Assessing Quality Dimensions and Elements of Online Learning Enacted in a Higher Education Setting

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DEDICATION

To my husband, Mark B. Hickey. Thank you for sharing this life with me.

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ABSTRACT

ASSESSING QUALITY DIMENSIONS AND ELEMENTS OF ONLINE LEARNING ENACTED IN A HIGHER EDUCATION SETTING

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George Mason University, 2009

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This study described how online learning is enacted in a university setting by addressing what university students reported about their perceptions of the quality of their learning in online environments and what university students reported about the ways in which online learning experiences were enacted across a large university. Using literature related to theories of teaching and learning as well as research-based elements of online design, a theory of online learning quality was developed that included six dimensions of quality interactions (instructor-learner, learner-learner, learner-content, learner-instructional strategies, learner-interface, and social presence) A questionnaire to assess the quality of online courses from students' perceptions was created using the theory of online learning quality as a framework. The questionnaire was administered to undergraduate and graduate, full and part time students enrolled in online courses in the Fall 2008 semester at large, comprehensive university located in the metropolitan area of Washington, D.C.

Six questions focused this study:

1. What do university students report about the quality of online courses?

2. What do university students report about the frequency with which certain quality elements are used in online courses?

3. Is there a difference in university students' rating of overall online course quality by academic unit, academic load, and academic status?

4. Is there a difference in university students' rating of overall quality in each dimension (instructor-learner, learner-learner, learner-content, learner instructional strategies, learner-interface, and social presence) by academic division, academic load, and academic status?

5. Which quality dimensions contribute to university students' perceptions of overall online course quality?

6. Which quality elements contribute to university students' overall perceptions of quality for instructor-learner interactions, learner-learner interactions, learner-content interactions, learner-interface interactions, learner-instructional strategies interactions, and social presence?

Data were analyzed descriptively and statistically. Students' reports about the quality of online courses and the frequency with which quality elements were used were analyzed descriptively. Several hypotheses were formulated and analyzed using ANOVAs and *t*-tests to determine if differences in students' overall ratings of course quality and dimension quality existed. Multivariable regression analyses were used to

determine which dimensions contributed to overall online course quality ratings and which quality elements contributed to overall dimension quality ratings.

Data analyses showed that overall online course quality at the University was highly rated by students. Differences existed between the academic divisions for overall course quality rating, for learner-learner interactions, and for social presence. Several commonalities and distinctions were identified between academic divisions regarding overall course quality, dimension quality, and the frequency with which elements of quality were used in online courses. A difference also existed between undergraduates and graduates for overall quality of social presence ratings. Learner-content, learner-instructional strategies, and learner-interface interactions were identified as contributors to students' perceptions of overall online course quality. Several design elements were identified as contributors to overall quality for instructor-learner interactions, learner-content interactions, learner-instructional strategies interactions, learner-interface interactions, and social presence. There were no learner-learner elements identified as contributors to overall quality of learner-learner interactions.

Findings from this study provided the basis for several recommendations regarding the design of online learning environments and further research. In addition, a portrait of online learning at the University was crafted from the findings on students' perceptions of overall course quality, overall quality pertaining to each dimension of interaction, and the frequency elements were used in the design of online courses.

1. Introduction

Introduction

Online learning is no longer a trend in higher education. Allen and Seaman (2007) report that two thirds of 2,500 higher education institutions surveyed are offering some form of online learning. Three and a half million students enrolled in at least one online course in the fall term of 2006. In addition, administrators from these institutions believe online course enrollments will continue to increase, creating the need for online learning as a critical consideration in long term strategies. With the promotion of online learning from more than two dozen state-run virtual high schools (Tucker, 2007), students are entering postsecondary institutions with an expectation that online learning will be available to them. These digital natives, the first generation to grow up with the new technologies (Prensky, 2001), "will continue to demand that more learning be delivered asynchronously via whatever electronic telecommunications device they have handy" (The Society for College and University Planning, 2007, p. 7).

Online learning offers stakeholders such as institutional administration, instructional faculty, and students many affordances, making online education an attractive learning option. At the institutional level, online learning is seen as a means to improve student access, increase growth in continuing and professional education, increase the rate of degree completion, improve student retention, enhance the reputation

of the institution, and even to provide pedagogic improvements (Allen & Seaman, 2007). Even though administrators do not see online offerings as a way to lower costs (Allen & Seaman, 2007), online learning is impacting the revenue side of institutional budgets.

For instructional faculty, online learning offers opportunities for innovation and flexibility. With an understanding of pedagogical constructs, learning strategies, and the technology tools available to support learning, faculty can invent new ways to promote meaningful learning experiences. According to the Society for College and University Planning (2007), online learning can be viewed as "one of the few relatively unrestricted avenues for innovation in teaching and learning" (p. 7). Because online learning distributes class activities across time and place as well as providing access to various media, faculty have the advantage of flexible scheduling, working from other geographical locations, and a vast choice of online resources and media to support their online teaching.

The benefits that drive students to choose online options are convenience, flexibility, affordability, and the possibility of accelerating degree completion. Allen, Seaman, and Garrett (2007) report that the majority of online students are undergraduates, but online learning also benefits non-traditional students - those with interest in continuing or professional education - by providing postsecondary education without the constraints of traditional course schedules and commutes to campus.

A key benefit of online learning is its potential to provide a highly interactive, social, and meaningful learning experience for students (Levine & Sun, 2003). The tools of online learning afford instructional events and activities not possible in traditional face

to face instruction (Dabbagh & Schmitt, 1998; Perold & Maree, 2003). It is these pedagogic improvements that administrators in higher education hope to achieve. However, concerns with quality may be a barrier to this achievement.

Hergert (2003) reported that students enrolled in a new online management course were skeptical about the quality of the online course. The research community has concerns as well. Herrington, Reeves, & Oliver (2005) suggest that many online learning environments are simply frameworks to impart inert knowledge rather than to support meaningful learning and active use of knowledge. Also, in many cases, online learning environments are simply replications of traditional face to face courses (Cox, 2005; Twigg, 2001a).

Concerns about quality and less than robust learning experiences as well as challenges with adopting new learning strategies may account for low student retention rates. While no national statistic exists on online retention rates, anecdotal information from community colleges and four- year institutions reveal that student retention rates in online courses are lower than in the traditional face to face counterparts (Carr, 2000; Doherty, 2006). Given these challenges, higher education cannot progress towards improvements in online environments without an overall portrait of the ways in which online learning is being implemented and the attributes of online environments which impact students' perceptions of the quality of their learning.

Background of the Problem

Online Learning in Higher Education

Distance education is a well-established concept with modern roots planted over 150 years ago. Early correspondence courses and education programs relied on print media and mailing services, telephone, radio, and television. Design of these environments was developed to prepare students for the industrial society of the 19th and 20th centuries and, therefore, followed teacher-centered knowledge transmissions models through the perspective of objectivism (Norton & Wiburg, 2003), an epistemological belief that there is one true and correct reality, and instruction is designed to effectively transfer objective knowledge to the learner (Vrasidas, 2000). More recently, the definition of distance education has been refined as technology innovations have redefined these learning environments (Maguire, 2005). Simonson, Smaldino, Albright, and Zracek (2006) define distance education as institution-based formal education where the learning group is separated and when interactive telecommunications systems are used to connect learners, resources, and instructors.

The emergence of new technology tools, learning theories, and designs available to higher education have the potential to impact learning as the affordances of new tools and designs can lead to different expressions of teaching and learning. These innovations have the potential to shift models grounded in objectivist principles to models grounded in constructivist principles, an epistemological belief that knowledge is constructed by the learner and does not exist independent of the learner (Vrasidas, 2000). Technology innovations have also set in motion a shift from mass production and mass consumption

to a greater focus on local and individual needs (Rumble, 2001). Technology based learning environments also have the potential to support the development of 21st century skills and to meet the educational needs of higher education students such as problem solving, critical thinking, collaborating, creative designing, and knowledge about how new technology innovations are used to promote these skills (Pink, 2006; Toffler, 2006).

Dabbagh and Bannan-Ritland (2005) define online learning as "an open and distributed learning environment that uses pedagogical tools enabled by the Internet and Web-based technologies to facilitate learning and knowledge building through meaningful action and interaction" (p. 15). The researchers list the following characteristics of online learning:

1. Globalization and learning as a social process are inherent and enabled through telecommunications technology.
2. The concept of learning group is fundamental to achieving and sustaining learning.
3. The concept of distance is relatively unimportant or blurred and is not limited to the physical separation of the learner and the instructor.
4. Teaching and learning events (or course events) are distributed across time and place, occurring synchronously and/or asynchronously through different media.
5. Learners are engaged in multiple forms of interaction: learner-learner, learner-group, learner-content, and learner-instructors.

6. Internet and/or Web-based technologies are used to support the teaching and learning process and to facilitate learning and knowledge building through meaningful action and interaction (p. 16).

Therefore, an online learning design model is constructed through the integration of pedagogical models, instructional strategies, and learning technologies (Dabbagh & Bannan-Ritland, 2005) in order to provide a meaningful learning experience.

From definition to practice, an online learning design model can be delivered in many forms. Delivery modes currently used in higher education range from web-enhanced models in which a small proportion of course materials are posted online to hybrid or blended models in which a substantial proportion of course content is delivered online to Web-only courses in which most or all content is delivered online. In higher education, web-only courses are most prevalent (Allen et al., 2007) with hybrid forms of delivery becoming a growing trend (D'Onofrio & Bowes, 2007). These delivery modes are enabled by web pages or course management systems (CMSs). In addition to the pedagogical models, the instructional models, and the learning technologies, the delivery mode of online learning designs is another component in the online learning experience.

Meaningful Online Learning Experiences

Explicit in the definition of online learning is the focus on design and the intentional merging of pedagogical models, instructional strategies, learning tools, design/delivery model, and delivery mode to provide meaningful action and interaction and ultimately a meaningful learning experience. The literature on qualities for meaningful learning favors teaching conceptions that promote learner-centered

approaches based on the philosophy of constructivism (Chickering & Gamson, 1987; Jonassen, 1995; Jones, Valdez, Nowakowski, & Rasmussen, 1994; Ruokamo & Pohjolainen, 1998).

The framework for effective design of online learning environments offered by Jonassen (1995) aligns with learner-centered approaches advocated in the literature and with the definition of online learning. Jonassen (1995) identified seven qualities of meaningful learning. These qualities should structure learning so that it is

1. Active- Learners are engaged, information is mindfully processed, responsible for learning
2. Constructive- Learners incorporate new meanings into prior knowledge to construct new knowledge
3. Collaborative- Learners work in learning and knowledge building communities
4. Intentional- Learners are actively and purposefully working towards cognitive objectives
5. Conversational- Learners are engaged in social and dialogic processes as members of a knowledge building community.
6. Contextualized- Learners are engaged in tasks that are meaningful and situated in real world contexts in order to apply newly constructed knowledge.
7. Reflective- Learners articulate, reflect, and evaluate what they have learned.

The qualities of meaningful learning developed in the literature can serve as frameworks for designing, implementing, and evaluating online designs (Bonk & Cummings, 1998; Rinta-Filppula & Korhonen, 2000). Each quality for meaningful

learning is realized through careful choice of pedagogical model, instructional strategies, learning technologies, and delivery mode. Factors that influence choices made within these categories include the epistemological stance and teaching conception of the designer/instructor (Kember & Kwan, 2002) and the ability of the designer/instructor to appropriately apply the learning technologies.

By nature, online learning environments align well with pedagogical constructs and instructional and learning strategies grounded in constructivist perspectives (Dabbagh, 2005). While academic learning has shifted towards a constructivist philosophy, academic practice faces obstacles in the shift often creating tension in the production and implementation of meaningful online learning. Nunes and McPherson (2003) outline the realities of higher education practices which hinder the use of online designs grounded in pure constructivist philosophy:

- Semester divisions of academic life
- Uniformity of standards and curricula
- Processes of assessment and student monitoring
- Adherence to institutional and national policies
- Balance of time between teaching and researching
- Use of lecturers with little or no formal education in teaching and learning

As a consequence of these hindrances, the tradition in higher education is to continue to design and deliver face to face instruction from a teacher-centered approach (Nunes & McPherson, 2003; Twigg, 1994). This tradition has been upheld in some online learning designs in the form of direct translation of face to face designs into online

learning designs. Nunes and McPherson (2003) stated, “If the pedagogical component of the design is not consciously considered and planned, the designer tends to incorporate his/her own model of learning into the environment, which may be inappropriate or inadequate for the learning activities planned” (p. 496). Yet, as Young (2006) stated, “The online environment is similar to the traditional environment in many ways, yet shows important differences such as the changing roles of students and instructors” (p. 66), and thus, pedagogical plans are required to address these differences.

The literature is clear that learner-center approaches in online design and delivery take more time and effort for both faculty and students (Cavanaugh, 2005*;* Hughes, Wickersham, Ryan-Jones, & Smith, 2002; Rajandran, 2003; Wiesenberg & Hutton, 1996). Therefore, designs that integrate perspectives across the continuum between objectivism and constructivism may be beneficial to both faculty and learners “because constructivist instructional design has the strength to result in meaningful learning whereas objectivist instructional design has the advantage to produce efficient learning” (Chen, 2007, p. 83). A small body of literature endorses the value and necessity of using integrative approaches in online learning design which span the continuum between teacher-centered and learner-centered approaches (Chen, 2007; Cuthrell & Lyon, 2007; Nunes & McPherson, 2003; Vrasidas, 2000). An integrative perspective provides a balanced approach which, in some cases, more closely aligns with student preferences (Cuthrell & Lyon, 2007) and allows faculty to work within organizational and educational constraints of higher education while promoting meaningful learning.

Quality

Defining quality of learning is problematic in higher education regardless of the delivery mode of instruction. The meaning of quality changes depending on the perspective of the stakeholder whether it is an accreditation body, the administrators of the institution, faculty, or students. This wide range of stakeholders makes it difficult to achieve consensus on what constitutes quality. While several organizations concerned with distance education and accreditation have developed guidelines, principles for good distance education, best practices, and benchmarks (AFT, 2000; ADEC, 2003; CHEA, 2002; IHEP, 1998; ITC, 2000; WCET, 1997), there is substantial criticism surrounding the use of guidelines and best practices to measure quality. One concern centers on the inherent lack of actual measurement tools needed to conduct quality assessment (Scanlan, 2003). Another criticism focuses on the role each organization and accreditation agency's own agendas, interests, and area of expertise are reflected in their standards (Meyer, 2000).

Quality inventories and rubrics have been developed by individual institutions and faculty (Choy, Dong, Wang, 2004; Herrington, Herrington, Oliver, Stoney, & Willis, 2001). While these assessment tools provide indicators of quality that align closely with frameworks of meaningful learning, they are biased towards an individual faculty or institution's perspective and biased towards one epistemological view.

Benchmarks as measures to assess quality have been criticized. Twigg (2001b) expressed concern that the benchmarks created by the Institute for Higher Education Policy (IHEP) are derived from traditional face to face instructional principles. Therefore,

important elements which promote quality online learning environments have been omitted (Novak, 2002). Although the benchmarks allow for institutions to compare online programs based on certain criteria, they do little to inform institutions on what elements are necessary for improvement (Bers, 2006). Meyer (2002) suggests that each institution use these guidelines and benchmarks as resources to develop their own quality measures to fit their own needs.

Meyer (2002) recommends that when defining quality the predominant focus should be on student learning in conjunction with the variables that contribute to learning. This notion of quality learning results in a focus on interactions between student and faculty, student and peers, interactions between student and content, multiple paths to learning, attention to students' learning styles, inclusion of experiences that lead students to construct and reflect on meaning, and opportunities for students to experiment with their understandings in new situations (Meyer, 2002). A significant body of research on students' perceptions about their online learning experiences supports these variables as elements which contribute to learning in online environments.

Interaction is an essential element in online learning environments and is considered on four levels: learner-instructor, learner-learner, learner-content, and learner-interface (Hillman, Willis, & Gunawardena, 1994; Moore, 1989). The importance of interaction in successful online learning experiences from the perspective of students is well-established in the literature.

- Elements of learner-instructor interactions found to influence students' perceptions about their learning include teaching presence, instructor's value

of online discussion, quality and timeliness of feedback, and the quality and quantity of interactions (Dennen, Darabi, & Smith,2007; Jiang & Ting, 2000; Hara & Kling, 2000; Kashy, Albertelli, Bauer, Kashy, & Thoennessen, 2003; Northrup, 2002; Pawan, Paulas, Yalcin, & Chang, 2003; Picciano, 2002; Riccomini, 2002; Shea, Pickett, & Pelz, 2003; Swan, 2001; Vonderwell, 2003).

- Elements of learner-learner interactions include the quality and quantity of postings in online discussions, and vicarious interactions (Jiang & Ting, 2000; McLoughlin & Luca, 2001; Liu, Magjuka, Bonk, & Lee 2006; Picciano, 2002; Rovai & Barnum, 2003)
- Elements of learner-content interactions include cognitive presence, multiple perspectives, reflection, and use of resources and multiple pathways (Garrison & Cleveland-Innes, 2005; Pawan et al., 2003; Pena-Shaff, Altman, & Stephenson, 2005; Picciano, 2002; Song, 2004).
- Elements of learner- interface interactions include students' prior experience with computers, computer skills, access to computers, course design factors such as consistency, organization, and site navigation contribute to student learning (Lebec & Luft, 2007; Song & Kidd, 2005; Swan, 2002; Vonderwell & Zachariah, 2005).

In addition to the indicators of quality that pertain to interactions in an online environment, another dimension of quality elements found in the literature focuses on the instructional strategies used in online courses. This feature includes, but is not limited to,

the use of authentic tasks (Herrington, 2006; McLoughlin & Luca, 2002; Norton, 2003), role-playing (Bender, 2005; Lebaron & Miller, 2005), games and simulations (Johnson & Aragon, 2003), problem-based learning (Dabbagh & Bannan-Ritland, 2005), and reflective activities (Garrison & Cleveland-Innes, 2005).

Finally, social presence is commonly discussed in the literature as a necessary consideration for promoting successful and meaningful online learning experiences. Gunawardena and Zittle (1997) define social presence as "the degree to which a person is perceived as a 'real person' in mediated communication" (p. 9). Indicators of quality focus on online design features that promote social presence such as providing student profiles, adding welcome messages at the onset of a course, and providing activities that build community and trust (Aragon, 2003, Rovai, 2002; Volet &Wosnitza, 2004; Wickersham, Espinoza, & Davis, 2007).

The indicators for quality in online learning environments are evident in the literature and are grounded in learning theories that span the continuum from objectivist to constructivist principles. Furthermore, the value of these indicators has been determined through research on students' perceptions about their learning when these indicators are present or absent. However, the extent to which these quality elements are implemented across a higher education setting and students' perceptions of their validity as guides for the design of quality online learning experiences remains unknown.

Statement of the Problem

As online learning establishes roots in the mainstream of higher education, consideration for the quality of student learning in these environments becomes of

increasing concern. Students are not entirely convinced that online environments provide the same quality learning experiences as their face to face counterparts. Skepticism exists in the educational field as well (Institute for Higher Education Policy, 1999). Twigg (2001b) attributes part of the problem to the lack of consensus on what constitutes quality online learning among a host of stakeholders. There are numerous studies on how online courses should be designed and the identification of key elements for effective online learning experience. However, little research exists on the actual practice of implementing quality elements in higher education and the impact of these elements on students' perceptions about the quality of their online learning experiences.

If online learning is to rise to the level of its promise, it is necessary to explore what kinds of online learning experiences university students are having and what they believe about all quality of those experiences. This study was designed to examine these variables, specifically addressing what university students reported about their perceptions of the quality of their learning in online environments, and what university students reported about the ways in which online learning experiences were enacted across a large university.

Research Questions

Six research questions focus this study:

1. What do University students report about the quality of online courses?
2. What do University students report about the frequency with which certain quality elements are used in online courses?

3. Is there a difference in University students' rating of overall online course quality by academic unit, academic load, and by academic status?

4. Is there a difference in University students' rating of overall quality in each dimension (instructor-learner, learner-learner, learner-content, learner instructional strategies, learner-interface, social presence) by academic division, academic load, and by academic status?

5. Which quality dimensions contribute to University students' perceptions of overall online course quality?

6. Which quality elements contribute to University students' overall perceptions of quality for instructor-learner interactions, learner-learner interactions, learner-content interactions, learner-interface interactions, learner-instructional strategies interactions, and social presence?

Conceptual Framework

Dabbagh and Bannan-Ritland (2005) define online learning as "an open and distributed learning environment that uses pedagogical tools, enabled by the Internet and Web-based technologies to facilitate learning and knowledge building through meaningful action and interaction" (p. 15). This definition outlines the components of an online learning design formed though the integration of pedagogical models, instructional strategies, and learning technologies to achieve meaningful learning. Meaningful learning is a deep understanding of complex ideas that are relevant in students' lives (Project Time, 2002). Jonassen (1995) describes the attributes of meaningful learning as active, constructive, collaborative, intentional, conversational, contextualized, and reflective.

Therefore, this study is framed by the pedagogical models, instructional strategies, the learning technologies used in online learning environments, and the point of intersection where meaningful learning occurs.

The literature identifies elements of quality in pedagogical models that contribute to learning in online environments from various epistemological stances. Likewise, elements of quality in instructional strategies are reported in the literature from both teacher-centered and learner-centered approaches. This study considers the quality elements which span the continuum from an objectivist perspective to a constructivist perspective, from a teacher-centered approach to a learner-centered approach.

Figure 1 illustrates a model of the concepts framing this study. Pedagogical models, instructional strategies, learning technologies, and delivery mode merge together as meaningful learning. Faculty as designers and instructors of online learning environments are influenced by their own epistemological views, their experience with and knowledge about online learning environments, time constraints, and tool constraints. Students' perceptions about the quality of their learning are influenced by interactions afforded by online features as well as their prior online experiences, beliefs about online learning, learning preference, technical skills, and learning skills. In this study, students' perceptions of the quality of their online learning experience are examined through their interactions with instructors and the course design/delivery.

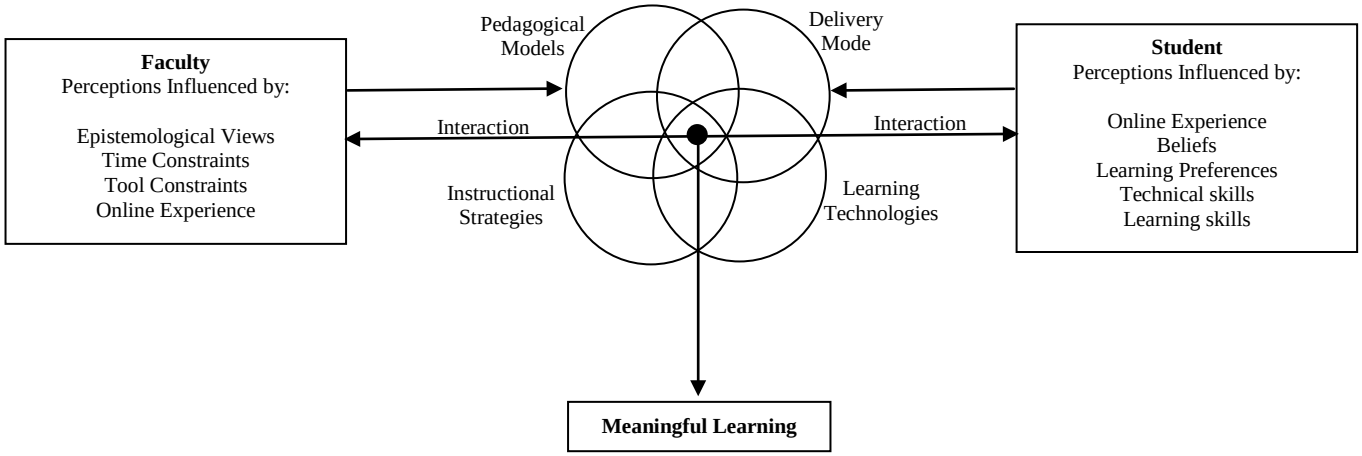

Figure 1. Components of quality online learning

Significance of the Study

The study of quality in online learning environments has taken on urgency as an important issue in online learning as acceptance in the higher education community increases. Studies on quality in online environments from faculty perspectives (Bennett & Bennett, 2002; Yeung, 2001) and from administrators' perspectives (Giannoni & Tesone, 2003) have been conducted. Meyer (2002) recommends that research on quality in online learning focus on student perceptions of their learning. Recently, several studies assessing the quality of online learning through quantitative methods have been conducted from the perspective of higher education students. Several of these studies used instruments based on the IHEP benchmarks for assessment of online learning quality (Aceves, 2006; Hutti, 2007; Yang, 2006). Another study used a researcher-developed quality inventory designed to determine the extent to which learner-centered practices were employed in online course designs (Egerton, 2006). Additionally, the quality of learning in online learning environments which are delivered via course management systems has been studied (Song, 2005).

