning and knowledge from experiences (Jonassen, 1994). This learning approach requires unique strategies to create structure that would support experiential learning. For example, the structure could support constructivist strategies with case studies and problem studies. The key role for the instructor is to facilitate and negotiate the construction of meaning with the learner. This requires learner-instructor interaction strategies to promote understanding such as critical questioning and exploring perplexing alternatives. Directing learning can be extremely useful by guiding learners to challenging, real world scenarios that cognitively engage them. This learning theory, more than any other, requires the instructor to be engaged with learners in building knowledge. Supporting learning could also include fostering student-to-student interaction to promote critical thinking.

Summary

The proposed theoretical framework for quality learner-instructor interaction in online DE takes into account the conditions and variations within the online environment. This discussion has introduced a theoretical framework that offers a new way to think about instructor-learner-interaction and has used the data to offer some potential prescriptions that help the reader evaluate this framework within the context of application in the online environment.

The framework includes the central phenomenon of interaction that supports learning and the interaction that creates the structure or organized learning space in which all interaction takes place. Creating structure provides the infrastructure for and supporting learning provides the linkage for the teaching strategies of interaction that direct learning, provide performance feedback, and promote content understanding.

According to the framework, the central feature of quality interaction online is the purposeful planning of learner-instructor interaction. While purposeful, planning must be flexible. The framework includes interaction that is responsive supports learning. Quality learner-instructor interaction online is dependent upon the instructor's ability to diagnose the learner needs, determine what interaction strategies each student needs to be successful online, and implement those strategies. This requires that the instructor have a toolbox of strategies for learner-instructor interaction as represented in this framework. Furthermore, the instructor must plan how to create structure, support learning, attend to and be responsive to learner needs, and promote their success in the online environment.

Finally, this is a multi-linkage framework; the functions of the framework do not operate independently. While they have been explored separately to understand each

function better, they are inextricable integrated. The framework suggests that interrelationships exist among the functions, and therefore it is difficult to plan for or engage in one without at least considering other functions of the framework. Even if the instructor attempts to engage in only one function of interaction, it is likely that other functions will be part of his or her interaction behavior.

Chapter 7

Summary and Implications

Learner-instructor interaction is recognized as important to learning. Effective interaction between the learner and the instructor is crucial to student performance and motivation (Chen, 1997; Garrison, 1990; Gunawardena, 1992; Keegan, 1990; LaRosa and Whitten, 2000). The literature suggests differences between the learning environment in a traditional classroom and in online DE (Bullen, 1998; Hillman, et al, 1996; Keagan, 1995; Moore & Kearsley, 1996). However, little is known about the phenomenon of learning in electronic space or what constitutes effective interaction (Harasim, 1990; Hara & Kling, 2000). Learner-instructor interaction is at the heart of the learning process, but little is known about the dynamics of that phenomenon in the online environment (Althaus, 1997; Hiltz, 1995;).

The void in the literature with respect to learner-instructor interaction in the online environment led to this research effort. Grounded theory, a research methodology designed to fill theoretical voids by the generation of theory related to the context of the phenomenon (Strauss and Corbin, 1990), was used to develop the proposed theoretical framework for quality learner-instructor interaction in online DE. The goal was to provide new ways to study and implement the phenomenon of learner-instructor interaction.

A New Perspective of Learner-Instructor Interaction

The framework developed through this study consists of dynamic interrelationships among five functions of learner-instructor interaction: directing learning, providing performance feedback, promoting content understanding, creating

structure and supporting learning. It is a multi-linkage framework that is flexible and powerful enough to reflect the central phenomenon generated from the data. The multi-linkage characteristic of this framework refers to how the functions are interrelated in such a way that they can be linked in various ways to create learner-instructor interaction specifically tailored to a student's learning needs. Matching learner-instructor interaction strategies to the specific needs of the learner necessitates a multi-linkage framework that accounts for the range of conditions and variations associated with online learning.

The current view of learner-instructor interaction is naïve. It reflects a simplistic approach to what the data show is a complex phenomenon. The current literature and practice tend to approach learner-instructor interaction as one-dimensional, balancing structure against dialogue (Moore & Kearsley, 1996; Saba, 2000). Some scholars argue that there is a tension between structure, dialogue, and learner autonomy (Kanuka, Collett, & Caswell, 2002). The findings of this study contradict that proposition and indicate that there is a positive synergism between structure and dialogue. This study finds that structure and dialogue, define in new ways, are interrelated and are both critical factors of quality interaction online.