To date, no university-wide study has been conducted to determine the various ways online learning is implemented and the extent to which quality dimensions and quality elements, grounded in the principles along the continuum of epistemological stances, are used. Therefore, the findings of this study would contribute another perspective to view quality in online learning environments to the literature.

A portrait of online learning in higher education provides universities with a realistic view of how online learning is implemented – an important factor for strategic

planning of institutional support. Understanding which elements contribute to quality online learning provides administrators and faculty with information on which to base decisions for improvements in online learning designs and implementations and for future staff development opportunities.

Researcher's Perspective and Bias

The researcher's perspective regarding online learning and quality is shaped not only by the literature on instructional design principles but also by instructional design experiences and the practice of teaching in face to face and online environments. The researcher's academic studies have primarily focused on the design of and teaching in online environments. In addition, the researcher has participated in the design of three Web-only graduate courses, has taught numerous graduate level online courses, and has integrated online learning in face to face environments over that past six years. Finally the researcher has co-authored six published articles on online learning topics. Understanding the complexities of online design, teaching, and learning has been and continues to be the researcher's primary research focus.

The researcher is influenced by the notion that instructional strategies used in a particular course design should be multifaceted in order to address the varying levels of learners and the learning context. In other words, an instructional approach used for learners who require background knowledge may not be appropriate for learners who are familiar with the content. The researcher's epistemological orientation related to online teaching and design does not lie with a single learning theory but rather along a continuum between objectivism/behaviorism and constructivism. Ertmer and Newby

(1993) stated, “The practitioner cannot afford to ignore any theories that might provide practical implications. Given the myriad of potential design situations, the designer’s best approach may not ever be identical to any previous approach but will truly depend upon the context” (p. 70).

Therefore, it is important for the instructional designer to match learning with the context. The researcher believes that when it is necessary for learners to gain background knowledge of a particular discipline, an objectivist/behaviorist approach effectively facilitates learning (low level thinking processes). When facts and rules must be applied in unfamiliar and/or different situations, a cognitivist approach is most appropriate to facilitate learning (mid-level thinking processes). Finally, when the application of knowledge in authentic contexts is required or ill-defined problems must be solved, a constructivist approach provides the strategies for facilitating the high level thinking processes needed. According to Norton and Wiburg (2003), “Learning environments are instructional strategies. Teachers’ choices about the types and organization of learning environments are choices about what and how students will learn” (p. 61). Ertmer and Newby (1993) identify this approach to instructional design as systematic eclecticism, choosing instructional design strategies to fit the learning context and the level of learners.

The researcher’s perspective in this study is also informed by the instructional design model developed by Norton and Wiburg (2003) and the affordances of technology tools described by Norton and Sprague (2000). According to Norton and Wiburg (2003), instructional design is guided by the foundations, activities, contents, tools, and systems

of assessment (FACTS) associated with a learning environment. Technology tools are chosen to support learning designs by recognizing the unique ways each tool enhances thinking and learning through its use (Norton &Sprague, 2000). The systematic eclectic approach adopted by the researcher provides the foundation for the belief that any discipline or content area can be delivered through online learning environments.

Scope of the Study

In order to answer the research questions, a descriptive case study strategy in conjunction with a survey research design was used. A large, public university located in the Washington, D.C. metropolitan area served as the setting for this study. Faculty from all degree programs with the exception of the professional program offered by the School of Law were asked to identify course offerings in the Fall 2008 semester which used Web-only, hybrid, Web-enhanced, and Web-supported modes of online learning delivery. The Faculty Online Course Identification Form (FOCIF), an electronic-based form, was used to identify online courses, delivery modes, and thus, the participants in the study. The participant pool consisted of students enrolled in the identified Fall 2008 semester courses.

The instrument used to answer the research questions in this study was researcher-created questionnaire. The survey instrument was constructed using closed-ended items. The questionnaire was designed to elicit information about students' perceptions about the quality of their online learning experience and the students' perceptions about the frequency with which quality elements were used in an online learning environment. Demographic information was collected using this instrument as well. The questionnaire

was available in an electronic format. In order to develop a descriptive portrait of the University's use of online learning and students' perceptions about the quality of their experiences, quantitative survey data were analyzed using descriptive and inferential statistics.

Definitions

Traditional face to face learning environments (directed learning): Learning environments in which no online technology is used; content is delivered in writing or orally (Allen & Seaman, 2005).

Meaningful Learning: Meaningful learning is deep understanding of complex ideas that are relevant in life and achieved through learning structured as active, constructive, collaborative, intentional, conversational, contextualized, and reflective (Jonassen, 1995).

Distance Education: Institution-based formal education where the learning group is separated and when interactive telecommunications systems are used to connect learners, resources, and instructors (Simonson et al., 2006).

Online learning: "An open and distributed learning environment that uses pedagogical tools, enabled by the Internet and Web-based technologies to facilitate learning and knowledge building through meaningful action and interaction" (Dabbagh & Bannan-Ritland, 2005, p. 15).

Pedagogical models: Pedagogical models are the mechanisms by which theories are linked to practice.

Instructional strategies: Instructional strategies are the "plans and techniques that the instructor/instructional designer uses to engage the learning and facilitate learning" (Jonassen, Grabinger, & Harris, 1991, p. 34).

Learning technologies: Learning technologies are the tools through which instructional strategies are operationalized.

Delivery mode: Delivery mode is the method in which learning activities, interactions, and course events are supported through the use of Internet and Web-based technologies and are characterized as Web-only, Hybrid, Web-Enhanced, or Web-Supported.

Web-only delivery mode: The researcher defines Web-only delivery as a method in which 80% or more of instructor and learner(s) interactions with each other and content are designed for online delivery.

Hybrid delivery mode: The researcher defines Hybrid delivery as a method in which 25% to 79% of the instructor and learner(s) interactions with each other and content are designed for online delivery.

Web-enhanced delivery mode: The researcher defines Web-enhanced delivery as a method in which 1% to 24% of the instructor and learner(s) interactions with each other and/or content are designed for online delivery. Web-enhanced courses use web-based technology to enhance courses designed as face-to-face course.

Web-supported delivery mode: The researcher defines Web-supported delivery as a method in which the use of web-based technologies for the purpose of posting syllabi, assignments and/or resources or to serve as a means of communication about content

when learners and instructor are separated during internship or practicum coursework. For either case, learning is predominantly in a face to face environment with web-based technologies supporting face to face interactions.

Quality in Online Learning: Quality in online learning is a focus on student learning and the variables enabled by learning technologies that contribute to learning (Meyers, 2002). It is the presence of quality dimensions instantiated by quality elements designed in an online course to bring about meaningful learning.

Quality Dimensions: Quality dimensions are the aspects of online learning which inform online quality. Instructor-learner interactions, learner-learner interactions, learner-content interactions, learner-interface interactions, learner-instructional strategies interactions, and social presence describe the features of quality online learning.

Quality Elements: Quality elements are the variables reported in the literature and considered to be factors that contribute to quality online learning experiences.

Summary

This chapter provided an introduction to the topic of online learning quality addressed in this study. The background of the problem was presented including issues pertaining to the implementation and quality of online learning in higher education. The problem relating to assessing online learning environments in higher education was stated and research questions addressing the problem were introduced. The scope of the research, the conceptual framework, and researcher's perspective, and definitions of important concepts used in the study were also included.

Chapter 2 presents a review of the literature on online learning in higher education, the definition of online learning, and the issue of online learning quality. The methodology of this study is presented in Chapter 3 including a description of the case study, the process of studying the case, the instrumentation used, subject selection, data collection and data analysis. Chapter 4 presents the results of data analyses and summarizes the results. Chapter 5 provides a summary of study and describes a portrait of online learning quality at the University. Interpretation of the results and related literature are discussed and recommendations for practice and future research are also included in this final chapter.

2. Review of Literature

Introduction

This study described how online learning was enacted at a large university by addressing what university students reported about their perceptions of the quality of their learning in online environments and what university students reported about the ways in which online learning experiences were enacted across the university.

This chapter outlines selected literature related to online learning in higher education. The first section discusses the current trends in online learning at higher educational institutions which influence institutional, faculty, and student choices and perceptions of online learning. Included in this section is a discussion of the benefits of online education to demonstrate that online learning is a prevalent, viable, and important option in higher education. Challenges presented by online learning environments are also discussed to show the need for investigations of online quality.

The second section defines online learning and the unique components which comprise online learning environments in order to distinguish online learning from the broader designation of distance education. A clear definition of online learning offers a context in which quality can be assessed.

The third section discusses the issue of quality in online learning. Six research-based dimensions are identified, defined, and described as contributors to quality online

learning experiences. Included in this description are the associated learning theories and the elements which exemplify each quality dimension. This section provides the foundation for understanding the design features of quality online courses.

The fourth section discusses the research on disciplinary differences in online courses. Emerging research suggests that 'one size does not fit all' when creating online courses. The literature reports unique challenges associated with online education relating to discipline. In addition, certain online design elements may be better suited in certain content areas than in others. An understanding of these issues is important because they impact design choices.

The fifth section discusses the rationale for and value of using student perceptions to paint a portrait of quality online learning at the University. The quality dimensions which inform online quality and the quality elements which instantiate the dimensions have been developed from research on students' perspectives of online learning experiences. Research on the use of student perceptions is also presented to demonstrate the validity of using student views to assess online quality.

Finally, a concluding section provides a summary of this chapter for the purpose of introducing a theory of online quality. Online learning is an important option in higher education. The success of these environments to deliver meaningful learning is contingent on the presence of quality dimensions and the application of instructional strategies, pedagogical models, and learning tools deliberately used to facilitate content.

Online Learning in Higher Education

Trends

Online learning is not only becoming mainstream in higher education, the growth rate for online enrollments is exceeding the growth of the overall higher education student population (Allen & Seaman, 2008). Over 3.9 million higher education students enrolled in online courses during the fall term of 2007, a 12.9% increase from the previous year while the overall population of higher education students experienced only a 1.2% increase in growth (Allen & Seaman, 2008). In addition to increased online enrollments, the number of online degrees and course offerings is increasing. Online courses are offered across all disciplines at the higher education level including engineering, psychology, social sciences and history, computer and information science, education, health professions and related sciences, liberal arts and sciences, general studies, humanities and business. According to Allen and Seaman (2008), online representation is roughly equal across these disciplines with the exception of engineering. This demonstrates that online learning is not discipline specific and that all content areas are finding ways to include online learning as an integral part of degree programs.

Benefits

A number of perceived benefits are associated with online learning at the institutional level, faculty level, and student level. Higher education institutes that participate in online learning efforts report benefits related to both access and quality perspectives (Schiffman, Vignare, & Geith, 2007). In terms of access, institutions view online learning as a means to improve student access and to increase growth in

continuing and professional education (Allen & Seaman, 2007). According to a 2006 Sloan Consortium national survey, respondents from higher education reported that getting students from new geographic regions or new markets of students was the top reason for engaging in online learning (Schiffman et al., 2007). Online courses increase enrollment for universities by meeting the needs of both distance students who live more than 50 miles away and students who live closer and want more flexibility (Tallent-Runnels et al, 2007). Adult learners are the fastest growing population in higher education as lifelong learning has become a competitive necessity (Howell, Williams, & Lindsay, 2003) due to changes in the economy and the rapidly changing job market (Bishop & Spake, 2003). Online learning provides universities the opportunity to capture these students through online continuing and professional education extension efforts.

From a quality perspective, institutions believe online learning has the potential to enhance the reputation of the institution, increase the rate of degree completion, improve student retention, and to provide pedagogic improvements (Allen & Seaman, 2007). Universities perceive investments in technology infrastructure and the development of online programs as indicators to the outside world that they are modern, state-of-the-art, and technology competent (Bishop & Spake, 2003; Larreamendy-Joerns & Leinhardt, 2007). The use of online technology in higher education is "both a medium and a message of educational innovation" (Larreamendy-Joerns & Leinhardt, 2007, p. 571). Thus, this message conveys a perception of competitive advantage. An increase in retention, degree completion and pedagogical improvements are outcomes that reflect ubiquitous characteristics of 'high quality' institutions such as being financially healthy

and well-known (Schiffman et al., 2007, p.67) as well as successful (Fisher& Baird, 2005). The realization of these outcomes has yet to occur as indicated in the literature. While no national statistic exists on online retention rates, anecdotal information from community colleges and four- year institutions reveal that student retention rates in online courses are lower than in the traditional face to face counterparts (Carr, 2000; Doherty, 2006). As for pedagogical improvements, educators, employers, and the general public view online learning as inferior to traditional face to face courses (Daymont & Blau, 2008) despite the extensive research that online students learn as much or better as those students in traditional face to face classes (Fillion, Limayem, Laferriere, & Mantha, 2008; Hay, Hodgkinson, Peltier, & Drago, 2004).

For instructional faculty, online learning offers opportunities for innovation and flexibility. With online education, faculty can invent new ways to promote meaningful learning experiences. According to the Society for College and University Planning (2007), online learning can be viewed as "one of the few relatively unrestricted avenues for innovation in teaching and learning" (p. 7). Because online learning distributes class activities across time and place as well as providing access to various media, faculty have the advantage of flexible scheduling, working from other geographical locations, and a vast choice of online resources and media to support their online teaching. Online learning also lends itself to more interaction between faculty and students (Swan, Shea, Fredericksen, Pickett, & Pelz, 2000). In their study of asynchronous learning networks at the State University of New York (SUNY), Swan et al. (2000) found that faculty

satisfaction with online courses was directly tied to student learning and increased interaction with students.

Students choose online options for convenience, flexibility, affordability, and the possibility of accelerating degree completion. The literature reports that convenience is the primary advantage of online courses for students (Dutton, Dutton, & Perry, 2002; Bocchi, Eastman & Swift, 2004; Young & Norgard, 2006). Online learning provides educational opportunities that otherwise might be missed due to family responsibilities, work schedules, and travel distances from campus (Daymont & Blau, 2008). In their review of 76 studies on online teaching and learning, Tallent-Runnels et al. (2006) concluded that students preferred to move at their own pace and that online learning accommodated these needs for flexibility. Online learning also provides students the flexibility to increase course loads by allowing them to take online courses in addition to a full load of traditional face to face courses (Carnevale & Olsen, 2003). Thus, students can accelerate completion of their degree.

In addition to flexibility, online learning offers more opportunities for interaction with instructors and classmates. Kim, Liu, and Bonk (2005) interviewed twenty students, chosen as a representative sample of 100 students enrolled in an online MBA program, and found that students were able to interact more closely with instructors than in traditional face to face settings. Also, students reported that online collaboration with peers was beneficial for the development of virtual teaming skills, a valuable skill to have in the global business environment. In a case study of the first-time experience of an instructor-researcher in teaching an online class, Campbell (2006) determined five

advantages of online instruction: (a) students actively involved in their own education, assessing their own learning and seeking additional information when needed; (b) students constructing knowledge; (c) the asynchronous structure of the course leading to measured responses by students; (d) an increase in the quality of students work because of open access to peers' work; and (e) students' increases in technological confidence leading to the consideration of subsequent application of technology in their own lives (p. 386). Students have reported that the nature of the traditional face to face format has inhibited them from freely asking questions in the classroom (Vonderwell, 2003). The online environment also offers students the advantage of being anonymous, which allows them to ask more questions to the instructor. These benefits highlight the potential of online learning to provide a highly interactive, social, and meaningful learning experience for students (Levine & Sun, 2003).

Limitations and Challenges

The literature reports several perceptual limitations and challenges presented by the use of online learning environments. Online degrees and coursework may not be perceived to be as acceptable as those degrees and courses attained through traditional classroom experiences. Adams (2008) surveyed 123 university search committee chairs to better understand the acceptability of online degrees and coursework in the hiring of faculty. This study indicated that face to face interactions between students and instructors were perceived as important indicators of a quality education and that online degrees and coursework may be regarded as lacking key elements, even if the online learning experiences were offered by universities known for academic rigor.

Online learning has redefined the role of university teacher (Baldwin, 1998). Seok (2008) described e-Teachers as those who must be instructional designers, facilitators of discourses, subject matter experts, and technicians. Additionally, the virtual environment calls for e-Teachers to become community builders with the ability to motivate active virtual attendance and participation in information sharing (Seok, 2008). Instructors are often challenged by this new conception of educating students. Smith and Meyen (2003) refer to online education as a "new form of pedagogy" (p. 1) and a learning environment involving "an added layer of complexity" (Bennett & Lockyler, 2004, p. 242) when compared to traditional face to face learning environments. Peltier, Schibrowsky, and Drago (2007) concluded that "teaching online is much more complicated than selecting a textbook, assigning a couple of readings, and making a few assignments" (p. 150). Innovations made possible through telecommunications and the Internet have shifted teaching styles towards learner-centered approaches (Knowlton, 2000) and epistemology perspectives that align with constructivist beliefs (Dabbagh, 2005). Some faculty may find that new pedagogical skills must be learned and teaching styles must change.

Online learning environments challenge the traditional lecture-based and teacher-centered approaches prevalent in higher education (Nunes & McPherson, 2003). In online learning environments, faculty are "forced to develop and design their activities and interactions in new ways" (Schrum, 2004, p. 1033). Conflicts with traditional teaching styles often arise, leading to uncertainties about effective practices and skepticism about the value of online learning (Phillips, Wells, Ice, Curtis, & Kennedy, 2007). In addition,

research indicates that teacher-centered styles are more favored by higher education faculty in both traditional face to face and online settings (Schaefer & Zygmont, 2003), creating “a divergence between the theories on effective distance education instructional methods and the practice of distance education” (Barrett, Bower, & Donovan, 2007, p. 45).

Increased faculty workload and time commitment are often cited as a limitation of online learning environments (Berge & Muilenburg, 2000; Peltier et al., 2007; Visser & Visser, 2000). In their survey of more than 2500 higher education administrators and faculty, Berge and Muilenburg (2001) found additional challenges associated with the implementation of online courses such as faculty compensation and incentives, lack of money to implement programs, lack of shared vision for distance education, and lack of support staff. These barriers experienced by faculty are factors that influence how online learning is designed and delivered and ultimately, the experience of online students.

The literature reports several challenges relate to online learning which impact students’ learning experiences. These challenges include technical issues related to use and access (Lebec & Luft, 2007; Singleton et al., 2004), feelings of isolation in the online environment (Hara & Kling, 2000), inconsistent course designs (Song, 2005; Yang 2007; Yang & Cornelius, 2004), skepticism about peers’ expertise (Petrides, 2002), and concerns for clarity and misinterpretations resulting from online communications (Campbell, 2006). The need to understand these challenges has implications for online course retention. Online course challenges influence students’ perceptions about the overall online course experience (Yang, 2007), and these perceptions of quality may

influence students' decisions to continue in online coursework (Rodriguez, Ooms, & Montanez, 2008).

Research indicates that good online design is the key to mitigating these student concerns (Song, Singleton, Hill, & Koh, 2004). Rovai (2003) advised that good instructional design and pedagogy are at the heart of high-quality online courses. When the barriers to successful learning were removed by well-designed and well-implemented online courses, students "learned significantly more, and more effectively, than those in online courses where teaching and learning activities were not carefully planned and where the delivery and accessibility were impeded by technology problems" (Tallent-Runnels et al., 2007, p. 116). The documentation in the literature regarding the limitations and barriers of online learning has directed the focus of recent research towards understanding the essence of a quality online learning environment.

The trends in online learning indicate that this educational environment is not a passing phase but a viable option in higher education. Online learning has numerous benefits for stakeholders including higher education institutes, faculty, and students. However, without attention to the aspects of online course design which lead to quality learning experiences, the benefits of online learning are not likely to be realized.

Defining Online Learning in Higher Education

A discussion about the quality of online education is not possible without a definition of online learning. A clear definition of online learning is important because it provides the foundation for understanding the complex and essential components of a quality online course design. Distance education, e-learning, and online learning are the

terms frequently used in the literature to reference the education of students separated by time and/or distance. At times, these terms are used interchangeably in the literature (Yoon, 2003). However, each term has its own distinctive aspects that set it apart from the others and substituting one term another dilutes specific components.

Distance education is defined as institution-based formal education where the learning group is separated and when electronic media are used to connect learners, resources, and instructors (Butner, Smith, & Murray, 1999; Simonson et al., 2006). Electronic media include videotapes, interactive television, television, and Internet. Research on distance education typically focuses on institutional, organizational, and administrative aspects such as institutional policies, enrollment effects, and faculty support issues rather than deeper examinations of teaching and learning (Tallent-Runnels et al., 2007).

Emergence of new technology tools, learning theories, and designs has necessitated more complex understandings of distance education. Harasim (1989) stated the traditional definition of distance education does not embrace the social and collaborative aspects made possible by computer-mediated communications (as cited in Yoon, 2003). Therefore, distance education is more appropriately used as an overarching term encompassing new terminology, such as e-learning and online learning, which more accurately describe learning with the new technology tools available in higher education.

Zemsky and Massy (2004) stated that e-learning is “a concept in search of a consistent definition” (p. 5). They defined e-learning as instruction delivered via the web, facilitated by course management systems and/or electronically mediated in a “digital

format that is interactive but not necessarily remote" (p. 6). Therefore, e-learning describes the delivery of instructional content via all electronic media. The term e-learning is sporadically used in higher education to describe learning online but typically e-learning is used to describe online course environments in a corporate training context (Yoon, 2003).

At times, online learning is equated with distance education. Online learning has emerged as a specific expression of distance education in which instruction is delivered via the Internet (Tallent-Runnels et al., 2007). In the literature, online learning is more often than not defined as a delivery system. For example, Campbell (2006) defines online learning in his study "as instruction delivered asynchronously through a Web-based medium" (p. 379). However, to describe online learning only in terms of its delivery system neglects important aspects of the environment which have implications for learning and quality assessment (Seok, 2008).

Definition of Online Learning

To be useful in discussing the quality of online learning environments, a definition of online learning must take into consideration all components that impact meaningful learning. Dabbagh and Bannan-Ritland (2005) define online learning as "an open and distributed learning environment that uses pedagogical tools, enabled by the Internet and Web-based technologies to facilitate learning and knowledge building through meaningful action and interaction" (p. 15). The researchers list the following characteristics of online learning:

1. Globalization and learning as a social process are inherent and enabled through telecommunications technology.
2. The concept of learning group is fundamental to achieving and sustaining learning.
3. The concept of distance is relatively unimportant or blurred and is not limited to the physical separation of the learner and the instructor.
4. Teaching and learning events (or course events) are distributed across time and place, occurring synchronously and/or asynchronously through different media.
5. Learners are engaged in multiple forms of interaction: learner-learner, learner-group, learner-content, and learner-instructors.
6. Internet and/or Web-based technologies are used to support the teaching and learning process and to facilitate learning and knowledge building through meaningful action and interaction (p. 16)

Pedagogical Models

Pedagogical models are the mechanisms by which theories are linked to practice. Dabbagh (2005) describes a variety of pedagogical models suited for use in online learning. Pedagogical models epistemologically oriented towards objectivism view learning as a stimulus-response that begins and ends in the environment external to the learner. These models are grounded in the notion that there is one true and correct reality, and instruction is designed to effectively transfer objective knowledge to the learner (Vrasidas, 2000). Skinner's (1954) programmed instruction is an example of a pedagogical model oriented towards objectivist perspectives. In programmed instruction,

information is presented sequentially in small steps, each step requiring a response from the learner. Correct responses result in positive reinforcement and progression to the next step. Information is retaught if the response is incorrect. Drill and practice activities are grounded in programmed instruction.

Models oriented in cognitivism view learning as an activation of prior knowledge for the purpose of assimilating new knowledge with existing knowledge to provide meaning. An example of a pedagogical model grounded in a cognitivist perspective is Gagne's (1965) conditions of learning model. This model suggests there are various types of human learning and that each type requires different kinds of instructional strategies. The model outlines nine hierarchical instructional events, each with an associated cognitive process: gaining attention (reception), informing learners of the objective (expectancy), stimulating recall of prior learning (retrieval), presenting the stimulus (selective perception), providing learning guidance (semantic encoding), eliciting performance (responding), providing feedback (reinforcement), assessing performance (retrieval), and finally, enhancing retention and transfer (generalization).

Models oriented towards a constructivist epistemology provide open-ended, social learning environments where meaning is constructed from activity and experience. These models are grounded in the notion that knowledge is constructed by the learner and does not exist independent of the learner (Vrasidas, 2000). Two schools of thought regarding the locus of knowledge construction exist. Personal constructivists, such as Piaget (1970), believe that knowledge is constructed in the mind of the learner as experiences and thinking structures are reorganized in the mind. Social constructivists (Brown, Collins, &

Duguid, 1989; Lave & Wenger, 1991; Vygotsky, 1978) believe that knowledge is constructed through social interactions within communities of practice. However, others believe that the two conceptions are not separate but complementary (Cobb, 1994). As Vrasidas (2000) affirmed, "Unless the socially constructed knowledge is being processed in the individual's mind and related to her experiences, it will not be meaningful" (p. 7). An example of a pedagogical model oriented in constructivism is anchored instruction (Collins, 1991) in which authentic learning activities situate the learner in contexts that reflect the way knowledge is used in real-life situations.

Instructional Strategies

There are a variety of instructional strategies that move pedagogical models into action. These are the techniques implemented by designers/instructors to engage students and facilitate student learning (Jonassen et al., 1991). Pedagogical models designed to shape behaviors employ shaping, chaining, and fading as instructional strategies (Driscoll, 2000). To activate prior knowledge and integrate it with new knowledge, instructors present content using outlines and summaries (Dabbagh & Bannan-Ritland, 2005). For constructivist based models, instructional strategies include promoting multiple perspectives, problem solving, authentic learning activities, collaboration and social negotiation, reflection, articulation, scaffolding, and role-playing (Dabbagh & Bannan-Ritland, 2005).

Learning Technologies

Learning technologies are the tools used to support the instructional strategies. Historically, distance education technologies such as print, radio, and television mediated

instruction and viewed the teacher as active and the student as passive. The student was dependent on the teacher providing information through the tool. New innovations in technology such as telecommunication and Web technologies have afforded different kinds of interactions and interconnections that support meaningful learning.

Asynchronous tools such as email, bulletin board, discussion boards, synchronous tools such as chat, videoconferencing, virtual whiteboards, search engines, online databases, digital repositories, and document-sharing technologies have all increased access to other humans and information. Learners can actively search for information and connect with others in ways that are meaningful to them. With the emergence of Web 2.0 tools, such as blogs, wikis, and podcasts, online learning designers/instructors have even more options to support collaborative learning.

Authoring tools and course management systems have provided faculty with options to merge pedagogical models, instructional strategies, and learning technologies into learning designs for delivery. Three classes exist: multimedia authoring tools, Web-based authoring tools, and course management systems. Multimedia authoring tools are CD-ROM-based while Web-based authoring tools are Internet-based. Each of these authoring tools requires technical skills training in the authoring programs. A course management system (CMS) is "a collection of Web applications that integrate technological and pedagogical features of the Internet and the World Wide Web into a single, template-based authoring and presentation system that facilitate[s] the design, development, delivery, and management of Web-based courses and online learning environments" (Dabbagh & Bannan-Ritland, 2005, p. 298).

Commercial CMSs were developed to meet the needs of higher education, where large scale training in online design was lacking and the demand for online options was growing (Dabbagh & Bannan-Ritland, 2005). The promise of an easy alternative to posting courses has led to the popularity of these designs in higher education. Its wide spread use in postsecondary institutions indicates that CMSs have become the standard online course delivery technology (Bailin, 2002; Papastergiou, 2006).

Delivery Mode

There are few definitions of delivery modes in the literature. Typically, in the higher education community and accreditation agencies such as the Southern Association of Colleges and Schools (SACS), a course is designated as Web-only when 51% of the course is taught online. This definition does not allow for a clear delineation between hybrid courses which blends face to face and online learning. Allen and Seaman (2007) define Web-only delivery modes as those in which 80% of the course is online. They distinguished hybrid modes from Web-only in that hybrid/blended modes deliver 30% to 79% of the content online while the remaining proportion of course delivery is comprised of face to face class meetings. Allen and Seaman (2007) included Web-facilitated as a third mode of delivery and defined it as a mode in which 1% to 29% of the course is facilitated by Wed-based technology. Included in this description is that Web-facilitated courses use web pages or CMSs to post course information.

These delivery mode descriptions are insufficient for a discussion of online quality. Characterizing each delivery mode only as a percentage of online content reduces the importance of delivery mode in the overall definition of online learning. Delivery

mode is not only the method of delivery of content but also the method of delivery of designed interactions, learning activities, and course events interactions descriptions. In the current study, Web-only and hybrid/blended are defined not as a percentage of the total course online but rather the amount of interactions between instructors and learners with each other and content designed for online delivery. The researcher defines Web-only delivery as 80% or more of instructor-learner(s) and learner(s)-learner(s) interactions with each other and content are designed for online delivery. Hybrid/blended delivery is defined as 25% to 79% of the instructor and learner(s) interactions with each other and content are designed for online delivery.

According to Allen et al., (2007), Web-only implementations are found most frequently in higher education with hybrid/blended delivery modes gaining in popularity. Research indicates that courses designed to use hybrid delivery may improve student learning. In a recent study, McFarlin (2008) redesigned an undergraduate exercise physiology course to offload 50% of the traditional class format to an online environment. Final grades from 312 students enrolled in the hybrid course format were compared to the grades of 346 students enrolled in the traditional class format. Results demonstrated that the grades of the students enrolled in the hybrid course format were significantly higher than those in the traditional course. McFarlin (2008) concluded that students in the hybrid course benefited from an increase in interaction with the course content and the ability to reflect more on the content. Informal student feedback corroborated this finding and indicated that students preferred the self-paced nature of the

online environment which allowed them to review the course content as many times as they desired.

As indicated by Allen and Seaman (2007), other delivery modes exist. However, the Web-facilitated characterization offered by these researchers is insufficient in that it appears to be a catch-all category for all other uses not categorized as Web-only or hybrid. Not addressed in this definition of Web-facilitated is the notion that online environments can be used to enhance face to face classroom experiences through the use of Web-based environments without the intention of replacing classroom experiences. An example of this use is when online environments are designed to extend classroom conversations between face to face meetings or to provide an opportunity for students to collaborate with each other in structured instructional activities.

These environments have the potential to improve learning and are deserving of acknowledgement as a viable delivery mode. Colbert, Miles, Wilson, and Weeks (2007) studied the use of an online format to enhance learning in an undergraduate English course. Online activities were designed to extend face to face class activities and discussions. The enhancement activities were assessed and valued at 10% of the overall course grade. Analysis of the questionnaire responses of 87 first year students enrolled in the course revealed that students believed their learning was enhanced by the addition of the online environment. This research also showed that assessments built into the online enhancement activities provided necessary motivators for student participation and assignment completion. In addition, the majority of students believed the online assignments deserved a weighting greater than 10% because they had put time and effort

into those projects. The researchers concluded that online learning used as an enhancement to traditional formats can improve student learning, that designs must be intentional, and that designs must include balanced assessments. Pena-Shaff et al., (2005) found similar results. Students in their study believed the addition of Web-based discussion assignments between face to face class meetings encouraged the continuation of classroom discussions and enhanced their understandings of course content. Similar to Colbert et al. (2007), Pena-Shaff et al. (2005) concluded that it is important to assess the correct balance between grade and effort required from students in online designs.

Uses of the Web as an environment for posting course resources and syllabi require minimum if any instructor-learner interaction or learner-learner interaction. Therefore, these uses should be distinguished from Web-based delivery modes in which these interactions do occur. This study suggests two delivery modes that more accurately characterizes other uses of Web-based environments: web-enhanced and web-supported. Web-Enhanced delivery is defined as1% to 24% of the instructor and learner(s) interactions with each other and/or content are designed for online delivery. Web-enhanced courses use web-based technology to enhance courses designed as face-to-face. Web-Supported delivery is defined as the use of web-based technologies for the purpose of posting syllabi, assignments and/or resources, or to serve as a means of communication about content when learners and instructor are separated during internship or practicum coursework. For either case, learning is predominantly in a face to face environment with web-based technologies supporting face to face interactions. While research shows the benefits of Web-enhanced instruction, there currently is no

definitive research regarding the prevalence of Web-facilitated, Web-enhanced, or Web-supported modes in higher education, and this study attempts to identify how frequently these delivery modes are used in a higher education setting.

Quality

Defining quality of learning is problematic in higher education regardless of the instructional delivery mode. The meaning of quality changes depending on the perspective of the stakeholder whether it is an accreditation body, the administrators of the institution, faculty, or students thereby making it difficult to achieve consensus on what constitutes quality. Distance education, in particular, faces some unique challenges. The emergence of new technologies and innovative designs which capitalize on the affordances of those technologies create a dynamic situation in the field. There are also ongoing comparisons with traditional face to face learning environments and consequently, beliefs by some that because online education lacks the physical presence of students and teachers, online education is of lower quality than face to face education (Higher Education Program and Policy Council of the American Federations of Teachers, 2001). The need to ensure that consumers of online environments are adequately protected from poor quality courses propelled a number of organizations and accreditation agencies to develop guidelines, “best practices”, and benchmarks to direct the implementation of distance programs and the use of Web-based environments for learning.

The first guidelines appeared in 1995 from the Western Cooperative for Educational Telecommunications (WCET) “Principles of Good Practice for

Electronically Offered Academic Degree and Certificate Programs." Other summaries of "best practices" and standards soon followed from the Instructional Telecommunications Council (ITC, 2000), the American Federation of Teachers, (AFT, 2000), the Council for Higher Education Accreditation (CHEA, 2002), and the American Distance Education Consortium (ADEC, 2003). Similarities and differences can be found when comparing the guidelines. Meyer (2002) found that in comparing the guidelines, it was evident each reflected the promotion of certain guidelines based on that organization's expertise or interest. For example, the CHEA guidelines are predominantly concerned with assessment while the National Education Association (NEA) standards focus primarily on student services and library and learning resources. In addition, no single set of guidelines represents all the ideal standards for distance education. Therefore, it is not uncommon for institutions and fields of study to combine standards to fit their needs or perspectives about what constitutes quality distance education. For example, Chaney, Eddy, Dorman, Glessner, Green, et al. (2007a) extracted the common quality indicators among these guidelines and elsewhere in the literature and developed a list of quality indicators for distance health education programs.

Criticism of these guidelines focused on their usefulness to assess quality in distance education. According to Scanlan (2003), "None provide actual measurement tools needed to conduct quality assessment" (p. 1) and therefore, a need for reliable and valid performance assessments existed (IHEP, 1998). Commissioned by the National Education Association (NEA) and Blackboard, Inc., the Institute for Higher Education Policy (IHEP) developed a set of benchmarks in 2000. IHEP derived these benchmarks

through a “strong content validation process” (Scanlan, 2003, p. 1). The benchmarks cover seven categories that include: Institutional Support, Course Development, Teaching and Learning, Course Structure, Student Support, Faculty Support, and Evaluation and Assessment. Several studies of distance education programs in higher education have turned to the IHEP benchmarks as a framework for assessing overall quality (Scanlan, 2003; Bennett & Bennett, 2002; Hensrud, 2001; Yueng, 2001; Yang, 2007; Hutti, 2007).

According to Bers (2006), “Benchmarks are quantitative measures that reflect an institution’s performance but do not provide insights into what influenced that performance. They do permit one institution to compare itself to another, or to a group of colleges, but do not provide clues about what the institution might do to improve” (p. 85). Indeed, the IHEP benchmarks are a collection of practices and standards agreed upon by six institutions identified as leaders in Internet-based distance learning. These benchmarks are based on “quality measures currently in use on campuses around the nation” and “the best strategies used by colleges and universities that are actively engaged in online learning” (Pittinsky & Chase, 2001). However, some in the research community have been critical of the use of benchmarks to assess online quality. Bates (2007) stated, “It is one thing to list goals or standards for technology-based teaching; it is quite another to know what to do to achieve them” (p. 4).

A risk of using benchmarks as a measure of quality in distance education environments is that they often become incorporated as standard practice, and thus, the innovative spirit that online learning promotes can be lost. Distance education benchmarks may not provide the best framework for exploring the use and quality of

online learning in higher education. Novak (2002) reported that under the IHEP teaching and learning benchmarks, measures to ensure quality practices in collaborative and/or group work and those that concern accommodation of different learning styles were omitted. These omissions devalue certain aspects of online interaction found to be essential: collaborative interaction/group work (Du, Durrington, & Mathew, 2007), learner-interface interaction (Hillman et al., 1994), and learning styles (Mupinga, Nora, & Yaw, 2006).

Twigg (2001) contended that the omission of essential online learning elements reveals a tendency to equate face to face instruction and online instruction by deriving benchmarks based on face to face instructional principles. Certain good online instructional practices may also be excluded because the IHEP benchmarks represent the concerns of special interest groups rather than the learners (Twigg, 2001b). Zygouris-Coe, Swan, and Ireland (2009) argued that the "general benchmarks for quality do not explain in detail how online programs should develop and maintain programs for quality assurance" (p. 128). Most importantly, the IHEP benchmarks are based on "best practices" in distance education rather than on the theories that inform online learning as defined in this study.

Quality Dimensions and Quality Elements in Online Learning

Meyer (2002) recommended that when defining quality the predominant focus should be on student learning in conjunction with the variables that contribute to learning. Several research studies have demonstrated course design as an influence in how well these variables are used to create meaningful learning experiences (Garrison &

Cleveland-Innes, 2005; Rovai, 2003; Song et al., 2004; Tallent-Runnels et al., 2007; Thurmond, Wambach, Connors, & Frey, 2002). Student characteristics related to successful learning have been identified, and frameworks for course design have been suggested based on these student dimensions (Schrum & Hong, 2002). However, Thurmond et al. (2002) found that students' satisfaction was influenced by the online environment and not due to student characteristics. Thurmond et al. determined that having knowledge about student characteristics such as, computer skills, number of Web-based courses taken, knowledge on use of electronic communications technology, resident distance from main campus, and age, did not help predict a student's level of satisfaction. The results also indicated that specific student characteristics were not correlated with either the outcome or environmental variables. Thurmond et al. concluded that the level of satisfaction with the course was due to what occurred in the Web-based course environment and not because of the student characteristics. While the findings of this study are limited because use of technology was specifically the focus as opposed to course content, the findings do direct researchers towards the possibility of alternative quality indicators such as events that occur in a Web-based learning environment.

McNaught, Whithear, and Browning (1999) recommended that online course design focus on students' overall experiences rather than on isolated learning activities. This suggests that quality online designs should be multidimensional. Several studies in higher education have been conducted to determine which indicators or dimensions should be attended to in a quality online course and thus, which design elements within each dimension represent behaviors that lead to meaningful learning experiences

(Chaney, et al. 2007a; Jiang & Ting, 2000; Mandinach, 2005; McGorry, 2003; Roberts, Irani, Telg, & Lundy, 2005; Rovai, 2003; Stewart, Hong, & Strudler, 2004;).

A review of these studies shows the prevalence of six dimensions. The first four quality dimensions are comprised of four different types of interactions: instructor-learner, learner-learner, learner-content, and learner-interface (Moore, 1989; Hillman, Willis, & Gunawardena, 1994). Interactions between learners and various components of online environments have been identified as the most essential dimension of online learning (McIssac & Gunawardena, 1996; Moore, 1989; Wagner, 1994). Since a considerable number of studies have focused on instructional strategies which lead to meaningful learning experiences, it is reasonable to include instructional strategies as a fifth quality dimension (Clark, 2002; Garrison & Cleveland-Innes, 2005; Herrington, 2006; Jonassen, 1995; Song, et al., 2004). Finally, social presence has emerged in the literature as a sixth dimension of quality because it is a variable that contributes to building a sense of community (Aragon, 2003), social exchanges in online environments have been found to be significantly higher than other exchange types (Kanuka & Anderson, 1998), and social presence was found to be a predictor of satisfaction in online environments (Guanwardena & Zittle, 1997).

Overview of Interaction

Interaction is an essential element of the principles of good practice in education (Chickering & Gameson, 1987). Meyers (2002) added, "Quality learning is largely the result of ample interaction with the faculty, other students, and content" (p. vii). Hay et al., (2004) compared students' perceptions of interaction in online courses and traditional

face to face courses. The researchers found that interaction was just as important in predicting course effectiveness in the online courses as it was in the traditional formats. Therefore, interaction in the online environment is an essential quality dimension to consider when assessing online quality. Wagner (1994) defined interaction as:

> Simply stated, interactions are reciprocal events that require at least two objects and two actions. Interactions occur when these events mutually influence one another. An instructional interaction is an event that takes place between a learner and the learner's environment. Its purpose is to respond to the learner in a way intended to change his or her behavior toward an educational goal. (p. 8)

Maintaining interaction in online learning environments is more challenging than in traditional face to face environments (Bannan-Ritland, 2002). A concern that arises is the impact of distance, a separation of both time and space, on interaction between instructors and learners. Moore (1993) theorized that this is not a geographical distance but a pedagogical distance, which can potentially lead to communication gaps and misunderstandings between learners and instructors.

Moore (1989) distinguished three types of interaction in online learning: instructor-learner, learner-learner, and learner-content. Hillman et al., (1994) proposed a fourth interaction, learner-interface, and argued that the learner must interact with the technology devices in order for the other interactions to take place. Thus, four dimensions related to interaction have implications for online quality.

Dimension 1: Instructor-Learner Interactions

Unlike face to face learning formats in higher education where the instructor typically takes on the role of lecturer, online instructors take on the role of facilitator and, therefore, must interact differently with online students (Seok, 2008). In their study of online interactions in MBA courses, Marks, Sibley, and Arbaugh (2005) found that instructor-learner interactions were the most important influence on students' perceived learning. Richardson and Ting (1999, cited in Swan, 2001) found in their study comparing students in an online course with students who took the same course as a print-based correspondence course, that online students reported all interactions with the instructor mattered.

The interactions facilitated by online instructors take on many forms such as pedagogical, managerial, social, and technical (Dennen et al., 2007). Young (2006) surveyed undergraduates and graduates enrolled in online courses across six colleges in a western United States university to determine their view of effective online teaching. Through the survey process, students provided a description of effective online teaching which included adapting to student needs, providing meaningful examples, motivating students, facilitating the course effectively, delivering valuable course content, communicating effectively, and showing concern for student learning (Young, 2006). All of these instructor actions are interactions which enhance online connections and build relationships between instructors, learners, and course content. Just as in traditional learning environments, learners also interact with the instructor by asking questions, discussing problems, and submitting work (Vrasidas, 2000). Just as in traditional learning

environments, online instructors must create an environment in which learners feel comfortable to participate in these types of interactions.

Instructor-Learner Elements of Design

The literature reports a strong emphasis on research relating to instructor-learner interactions due to its influence on students' perceived learning. In fact, instructor-learner interactions have proven to have a much larger effect on satisfaction and perceived learning than learner-learner interactions (Swan, 2001). Elements of learner-instructor interactions found to impact students' perceptions about their learning include teaching presence, the value instructor places on online discussion, quality and timeliness of feedback, and the quality and quantity of interactions (Dennen et al., 2007; Jiang & Ting, 2000; Hara & Kling, 2000; Kashy, et al., 2003; Northrup, 2002; Riccomini, 2002; Pawan et al., 2003; Picciano, 2002; Shea, Pickett, & Pelz, 2003; Swan, 2001; Vonderwell, 2003).

A challenge to online learning is that the separation of instructors and learners across time and space can lead to feelings of isolation. Several elements of design related to improving the quality of interactions between instructors and learners have shown to be effective. The quality, quantity, and timeliness of interactions appear to be the most important factors relating to instructor-learner interactions and perceived learning effectiveness. The literature focusing on the quality of online interactions is addressed in a variety of ways. The personality an instructor projects online and the tone of written correspondence and discussions play a role in student motivation to participate in the online environment. Russo and Campbell (2004) argued that mediated presence, various mediated communication behaviors that lead participants to feel connected to others in an

online environment, is related to immediacy - “the psychological distance that a communicator puts between himself or herself and the objective of his or her communication” (p. 220) and conveyed verbally or nonverbally. Since immediacy is a correlate of student satisfaction (Ellis, 2000), the researchers explored students’ perceptions of mediated presence as an important product of interactions which lead to student satisfaction. The researchers found that instructor interactions that were conducted in conversational tones, reflected responsiveness to individual student needs, and expressed encouragement were perceived by students to be behaviors that promoted instructor presence and the decrease of the psychological distance between students and instructor.

The quality of feedback has also been shown to be an important factor in instructor-learner interactions. In a comparison study on student and instructor beliefs about instructor-learner interactions, Dennen et al. (2007) found that interpersonal communication needs such as feedback and discussion were ranked the most important by students. Specific comments and suggestions are most valued by students (Reisetter, Lapointe, & Korcuska, 2007). Riccomini (2002) compared two forms of feedback, a Web-based model comparison feedback and an instructor corrective feedback model, in order to determine the extent to which quality of feedback mattered to students. Riccomini (2002) concluded that quality of feedback does matter and that students’ performance was significantly better on the task when they received instructor delivered corrective feedback. Gallien and Oomen-Early (2008) confirmed these results in their examination of personalized versus collective instructor feedback in an online course.

Students who received personalized feedback from the instructor were significantly more satisfied and performed academically better than the students who received collective feedback posted to a public discussion board.

With regard to quantity of interactions, the more frequent the interactions between instructors and students, the higher the participation among students. Jiang and Ting (2000) surveyed 183 online students, varying in academic status, to identify factors that might influence perceived learning. One result obtained from the study was that the number of instructor responses had a strong relation to number of student responses. The researchers concluded instructors' frequent presence and participation in discussions may have promoted student participation. In addition, frequent instructor participation in online discussions demonstrated that the instructor values these interactions and serves as a model to students (Dennen et al., 2007; Jiang & Ting, 2000; Young & Norgard, 2006). However, Dennen et al. reported there is a threshold at which too many interactions between instructors and students can inhibit student participation and well-planned, structured interactions are necessary (Rovai, 2001).

Timeliness of interactions and feedback is reported to be one of the most important factors related to instructor-learner interactions. Young and Norgard (2006) found that students indicated dissatisfaction when instructors delayed feedback or did not participate in discussions. Students reported feeling isolated and unsure of learning efforts when instructors only responded to questions and participated in discussions on certain days of the week. Russo and Campbell (2004) reported that an instructor can employ quality interactions with students but if these interactions are not timely, the

quality is lost on the students. Other studies echo these findings (Dennen et al., 2007; Northrup, 2002; Tseng, Wang, & Ku, 2004; Vonderwell, 2003).

A criticism of online learning is that there is little evidence of knowledge construction and elaboration of ideas produced through online interactions (McLoughlin & Luca, 2001). Research suggests that social interactions may set the stage for sharing ideas but do not create cognitive presence. Cognitive presence is defined as the "exploration, construction, resolution and confirmation of understanding through collaboration and reflection in a community of inquiry" (Garrison, 2007, p. 65). The literature relating to increasing cognitive presence in online environments suggests instructor-learner interactions that use teacher-centered approaches such as expert voice, lecture, and direct guidance to promote construction of knowledge. While the literature on online learning promotes constructivism and student-centered approaches (Chen, 2007), online interactions often "involve a continuum from teacher-centered to student-centered participation" (Tallent-Runnels et al., 2007, p. 10) to best meet instructional goals.

The use of expert voice in interactions between instructors and learners has been found to positively impact student satisfaction. Akahori and Kim (2003) studied the validity of Web-based peer evaluation and found that students had a higher appreciation for the expert problem-solving methods of instructors rather than novice methods offered by students. Northrup (2002) investigated the types of interactions students perceived as most important for their learning and uncovered students' preference for instructor created audio-narrated lectures and note-taking guides. Christopher, Thomas, and Tallent-

Runnels (2004) developed a rubric to assess the thinking levels of online discussion prompts and responses and found that unguided discussions scored in the middle level as evidenced by thinking to organize, classify, apply, compare, and contrast. The researchers suggested that direct guidance from instructors in the discussions would elevate thinking to higher levels of synthesizing and evaluating. The expert voice of an online teacher focuses content for learners and can be a powerful alternative source of support (Reisetter et al., 2007)

Dimension 2: Learner-Learner Interactions

Learner-learner interactions are those in which learners "collaborate with peers on projects, assignments, discussions, exchange ideas, and interact on topics related to the course" (Vrasidas, 2000, p. 2). The underlying pedagogical principal for online discussion is social constructivism. Individuals construct knowledge by bringing meaning to new information and integrating this knowledge with prior experiences in their communication with others. Tseng et al. (2004) studied students' perceptions of interactions by surveying 13 graduate students enrolled in an online Instructional Design course. Students reported that learner-learner interactions were useful to organize, to brainstorm, to clarify unclear points, and to finalize projects. Learner-learner interactions are an essential dimension of quality because peer interaction has been shown to impact students' perceptions about course content (Peltier et al., 2007) and to be a predictor of student success in online courses (Yang, 2007). A considerable amount of research has been dedicated to the exploration of the interactions that occur between peers and the quality elements designed in online environments which contribute to successful online

experiences. Several quality elements pertaining to learner-learner interactions have been derived from this body of research.

Tseng et al. (2004) found that the desire and need for peers was strong and that collaboration with peers was reported to be a reason for effective learning in the course. Peltier et al. (2007) found that when students reported that they had learned from other students, their perception of course quality increased. Yang (2007) studied student perceptions of online course quality and collected survey responses from both undergraduates and graduates enrolled in online courses at a comprehensive southeastern university. The results from the study revealed that peer interaction was a main factor affecting students' perceptions of online course quality. Yang (2007) also found that peer interactions had greater effects on undergraduate students than graduate students.