Practitioners tend to think linearly about learner-learner, learner–content, and learner-instructor forms of interaction. The theoretical framework of quality learner-instructor interaction emerging from this study does not refute current thinking. Rather, it offers an evolution of that research by proposing a framework for learner-instructor interaction where there was none before.

The data suggest that quality learner-instructor interaction is really an multi-dimensional phenomenon and structure and dialogue are not dichotomous as some

theorists imply (Moore & Kearsley, 1996; Saba, 2000). The forms of interaction are not linear, nor is quality interaction simply a matter of engaging in interaction. Rather it is a complex set of instructor behaviors defined by the functions within the framework and it is dependent upon the wide range of conditions of the online environment. This theoretical framework introduces a descriptive and prescriptive view that addresses the complexity of leaner-instructor interaction.

Structure, as discussed in the current literature, holds up in this new framework. The data support the existing concept that course structure builds the virtual learning space consisting of elements such as learning objectives, content, assignments, projects, due dates, and administrative details. The data from this study's data confirm, as suggested by the current literature, that structure helps guide students around the virtual learning space and through the course requirements. The framework proposed here does depart from the current literature in suggesting that structure must be purposefully designed to support and facilitate the other functions of quality learner-instructor interaction. Structure is not, as current theory suggests, independent of dialogue. It is interrelated with the other four functions of the framework for quality learner-instructor interaction.

The other functions in the proposed framework are represented in the current literature as "dialogue." It is here that the framework departs from current understanding of interaction in two significant ways. First, the relationship of structure and dialogue is generally thought of as inversely proportional. More structure means less dialogue and vise versa. However in practice, there is an interrelationship between structure and dialogue. Dialogue can provide structure, and, more important, structure supports

dialogue. Second, the data illustrate the complexity of dialogue and the need to think of it in new and more useful ways. The findings of this study suggest that dialogue should be operationalized as directing learning, providing performance feedback, and promoting content understanding. These functions integrate learner-learner interaction and learner-content interaction through learner-instructor interaction. The data do not suggest a linear relationship among these forms but rather dynamic interrelationships among the functions with a holistic view of quality learner-instructor interaction as represented by this theoretical framework.

This dynamic of interrelationships presents another major element of the framework. Central to all interactions is learner-instructor interaction. That interaction gives rise to and facilitates learner-learner and learner-content interactions. Quality learner-instructor interaction is the core element necessary for learner success in the online environment. The key to the effective use of this framework is an instructor who has the skill set needed to manage its complexity. Clearly, as the literature suggests, instructors should focus on providing the dynamics for an effective online learning environment rather than on replicating the dynamics of the traditional classroom (Bullen, 1998; Moore & Kearsley, 1996). To do so requires special instructor skills not often discussed in the current research.

The required skill set has three primary components. First, instructors have to possess keen diagnostic skills. They must be able to assess learner characteristics, skills, needs, and progress – all at a distance mediated by the single dimension of electronic technology. This diagnosis provides the instructor with the assessment necessary to determine what blend of learner-instructor interaction strategies the learner needs in order

to be successful in the online environment. That is no small task, but it is only part of the skill set.

Second, instructors must have the skills to select and engage effectively in the interaction strategies that are indicated by the assessment. They need to recognize and use the many linkages of the framework, engaging in interaction behaviors that best support the learner's success online. Instructors must be practiced at integrating the interaction behaviors of the functions. It is important that they understand the utility of creating structure and supporting learning and how these are interrelated with the teaching strategies of directing learning, providing feedback, and promoting understanding.

Finally, instructors must be able to communicate. What is unique about the preponderance of online delivery is that the interaction takes the form of the written word. The data were overwhelming in this area. Instructors must be able to implement all five functions of learner-instructor interaction by communicating through written text. Instructors' writing must be clear, concise, on target, timely, and personable. Instructors may have good diagnostic skills and the ability to identify the most appropriate interaction strategies, but all is for naught if they can't implement those strategies effectively in writing that is mediated by electronic technology.