Learner-Learner Elements of Design

With the knowledge from the literature that learner-learner interactions are a dimension in online course quality, several studies determined the specific aspects of quality related to learner-learner interactions. Elements of learner-learner interactions include issues regarding opportunities to work collaboratively, quality and quantity of postings in online discussions, relevant and meaningful interactions, and vicarious interactions (Jiang & Ting, 2000; McLoughlin & Luca, 2001; Rovai & Barnum, 2003; Picciano, 2002; Swan, 2004; Swan et al., 2000).

Opportunity for collaboration with other students has been reported to be valuable for student learning. Studies have shown that in online collaborations with peers, students were able to learn from other perspectives (Pena-Shaff et al., 2005; Tseng et al., 2004).

Learner-learner interactions also support community building within the learning environment (Dawson, 2006). Community building is an important element of another dimension, social presence, discussed later in this literature review.

Several technology tools have been found to be useful in structuring collaborative opportunities to enhance learner-learner interactions. Tools such as email, computer conferencing, synchronous chats, and asynchronous discussion have impacted students' perceptions about the quality of their learning experiences (Thurmond et al., 2002). Pena-Shaff et al. (2005) employed threaded discussion boards to facilitate group discussions and collaborations and studied students' perceptions about the use of this tool to facilitate learner-learner interactions. The researchers found that students were more likely to defend positions in online discussions with peers than they would have in face to face formats, providing active exchanges and opportunities for the expression of diverse positions about course content. Learner-learner interactions structured through the use of discussion boards promotes reflection in written responses and allows students to spend more time understanding and evaluating peer contributions (Poole, 2000). Synchronous tools have been used successfully as well. Hansen (2008) studied two groups of students in an applied marketing class. One group was enrolled in the traditional face to face course and a second group was enrolled in an online format of the course that employed synchronous chat as the primary mode of communication. Student learning was measured by student performance in three stages of the development of a marketing plan for a start-up business. The study revealed that students in the online course produced better results for knowledge transfer. Online students who collaborated via online chat also received

higher grades on presentation and written plan criteria. Hansen (2008) subsequently replicated his study with three separate applied marketing classes and obtained the same results. This provides strong evidence that collaborative learning and successful learning outcomes can be successfully facilitated using online chats.

Research also indicated that peer to peer interactions often hindered student learning due to obstacles and frustrations such as low participation in discussion among students, the lack of validation from other students, perceived unavailability of peers, and delayed responses (An & Kim, 2006; Pena-Shaff et al., 2005; Reisetter et al., 2007). Design elements such as increasing communication channels could increase learner-learner interactions (Russo & Campbell, 2004; Sherry, 2000). Tools such as web-audio, web-video, blogs, and wikis are communication channels readily available for online learning and could be used to support quality learner-learner interactions. Reisetter et al. (2007) indicated that online students who became disenchanted with untimely peer discussions turned to chat and email to accommodate their need to interact.

Often the frequency of learner-learner interaction is used as a measure of students' online engagement (Tallent-Runnels et al., 2007). Swan (2001) reported that students who reported high levels of interaction with peers reported higher levels of satisfaction and higher levels of learning than those students who experienced insufficient or no interaction in the online course. Pena-Shaff et al. (2005) found that graduate students participated more frequently and consistently than undergraduates. However, active participation did not necessarily indicate a students' increased ability to perform well in an online course. In some cases, some students may not need to actively

participate in order to meet course learning objectives (Beaudoin, 2002; Picciano, 2002), and the "act of writing messages is not the only factor that contributes to student learning" (Dennen, 2008, p.1624). Vicarious interactions or lurking, those interactions in which students observe the participation of others, such as peer created discussion threads and responses, but do not contribute in any noticeable way, was recently studied by Dennen (2008). The researcher found that pedagogical lurking, "temporary situational or topical lurking in a class context" (p. 1631) was a regular part of online participation. In addition, the researcher concluded that pedagogical lurking is not a practice of disengaged or uninvolved students but a pedagogical need. Students who engaged in "reading messages to find a model and point of entry into the conversation and returning to review ideas raised in earlier discussion" (p. 1631) indicated that these interactions were worthwhile for learning.

Relevant and meaningful online discussions between peers are also an important quality element for learner-learner interactions (Pena-Shaff et al., 2005). Hara, Bonk, and Angeli (2000) examined online discussions of students enrolled in an applied cognitive psychology graduate level course at a major Midwestern university. The course employed highly structured discussions and assigned roles and discussion responsibilities to students. The researchers found that with structured discussions, students had relevant and meaningful discussions. Content analysis of the discussions revealed that not only did the students share knowledge but they were processing course information at high cognitive level. However, students did not make efforts to go beyond the course posting

requirements. In a study of undergraduates, Hara et al. (2000) found differences in the quantity and complexity of discussion compared to graduates in the previous study.

Opportunities to receive feedback from peers as well as give feedback to peers add an element of relevancy and meaningfulness to learner-learner interactions. Akahori & Kim (2003) found that peer evaluation highly promoted students' motivation to learn and was effective in cultivating metacognition through modeling. In an exploratory study on peer feedback, Ertmer et al., (2007), students noted that peer feedback was valuable and, more importantly, described how giving peer feedback not only reinforced their learning but enabled them to achieve higher understanding. Students who received peer feedback valued the confirmation from peers. Students also reported that giving peer feedback was just as rewarding because it required them to reflect more critically on their own thought process.

Dimension 3: Learner-Content Interactions

Although instructor-learner interactions and learner-learner interactions have garnered much attention in the research community, learner-content is the fundamental form of interaction on which all education is based. According to Moore (1989), it is "the process of intellectually interacting with content [which] results in changes in the learner's understanding, the learner's perspective, or the cognitive structures of the learner's mind" (p. 1). Learner-content interactions are not widely studied or identified in the literature. Thurmond and Wambach (2004) posited that these interactions are difficult to distinguish in the literature as separate elements because they are often associated with other dimensions such as learner-interface interactions. Swan (2001) added that

interaction with content is possibly accomplished through interactions with instructors and peers in the online environment and, therefore, subsumed by other measures in studies. In this study, learner-content interactions are those interactions which help the learner to effectively transfer objective knowledge. Therefore, the elements identified as learner-content interactions are, for the most part, teacher-centered approaches. Although research specific to learner-content interactions is scarce, a number of recommendations for elements that foster learner-content interactions exist. Along with the available research, these recommendations from researchers provide information related to learner-content quality elements.

Learner-Content Elements of Design

One element of learner-content interactions that has been identified in the literature is the presence of clearly stated course objectives. Song (2005) described university students' perceptions regarding the instructional quality of online courses delivered via a course management system and found that clear course objectives were one of the most important factors that impacted student perceptions. Song (2005) also recommended that clarity can be improved if lessons are sequenced in accordance with objectives. Dennen et al. (2007) confirmed this finding through student reports which identified clearly stated course objectives and rules as important aspects for overall satisfaction in an online course.

Clear objectives for participation in the online course including interactions with the instructor and peers are elements of learner-content interactions. Swan (2001) found correlations between the percentage of grades based on discussion and students'

satisfaction with the course. Students desire that a significant part of a course grade depend on participation as they believe a considerable amount of effort is necessary for interacting with instructors and peers in online discussions (Colbert et al., 2007; Pena-Shaff et al., 2005).

The use of a participation rubric sets clear expectations and criteria for the quantity and quality of online participation needed to interact with the instructor, other learners, and course content (Garrison & Cleveland-Innes, 2005; Pawan et al., 2003). Research indicates that without participation criteria, course engagement lessens. Lebec and Luft (2007) described learning in an online biology course designed to prepare teachers for a certification exam. Evidence collected through mixed methods revealed that students gained declarative knowledge but did not attain complex levels of understanding. In addition, engagement levels varied among participants. The researchers attributed these findings in part, to the lack of participation requirements and personal accountability.

Rovai and Barnum (2003) found that active interaction, as measured by the number of messages posted by students per week, was a significant predictor of perceived learning. Active interaction, whether it is in the form of interaction with instructors or peer, also relates to interaction with course content because when learners interact with peers and instructors in an online course, the interactions are structured by the content. Continuous interaction with online content may enhance learning (Swan, 2002). Therefore, a requirement that learners respond to peers' posting is another element that could lead to an increase in active interaction (Johnson & Aragon, 2003). Hara et al.

(2000) found that requiring students to respond to others in an online discussion did encourage students to participate. However, nearly all the students posted just the minimum number of responses required, demonstrating the power of a response requirement.

It has long been reported in the literature that online learning requires time management skills (Alexander, 1994). Therefore, the use of timelines and due dates can help learners manage time with course content (Liu, 2006; Northrup 2002; Song & Kidd, 2005). Other elements that have been found to be valued by students for their learning about the content are the use of teacher-created outlines and summaries to guide student thinking about the content. Reisetter et al. (2007) noted that learners in the traditional face to face classroom valued the class setting and attendance of teacher and classmates as a learning support, but online learners emphasized the value of teacher-created materials as a support for their content learning. Finally, the use of online quizzes and tests has been identified as a support for content learning by online students. Navarro and Shoemaker (2000) compared the performance and perceptions of online learners and face to face learners enrolled in an undergraduate economic course. From the survey responses of the online students, the researchers found that online students learned as well as or better than those in the face to face setting and had a high degree of satisfaction. The online students reported that essential and most enjoyable to their learning were the multimedia lectures and the electronic testing of important course content with instant feedback.

Dimension 4: Learner-Interface Interactions

Hillman et al., (1994) contended that for any interactions such as instructor-learner, learner-learner, or learner-content, to occur in an online environment, the learner must first interact with the interface used to deliver content and scaffold communicative interactions. In the case of online learning, the interface includes the Internet and the learning technologies used to deliver course content such as Web-pages and CMSs. Learner-interface as a dimension for assessing online course quality is grounded in the theory that each medium uses different symbol systems to convey messages (Salomon, 1974). The characteristics of that medium, in this case, the Internet and the various learning technologies, can influence the message conveyed, (i.e. course content). Several researchers have determined that learners' proficiency with the interface correlates positively with the learner's ability to attain information from course content and that unfamiliarity with technology poses a negative barrier to learning (Hillman et al. 1994; Schrum & Hong, 2002). However, Kenny (2002) reported that participation in an online learning environment can actually benefit technology inexperienced students by increasing their exposure to technology and their confidence in the environment. Other researchers report that prior computer experiences, identified as a student characteristic, did not have an impact on overall learning (Neuhauser, 2002; Thurmond et al., 2002). Regardless of the debate, learner-interface interactions do impact students' perception of course quality and interactions (Song & Kidd, 2005; Vonderwell & Zachariah, 2005).

Learner-Interface Elements of Design

Poorly designed courses are often reported as a source of frustration for online students (Yang & Cornelius, 2004). In Swan's (2002) study of online student perceptions relating to online course design factors, course consistency was found to have contributed significantly to students' perceptions about their online experience. Other researchers report similar findings. Young and Norgard (2006) found in their assessment of online course quality in a university setting that students preferred a consistent course design across the university which was not the case at the time of the study. Consistent course design also facilitates ease of navigation. Song and Kidd (2005) found that one aspect affecting students' perception of instructional quality in online courses was the course navigation scheme, the system by which learners access course information within the course site. The ability to navigating pages seamlessly without too many distractions, working hyperlinks, and hyperlinks that clearly indicated link paths were cited by students as important aspects of the course design.

In the absence of face to face communication, design elements which keep the learner on track through interface interactions are essential. Quality learner-interface interactions provide access to clearly stated course expectations, additional resources, online grade books, and tutorials (Lebec & Luft, 2007). Elements such as simple, clear, and easy to understand course layouts, module structures (Vonderwell & Zachariah, 2005) and redundancy (Swan, 2002) prevent students from getting lost within the online environment. Color is often used as a strategy to keep learners oriented. Song and Kidd (2005) established that participants' levels of interest were impacted by the visual appeal

of the course and clearly had preferences for certain visual effects as evidenced by comments indicating that the course under evaluation was not designed with colors "chosen in a professional and easily readable manner" (p. 2403). Effective uses of multimedia such as images, animations, and video and audio presentations were also preferred by students as interface elements and impacted their perceptions of course quality. Unnecessary uses of multimedia caused distractions while effective uses had the potential to positively impact student achievement (Song & Kidd, 2005, Yoon, 2003).

Dimension 5: Instructional Strategies

Engagement in online learning is crucial. Instructional strategies are the techniques implemented by designers/instructors to engage students and facilitate student learning (Jonassen et al., 1991). Instructional strategies have not been identified in the literature as a dimension of quality in the same way that instructor-learner, learner-learner, learner-content, and learner-interface interactions are recognized. Yet, techniques for engaging learners are the intermediaries which activate instructor- learner, learner-learner, learner-content, and learner-interface interactions. Instructional strategies are design mechanisms essential to achieving meaningful learning. Therefore, the presence or absence of instructional strategies as a dimension of online learning has implications for course quality.

Instructional Strategies Elements of Design

Current perspectives in instructional design favor constructivism. The possibilities of online learning to cultivate meaningful learning align well with constructivist approaches. Therefore, research relating to instructional strategies in online learning often

identifies strategies grounded in constructivist perspectives. Also, a specific instructional strategy is rarely the focus of a research study. Elements of instructional strategies are typically identified as recommendations for best practice.

In order to assess the depth of online learning, Garrison and Cleveland-Innes (2003), studied four designs, varying in approach. In one design, students critically analyzed readings with little instructor involvement. Another design relied on text "lectures" with little instructor involvement. A third course was designed in which participation was voluntary with student moderated discussions and considerable instructor engagement. The fourth course was designed for deep approaches through critical discourse, reflection, role-playing, the use of multiple perspectives, and instructor engagement for mentoring interactions. Only those students in the fourth course shifted towards deeper understanding of the content. Garrison and Cleveland-Innes (2003) attribute the learning success of the latter group to teaching presence - the presence of instructor and students in the role of leader. However, embedded in the course design were instructional strategies, such as opportunities for critical thinking about the course content, role playing, reflection, and diverse perspectives. These techniques facilitated the teaching presence in that they gave the instructor something instructionally valuable to do.

Lebaron and Miller (2005) explored the use of role playing in an online graduate education course. The researchers noted that role playing offers the "essence of socially constructed, authentically applied, collaborative knowledge construction" (p. 1654). Graduate students were provided an in-depth scenario to set the stage, assigned

roles/teams to play in the scenario, and finally implemented the scenario using a variety of course tools such as email for exchanging resources, synchronous chat to reach consensus, and asynchronous discussion boards for both reflective "team" discussions and "whole-course" discussion forums for posting and discussing results. Through student surveys, student evaluation forms, and analysis of student activity and discussion postings throughout the course, Lebaron and Miller (2005) determined that students enjoyed the activity and, more importantly, believed that the role play activity provided an opportunity to apply theories learned in class to a realistic situation.

The online environment is a viable stage for authentic activity. Herrington (2006) stated "online technologies afford the design and creation of truly innovative authentic learning environments" (p. 3164). Fisher and Baird (2005) added that the traditional face to face classroom offers limited opportunities for applying new skills and information in real-world situations but that the online classroom "provides a platform wherein the benefits of both worlds can be blended into an effective model to acquire and then immediately apply new information into the student's workplace" (p. 93). Recent scholarly appeals by Herrington (2006) to use authentic activity to promote higher order learning demonstrate the lack of use in higher education. As Herrington (2006) expressed, "Despite the intuitive appeal of authentic learning environments, and much anecdotal evidence that they are effective in promoting higher order learning, such complex learning environments appear to be used only rarely in higher education courses" (p. 3164). Herrington (2006) summarized the literature on authentic learning and developed a list of ten characteristics:

1. Authentic activities have real-world relevance.

2. Authentic activities are ill-defined, requiring students to define the tasks and sub-tasks needed to complete the activity.

3. Authentic activities comprise complex tasks to be investigated by students over a sustained period of time.

4. Authentic activities provide the opportunity for students to examine the task from different perspectives, using a variety of resources.

5. Authentic activities provide the opportunity to collaborate.

6. Authentic activities provide the opportunity to reflect.

7. Authentic activities can be integrated and applied across different subject areas and lead beyond domain-specific outcomes.

8. Authentic activities are seamlessly integrated with assessment.

9. Authentic activities create polished products valuable in their own right rather than as preparation for something else.

10. Authentic activities allow competing solutions and diversity of outcomes.

These characteristics demonstrate the complexities involved in using authentic activities but also highlight the benefit of this instructional strategy to the development of meaningful learning.

In their role play design, Lebaron and Miller (2005) demonstrated the effectiveness of authentic activity to promote meaningful learning. Through studying the preferences of online graduate students, Northrup (2002) learned that students preferred to learn in innovative online designs such as those that integrated case studies and

structured games. Few research examples of the use of authentic activities in higher education exist, demonstrating the need to seek out higher education course instances where these valuable strategies employed.

Examples of other less complex instructional strategies have also been identified in the literature. Kim et al. (2005) surveyed and interviewed students in an online MBA course in which virtual teaming was used not only as a strategy for project completion but also to simulate the real-world business workplace. The majority of the students agreed that the virtual collaboration component was not only helpful for their learning but was also beneficial in developing the virtual collaboration skills needed in the workforce. The evidence from this study demonstrates the importance of designing not only opportunities for collaborative online discussion but also for collaborative online group work which culminates in the completion of a project. Fisher and Baird (2005) also found that collaborative online work fostered student support, self-regulation, and retention as well as provided a highly meaningful learning experience for students.

One quality of meaningful learning is that it is reflective (Jonassen, 1995). Therefore, activities that promote reflection and critical evaluation of content provide an avenue towards meaningful learning. Several researchers have noted that opportunities for reflection on content were valued by students as a reason for quality learning experiences (Herrington & Oliver 2002; Johnson & Aragon, 2003; Pena-Shaff et al., 2005; Picciano, 2002). Participants surveyed in Pena-Shaff's et al. (2005) study reported that the ability to reflect was created through the use of the asynchronous discussion tools. These opportunities allowed participants to think about what others had written in

relation to readings and to structure their own thoughts before responding. In addition, instructional strategies such as the availability of models and examples to help clarify expectations for assignments and diverse perspectives foster critical evaluation and reflection on student work (Pena-Shaff et al., 2005; Young, 2006).

Stodel, Thompson, and MacDonald (2006), investigated students' perceptions regarding the deficiencies of online learning to identify what learners believed was missing from online courses. One interesting finding was that online courses, while offering flexibility related to time and space, offered little in terms of cognitive flexibility. The researchers established that students desired to have the "freedom to explore and tackle interesting and learner-generated problems" (p. 11) as well as the freedom to explore and inquire about content issues extending beyond the scope of the course. In their study of online quality across dimensions of structure, content, delivery, service, and outcomes, MacDonald and Thompson (2005) found that structure applied to course design was often inflexible in responding to emerging learning needs. The researchers concluded that a course affording prompt redesign as learners' needs emerged leads to a quality learning experience. Freedom to redesign supports individual needs and the personal construction of knowledge. Due to varying experiences and needs, students may find the need for additional support or flexibility to help them build knowledge.

Twigg (2000a) maintained that the key to innovation in online learning is individualization. A strategy for promoting flexible and individualized learning is the use of online formats which offer a variety of tools and content to personalize learning. In the

university setting, these online tutorial formats are integrated into online courses or as self-contained tutorials comprised of small sets of concepts.

Dimension 6: Social Presence

A challenge voiced by students with regard to online environments is the feeling of isolation due to the separation of instructors and learners across distance and time (Hara & Kling, 2000). A considerable amount of literature has been dedicated to understanding how learners connect with each other, establish interpersonal contact, and make themselves known as living beings in online environments (Aragon, 2003; Goertzen & Kristjansson, 2007; Gunawardena & Zittle, 1997; McLoughlin & Luca, 2001; Rovai, 2001; Rovai, 2002). Social presence has emerged from the literature as a theory to explain the dynamics of learning community building in text-based, asynchronous interactions as new knowledge is transformed from a personal activity to a social activity (Kanuka & Anderson, 1998). Social presence theory provides a lens through which the impact of the geographic, temporal and psychological distances between instructors and learners is examined (Aragon, 2003). Gunawardena & Zittle (1997) defined social presence as "the degree to which a person is perceived as a 'real person' in mediated communication" (p. 9). Social presence is included as a dimension of online quality in light of the emerging research on the relationship between social presence and student learning satisfaction (Gunawardena & Zittle, 1997; Hostetter & Busch, 2006; Picciano, 2002; Richard & Swan, 2003; Volet & Wosnitza, 2004; Yoon, 2003).

Workman and Stenard (as cited by Rovai, 2003) analyzed the needs of university distance education students and determined five specialized needs. They found that the one required need centered on meeting the need for interpersonal relationships with peers and instructors. Research conducted by Gunawardena and Zittle (1997) and extended by Richardson & Swan (2003) demonstrated that student's perceptions of social presence in online course are a predictor of their perceived learning. Picciano (2002) also found positive correlations between the level of students' perceptions of social presence and higher results on learning measures.

Hostetter and Busch (2006) found that taking more online classes positively influenced social presence scores, indicating that experience in online courses promotes the development of skills and a better understanding of the need to contribute to an online community. However, in contrast to earlier studies, the researchers found that students' perceptions of social presence had no significant effect on learning outcomes. The researchers speculated that this result might be due to the fact that the participants were from a senior seminar course where the variability in grades was small. These conflicting results do warrant further exploration concerning social presence for the simple reason that teaching and learning is a social process when viewed through the lens of social constructivism and the development social interactions impacts in the development of learning communities.

Social presence is identified as the key aspect of community building. According to Conrad (2005),

> [Community in the online environment] is a general sense of connection, belonging, and comfort that develops over time among members of a group who share purpose or commitment to a common goal. The creation of community simulates for online learners the comforts of home, providing a safe climate, an atmosphere of trust and respect, an invitation for intellectual exchange, and a gathering place for like-minded individuals who are sharing a journey that includes similar activities, purposes, and goals (p. 2).

Not all researchers agree that the development of a community among online learners is necessary for learning to occur. Richardson and Swan (2003) reported that student perceptions of a sense of community correlated with perceptions of overall learning. However, Norton and Hathaway (2008a) found that student learning occurred regardless of students' sense of community. Students' understandings of community were associated with the socio-emotional connections described in the literature and that students differentiated between working to complete tasks and working to build community. While some collaborative groups identified themselves as a community, others did not. Yet, all group tasks and projects were completed and met criteria for high quality work regardless of the designation of community. This study confirmed the notion that community-building in online environments is a voluntary and participatory process (DiPetta, 1998). As LaPadula (2003) stated "the need for a sense of community is obviously stronger for some students than others, whether on campus or miles away" (p.

123). Some learning groups choose to combine a task-oriented approach with time for community building while others choose to attend predominantly to the work of the group without the need for socio-emotional connections. McPherson and Nunes (2004) suggested that "mature, full-time professional, part-time students have neither the time nor the inclination to spend effort on non-essential and unrewarded tasks" (p. 319) such as those required to build community. The development of community may be setting specific (Hill, 1996) or even learner specific (Norton & Hathaway, 2008a). These results show that certain aspects of community are not yet defined and/or are multidimensional. While the debate continues as to whether or not the development of community is necessary for successful online learning, social presence as an aspect of community may be a more likely dimension to assess for online course quality. When the elements of social presence identified in the literature are present in online environments, social presence has been shown to diminish some of the feelings of disconnection students feel in online environments which in turn has an impact on students' perceptions of quality.

Social Presence Elements of Design

From the literature, a number of design features have been identified as elements which foster social presence. Volet and Wosnitza (2004) studied the significance of social presence on university students' appraisals of a cross-national online learning experience embedded in their course of study on intercultural learning and education. Content analysis of student engagement in asynchronous and synchronous activities showed a substantial amount of social interchange and meaningful learning. Prior to the start of the course, students participated in activities designed to build a sense of social

presence for the forthcoming online learning activities. The activities focused on the exchange of emails between the cross-national student groups. The emails were of a social nature containing introductory remarks and student photographs. The researchers attributed this activity to the development of social affordances. Volet and Wosnitza (2004) defined social affordances as "any social elements of the learning design and environment that contribute to facilitating students' learning" (p. 6). The results of this study demonstrate the importance of activities designed to build trust among the class participants (Pena-Shaff et al., 2005; Vonderwell, 2003) and the use of welcome messages at the onset of a course (Johnson and Aragon, 2003; Jones, Kolloff, & Kolloff, 2008). The use of humor in online learning interactions is also cited as a means for developing a comfortable learning atmosphere and, thus, increases the social presence of students (Aragon, 2003).

In a descriptive multiple case study, Wickersham et al., (2007) studied three approaches to online teaching and course design. Analysis of student writings on discussion boards and in e-mail, descriptions from each instructor of specific activities, and web pages and other projects created in the classes revealed that students felt their views were valued, specifically through interactions with other students in a virtual spaced designed in the course for the exchange of student questions and answers. Questions were not only posed by students but also answered by students. Playing the role of expert allowed students the opportunity to share experiences and beliefs and feel like an important part of the learning environment.

Encouraging students to share their experiences and personal stories is a key component in the development of productive virtual teams (Klobas & Haddow, 2000). Opportunities to work collaboratively with other students instill a sense of connectedness. Klobas and Haddow (2000) found in their study of the perceptions of students about learning in collaborative groups that the majority of students explicitly related their experiences as members of virtual teams to their learning. Other researchers echo these findings (Northrup, 2002; Vonderwell, 2003).

Granitz and Greene (2005) recommended the use of learning technologies in support of applying well-established marketing techniques to develop relationship in online courses. Lessons drawn from several examples of application include the use of email, chat, bulletin boards, and student profiles. In particular, student profiles or "biosketches" provide a social context for learning about each other without interfering with course content-related work.

Online Learning and the Disciplines

In traditional higher education classrooms, curriculum, teaching styles, and the use of particular strategies for ensuring quality experiences can differ across disciplines (Becher, 1994; Neumann, 2004). These differences are also found in online learning environments (Smith, Heindel, & Torres-Ayala, 2008). The majority of studies on online learning do not address disciplinary differences (Smith et al., 2008). To investigate these differences, courses must be used as the unit of analysis and disciplinary clusters of courses must be used as comparison groups.

White and Liccardi (2006) delineated disciplinary areas as hard areas and soft areas and then further, as pure and applied. The researchers characterized knowledge in hard disciplinary areas as atomistic, cumulative, and quantitative. Natural sciences such as bioscience, earth environment science, mathematics, statistics, operational research, and physical science were categorized as hard-pure. Disciplinary areas such as engineering, health science and practice, computer science, medicine, dentistry, veterinary medicine, and psychology were categorized as hard-applied. Knowledge in soft disciplinary areas was defined as holistic, reiterative and qualitative. Social sciences and humanities disciplines such as economics, English, history, archaeology, language and linguistics studies, philosophical and religious studies, sociology, anthropology, and politics were classified as soft-pure. Soft applied disciplines include art, design and media, business management and accounting, education, hospitality, leisure, sport and tourism, law, dance, drama and music, social policy, and social work.

White and Liccardi (2006) surveyed 62 graduate and 224 undergraduate students enrolled in online courses across several discipline areas to discover the ways online learning tools and instructional strategies were regarded across a variety of discipline areas. The researchers found that 27% of students in the hard subjects desired the inclusion of online lectures, and 98% of students enrolled in online hard-applied subjects identified the need for more online tests. Eighty-nine percent of the respondents in the hard-pure area expressed the desire for more web-based materials to help visualize problems, computer-based presentations, and simulations. Students from soft-pure disciplines preferred discussions, simulations, and online tests. All students from soft-

applied disciplines preferred online simulations and role-playing. Similar to those students in the hard-pure area, 89% of students enrolled in soft-applied courses desired more online materials to support their learning. Overall, the researchers found that students from the hard disciplinary areas valued instructional strategies that supported building factual and conceptual knowledge while students from the soft disciplinary areas valued strategies that promoted the development of argumentation skills and critical thinking.

Smith et al. (2008) studied the differences and preferences for various online CMS tools between the different disciplinary areas. Hard-pure courses made greater use of online testing features than the other disciplinary classifications. Soft-pure and soft-applied disciplines used digital drop boxes for the exchange of written essays and projects. Researchers also found that the psychological distance between instructors and learners was less in online applied content courses. They hypothesized that tool choices, such as messaging and email, embedded in applied content courses facilitated more interaction between instructors, learners and peers. In pure courses, the high use of document tools found in CMSs was used extensively for instructor-generated lessons, indicating a reliance on textbook material. Smith et al. (2008) concluded that online learning in pure and hard-pure courses are more commoditized or indistinguishable due to the reliance on ready-made courseware tools, while applied courses are increasingly diversified due to the reliance on instructor-learner and learner-learner interactions and community practice.

Finally, Zhao, Lei, Yan, Lai, and Tan (2005) identified factors that affected the effectiveness of distance education through a review of current research on distance education and found that some content may be better suited for face to face instruction while other content may be better suited for online environments. In support of this finding, Zhao et al. (2005) reported that studies of undergraduate courses favored distance education over face to face environments while studies conducted for graduate level courses revealed less positive results. Zhao et al. (2005) posited that undergraduate course focus more on factual knowledge while graduate courses focus on idea development. Zhao et al. further posited the possibility that online environments are more conducive to delivering facts and concepts as opposed to facilitating the discussions and interactions needed for idea development.

The literature presented here indicates that disciplinary areas must be a consideration in the design of online learning environments. The quality dimensions and elements chosen for online designs must be informed by the course content and curriculum. Attending to quality dimensions alone may not lead to the development of a quality course if design elements do not coincide with what is needed to deliver meaningful learning prescribed by the discipline.

Use of Student Perspectives

The increasing demand for online education has spurred an increase in the availability of online universities, programs, and courses (Howell et al., 2003). This proliferation and the flexible nature of online environments have transformed education into a commodity, “making consumers of students and putting them in a position to shop

for the best deal" (Howell, et al., 2003, n.p.). Institutions vying for these consumers results in a focus on quality and a need to know what these consumers perceive as quality.

According to James (2001), student perceptions are valid measures to judge certain aspects of quality in higher education. Students are well-equipped to judge the quality of teaching spaces, the teaching skills of academic staff, their own teaching preferences, the fundamentals of effective teaching such as clear goals, feedback on progress, transparent assessment requirements and grading practices, their personal interactions with instructors, and feelings about being treated as individuals by instructors who show concern for their progress (James, 2001). These are characteristics of what is generally believed to be effective learning environments in higher education (Ramsden, 1991).

Several researchers have recognized the value of collecting student perspectives for the purpose of understanding online learning environments. Student perspectives can help faculty tailor courses to meet the needs of the typical student (Lao & Gonzales, 2005) and "can provide an in-depth understanding of the effectiveness of web-based learning" (Vonderwell, 2003, p. 78). Young and Norgard (2006) stated that "in order to assure quality and consumer satisfaction, institutions and their faculty must pay close attention to their students' perceptions of online courses and programs" (p. 113).

A number of instruments have been developed and validated to evaluate students' perceptions of the quality of their online experiences (Chaney et al. 2007b; Roberts, Irani, Telg & Lundy, 2005; Stewart, Hong, & Strudler, 2004). Recent research has focused on

assessing online quality in higher education through the use of students' perceptions as a measure of quality (Rodriguez et al., 2008; Yang, 2007, Young & Norgard, 2006).The use of students' perceptions regarding the quality of online learning is demonstrated in the literature. Students have the ability to judge their learning environments and recent research has relied on students' views to assess the quality of online learning. Therefore, the use of student views is well established as a viable measure of online quality.

Conclusion

Online learning is a prevalent, viable, and crucial option in higher education. The benefits of online learning environments extend to institutions, faculty, and students. For institutions, online courses and programs provide greater access to students, enhance the reputation of the institution, increase the rate of degree completion, improve student retention, and provide pedagogic improvements. Online learning environments offer faculty the benefits of flexible schedules and the ability to be innovative with new technology tools. Students benefit from the convenience, flexibility, and affordability of learning online. Most important, online learning can provide a highly interactive, social, and meaningful learning experience.

However, not all online programs and courses have reached the level of acceptability in the eyes of employers and among university administrators. Skeptics argue that online learning may not be as effective in providing meaningful learning as traditional face to face environments. Faculty are challenged by the new teaching roles brought about by the need for different instructional strategies, which often conflict with traditional university teaching conceptions. Students feel isolated in online courses and

frustrated by inconsistent course designs. Also, the challenge of communicating across distance in a text-based environment can decrease the motivation to learn online. Students are skeptical as well about the ability to learn from peers. Challenges in a learning environment influence students' perceptions about overall course quality. It is the limitations cited in the literature that have directed research towards understanding the essence of online quality and the role of course design in bringing together pedagogical models, instructional strategies, and learning technologies to provide a meaningful learning experience.

Dabbagh and Bannan-Ritland (2005) define online learning as "an open and distributed learning environment that uses pedagogical tools, enabled by the Internet and Web-based technologies to facilitate learning and knowledge building through meaningful action and interaction" (p. 15). Content is delivered in an online environment and presented through the design of pedagogical models, instructional strategies, and learning technologies suited for the content. Meaningful learning is attained when instructors and learners interact through the components of online learning. However, meaningful learning depends on the quality of online learning environment.

Research has looked extensively at the aspects of teaching and learning and the various instructional strategies and technology tools that can be used to mitigate the challenges often experienced by online students and thus, have a positive effect on students' perceptions of course quality. Design guidelines and best practices have been developed as well as quality benchmarks to inform instructional designers and online instructors about how to design and teach effectively in online learning environments.

Several instruments have been designed and validated through the identification of design quality elements or strategies found in research on students' perspectives of quality online experiences. Typically, these elements have been categorized under researcher-created constructs to identify a dimension addressed by the elements. The dimensions created across studies share some commonalities but a clear set of research-based quality dimensions, developed for the purpose of defining quality has yet to be reported in the literature. Lacking in the literature is a theory of online learning quality.

Theory or "general principles whose applicability to specific educational problems are unknown until tested empirically" (McMillan & Schumacher, 2001, p. 77) can be formulated at different levels of thought. Glesne (1999) identified two types of theories: empirical generalizations and formal theory. Empirical generalizations or substantive theories, according to Glesne (1999), are a type of theory that "consists of outcomes (empirical generalizations) from related studies and mainly functions to raise questions or provide rationale for new studies, and to compare and contrast with study findings. A review of literature related to the study's main concepts provides the base for working with empirical generalizations" (p. 22). These theory types are at a low level of abstraction.

Formal theory is also known as general theory or middle-range propositions. According to Glesne, "This type of theory explains whole phenomena and is broader in scope than substantive theories" (p. 22). Generating "middle-range" propositions consists of the identification of a core category and process categories such as what occurs in

grounded theory research. Data collected from the researcher form the basis for the theory.

This research built a substantive theory of online learning quality through critical review of the literature on online learning and the design features that have been shown in empirical studies to have an impact on students' perceptions of their online learning experience and course quality. To build the theory of online learning quality for the current study, six research-based dimensions were first chosen. The six dimensions chosen were those that most commonly appeared in the literature and were tied to evidence of impact on student learning in online environments. In addition, the six dimensions - instructor-learner interactions, learner-learner interactions, learner-content interactions, learner-interface interactions, learner-instructional strategy interactions, and social presence - were informed by theory. The six dimensions of quality were each instantiated by several elements of design informed by research and principles of good educational practice.

A theory of online learning quality was described as the presence of six quality dimensions (instructor-learner, learner-learner, learner-content, learner-interface, learner-instructional strategies, and social presence), each instantiated by certain elements of design. The components of online learning including the pedagogical models, learning technologies, and instructional strategies provided the framework for the inclusion of quality dimensions and elements of design. Figure 2 depicts the model for a theory of online quality as described in the current study

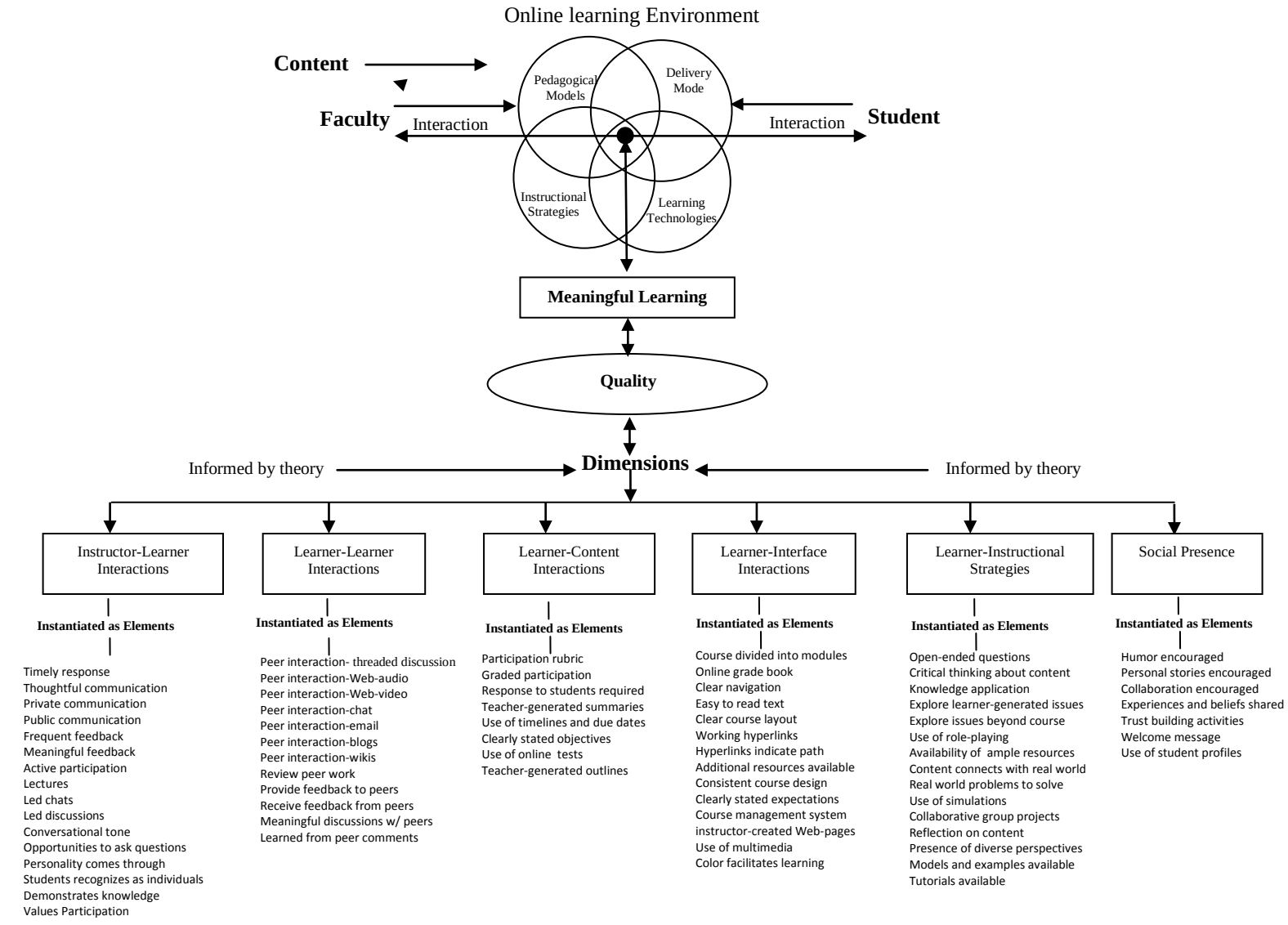

Figure 2. A theory of online learning quality

3. Methodology

Research Questions

This study was designed to examine the variables of online learning quality, specifically addressing what university students reported about their perceptions of the quality of their learning in online environments and what university students reported about the ways in which online learning experiences were enacted across a large university.

Five research questions focus this study:

1. What do University students report about the quality of online courses?

2. What do University students report about the frequency with which certain quality elements are used in online courses?

3. Is there a difference in University students' rating of overall online course quality by academic unit, academic load, and by academic status? The researcher hypothesized that

    a) There will be no significant difference between academic units (College of Education and Human Development, College of Health and Human Services, College of Humanities and Social Sciences, College of Science, College of Visual and Performing Arts, School of Management, School of Public Policy, School of Information Technology and Engineering,

Institute for Conflict analysis and Resolution) students' rating of overall online course quality.

b) There will be no significant difference between undergraduates and graduate students' rating of overall online course quality.

c) There will be no significant difference between full-time and part time students' rating of overall online course quality.

4. Is there a difference in University students' rating of overall quality in each dimension (instructor-learner, learner-learner, learner-content, learner instructional strategies, learner-interface, and social presence) by academic division, academic load, and academic status? The researcher hypothesized that

a) There will be no significant difference between academic divisions (College of Education and Human Development, College of Health and Human Services, College of Humanities and Social Sciences, College of Science, College of Visual and Performing Arts, School of Management, School of Public Policy, School of Information Technology and Engineering, Institute for Conflict analysis and Resolution) students' rating of overall quality in each dimension.

b) There will be no significant difference between undergraduates and graduate students' rating of overall quality in each dimension.

c) There will be no significant difference between full-time and part time students' rating of overall quality in each dimension.

5. Which quality dimensions contribute to University students' perceptions of overall online course quality? The researcher hypothesized that

a) There will be no significant relationship between students' overall rating of online quality dimensions (instructor-learner interaction, learner-learner interaction, learner-content interaction, learner-interface interaction, instructional strategies, and social presence) and their rating of overall online course quality.

6. Which quality elements contribute to University students' overall perceptions of quality for instructor-learner interactions, learner-learner interactions, learner-content interactions, learner-interface interactions, learner-instructional strategies interactions, and social presence? The researcher hypothesized that

a) There will be no significant relationship between students' overall rating of instructor-learner interaction and their reported frequency of related instructor-learner quality elements.
b) There will be no significant relationship between students' overall rating of learner-learner interaction and their reported frequency of related learner-learner quality elements.
c) There will be no significant relationship between students' overall rating of learner-content interaction and their reported frequency of related learner-content quality elements.

d) There will be no significant relationship between students' overall rating of learner-interface interaction and their reported frequency of related learner-interface quality elements.

e) There will be no significant relationship between students' overall rating of learner-instructional strategies interaction and their reported frequency of related learner- instructional strategies quality elements.

f) There will be no significant relationship between students' overall rating of social presence and their reported frequency of related social presence quality elements.

Case Study

Rationale

In order to develop a portrait of how online learning was enacted at a higher education institute, a descriptive, bounded single-case study was used. The rationale for using this particular design addresses each of the four components: a case study, a single case, a bounded design, and a descriptive case. According to Yin (2003a), a case study has a distinct advantage "when a 'how'…question is being asked about a contemporary set of events, over which the investigator has little or no control" (p. 9). In this study, the overarching research question that framed the purpose of the study was how quality online learning was enacted in a university setting.

A rationale for using a single-case design is the use of a "representative or typical case" with an objective "to capture the circumstances and conditions of an everyday or commonplace situation" (Yin, 2003a, p. 41). This study focused on a University,

comparable to at least two dozen universities across the nation, with the purpose of capturing the condition of online learning, a commonplace situation at universities. Online learning is used in two thirds of 2,500 universities surveyed across the nation (Allen & Seaman, 2007), justifying its existence as a common occurrence in higher education.

The pedagogical models, instructional strategies, and learning technologies of online learning are not unique to a particular higher education setting. In addition, with the availability of open source programs and the ubiquitous use of course management systems for designing and delivering online learning in higher education, it can be assumed that peer universities that implement online learning environments have the same online learning tools available. It is an assumption that the findings from this case will be informative about the experiences of the average institution (Yin, 2003a). Therefore, choosing a particular university as a representative case of online learning enactment is justified.

Some authors reject the notion of a single-case study on the basis that one case lacks analytic power and generalizability of results and, therefore, advocate the use of multiple-case studies (Campbell, 1975; Yin, 2003a). However, Yin (2003a) suggests that within a single case, valuable knowledge about the institution as a whole can be obtained from analytically comparing separate sections of the institution. This study described and compared the use of online learning in courses offered by each College within the University in order to develop a portrait of what is happening at the University as a whole.

This case study is an exploration of a bounded system. According to Creswell (2005), bounded means that "the case is separated out for research in terms of time, place, or some physical boundaries" (p. 439). Regarding the current research, the University is studied as a case separated out for research from its peer institutions.

Descriptive case studies present a complete description of a phenomenon within its context (Yin, 2003b). A descriptive theory is developed to guide data collection and illustrates the scope and depth of the case described (Yin, 2003b). In this study, the components of online designs and the quality elements used to implement online learning in the University setting frame the descriptive theory of this study.

The Case

The University is a comprehensive, public institution located approximately 20 miles west of Washington, D.C. With an enrollment of 30,714 students in the Fall 2008 semester, it is the second largest university in the Commonwealth of Virginia. Full-time instructional and research faculty and part-time instructional faculty during the Fall 2008 semester totaled 2,333.

The University offers four degree programs: Bachelor's, Master's, Doctoral, and Professional (Law). The University is divided into eleven academic divisions: College of Education and Human Development (CEHD), College of Health and Human Services (HHS), College of Humanities and Social Sciences (CHSS), College of Sciences (COS), College of Visual and Performing Arts (CVPA), Institute for Conflict Analysis and Resolution (ICAR), School of Law (SOL), School of Management (SOM), School of Public Policy (SPP), School of Information Technology and Engineering (ITE), and the

Institute for Advanced Study. The Institute was recently elevated to an academic division and, therefore, has no readily available demographic data published for the institution

The University is comparable to twenty four peer institutions identified by the State Council of Higher Education for Virginia (SCHEV). The current list of 25 peer institutions was approved in 2007 and is maintained as a benchmark for targeting comparative data by SCHEV, in particular, for faculty salaries. These peer institutions are included in Appendix A. The criteria used to establish the ability to compare these institutions with the case are based on the Carnegie Classification of Institutions of Higher Education descriptors and include the level of research activity, size and setting, enrollment profile, undergraduate instructional program, undergraduate profile, graduate instructional program, and the 2000 Carnegie Classification.

According to SCHEV 2007 criteria, the University is described as a large, high research activity level, four-year, non-residential university with the majority of students enrolled as undergraduates. The majority of the bachelor's degree majors are in arts and sciences with a high graduate coexistence. The undergraduate profile shows that the level of full-time enrolled undergraduates is medium (i.e. 60-79% of the undergraduates enroll as fulltime students).The University is selective in admissions, accepting first year students whose test scores rank approximately in the middle two-fifths of baccalaureate institutions. In addition, at least 20% of the students entering as undergraduates are transfer students. The graduate instructional program is considered comprehensive, awarding doctoral degrees in science, technology, engineering, mathematics, humanities and social sciences as well as professional education in fields such as business, education,

engineering, law, public policy, social work, or health professions (Institutional Research and Reporting, 2007).

Peer institution lists can also be generated using the Carnegie Classification of Institutions of Higher Education comparison tool and sorting institutions using basic criteria such as level of research activity, size, setting, and public/private designation. According to the 2005 Carnegie Classification of Institutions of Higher Education, the basic classification of the University is "Research University with High Research Activity." Under the Carnegie Classification, the University compares to thirty- eight other large, public, four-year, primarily non-residential, research universities. These designations are used by the University's Office of Institutional Assessment to compare University results on assessment surveys such as the National Survey of Student Engagement (NSSE) with peer institutions. A complete list of the thirty-eight the University's Carnegie peers is included in Appendix B.

The higher education institution, chosen as the setting for this study mirrors other large universities across the United States. As a representative sample of the larger population of similar universities across the nation, coupled with the fact that online learning is a part of the higher education landscape at large, it is assumed that online learning environments found at the University reflect online learning use at peer institutions. Therefore, it is possible to produce generalizable results in this study.

While the researcher is aware of numerous online options available at the University, and the University course catalog distinguishes Internet-based or "Net" courses from traditional face to face courses, there is no distinction between face to face

courses and hybrid courses. The general term of "Net" is not adequate in describing the various options for delivery mode and the ways in which online learning is delivered to students. This study distinguishes between four different types of online learning delivery modes in order to better understand how online learning is implemented.

The University is currently revising its distance education mission statement and has proposed to use the Southern Association of Colleges and Schools (SACS) distance education definition, which is 51% of the course is taught online. To date, there is no policy for online learning or mechanism in place for students to evaluate their online course experiences as traditionally done in face to face settings at the University. Therefore, this study has the potential to inform the University about how online learning is used across the University and to provide an assessment from students' perspectives as to the quality of these uses.

Studying the Case

Survey Rationale

To develop a comprehensive description of how online learning is enacted at the University, data are needed from all instances of online learning use across the University. This requires a data collection strategy that accommodates large numbers. Therefore, a survey design was used as a data collection strategy to study this case.

Surveys are versatile, efficient, and generalizable methods to obtain descriptions of traits, beliefs, attitudes, and other characteristics from a large population (McMillan & Schumacher, 2001). The focus of survey research is directed toward learning about a population (Creswell, 2005). McMillan and Schumacher (2001) stated, "Surveys can

describe the incidence, frequency, and distribution of characteristics of an identified population" (p. 304). Therefore, the descriptive nature and large sample size of this study aligns with the use of a survey to describe the case.

Unit of Analysis

The research questions that frame this study focused on the frequency of use of quality elements in online courses across the University and students' overall ratings of six quality dimensions. Quality elements are the variables reported in the literature to be factors that contribute to quality online learning experiences. As defined in this study, two modes of delivery, Web-only and hybrid, support teaching and learning intentionally designed for online environments. Therefore, the unit of analysis in this case study is the courses offered through each Academic unit delivered in Web-only or hybrid modes during the Fall 2008 academic semester.

Description of Faculty

In the Fall 2008 academic semester, the University faculty was comprised of 1,134 full-time instructional faculty and 1,005 part-time instructional faculty. Forty percent of the faculty was female, and 60% of the faculty was male. The average salary for instructional faculty for the 2007-2008 academic year was $87,724. Table 3.1 describes the tenure status of instructional faculty.