An instructor armed with these three skills can use this framework effectively to match strategies of learner-instructor interaction to the specific needs of the learner. Equally important, and a departure from current thinking, this theoretical framework helps focus and facilitate these instructor skills. The framework prescribes how the instructor can diagnose learner performance at a distance and engage in the appropriate

interaction strategies. This framework posits a new view that instructors must recognize and respond to the differing needs of different learners by varying the blend of creating structure, supporting learning, and the using teaching strategies from learner to learner. What is often ignored in current practice is that a student's need for learner-instructor interaction varies even within the same course. For example, within a course, a student may find some concepts easy and some difficult. Self-efficacy may wane and wax. The student may have a personal interest in an aspect of the course that requires a different approach to interaction. All of these varying conditions may require a different blend of interaction strategies. The complex interaction of learner characteristics and conditions requires situational interaction, matching strategies of learner-instructor interaction to the specific needs of the learner.

It is this situational characteristic of the framework that affords a more comprehensive explanation of the complexities of learner-instructor interaction than current distance education literature suggests. It guides the practitioner to think of and respond to the myriad of conditions and variations of online teaching and learning that dictate different learner-instructor interaction. The theoretical framework for interaction is based on the perceptions of students in online DE with varying situational variables. Chapters 4 and 5 explored each category of the framework and their properties individually; however, it is clear from the data that quality learner-instructor interaction reflects the interrelationships among those functions. Effective instructors continually monitor (first skill) the effectiveness of their interaction strategies and adjust (second skill) the blend of strategies based on the performance and success of each student.

Quality learner-instructor interaction online is framed and by and judged against learner success.

This situational characteristic of the framework also introduces the concept that instructors should be able to approach teaching from a variety of adult learning orientations. A cognitivist approach may be best suited in one situation while a humanist or constructivist might be more appropriate in another. This framework causes us to consider a dynamic approach to teaching.

This discussion has advanced the premise that the framework emerging from the data challenges us to look at learner-instructor interaction in the online environment in new ways. There is an observation about professor approaches to teaching that, while not specifically related to the generation of this new framework for interaction, is notable. It deserves a brief mention because of the potential implications for related research.

It was interesting, but perhaps not surprising, that faculty generally approach online teaching as they approach traditional teaching. They appear to be captive to their own experiences. While not always the case, most tried to fit their traditional teaching strategies into online DE despite the constraints imposed by the technology rather than adjust their teaching to take advantage of the technology. Their experiences in the traditional classroom may blind them to the possibilities of what might be accomplished online. Although there were some exceptions, generally they did not think purposefully about how to take advantage of the technology to support interaction strategies. The literature suggests that practitioners should think about teaching with technology in ways different from when teaching in the traditional classroom (Moore and Kearsely, 1996). However, this appears not to be the case in practice.

For many instructors, what they do in the classroom has become almost second nature. They do not have to think consciously about their teaching strategies or purposefully about learner-instructor interaction and how it affects learning. Many do not think of the interrelated nature of interaction strategies, which with thoughtful planning results in powerful synergism aimed at promoting learning. Many approach each type of leaner-instructor interaction as a discrete strategy. This practice is consistent with the current literature but not with the findings of this study. As an example, an instructor might engage in summarizing to help promote content understanding but typically won't think about how creating structure, supporting learning, and the other functions of interaction are related and can be integrated into a blended approach to promote understanding.

Instructors need a new perspective to guide them in the effective use of media to enhance learning in order to modify current techniques or adopt new ones that are effective in the technology-meditated learning space. That means that instructors must approach interaction from a different perspective than current research and practice offer. This framework offers that new perspective.

Implications for Further Research

The implications of this research and the proposed framework for learner-instructor interaction in online DE are significant. The framework suggests a new way to think about the phenomenon of interaction. It does not offer a template, but rather a schema that helps guide both the development of online courses and the practice of online teaching. The properties of each function of interaction help operationalize what heretofore have been general functions of interaction. The functions and properties of the

framework translate vague descriptions of interaction, such as "communicate," "student-to-content," "dialogue," "teach," and "enhance student performance," into specific instructor behaviors. This theoretical framework focuses on perceived learner success in the online environment. The research sample represented a diversity of online conditions and variations so that the framework has potential validity in a wide variety of online situations and may be generalizable beyond the specific courses included in this study.

Clearly there are significant implications for further research, the primary focus of which is validating this study and testing the descriptive and prescriptive power of this framework. Empirical tests should be conducted to explore the relationships among the functions of the framework and between the framework and measured learning performance. Learner-instructor interaction guided by the framework and common current practices should be compared with empirical control group studies that assess content understanding before and after treatment. The relationship between quality learner-instructor interaction as defined in this framework and student self-efficacy should be tested in similar ways.