Table 3.1

Tenure Status of Instructional Faculty- 2007-2008

Rank	Tenured	Tenure Track	Term	Total
Professor	307	0	9	316
Associate	276	20	44	340
Assistant	5	236	121	366
Instructor	0	1	85	86
Total	588	257	259	1,104

The faculty is distributed across eleven academic divisions within the University. However, as a professional school, the School of Law operates within the University as a unique entity, and therefore, the specialized requirements and program characteristics are too exclusive for consideration as part of the general University setting. Therefore, demographics for the School of Law were not considered further in this study. As a new addition to the University as an academic unit, The Institute for Advanced Study was eliminated from the discussion due to lack of official University demographic data. Table 3.2 describes the distribution of faculty across the remaining nine academic units.

Table 3.2

Number of Instructional Faculty by Academic Divisions-2008

Academic Divisions	Instructional	Research	Part-time	Total Faculty
CEHD	107	4	209	320
CHSS	393	19	255	667
HHS	66	8	91	75
COS	179	94	75	348
CVPA	63	0	61	124
SOM	81	0	62	143
SPP	40	26	31	97
ITE	118	24	108	250
ICAR	19	1	15	35
Total				2,139

Description of Courses

For the Fall 2008 semester at the University, a total of 4,655 courses were listed in the course catalog. There were 4,112 courses offered throughout the nine academic divisions of interest with 67 courses officially designated as “Net” courses. Thus, 1.6% of the courses offered in the nine divisions were characterized as fully online courses. Table 3.3 summarizes the number of traditional face to face courses and the number of online courses published in the University course catalog for the nine academic units included in this study.

Table 3.3

Number of Courses Published in Fall 2008 University Course Catalog

Academic Unit	Traditional	Net Courses
CEHD	383	25
CHSS	1,343	9
HHS	362	16
COS	723	1
CVPA	331	0
SOM	279	2
SPP	137	2
ITE	487	12
ICAR	67	0
Total	4,112	67

Description of Students

The total student enrollment for Fall 2008 was 30,714 students. Fifty-six percent of the student population were female, 44% were male. Eight-three percent of the student population were enrolled as in-state students, and 17% enrolled as out-of-state students. Fifty-four percent of the student population were enrolled as full-time , and 45% were considered part-time. Total undergraduate enrollment in the Fall 2008 semester was 18,809, and 11,224 students were enrolled in graduate study. Enrollment by academic division is described in Table 3.4, and Table 3.5 summarizes the enrollments for the largest programs in the 2007-2008 academic year.

Table 3.4

Fall 2008 Enrollment by Academic Division

Academic Division	Undergraduate	Graduate	Total enrollment
CEHD	660	3,810	4,479
CHSS	6,219	1,989	8,208
HHS	1,269	756	2,025
COS	1,893	910	2,803
CVPA	1,046	226	1,272
SOM	3,853	477	4,330
SPP	0	975	975
ITE	1,784	2,136	3,920
ICAR	117	288	405
Total	16,841	11,567	28,417

Table 3.5

Largest Programs by Enrollment- 2007-2008

Program	Student enrollment
Undergraduate	
Biology	1,078
Accounting	979
Psychology	972
Management	950
Government and International Politics	869
Nursing	791
Graduate	
Curriculum and Instruction	1,004
Special Education	492
Public Policy	450
Business Administration	319
Educational Leadership	280
New Professional Studies	270

Instrumentation

Quilter and Weber (2004) stated, “There is no one ‘right way’ to evaluate the quality of online teaching/learning,” and “there are no standard tools or forms that are currently being used on a wide scale” (p. 71) to assess quality in online learning environments. The diversity of options available in online learning does not allow for one standard form of quality assessment. Student satisfaction surveys, rating scales, and observations have been adapted to online learning environments from traditional learning settings. Lacking in the literature are instruments used to describe implementations of online learning, how the course is designed, what tools are used, how learning is supported, how needs are assessed, and what kinds of interactions occur. Therefore, this study used a researcher-created survey in order to address the study questions: (a) What are students’ perceptions about the overall quality of their learning in online environments? and (b) What do students report concerning the frequency a quality element is used in the design of their online learning environment?

Online Learning Quality Inventory (OLQI) Survey Instrument

The Online Learning Quality Inventory (OLQI) is a researcher-created instrument designed to collect data on students’ perceptions about how online learning is implemented in courses they enrolled in for Fall 2008 which were identified by the instructor as web-only or hybrid. Specifically, the instrument collected students’ perceptions about the quality of their learning in the online course and the frequency each quality element was used in the online course.

A review of the literature addressing the elements of quality in online learning was conducted to identify the elements of quality. Databases such as ERIC and Digital Dissertations as well as peer reviewed journals such as those from the Association for the Advancement of Computing in Education (AACE) and The International Society for Technology Education (ISTE) were searched. Other peer-reviewed journals dedicated to distance education and technology in higher education, such as *The American Journal of Distance Education, Journal of Distance Education*, and *Internet and Higher Education* were also included in the literature review. Additionally, refereed journals from various content areas, such as nursing and management, were subsequently explored to capture findings from research on online learning conducted in those disciplines. The search spanned the years 1985 to 2008 and focused on the quality of teaching and learning in online environments rather than administrative and/or institutional aspects of distance education. Search descriptors included distance learning, online learning, quality indicator, effective online learning, and online design.

The literature reviewed included a range of epistemological perspectives. However, the majority of quality elements found in recent literature reflected constructivist perspectives as research on online learning has shown an alignment between the use of constructivist principles and meaningful online experiences. Therefore, quality elements represented in questionnaire items that reflect constructivist perspectives outnumber those elements reflecting objectivist perspectives. As reported in the literature, online designs which integrate both perspectives are promoted as environments that can result in meaningful learning experiences (Cuthrell & Lyon, 2007).

Quality elements were identified and categorized within six dimensions also found in the literature: Instructor-Learner Interaction, Learner-Learner Interaction, Learner-Content Interaction, Learner-Interface Interaction, Instructional Strategies, and Social Presence. These dimensions were based on the literature and commonly used in other instruments designed by researchers to assess online course quality (e.g. Chaney et al., 2007b; Stewart et al., 2004). A matrix of quality dimensions, elements, and associated references from the literature are presented in Appendix C.

The Online Learning Quality Inventory was a researcher-created survey containing selected response items and close-ended items. The questionnaire was comprised of six sections. Section I collected course identification number in order to associate the collected data with an academic division. Through selected response items, Section II collected participant demographics including gender, age, academic status, course load, and online course enrollment history.

To answer RQs 1, 3, and 4 regarding students' perceptions about the quality of their learning in their online course, differences in students' ratings of overall course quality, and the contribution of quality dimensions to the students' perception of overall course quality, seven close-ended questions in Section III addressed students' perceptions about the overall quality of the course and overall quality as it related to each of the six dimensions. To elicit a descriptive reaction to the overall quality of the six dimensions of quality, a semantic differential scale with adjective pairs "not good at all" and "very good" was used.

To address RQ 2 regarding the frequency elements of quality were used in the design of their online learning experience, a series of close-ended questions which described the implementation of each quality element in an online learning setting were designed in Section IV. Seventy-two items, each representing a quality element, were featured in this section. Each quality dimension was specifically represented by a number of quality element questionnaire items derived from the literature. Data from Section IV (frequency of use of quality elements) and Section III (overall quality ratings of each online dimension) were collected in order to answer research question 5. The epistemological perspective reflected in each quality element questionnaire item was identified. Quality elements were categorized as elements favoring objectivist, constructivist, or either objectivist or constructivist perspectives. When an epistemological perspective did not apply to the quality element, it was labeled "not applicable." Table 3.6 summarizes the quality dimensions, the total number of Section IV questionnaire items attributed to each, and the epistemological perspective that was reflected by the quality element item.

Table 3.6

Item Number, Totals Attributed to Quality Dimensions and Perspective

Quality Dimension	Item #	O	C	E	N	Total # of Items
Instructor-Learner	Items# 1-16	1	1	14	0	16
Learner-Learner	Items # 17- 28	0	5	0	7	12
Learner-Content	Items # 29-36	4	0	4	0	8
Instructional Strategies	Items # 37-51	3	12	0	0	15
Learner-Interface	Items # 52-65	0	0	3	11	14
Social Presence	Items # 66-72	0	3	4	0	7

O= objectivist, C= constructivist, E= either, N= not applicable

The response options for students' report of the frequency of use were provided by the use of an ordinal scale. The frequency ordinal scale response options were "never," "rarely," "occasionally," and "often."

The OLQI was available in an electronic format. The electronic survey was constructed using a commercial online survey service (surveymonkey.com). The questionnaire is found in Appendix D.

Validity

A panel of six faculty with extensive experience in designing and teaching in online environments reviewed the instrument for face validity and content validity. Face validity is defined as a determination of whether or not the items appear to be relevant to the constructs being investigated (Chaney et al., 2007b). Content validity is defined by Scanlan (2003) "as the degree to which the scale properly [reflects] student-related dimensions of quality" (p. 4) in online learning. Expert comments and recommendations were collected and necessary changes to the questionnaire made. To elicit feedback from online students, a test instrument was administered to 113 students enrolled in one of six online courses offered through the College of Education and Human Development, Instructional Technology in the Spring 2008 semester. This also provided the opportunity for the researcher to collect data for the purposes of instrument reliability testing.

Participant Selection

The participants for this study were selected from the population of University students who were enrolled in Web-only or hybrid online courses offered by the University during the Fall 2008 semester. Both graduate and undergraduate academic

levels were included. Both male and female and part-time and full-time students were considered in this population.

To ensure the appropriate selection of students, the researcher elicited online course information directly from the University faculty. Through a researcher-created form, faculty were asked to provide Web-only and hybrid course information as well as permissions to select enrolled students as participants for the study. This information formed the foundation of the participant selection process.

The Faculty Online Course Identification (FOCI) form provided faculty information about the study and the definitions of the four possible online learning delivery modes as defined by the researcher. Faculty were asked to indicate which of the delivery modes best described the delivery of their course(s), to describe their use of online learning if that use did not fit into the definitions, or to indicate that they were not using any online learning. Additionally, the form provided a section for completing course identification components such as course number and section number. Faculty were asked to provide demographic information such as academic division or college affiliation and rank. The FOCI form was constructed in an electronic format created through a commercial survey service (surveymonkey.com). A copy of the FOCI form is included in Appendix E.

The FOCI form served two purposes. The first purpose was to provide information about the ways online learning was delivered at the University in the nine divisions of interest. The second purpose of the FOCI form was to identify online courses from which enrolled students were selected to participate in the Online Learning Quality

Inventory. Although the University course catalog identified courses formally designated as online courses, not all instances of online learning were captured in the course catalog. Faculty may make decisions to offer traditional face to face courses as online options or faculty may decide to deliver part of a face to face course in an online learning environment (hybrid). There is not a mechanism in the course catalog system for designating hybrid courses and, therefore, hybrid courses are not captured in the University course catalog. In addition, courses not yet formally approved for the "Net" designation were not identified in the course catalog. Also, not all courses appear in the course catalog. Some programs, such as those the use a cohort format, submit their courses as "no print," which indicates that the courses are not printed in the official course catalog and not available to students outside of the particular program's cohort structure. The FOCI form provided a means to identify online courses not published in the University course catalog by asking faculty who design and teach courses to identify how they are using online learning.

Only courses designated on the FOCI form as Web-only or hybrid were used in this study to elicit information about students' perceptions of their online experiences. Web-only and hybrid courses, as defined by the researcher, are intentionally designed to use the online environment for teaching and learning whereas Web-enhanced and Web-supported delivery modes, as defined by the researcher, are used in courses designed for teaching and learning in a face to face setting. Therefore, only those courses identified by the faculty and designated as Web-only or Hybrid were chosen as possible sources for subject selection.

Initially, the FOCI form was distributed electronically to all faculty in Spring 2008 by the University Provost on behalf of the researcher. However, only 66 forms were completed and returned. Among the returned forms, six possible Web-only courses and three hybrid courses were identified. This was not an acceptable number of courses from which to select participants. To increase the response rate, the researcher met with the Dean of the College of Education and Human Development, who agreed to contact all University Deans via email on the researcher's behalf. The CEHD Dean requested assistance in finding the best way to solicit information on the use of online learning within each academic division. With the help of several Deans, online course faculty coordinators were identified, and through email or face to face meetings, the researcher attempted to identify online course options. In some cases, technology coordinators from several Colleges made faculty aware that a doctoral student was interested in how they used online learning in their teaching. Through this process, the researcher was able to identify ITE online courses and discover that faculty in ICAR did not use online learning as defined by the study. The researcher also collected contact information for all faculty who were scheduled to teach a course in Fall 2008 and sent an email requesting that faculty complete the electronic form to identify uses of online learning. The link to the electronic form was provided in the email. Only faculty from CEHD, CHSS, HHS, COS, CVPA, SOM, SPP, ITE, ICAR were contacted. Emails to faculty were sent as blind copies. A total of 1,457 faculty were contacted. A copy of the email sent to faculty is included in Appendix F.

A total of 187 forms were completed for a response rate of 13%. This was a great improvement over the previous attempt to collect information from faculty in Spring 2008. The email and FOCI form requested that faculty indicate if they were not using any type of online delivery as defined on the form. However, most faculty may not have responded simply because they were not using any form of online delivery and did not feel it was necessary to complete the form. Table 3.7 reports the number of forms completed by each academic division.

Table 3.7

Number of FOCI Completed

Academic Division	Completed
CEHD	38
CHSS	74
HHS	23
COS	19
SPP	2
CVPA	1
SOM	3
ITE	27
ICAR	0
Total	187

Using responses to the FOCI form, the researcher was able to identify a potential list of participants for this research. Web-only and hybrid courses were identified through reported course ID, section numbers, and College affiliation. The course ID and section numbers were not reported in this study because the unit of analysis was not the individual course but the online courses in an Academic division. The results of the FOCI form are summarized for each academic division. Results are summarized for CEHD in Table 3.8, for CHSS in Table 3.9, for HHS in Table 3.10, for COS in Table 3.11, for SPP in Table 3.12, for CVPA in Table 3.13, for SOM in Table 3.14, and in Table 3.15 for ITE.

Table 3.8

CEHD FOCI Report

Rank	N	Web-only	Hybrid	Web-enhanced	Wed-supported	None
Professor	6	16	5	3	8	1
Associate	7	2	0	5	9	2
Assistant	10	2	0	6	12	2
Instructor	11	2	1	0	2	6
Adjunct	4	3	0	0	1	2
Total	38	25	6	14	32	13

Table 3.9

CHSS FOCI Report

Rank	N	Web-only	Hybrid	Web-enhanced	Wed-supported	None
Professor	7	0	0	1	5	5
Associate	15	0	0	7	4	6
Assistant	16	1	9	8	8	2
Instructor	25	0	0	11	15	9
Adjunct	11	0	0	1	4	7
Total	74	1	9	28	36	29

Table 3.10

HHS FOCI Report

Rank	N	Web-only	Hybrid	Web-enhanced	Wed-supported	None
Professor	4	3	0	0	4	2
Associate	4	0	1	1	0	1
Assistant	8	2	1	0	7	3
Instructor	4	0	0	0	2	1
Adjunct	3	2	0	0	0	1
Total	23	7	2	1	13	8

Table 3.11

COS FOCI Report

Rank	N	Web-only	Hybrid	Web-enhanced	Wed-supported	None
Professor	3	0	4	0	3	0
Associate	4	0	1	3	0	1
Assistant	3	0	0	0	0	1
Instructor	5	0	0	0	3	3
Adjunct	4	1	0	2	0	2
Total	19	1	5	5	6	7

Table 3.12

SPP FOCI Report

Rank	N	Web-only	Hybrid	Web-enhanced	Wed-supported	None
Professor	1	0	0	2	0	0
Associate	0	0	0	0	0	0
Assistant	0	0	0	0	0	0
Instructor	0	0	0	0	0	0
Adjunct	1	0	0	0	0	1
Total	2	0	0	2	0	1

Table 3.13

CVPA FOCI Report

Rank	N	Web-only	Hybrid	Web-enhanced	Wed-supported	None
Professor	0	0	0	0	0	0
Associate	0	0	0	0	0	0
Assistant	1	0	1	0	2	0
Instructor	0	0	0	0	0	0
Adjunct	0	0	0	0	0	0
Total	1	0	1	0	2	0

Table 3.14

SOM FOCI Report

Rank	N	Web-only	Hybrid	Web-enhanced	Wed-supported	None
Professor	0	0	0	0	0	0
Associate	0	0	0	0	0	0
Assistant	2	0	2	0	4	0
Instructor	1	0	0	0	0	1
Adjunct	0	0	0	0	0	0
Total	3	0	2	0	4	1

Table 3.15

ITE FOCI Report

Rank	N	Web-only	Hybrid	Web-enhanced	Wed-supported	None
Professor	3	0	0	2	5	0
Associate	4	2	1	1	2	1
Assistant	2	0	0	0	1	1
Instructor	8	0	0	1	8	4
Adjunct	9	4	2	3	16	2
Total	27	6	3	7	32	8

A total of 67 Web-only and hybrid courses were identified as potential sources of subject selection. No results were obtained from faculty in ICAR on the FOCI form. Previous to the distribution of the FOCI form to faculty, several ICAR faculty had informed the researcher via email that online learning was not used in that academic unit. Therefore, ICAR was not considered in this study as a source of subject selection. Additionally, faculty from SPP did not return information regarding the use of Web-only or hybrid courses and therefore, this academic unit was removed from consideration in this study. Table 3.16 summarizes the uses of online learning as reported by faculty in each of the remaining eight academic divisions.

Table 3.16

Summary of Online Learning Use

Academic Division	Web-only	Hybrid	Web-enhanced	Wed-supported	Total Use	None
CEHD	25	6	14	32	77	13
CHSS	1	9	28	36	74	29
HSS	7	2	1	13	23	8
COS	1	5	5	6	17	7
CVPA	0	1	0	2	3	0
SOM	0	2	0	4	6	1
SPP	0	0	2	0	2	1
ITE	6	3	7	32	48	8
Total	39	28	57	125		67

As the FOCI forms were returned, the researcher sent an email to the instructors who had identified Web-only or hybrid courses requesting permission to survey students as required by HSRB. A copy of the email is included in Appendix G.

Seven identified web-only/hybrid courses from CEHD, four from HHS, and one from CVPA, were omitted from the participation selection process due to lack of responses by faculty to permit the survey of students. In addition, some courses reported as Web-only or hybrid did not have a student enrollment for Fall 2008 and could not be used for subject selection. One instructor from CHSS denied the researcher permission to survey students. The number of participants for this study was 531 students. Table 3.17 summarizes the total number of permissions received in each delivery mode from which possible participants were selected.

Table 3.17

Number of Permissions Granted and Number of Possible Participants

Academic Unit	Web-only Permissions	Hybrid Permissions	Number of Identified participants
CEHD	14	3	135
CHSS	2	9	127
HHS	7	2	67
COS	1	4	91
SOM	0	2	0
ITE	11	1	90
Total	35	21	531

Data Collection

Once selection of the participants was completed with instructor permissions, the OLQI distribution began mid-semester. The researcher sent an email to students enrolled in the courses identified as Web-only or hybrid inviting them to participate in the online. The purpose of the research was outlined in the email as well as the course identification number for students' to use as a reference when they took the electronic survey. A copy of the participant invitation email is included in Appendix H. The survey data collection parameters were set to only allow one survey per computer IP address. Therefore, if students were enrolled in more than one of the identified online courses, they were only able to take the survey once from a particular computer even if they had been invited to take the survey for another course.

The OLQI was prefaced by an electronic copy of the HSRB approved consent for student review. HSRB waived the requirement for signature on electronic consent forms.

The researcher provided contact information on the consent form. The consent form also outlined the research procedures, guaranteed of anonymity of the student, confidentiality of the data collected, and an assurance that participation in this study would not have any impact on course grade. Participants were informed that with the electronic OLQI not every computer transmission was perfectly secure but that every reasonable effort would be made to protect the confidentiality of response transmissions. A copy of the consent form is included in Appendix I. In addition, the OLQI introduction script provided an inviting description of the study and directions for completing. Data collected via surveymonkey.com were stored on surveymonkey.com servers.

A total of 164 surveys were started. Twelve surveys were omitted because the participants did not complete survey information further than the first question regarding course identification. Therefore, a total of 152 surveys were completed and returned for a return rate of 29%.

Data Analysis

A variety of analyses, including both descriptive and inferential statistics, were performed in order to answer the following questions and hypotheses. The independent variables in this study were the quality dimensions and quality elements. The control variables were academic divisions, academic status (undergraduate and graduate), and academic load (full or part time enrollment).The dependent variables were students' perceptions about quality (overall course, instructor-learner interaction, learner-learner interaction, learner-content interaction, learner-interface interaction, instructional

strategies, and social presence) and students' perceptions about the frequency of use of quality elements.

Descriptive and inferential statistics were used to answer the study questions. The Statistical Package for Social Sciences (SPSS 16.0) was used to conduct the data analyses. To address RQ 1,"What do university students report about the quality of online courses?," data on students' perceptions of overall course quality and overall quality for each dimension (instructor-learner, learner-learner, learner-content, learner-interface, learner-instructional strategies, and social presence) were analyzed descriptively, and means are reported by academic division, academic load, providing an overview of students' ratings of their online learning experiences.

To address RQ 2, "What do university students report about the frequency with which certain quality elements are used in online courses?," data on students' perceptions of the frequency with which quality elements were used in their online course(s) were analyzed descriptively. Means were calculated and reported by academic unit for each quality element.

To address RQ 3, "Is there a difference in university students' rating of overall online course quality by academic division, academic load, and by academic status?, a univariate analysis of the dependent variable, overall online course quality ratings, was performed to determine if there was a difference in ratings by academic division, full time and part time students, and undergraduate and graduate levels. When appropriate, post-hoc analyses were performed using Bonferroni corrections to reveal specific differences between groups. An analysis of variance (ANOVA) is an appropriate test to

use when differences between all groups is desired. It is an alternative to using a series of *t*-tests, which can lead to an inflation of the Type I error (obtaining a false positive).

To test the second hypothesis for RQ 3, "There will be no significant difference between undergraduate and graduate students' rating of overall online course quality," and the third hypothesis, "There will be no significant difference between full time and part time students' ratings of overall online course quality," a *t*-test was performed for each hypothesis.

To address RQ 4, "Which quality dimensions contribute to University students' perceptions of overall online course quality?," data were analyzed using multivariable regression. This statistical test allowed the researcher to examine the relationships between the overall quality ratings of the six quality dimensions and their combined effect on students' perception of overall course quality.

The use of multivariable regression analysis is appropriate to explore the combined relationships between two or more independent variables on a single dependent variable (Creswell, 2005). This procedure allowed the researcher to examine the complex ways in which each of the quality dimensions - instructor-learner, learner-learner, learner-content, learner-interface, learner-instructional strategies, and social presence - contributed to students' perceptions of overall course quality.

To address RQ 5, "Which quality elements contribute to university students' overall perceptions of quality for instructor-learner interactions, learner-learner interactions, learner-content interactions, learner-interface interactions, learner-instructional strategies interactions, and social presence?," data were analyzed using

multivariable regression. This statistical test allowed the researcher to examine the relationships between the reported frequency each quality element was used in a course and their combined effect on students' perception of overall quality in the associated quality dimension.

Limitations

Several limitations were identified in this study. The first limitation was associated with low response rate to both the FOCI and the OLQI. While 67 "Net" courses were officially offered in the Fall 2008 semester, faculty from only 14 of these courses responded to the FOCI and gave permission to survey students. Instances of online learning use by faculty in their Fall 2008 courses may not have been captured due to the reliance on faculty participation in the FOCI process for identifying online learning use. Only 152 participants out of a possible 531 participants returned completed the OLQI. Additionally, the OLQI was a 72-item questionnaire and the length of the survey may have deterred participants from completing all sections.

There was variability in the number of courses identified for this study across the Colleges. While there were 17 courses identified for participant selection in CEHD, there were only two courses in SOM from which participants were selected for survey. The courses identified in SOM were the same course with two sections.

The unit of analysis for this study was the course within an academic division and not the courses. Therefore, the researcher was not able to account for course variability in this study.

Finally, Web-only courses were not distinguished from hybrid courses in the analyses of data. It is important to acknowledge that elements of quality associated with the relationship between the face to face environment and the online environment of the hybrid courses were not investigated in this study.

Conclusion

The problem that framed this study sought to understand how online learning was enacted in the University. As Yin (2003a) suggested, a single-case study has the ability to offer valuable knowledge about an institution as a whole when separate sections of the institution are analytically compared. In this study, the individual quality elements, the dimensions of quality, the individual Academic divisions, the academic status of students, and the course load of students, provided a variety of ways these sections or conditions could be compared. The more comparisons and connections made between variables in this study the more opportunities and levels for describing online learning in a university setting exist.

The portrait of online learning in this higher education setting was developed in several ways. First, through the FOCI form, faculty were asked to identify the ways they deliver online learning. This data provided information regarding the four types of online delivery used by faculty in the University. In addition, this form served as a means to identify potential participants for this study. Second, through the framework of the online learning quality model, an instrument was developed to assess students' perceptions of their overall course experience and their overall rating of the quality of instructor-learner interactions, learner-learner interactions, learner-content interactions, learner-interface

interaction, learner-instructional strategies interactions, and social presence. Finding contributing factors in terms of online quality provided information on which dimensions played an integral role in online quality across the University. Third, the frequency certain quality elements associated with each of the six quality dimensions was used in online courses was also assessed, providing information on the different quality design elements employed in online courses throughout the University. Finally, assessing the contribution of quality elements to the overall rating of the corresponding dimension provided information on which quality design elements were integral in the overall quality of each dimension. These levels of analysis and the comparison of data across academic divisions, course loads, and academic status completed the picture of quality in online learning at the University.

4. Results

Introduction

Over the last two decades, research on distance education and online learning has focused on the development of aspects, factors, and indicators which characterize a quality learning experience. The prevalence of online learning in higher education is well-documented. However, the practice of providing quality online learning experiences in university settings is not widely researched. The notion of what makes a quality online experience is known, but the frequencies with which these quality experiences exist are unspecified. A portrait of quality online learning in a university setting lends a perspective about quality in higher education which informs decisions about implementation and staff development.

This study was designed to examine the variables of online learning quality, specifically addressing what university students reported about their perceptions of the quality of their learning in online environments and what university students reported about the ways in which online learning experiences are enacted across a large university. The intended outcome of this study is a description of online learning quality in a university setting through the investigation of the following questions:

1. What do University students report about the quality of online courses?

2. What do University students report about the frequency with which certain quality elements are used in online courses?

3. Is there a difference in university students' rating of overall online course quality by academic unit, academic load, and academic status?

4. Is there a difference in University students' rating of overall quality in each dimension (instructor-learner, learner-learner, learner-content, learner instructional strategies, learner-interface, and social presence) by academic division, academic load, and academic status?

5. Which quality dimensions contribute to University students' perceptions of overall online course quality?

6. Which quality elements contribute to University students' overall perceptions of quality for instructor-learner interactions, learner-learner interactions, learner-content interactions, learner-interface interactions, learner-instructional strategies interactions, and social presence?

This chapter presents findings of the study in order to develop one university's portrait of online learning quality. With the exception of the demographics section, this chapter is organized by the research questions which framed this study.

Participant Demographics

A total of 164 surveys were returned to the researcher. Out of those, 12 surveys were not completed past the course identification number (Question 1), leaving 152 responses with demographic information. Demographics were collected in the second section of the survey and consisted of age, gender, academic load, and academic status.

Course identification number was used to place participants in specific academic divisions. The College of Education and Human Development (CEHD), The College of Humanities and Social Sciences (CHSS), The College of Health and Human Services (HHS), the College of Science (COS), the School of Management (SOM), and the School of Information Technology and Engineering (ITE) were represented. The demographics of the 152 study participants are summarized in Table 4.1.

Table 4.1

Demographics of Participants

Academic Division	Gender				Status		Load	
	N	M	F	Mean Age	U	G	PT	FT
CEHD	31	5	26	33.5	0	31	26	5
CHSS	24	2	22	25.1	17	7	2	22
HHS	24	1	23	35.6	1	23	16	8
COS	7	3	4	23.3	7	0	1	6
SOM	38	12	26	24.9	38	0	4	34
ITE	28	27	1	30.3	6	22	21	7
Total	152	50	102	29.3	69	83	70	82

RQ 1: What do university students report about the quality of online courses?

In the third section of the Online Learning Quality Inventory (OLQI), participants were asked to rate the overall quality of the online course in which they were enrolled as well as the overall quality of their interaction with instructors, other learners, the content, the interface, the instructional strategies, and their opportunities for social presence. To elicit a descriptive reaction to the overall quality of the six dimensions of quality, a 5-point semantic differential scale with adjective pairs "not good at all" (lower end of scale) and "very good" (upper end of scale) was used in the survey instrument. Students' overall reaction to course quality (CQ) was positive. Of the 152 participants, 77.7% rated their overall course quality experience at the upper two points of the scale ("very good" end) with 44.1% rating the overall course quality as "very good" and 33.6% rating course quality one point lower than "very good." The average rating of course quality across the university on the 5-point scale was M = 4.11.

Several specific dimension interactions were also perceived by online students to be of very good quality. Instructor-learner interactions (IL) were rated highly overall. The majority of participants (42.8% at the high end and 31.6% one point lower on the scale) perceived their interactions with instructors to be "very good," and the average rating among all participants was M = 4.00. Participants rated the quality of their social presence (SP) highly with 72.4% of the participants indicating their ability to be "seen" and "heard" in the course was at the upper end of the scale. The average rating (M = 4.02) was slightly higher than that of instructor-learner interaction. Overall quality of interactions between students and the learning materials provided in this course was also

rated highly by the majority of students. Seventy-seven percent of the responses indicated that students perceived the quality of these interactions to be at the upper two points of the scale. The average rating overall for learner-content interactions (LC) was M = 4.09. Finally, the most highly rated element was the overall ease of use and accessibility of the course and the course materials. The quality of learner-interface interactions (LI) among 50.7% of all participants in the study was given the highest rating with 32.2% rating these interactions one point below the highest rating. The average quality rating for learner-interface interactions among all participants was M = 4.25.

Other dimensional interactions were rated by a majority of the participants at the second highest level. The highest percentage of participants (38.2%) rated the overall quality of interactions between learners and the techniques used to engage, motivate and facilitate learning one point below "very good." The average rating for these learner-instructional strategies interactions (LIS) was M = 3.82. Not many participants rated interactions between learner and peers as "very good." While 30.9% rated learner-learner interactions as "very good," 32.9% rated the quality of these interactions slightly below and 23% at mid-range on the scale. Learner-learner interactions (LL) with an average rating of M = 3.77 had the lowest average rating among overall course quality and dimension ratings.

Findings with respect to the means of overall course and dimension quality at the academic division, academic load, and academic status levels provided interesting results. At the academic level, responses revealed that several divisions were below the mean for overall course quality rating among all participants (M = 4.11). ITE (M = 4.04), CEHD

(M = 4.06), and CHSS (M = 3.54) showed the lowest means for overall course quality while COS (M = 4.57) had the highest ratings. There was no difference in the means between undergraduate (M_{UG} = 4.06) and graduate (M_{Grad} = 4.06) ratings of overall course quality. The participants enrolled in COS courses reported highest means among the other divisions in instructor-learner quality ratings (M = 4.57) and learner-interface quality ratings (M = 4.57) but had one of the lowest mean quality ratings (M = 3.29) for learner-learner interactions. HHS was better at fostering learner-learner interactions (M = 4.46) and social presence (M = 4.46) than the other divisions. The online courses offered by faculty in CEHD had high mean ratings for overall quality learner-content (M = 4.23), learner-interface (M = 4.32) and social presence (M = 4.42). However, the quality of instructor-learner (M = 3.87), learner-learner (M = 3.87), and learner-instructional strategies (M = 3.77) were rated at mid-range. Overall quality ratings for social presence were the lowest in SOM (M = 3.66). Participants enrolled in CHSS courses reported a mean quality rating of M = 3.21 for learner-interface interactions, which was the lowest dimension rating among all academic divisions. Also, all of the mean quality ratings reported for CHSS were M < 4.00 indicating that all of the online course ratings for quality and interactions were reported at mid-range. Mean quality ratings for HHS online courses were consistently above ratings of 4.00. Also interesting, graduates reported a higher overall quality (M = 4.23) than undergraduates (M = 3.77) for social presence. Means of overall course quality ratings are reported in Table 4.2.

Table 4.2

Means of Overall Quality of Online Course and Six Dimensions

	Academic Division							Load		Status	
	CEHD *n*=31	CHSS *n* =24	HHS *n*=24	COS *n*=7	ITE *n*=28	SOM *n*=38	TOTAL N=152	Full *n* =77	Part *n*=75	UG *n*=69	Grad *n*=83
CQ	4.06	3.54	4.33	4.57	4.04	4.32	4.11	4.12	4.09	4.06	4.06
IL	3.87	3.79	4.46	4.57	4.04	3.82	4.00	3.96	4.04	3.97	4.02
LL	3.87	3.63	4.46	3.29	3.36	3.74	3.77	3.73	3.81	3.70	3.83
LC	4.23	3.58	4.21	4.29	4.00	4.26	4.09	4.14	4.04	4.14	4.05
LIS	3.77	3.46	4.08	3.86	3.82	3.89	3.82	3.88	3.75	3.87	3.77
LI	4.32	3.21	4.29	4.57	3.96	4.34	4.25	4.33	4.21	4.33	4.18
SP	4.42	3.87	4.46	4.29	3.75	3.66	4.02	3.83	4.21	3.77	4.23

From the overview of mean overall quality ratings, it was indicated that students at this University rate the overall quality of their online learning experience at the highest rating of “very good” and that interactions between learners and the interfaces used for delivering content are also perceived as quality interactions. However, overall quality rating of learner-learner interactions is not as highly rated as other interactions among all participants. When overall mean course and dimension qualities were inspected at the academic division level, the College of Science and the College of Human and Health Services led with the highest mean quality ratings in most interactions.

RQ 2: What do university students report about the frequency with which certain quality elements are used in online courses?

In the fourth section of the OLQI, participants were asked to report the frequency with which elements of quality were used in the design of the online course in which they were enrolled. A series of close-ended questions described the implementation of each quality element in an online learning setting. Seventy-two items, each representing a quality element, were featured in this section. Each quality dimension (instructor-learner, learner-learner, learner-content, learner –interface, learner-instructional strategies, and social presence) was specifically represented by a number of quality element questionnaire items. The response options for students' to report the frequency of use were provided by use of an ordinal scale. The 4-point frequency ordinal scale response options were "never," "rarely," "occasionally," and "often." The information gathered from this section of the questionnaire provides a snapshot of the specific tools and strategies employed in online courses at the University.

A majority of the participants (N = 129) who completed the frequency of use survey items for elements of instructor-learner interactions, indicated that 13 out of the 16 quality elements listed were used "often" in the online course they were evaluating. A "knowledgeable instructor" (75.2%), "opportunities to ask questions of the instructor" (65.1%), "timely responses" (60.5%), "thoughtful communication from the instructor (58.9%), "recognition by the instructor as an individual" (58.9%), "personality of the instructor comes through" (55%), and "conversational tone from instructor" (52.7%) were each identified by more than half of the participants as elements used "often" in the

online courses. Interestingly, “online lectures from the instructor” was reported to be used “often” by 51.9% of the participants.

A look at the frequency of use of instructor-learner elements revealed that CEHD used online lectures the least (M = 1.15), while the SOM incorporated them the most (M = 3.79). The data also showed that instructor-led synchronous chats were least likely to be used in the online courses across the six academic uses. “Instructor’s knowledge was evident” was in the top three most frequently used elements in all the academic divisions. “The opportunity to ask instructor questions” was in the top three most frequently used in CEHD, CHSS, and COS. “Timely responses” were also more frequently used in CEHD, HHS, and ITE. The most frequently used instructor-learner elements in SOM not only included “online lectures from the instructor” but also “a conversational tone from the instructor.” Table 4.3 summarizes the frequency of use of instructor-learner quality elements by academic division, academic load, and academic status.

Table 4.3

Means for Frequency of Use: IL Quality Elements

	CEHD *n*=28	CHSS *n*=19	HHS *n*=23	COS *n*=7	ITE *n*=25	SOM *n*=29	TOTAL N=129	Full *n* =77	Part *n*=75	UG *n*=69	Grad *n*=83
Timely responses	3.38	3.47	3.74	3.71	3.44	3.17	3.44	3.41	3.48	3.33	3.53
Thoughtful responses	3.31	3.68	3.70	3.14	3.44	3.17	3.42	3.39	3.45	3.27	3.53
Private communication-chat/email	2.92	2.74	3.48	3.14	276	2.45	2.87	2.86	2.88	2.62	3.05
Public communication-discussion	2.69	2.68	3.26	3.00	2.24	2.48	2.62	2.75	2.49	2.47	2.73
Frequent feedback	3.12	3.05	3.48	3.71	3.08	2.97	3.11	3.17	3.05	2.96	3.22
Meaningful and relevant feedback	3.19	3.16	3.48	2.71	3.04	2.97	3.13	3.16	3.11	2.96	3.26
Active participation	2.73	3.37	3.62	3.71	2.92	2.76	3.06	3.17	2.95	3.05	3.07
Online lectures	1.15	2.42	3.30	1.43	3.08	3.79	2.86	3.06	2.88	3.09	2.69
Instructor-led chats	1.54	1.68	2.90	1.43	1.96	2.21	2.04	2.22	1.86	2.02	2.05
Instructor-Led discussion	2.77	3.00	3.22	1.71	2.16	2.41	2.63	2.67	2.58	2.39	2.81
Conversational tone	3.19	3.53	3.48	3.86	3.24	3.28	3.36	3.39	3.32	3.35	3.36
Opportunity to ask questions	3.50	3.68	3.70	4.00	3.24	3.14	3.46	3.50	3.42	3.44	3.47
Personality comes through	3.15	3.21	3.70	3.86	3.28	3.21	3.33	3.47	3.20	3.35	3.32
Recognize students as individuals	3.31	3.32	3.78	4.00	3.28	2.79	3.31	3.39	2.23	3.18	3.41
Knowledge is evident	3.42	3.63	3.78	4.00	3.76	3.62	3.66	3.67	3.66	3.65	3.66
Values participation in discussions	3.04	2.89	3.65	2.57	3.04	2.59	3.00	2.94	3.00	2.75	3.19

The frequency of learner-learner quality elements use was next reported. Participants (N = 117) overall indicated that discussion boards were the primary tool used to facilitated learner-learner interactions (48.7%). The majority of courses did not use any of the more innovative tools such as the Web 2.0 tools, Web-audio, or Web video. Seventy-five percent of the participants indicated that blogs were "never" used to interact with peers. Similarly, 74.4% indicated wikis were "never" used. Web-audio was "never" used to facilitate learner-learner interactions according to 76.1% of the participants, and an even greater number "never" used Web-video (81.2%). Interestingly, the average rating for frequency of use for elements that support learner-learner interactions ranged from M = 2.87 (use of discussion boards) to M = 1.34 (use of Web-video) which indicated that the frequency of use of learner-learner quality elements in a large percentage of online courses was characterized as "rarely" or "never."

When frequency of use of learner-learner quality elements were viewed from the individual academic division perspective, it was shown that in COS, ITE, and SOM courses, most learner-learner quality elements were rarely or never used, with COS using learner-learner quality elements the least. However, in CEHD, CHSS, and HHS courses half or nearly half of the quality elements were used often or occasionally. Table 4.4 summarizes the frequency of use of learner-learner quality elements by academic division, academic load, and academic status.

Table 4.4

Means for Frequency of Use: LL Quality Elements

	CEHD n=26	CHSS n =18	HHS n =20	COS n =5	ITE n =23	SOM n =25	TOTAL N=117	Full n =58	Part n =59	UG n =47	Grad n =70
Peer interaction: discussion board	3.54	3.44	3.60	1.00	2.13	2.24	2.87	2.84	2.90	2.51	3.11
Peer interaction: Web- audio	1.12	1.11	1.65	1.00	2.00	1.60	1.48	1.47	1.49	1.47	1.49
Peer interaction: Web-video	1.04	1.11	1.50	1.00	1.52	1.60	1.34	1.38	1.31	1.43	1.29
Peer interaction: Chat	1.42	1.78	2.70	1.00	2.04	1.60	1.84	1.90	1.78	1.72	1.91
Peer interaction: Email	2.15	2.11	3.20	1.80	2.70	2.28	2.44	2.36	2.53	2.23	2.59
Peer interaction: Blogs	1.35	1.94	1.45	1.00	1.43	1.48	1.49	1.64	1.34	1.57	1.43
Peer interaction: Wikis	1.19	1.44	1.75	2.00	1.35	1.48	1.45	1.66	1.25	1.55	1.39
Opportunity to review peer work	3.08	2.78	2.55	2.00	1.83	1.52	2.32	2.34	2.29	2.17	2.41
Opportunity to give feedback to peers	3.08	3.22	3.05	1.60	2.17	1.68	2.56	2.50	2.61	2.32	2.71
Opportunity to get feedback from peers	3.19	3.22	3.00	1.60	2.09	1.68	2.56	2.50	2.61	2.32	2.71
Meaningful interactions with peers	3.42	3.33	3.35	1.60	2.30	1.84	2.76	2.67	2.85	2.38	3.01
Opportunity to learn from peers	3.23	3.17	3.25	2.20	2.04	1.72	2.62	2.53	2.71	2.28	2.86

Quality elements of learner-content interactions were often used in these online courses. According to 79.3% of the participants (N = 116) online courses “often” had “clearly stated course objectives” and 77.6% of the participants reported that “timelines and due dates” were “often” used. Also noteworthy was that 53.4% of the responses indicated “a significant part of the course grade depended on participation.” With exception of “use of online quizzes and/or tests,” all other elements of learner-content interactions were used often. The “use of online quizzes and/or tests” was reported by 53.4% of the participants as “never” used.

An interesting finding from the breakdown of frequency of learner-content quality element use by academic division was that the means for frequency of use of “timelines and due dates” were the same for “course objectives are clearly stated” in CEHD, CHSS, HHS, and COS, and nearly the same in ITE and SOM. In addition, the means indicated that these elements were found “occasionally” and “often.” Table 4.5 summarizes the frequency of use of learner-content quality elements by academic division, academic load, and academic status.

Table 4.5

Frequency of Use: LC Quality Elements

	CEHD *n*=26	CHSS *n*=19	HHS *n*=23	COS *n*=5	ITE *n*=23	SOM *n*=25	TOTAL N=116	Full *n* =58	Part *n*=58	UG *n*=47	Grad *n*=69
Use of participation rubric	3.62	2.94	2.95	2.60	2.22	2.93	2.93	3.07	2.79	2.91	2.94
Course grade is tied to participation	3.69	3.94	3.68	3.00	1.70	3.12	3.12	3.22	3.02	3.09	3.14
Response to peers is required	3.58	3.44	3.26	2.20	1.83	2.70	2.70	2.72	2.67	2.36	2.93
Instructor generated summaries	2.12	3.17	2.89	2.40	2.74	2.66	2.66	2.72	2.60	2.64	2.68
Use of timelines and due dates	3.81	3.89	3.79	3.80	3.48	3.74	3.74	3.76	3.72	3.83	3.68
Clearly stated objectives	3.81	3.89	3.79	3.80	3.57	3.77	3.77	3.81	3.72	3.85	3.71
Online quizzes and tests	1.35	1.67	2.58	2.20	1.43	2.21	2.21	2.47	1.95	2.81	1.80
Instructor generated outlines	2.19	2.83	3.21	2.80	2.96	2.91	2.91	3.17	2.66	3.21	2.71

The data collected on the frequency of use of instructional strategy quality elements was quite positive. Eleven of the 15 instructional strategies listed as elements of quality were indicated by a majority of the respondents (N = 109) as used "often" in the online courses. Notably, the "availability of ample information and resources to complete assignments" was reported as "often" used by 73.4% of the participants. Another item of interest was that 69.7% of the participants reported that "clear connections between course content and real world applications" and learners were "presented with real world problems to solve" as reported by 50.0% of the participants were used "often." Instructional strategies such as "role-playing" and "simulations" were reported by participants (53.2% and 41.3%, respectively) to be "rarely" used in online courses. Also noteworthy was that 39.4% of the participants indicated that "collaborative group projects were "never" used."

A review of the frequency of use of "collaborative group projects" by academic divisions showed that in COS this strategy was "never" (M = 1.00) used and was reported in the "rarely" used range for ITE (M = 2.09) and SOM (M = 2.74). All academic divisions "occasionally" or "often" "made connections to real world issues" and "solve real-world problems" with a mean use of 4.00 for COS. COS was especially high in the range of "occasionally" and "often" for the "use of critical thinking," "exploring learner-generated issues," and "exploring beyond the scope of the course." ITE was the only division to "use tutorials" "occasionally" to "often." Table 4.6 summarizes the frequency of use of learner-instructional strategies quality elements by academic division, academic load, and academic status.

Table 4.6

Means for Frequency of Use: LIS Quality Elements

	CEHD *n*=25	CHSS *n*=16	HHS *n*=18	COS *n*=5	ITE *n*=22	SOM *n*=23	TOTAL N=109	Full *n*=54	Part *n*=55	UG *n*=44	Grad *n*=65
Use of open-ended questions	3.52	3.62	3.44	3.40	2.59	2.74	3.17	3.15	3.18	3.02	3.26
Critical thinking about content	3.64	3.44	3.61	3.80	3.18	2.96	3.38	3.30	3.45	3.16	3.52
Knowledge is applied	3.44	3.37	3.61	3.40	2.95	3.39	3.35	3.37	3.33	3.30	3.38
Explore learner generated issues	3.32	3.38	3.28	4.00	2.86	2.91	3.17	3.17	3.18	3.27	3.11
Explore issues beyond course	3.08	3.25	3.39	4.00	2.86	2.96	3.13	3.19	3.07	3.20	3.08
Role playing	1.72	1.62	1.61	1.40	1.50	2.13	1.93	2.19	1.67	2.30	1.68
Availability of ample resources	3.84	3.31	3.72	3.80	3.59	3.57	3.63	3.59	3.67	3.50	3.72
Content connects to real world	3.68	3.69	3.61	4.00	3.50	3.39	3.59	3.50	3.67	3.57	3.60
Real world problems to solve	3.32	3.12	3.17	3.00	3.05	3.39	3.21	3.07	3.35	3.18	3.23
Simulations	2.04	1.69	1.89	1.40	2.36	2.96	2.19	2.28	2.11	2.55	1.95
Collaborative group projects	2.64	2.06	3.00	1.00	2.09	2.74	2.45	2.46	2.44	2.41	2.58
Reflection on content	3.60	3.38	3.67	3.20	2.86	2.35	3.36	3.37	3.35	3.25	3.43
Diverse perspectives	3.48	3.31	3.39	3.20	2.36	3.30	3.17	3.28	3.05	3.20	3.14
Models & examples available	3.12	2.50	3.28	2.20	3.27	3.17	3.06	2.98	2.52	2.91	3.15
Tutorials available	1.72	1.56	2.67	2.00	3.23	2.78	2.39	3.13	2.27	2.25	2.31

The data on frequency of use of learner-interface quality elements clearly showed that the University online courses were frequently comprised of elements that attended to learner-interface interactions. Nearly all of the elements of learner-interface interactions were found in these courses "often." Eighty-four percent of the participants (N = 106) reported that courses often had consistent designs, with easy to read text (80.2%), clear and easy to understand course layout (78.3%), and clear navigation (74.5%). The use of a course management system (CMS) was "often" as indicated by 79.2% of the participants.

CEHD, CHSS, HHS, and SOM most frequently used CMS as a content delivery tool. COS and ITE "rarely" or "never" used a CMS and in fact, ITE had the highest mean for the frequency of use for instructor-created Web pages (M = 3.36). HHS had the highest mean for offering courses divided into modules (M = 4.00) which indicated that all HSS courses examined in the current study were organized into modules. Table 4.7 summarizes the frequency of use of learner-interface quality elements by academic division, academic load, and academic status.

Table 4.7

Frequency of Use: LI Quality elements

	CEHD *n*=23	CHSS *n*=15	HHS *n*=18	COS *n*=5	ITE *n*=25	SOM *n*=22	TOTAL N=106	Full *n*=53	Part *n*=53	UG *n*=43	Grad *n*=63
Course divided into modules	3.22	2.73	4.00	2.80	3.41	3.87	3.44	3.51.	3.38	3.53	3.38
Online Grade book	2.09	3.33	3.44	1.60	2.27	3.70	2.86	3.34	2.38	3.35	2.52
Clear Navigation	3.57	3.47	3.89	3.00	3.59	3.78	3.63	3.68	3.58	3.70	3.59
Easy to read text	3.61	3.73	3.61	2.80	3.55	3.87	3.63	3.66	3.60	3.70	3.59
Clear course layout	3.74	3.87	3.72	3.60	3.68	3.83	3.75	3.83	3.68	3.86	3.68
Working hyperlinks	3.65	3.33	3.28	3.40	3.73	3.48	3.51	3.45	3.57	3.47	3.54
Hyperlinks indicate path	3.57	3.33	3.33	3.40	3.82	3.52	3.53	3.53	3.53	3.51	3.54
Additional resources	3.30	3.07	3.39	3.00	3.45	3.52	3.35	3.40	3.30	3.40	3.32
Consistent design	3.87	3.80	3.89	3.40	3.68	3.78	3.78	3.79	3.77	3.79	3.78
Clearly stated expectations	3.78	3.87	3.83	3.20	3.64	3.78	3.75	3.75	3.74	3.71	3.73
Use of CMS	3.96	3.93	3.67	2.20	2.50	3.91	3.51	3.66	3.36	3.60	3.44
Use of Web pages	1.91	1.53	2.56	2.20	3.36	2.43	2.40	2.28	2.51	2.42	2.38
Use of Multimedia	1.96	1.47	3.33	2.80	3.23	3.83	2.83	3.06	2.60	3.23	2.56
Use of Color	1.91	1.80	2.89	2.20	3.14	3.83	2.75	3.02	2.47	3.16	2.46

Elements of quality for social presence were also prevalent in the University's online courses as reported by participants (N = 105). Most frequently used in courses was the use of "welcome messages at the onset of the course" (61.9%). In addition, 53.3% of the participants indicated that "opportunities to share experiences and beliefs" were frequent. However, "student profiles" were "never" used in courses as indicated by 52.4% of the responses. CEHD used more social presence quality elements at the "occasionally" or often" level ($3.04 \geq M \leq 3.83$) than the other academic divisions. The means for COS ($1.20 \geq M \leq 2.80$) and ITE ($1.57 \geq M \leq 2.86$) indicated that these divisions were "rarely" or "never" using social presence quality elements. Table 4.8 summarizes the frequency of use of social presence quality elements by academic division, academic load, and academic status.