Quality learner-instructor interaction in the online environment is defined by the functions of the framework. Those functions should be isolated and tested against various consequences such as performance and self-efficacy. Additionally, an analysis should be conducted to determine the predictive power of each.

The literature provides little research in instructor skills required in the online environment. The skills of diagnosing learner characteristics and performance, selecting and blending interaction strategies, and interacting through the electronic medium need to

be quantified and tested. This research provides some hints into that skill set and the specific behaviors associated with it. However, more is needed to understand those skills Future research should validate the instructor skill sets needed to promote online learning and test the relationships between those skills and student learning online. Such research will have potential implications for instructor training, development, and support.

The following represents future research activities in this area:

1. Develop operational definitions for the functions and develop instruments to measure the constructs that represent each function.
2. Test the reliability and predictive validity of the instruments.
3. Examine causal relationships between the framework functions and learner performance.
4. Develop and test learner-instructor interaction treatments to assess impact upon learner performance in online courses.

Summary

Using a grounded theory methodology, this research project undertook to define quality learner-instructor interaction in the online environment and to explore its consequences. The research generated a theory that fills a void in the current research by defining quality learner-instructor interaction in the online environment. The literature resoundingly argues the importance of learner-instructor interaction but offers little that either promotes an understanding of that phenomenon or provides a prescriptive explanation of interaction.

This study's findings propose a theoretical framework for quality learner-instructor interaction and fill the void in the current literature. It suggests a new way to

think about dialogue and the relationship of dialogue and structure. This study finds that the phenomenon of learner-instructor interaction is more complex than reflected in the literature. The power of this framework accommodates the different conditions and challenges of the online environment and the intervening variables such as learner characteristics. No longer should the instructor think of interaction as discrete behaviors such as providing feedback or explaining a concept. Rather, effective interaction is dependent on the framework's central phenomenon, the instructors' ability to diagnose and monitor learner performance (supporting learning) and implementing appropriate teaching strategies. The learner-instructor interaction is dynamic and changes in response to learner needs and performance throughout the course. Online teaching also requires that the instructor understand the function of creating structure and how the learning space fosters or inhibits the other functions of learner-instructor interaction.

This framework proposes a new and potentially powerful theoretical perspective of quality learner-instructor interaction in the online environment. It implies that teaching online is a challenge and may require more effort than teaching in the traditional classroom. The task now is to test the functions and relationships of this framework for quality learner-instructor interaction in the online environment.

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Appendix A
Interview Guide

Focus: What is learner-instructor interaction

Main: What does learner-instructor interaction mean to you?

Follow-up:
1. How would you describe interaction?
2. Can you give examples of interaction?
3. Are and how are these interaction behaviors important to you?

Probing:
1. Please tell me more about... as an interaction strategy
2. Is there contact with the instructor that you don't consider interaction?

Focus: The value of interaction

Main: Why is interaction important to your learning?

Follow-up:
1. What impacts your learning success in online DE?
2. Does interaction play a part in ....(from response in 1.)
3. Can you describe in what ways interaction impacts your learning?

Probing:
1. Can interaction make you feel part of the class and connected?
2. Are the things we've talked about important to your learning and success?
3. What forms of interaction are not important to you or inhibits your learning?
4. Can you succeed in online DE without learner-instructor interaction?
5. Do you expect the instructor to clarify the value of the course and benefits to you?

Focus: Interaction that works

Main: What constitutes quality or effective interaction for you?

Follow-up:
1. What learner-instructor interaction was especially gratifying to you? Impactful?
2. What changed in your learning or attitude towards learning as a result of interaction?
3. Do your interaction expectations/needs vary with course content?

Probing:

1. How do instructor skills make a difference in quality interaction?
2. What does it mean when interaction is effective in online DE?

Focus: Interaction in online DE

Main: Is learner-instructor interaction in online DE different than in the traditional classroom?

Follow-up:

1. What is different in online DE that impacts interaction?
2. Where in online DE do you need the most help in learning?
3. How has/can interaction help your learning in online DE?

Probing:

1. Are there differences between learner-instructor interaction online and in the traditional classroom?
2. What do you dislike most about learning online?
3. Can interaction address those dislikes?