Table 4.8

Means for Frequency of Use: SP Quality Elements

	CEHD *n*=23	CHSS *n*=15	HHS *n*=18	COS *n*=5	ITE *n*=21	SOM *n*=23	TOTAL N=105	Full *n*=53	Part *n*=52	UG *n*=43	Grad *n*=62
Humor encouraged	2.83	2.67	2.78	2.60	2.86	2.78	2.79	2.83	2.75	2.74	2.82
Personal stories encouraged	3.57	2.87	3.17	2.80	2.38	2.91	2.98	2.96	3.00	2.74	3.15
Collaboration encouraged	3.09	2.67	3.44	2.00	2.67	3.04	2.94	3.04	2.81	2.93	2.95
Experiences and beliefs shared	3.78	3.47	3.44	2.40	2.19	2.91	3.10	3.02	3.19	2.88	3.26
Trust building activities	3.04	2.20	2.83	1.80	2.00	3.04	2.62	2.75	2.48	2.70	2.56
Welcome messages	3.57	3.60	3.56	2.20	2.76	3.22	3.27	3.21	3.33	3.19	3.32
Student profiles	2.09	1.87	2.06	1.20	1.57	1.96	1.88	2.02	1.73	1.86	1.89

RQ 3: Is there a difference in university students' rating of overall online course quality by academic unit, academic load, and by academic status?

Prior to performing any statistical analysis, the researcher removed the College of Science (COS) from the data set because the sample size ($n_{COS} = 7$) was too small for statistical analysis. Therefore, only the academic divisions CEHD, CHSS, HHS, ITE, and SOM were considered in addressing RQ 3, RQ 4, and RQ 5. An alpha level of .05 was used for all statistical tests.

To address RQ 3 question, three hypotheses were formulated. The first hypothesis stated, "There will be no significant difference between academic divisions (College of Education and Human Development, College of Health and Human Services, College of Humanities and Social Sciences, College of Science, College of Visual and Performing Arts, School of Management, School of Public Policy, School of Information Technology and Engineering, Institute for Conflict analysis and Resolution) students' rating of overall online course quality." To test the first hypothesis, a univariate analysis of the dependent variable, overall online course quality ratings, was performed to determine if there was a difference in ratings by academic division. A *post-hoc* analysis was performed using Bonferroni corrections to reveal specific differences between groups.

The univariate analysis showed a statistically significant difference in overall course quality ratings between academic divisions, $F(4, 144)=2.587$, $p=.040$. The Bonferroni *post hoc* test indicated that the difference in the overall course quality ratings between CHSS and SOM accounted for the statistically significant difference in overall

quality ratings between academic divisions. Table 4.9 summarizes the one-way analysis of variance (ANOVA).

Table 4.9

ANOVA: Overall Course Quality Ratings between Divisions

		df	F	*p*
Overall Course Quality	Between Groups	4	2.587*	.04
	Within Groups	144.337		
	Total	155.007		

*$p < .05$

The second hypothesis stated, “There will be no significant difference between undergraduates and graduate students’ rating of overall online course quality” and the third hypothesis state, “There will be no significant difference between full-time and part time students’ rating of overall online course quality.” To test the second and third hypothesis of RQ 3, *t*-tests were performed.

Results of the *t*-test on overall quality ratings of undergraduates and graduates showed there was no statistically significant difference in overall quality ratings between undergraduates and graduates, $t(143) = .301$, $p = .764$.

Results of the *t*-test on overall quality ratings of full time and part time students showed there was no statistically significant difference in overall course quality ratings

between full time and part time students, $t(143) = .020$, $p = .984$. Table 4.10 summarizes the independent samples t-tests for the second and third hypotheses of RQ 3.

Table 4.10

Independent-sample t-test on Overall Course Quality Ratings

Variable	*M*	*SD*	*t*	*p*
Academic Status	4.11	1.088	.301	.319
Academic Load	4.08	1.118	.020	.155

*$p < .05$, two-tailed.

RQ 4: Is there a difference in university students' rating of overall quality of each dimension (instructor-learner, learner-learner, learner-content, learner instructional strategies, learner-interface, and social presence) by academic division, academic load, and academic status?

To address RQ 4 question, three hypotheses were formulated. The first hypothesis stated, "There will be no significant difference between Academic divisions (College of Education and Human Development, College of Health and Human Services, College of Humanities and Social Sciences, College of Science, College of Visual and Performing Arts, School of Management, School of Public Policy, School of Information Technology and Engineering, Institute for Conflict analysis and Resolution) students' rating of overall quality in each dimension." A univariate analysis of the dependent variable, overall

dimension quality ratings, was performed to determine if there was a difference in ratings by academic division. A post-hoc analysis was performed using Bonferroni corrections to reveal specific differences between groups. The univariate analysis showed no significant difference in overall quality ratings for instructor-learner interactions between academic divisions, $F(4, 144) = 1.519$, $p = .200$, in overall quality ratings for learner-content interactions between academic divisions, $F(4, 144) = 2.107$, $p = .080$, in overall quality ratings for learner-instructional strategies interactions between academic divisions, $F(4, 144) = .961$, $p = .431$, or in overall learner-interface interactions between academic divisions, $F(4, 144) = .751$, $p = .566$.

However, there was a statistically significant difference in overall quality ratings for learner-learner interactions between academic divisions, $F(4, 144) = 3.730$, $p = .006$, and also a statistically significant difference in overall quality ratings for social presence between academic divisions, $F(4, 144) = 3.642$, $p = .007$. The Bonferroni *post hoc* test indicated that the difference between HHS and ITE accounted for the statistically significant difference in the overall quality ratings for learner-learner interactions, and that the difference between CEHD and SOM accounted for the statistically significant difference in the overall quality ratings for social presence. Table 4.11 summarizes the one-way analysis of variance (ANOVA).

Table 4.11

ANOVA: Overall Dimension Quality between Divisions

		df	F	*p*
IL	Between Groups	4	1.519	.200
	Within Groups	140		
	Total	144		
LL	Between Groups	4	3.730*	.006
	Within Groups	140		
	Total	144		
LC	Between Groups	4	2.128	.080
	Within Groups	140		
	Total	144		
LIS	Between Groups	4	.961	.431
	Within Groups	140		
	Total	144		
LI	Between Groups	4	.741	.566
	Within Groups	140		
	Total	144		
LSP	Between Groups	4	3.642*	.007
	Within Groups	140		
	Total	144		

*$p < .05$

The second hypothesis stated, "There will be no significant difference between undergraduates and graduate students' rating of overall quality in each dimension." To test the second hypothesis of RQ 4, *t*-tests were performed.

Results of the *t*-test on overall quality ratings of dimensions by undergraduates and graduates showed there was a statistically significant difference in overall quality ratings of social presence between undergraduates and graduates, t(143) = -2.825, p = .005. Table 4.12 summarizes the independent samples t-tests for the second hypothesis for RQ 4.

Table 4.12

Independent-sample t-test on Load and OQ Ratings of Dimensions

	Undergraduate		Graduate			
Variable	*M*	*SD*	*M*	*SD*	*t*	*p*
Instructor-Learner	3.90	1.183	4.02	1.115	-.629	.418
Learner-Learner	3.74	1.200	3.83	1.034	-.481	.202
Learner-Content	4.13	1.016	4.05	1.011	.475	.230
Learner-Instructional Strategies	3.87	1.261	3.77	1.063	.517	.203
Learner-Interface	4.31	1.001	4.18	.952	.770	.456
Learner-Social Presence	3.71	1.260	4.23	.954	-.2.825	.005*

*$p < .05$, two-tailed.

The third hypothesis of RQ4 stated, "There will be no significant difference between full-time and part time students' rating of overall quality in each dimension." Results of the independent *t*-tests on overall quality ratings of full time and part time students showed there was no statistically significant difference in overall quality ratings for any of the dimensions between full time and part time students. Table 4.13 summarizes the independent samples t-tests for the third hypothesis of RQ 4.

Table 4.13

Independent-sample t-test on Status and OQ Ratings Of Dimensions

	Full time		Part time			
Variable	*M*	*SD*	*M*	*SD*	*t*	*p*
Instructor-Learner	3.90	1.221	4.04	1.066	-.732	.125
Learner-Learner	3.73	1.218	3.85	.989	-.647	.080
Learner-Content	4.13	1.013	4.04	1.023	.512	.746
Learner-Instructional Strategies	3.89	1.237	3.74	1.061	.754	.600
Learner-Interface	4.27	1.041	4.20	.906	.401	.466
Learner-Social Presence	3.79	1.241	4.22	.955	-.2.330	.097

*$p < .05$, two-tailed.

RQ 5: Which quality dimensions contribute to university students' perceptions of overall online course quality?

The researcher hypothesized that there would be no significant relationship between students' overall rating of online quality dimensions (instructor-learner interaction, learner-learner interaction, learner-content interaction, learner-interface interaction, instructional strategies, and social presence) and their rating of overall online course quality.

To address this question and test the hypothesis, data were analyzed using multivariable regression. This statistical test allowed the researcher to examine the relationships between the overall quality ratings of the six quality dimensions and their combined effect on students' perception of overall course quality.

Multivariable regression analysis of linear predictive models show that learner-content interactions, learner-interface interactions, and learner-instructional strategies interactions account for a statistically significant amount of variance in overall course quality ratings, $R^2 = .730$, $F(3,141) = 127.082$, $p = .000$. However, the change in R^2 from restricted to full model (adding instructor-learner interactions, learner-learner interactions, and social presence) is not statistically significant, R^2 change = .009, $F(3,145) = 1.618$, $p = .188$. Therefore, the hypothesis is rejected. The summary of the regression analysis is presented in Table 4.14.

Table 4.14

Regression Analysis for QD Contributing to Overall Course Quality (N = 145)

Variable	B	SE B	β
Step 1			
Learner-Content	.407	.086	.396
Instructional Strategies	.316	.067	.349
Learner-Interface	.200	.070	.187
Step 2			
Learner-Content	.398	.087	.388
Instructional Strategies	.242	.075	.268
Learner-Interface	.166	.072	.156
Instructor-Learner	.094	.062	.104
Learner-Learner	.077	.053	.082
Social Presence	-.014	.062	-.015

Note. R^2 = .730 for Model 1 (p = .000); ΔR^2 = .009 for Model 2 (p = .188).

RQ 6 : Which quality elements contribute to university students' overall perceptions of quality for instructor-learner interactions, learner-learner interactions, learner-content interactions, learner-interface interactions, learner-instructional strategies interactions, and social presence?

To answer this question, six hypotheses were formulated. To test these hypotheses, data were analyzed using multivariable regression. This statistical test allowed the researcher to examine the relationships between the frequency of use of quality elements within each dimension and their combined effect on students' perception of overall associated dimension quality.

The first hypothesis stated, "There will be no significant relationship between students' overall rating of instructor-learner interaction and their reported frequency of related instructor-learner quality elements." A multivariable regression analysis of linear predictive models showed that "Frequent feedback on assignments and activities from instructor," "Meaningful and relevant feedback on assignments and activities from instructor," "Instructor's personality comes through," " Instructor's knowledge is clear and evident," and "Instructor values and participates in online discussions" account for a statistically significant amount of the variance in overall Instructor-Learner interaction quality rating, $R^2 = .514$, $F(5,116) = 24.556$, $p = .000$. However, the change in R^2 from restricted to full model (adding "Instructor recognizes each student as an individual," "Opportunities to ask instructor questions," "Conversational tone from instructor," "Instructor led asynchronous discussions," "Instructor led synchronous chats," "Online lectures from the instructor," "Active participation in discussions by instructor," "Public communication with instructor through discussion boards," "Private communication with instructor through email or chat," "Thoughtful communication from instructor," and "Timely responses from the instructor") is not statistically significant, R^2 change = .046, $F(11,105) = 1.008$, $p = .445$. Table 4.15 summarizes the regression analysis results.

Table 4.15

Regression Analysis for QE Contributing to Overall IL Quality (N = 145)

Variable	B	SE	β
Step 1			
Frequent feedback	.413	.177	.356
Meaningful feedback	-.343	.177	-.290
Personality comes through	.318	.110	.245
Knowledge is evident	.522	.143	.310
Values discussions	.249	.085	.243
Step 2			
Frequent feedback	.407	.197	.350
Meaningful feedback	-.417	.194	-.353
Personality comes through	.515	.162	.306
Knowledge is evident	.327	.103	.319
Values discussion	.279	.156	.197
Timely responses	-.075	.193	-.052
Thoughtful responses	-.020	.108	- .017
Private communication	-.128	.112	-.127
Public communication	-.044	.114	-.041
Active participation	-.068	.070	-.076
Led synchronous chats	-.099	.088	-.102
Led asynchronous chats	.075	.089	.081
Conversational tone	.075	.124	.053
Opportunities to ask questions	-.059	.150	-.044
Recognizes student as individual	.081	.150	.069

Note. R^2 = .514 for Model 1 (p = .000); ΔR^2 = .046 for Model 2 (p = .445).

The second hypothesis stated, “There will be no significant relationship between students’ overall rating of learner-learner interaction and their reported frequency of related learner-learner quality elements.” For the second hypothesis, multivariable regression analysis of linear predictive models did not show any statistically significant quality element contributors to the overall learner-learner quality dimensions. Therefore, no relationship between quality elements associated with learner-learner interactions and students’ ratings of overall learner-learner interaction quality was found.

The third hypothesis stated “There will be no significant relationship between students’ overall rating of learner-content interaction and their reported frequency of related learner-content quality elements.” Multivariable regression analysis of linear predictive models showed that “Clearly stated course objectives” account for a statistically significant amount of the variance in overall learner-content quality ratings, $R^2 = .121$, $F(1,109) = 15.035$, $p = .000$. However, the change in R^2 from restricted to full model (adding “Use of online quizzes and/or tests,” “Instructor use of participation rubric,” “Use of instructor-generated summaries,” “Response to other students' postings required,” “Use of instructor-generated outlines,” “A significant part of the course grade depends on participation,” “Use of timelines and due dates”) is not statistically significant, R^2 change = .089, $F(1, 102) = .591$, $p = .762$. . The summary of the regression analysis is presented in Table 4.16.

Table 4.16

Regression Analysis for QE Contributing to Overall LC Quality (N =116)

Variable	B	SE B	β
Step 1			
Clear course objectives	.728	.188	.348
Step 2			
Clear course objectives	.543	.238	.259
Participation rubric	.059	.094	.066
Grade depends on participation	.087	.108	.095
Response to peers required	-.030	.090	-.040
Use of instructor summaries	.051	.090	.059
Use of timelines and due dates	.226	.233	.115
Use of online quizzes/tests	-.037	.075	-.050
Use of instructor outlines	-.053	.099	-.059

Note. R^2 = .121 for Model 1 (p = .000); ΔR^2 = .089 for Model 2 (p = .762).

The fourth hypothesis stated, “There will be no significant relationship between students’ overall rating of learner-instructional strategies interaction and their reported frequency of related learner-instructional strategies quality elements.” Multivariable regression analysis of linear predictive models showed that “Freedom to explore and

inquire about content issues extending beyond the scope of the course," "Availability of ample information and resources to complete assignments," "Clear connections between course content and real world applications," "Presented with real world problems to solve," "Activities designed to promote reflection on content," "Presence of diverse perspectives," "Availability of models and examples to help clarify expectations for assignments," and "Tutorials available" account for a statistically significant amount of the variance in overall learner-instructional strategies quality ratings, $R^2 = .360$, $F(7,96) = 7.702$, $p = .000$. However, the change in R^2 from restricted to full model (adding "Use of open-ended questions," "Opportunities for applying knowledge to other situations," "Freedom to explore and tackle interesting and learner-generated problems and issues," "Use of role-playing," "Use of simulations," and "Use of collaborative group projects") is not statistically significant, R^2 change = .011, $F(8, 88) = .198$, $p = .991$. The summary of the regression analysis is presented in Table 4.17.

Table 4.17

Regression Analysis for QE Contributing to Overall LIS Quality (N = 109)

Variable	B	SE B	β
Step 1			
Freedom to explore beyond course	.238	.121	.197
Availability of ample resources	.242	.178	.149
Connections to real world issues	.297	.178	.188
Activities promote reflection	.037	.138	.028
Presence of diverse perspectives	.024	.147	.020
Availability of models/ examples	.115	.120	.101
Tutorials available	.210	.090	.216
Step 2			
Freedom to explore beyond course	.217	.179	.179
Availability of ample resources	.234	.187	.144
Connections to real world issues	.260	.207	.165
Activities promote reflection	.022	.158	.016
Presence of diverse perspectives	.075	.160	.064
Availability of models/ example	.145	.135	.128
Tutorials available	.235	.106	.243
Use of open-ended questions	-.064	.146	-.054
Critical thinking about content	.133	.214	.101
Applying knowledge to other situations	.005	.210	.004
Freedom to explore learner issues	-.048	.149	-.043
Use of role-playing	-.037	.110	-.038
Presented with real world problems	-.007	.143	-.006
Use of simulations	-.062	.121	-.064
Use of collaborative group projects	-.002	.098	-.003

Note. $R^2 = .360$ for Model 1 ($p = .000$); $\Delta R^2 = .011$ for Model 2 ($p = .991$).

The fifth hypothesis stated, "There will be no significant relationship between students' overall rating of learner-interface interaction and their reported frequency of related learner-interface quality elements." Multivariable regression analysis of linear predictive models showed that "Clear navigation of course links," "Clear and easy to understand course layout," "Consistent course design", "Use of instructor-created Web pages," and "Use of multimedia- images, animations, video presentations, and/or audio presentations" account for a statistically significant amount of the variance in overall learner-content quality ratings, $R^2 = .314$, $F(6,94) = 7.182$, $p = .000$. However, the change in R^2 from restricted to full model (adding "Course divided into modules," "Online grade book," "Easy to read text," "Working hyperlinks," "Hyperlinks clearly indicate where they lead," "Availability of additional resources," "Use of a course management system (CMS)," and "Color used to facilitate learning") is not statistically significant, R^2 change $= .025$, $F(6, 86) = .413$, $p = .910$. The summary of the regression analysis is presented in Table 4.18.

Table 4.18

Regression Analysis for QE Contributing to Overall LI Quality (N = 106)

Variable	B	SE B	β
Step 1			
Clear navigation	.422	.158	.281
Clear and easy course layout	.264	.246	.135
Consistent course design	.030	.306	.015
Clearly stated course expectations	.446	.278	.251
Use of instructor-created Web pages	-.087	.074	-.116
Use of multimedia	-.108	.083	-.133
Step 2			
Clear navigation	.431	.186	.287
Clear course layout	.342	.266	.175
Consistent course design	.069	.345	.035
Clearly stated course expectations	.393	.306	.221
Use of instructor-generated Web pages	-.079	.088	-.105
Use of multimedia	-.096	.133	-.118
Course divided into modules	.009	.120	.009
Online grade book	-.051	.094	-.067
Easy to read text	.082	.146	.065
Working hyperlinks	.215	.284	.176
Labeled hyperlinks	-.376	.296	-.307
Availability of other resource	-.006	.132	-.005
Use of CMS	-.041	.122	-.040
Use of color	.016	.128	.020

Note. R^2 = .314 for Model 1 (p = .000); ΔR^2 = .025 for Model 2 (p = .910).

The sixth hypothesis stated, "There will be no significant relationship between students' overall rating of social presence and their reported frequency of related social presence quality elements. Multivariable regression analysis of linear predictive models showed that "Use of welcome messages at the onset of the course," "Humor encouraged," "Opportunity to share experiences and beliefs," "Opportunities to share personal stories is encouraged" account for a statistically significant amount of the variance in overall learner-content quality ratings, $R^2 = .264$, $F(4, 95) = 8.507$, $p = .000$. However, the change in R^2 from restricted to full model (adding "Working with other students collaboratively encouraged," "Activities designed to build trust among class participants," and "Use of student profiles") is not statistically significant, R^2 change = .015, $F(3, 92) = .634$, $p = .595$. The summary of the regression analysis is presented in Table 4.19.

Table 4.19

Regression Analysis for QE Contributing to Overall SP Quality (N = 105)

Variable	B	SE B	β
Step 1			
Use of welcome messages	.248	.114	.221
Humor encouraged	.121	.100	.119
Opportunity to share experiences/beliefs	.175	.154	.168
Sharing personal stories encouraged	.180	.156	.168
Step 2			
Use of welcome messages	.265	.117	.236
Humor encouraged	.185	.116	.182
Opportunity to share experiences/beliefs	.248	.163	.237
Sharing personal stories encouraged	.190	.159	.177
Collaboration encouraged	-.045	.118	-.045
Trust building activities	-.101	.125	-.103
Use of student profiles	-.065	.104	-.065

Note. R^2 = .264 for Model 1 (p = .000); ΔR^2 = .015 for Model 2 (p = .595).

A summary of the contributors for instructor-learner, learner content, learner-instructional strategies, learner –interface, and social presence is presented in Table 4.20. Note that no contributors to overall learner-learner quality were found.

Table 4.20

Summary of Quality Element Contributors of Quality Dimensions

IL	LL	LC	LIS	LI	SP
Frequent Feedback	None	Clear course objectives	Freedom to explore beyond course	Clear navigation	Use of welcome messages
Meaningful Feedback (negative)			Availability of ample resources	Clear and easy course layout	Humor encouraged
Instructor's personali comes through			Presence of diverse perspectives	Consistent course design	Opportunity to share experiences and beliefs
Knowledge is evident			Tutorials available	Use of instructor-created Web pages (negative)	Sharing personal stories encouraged
Values discussions				Use of multimedia (negative)	

Summary

The theory of online learning developed in this study provides the framework for the data collected regarding students' perceptions about the use of design elements and quality of online learning in a university setting. Quality dimensions instantiated by research-based quality design elements provided a means to assess online learning quality. Six research questions focused the study and were addressed by analyzing students' perceptions about the quality of their online learning experience, the relationship between their perceptions of quality in each of the six dimensions and the overall course quality, the frequency with which identified quality elements are used in online courses, and the relationship between these quality elements and the overall quality interactions as defined by the six dimensions in this study.

Descriptive data show positive student perceptions regarding overall online course quality at the University level. At the College level, there is a statistically significant difference between academic divisions which is attributed to the differences between the College of Humanities and Social Science (CHSS) and the School of Management (SOM). There was no statistically significant difference between undergraduate and graduate students' ratings of overall course quality. Likewise, there was no statistically significant difference between full time and part time students' ratings of overall course quality.

Students' ratings of the overall quality of the six quality dimensions were also examined descriptively and statistically by academic divisions, academic load, and academic status. Descriptive data on the frequency with which elements of quality for

each dimensions were used in online courses showed commonalities and distinctions across the academic divisions. There was a statistically significant difference in ratings for overall quality of learner-learner interactions between academic divisions. The difference was accounted for by the College of Health and Human Services (HHS) and the School of Information Technology and Engineering (ITE). HHS had higher ratings for overall quality of learner –learner interactions (M = 4.46, SD = .658) than ITE (M = 3.36, SD = 1.224). There was also a significant difference in ratings for overall quality of social presence between academic divisions. The difference was accounted for by the College of Education and Human Development (CEHD) and the School of Management (SOM). CEHD had higher ratings for overall quality of social presence (M =4.42, SD = .672) than SOM (M = 3.66, SD = 1.258). In addition, there was a statistically significant difference between undergraduates' ratings of overall quality of social presence and those of graduates. Undergraduates rated overall quality of social presence lower (M = 3.77, SD = 1,226) than graduates (M = 4.05, SD = 1.011).

Statistical analysis of the quality dimensions that account for a significant amount of the variance in overall online quality showed that learner-content, learner-instructional strategies, and learner-interface interactions are contributing to overall online course quality. Quality elements contributing to overall quality in each dimension were determined.

This chapter set the stage for development of a portrait of online learning quality in a higher education setting. The descriptive and statistical analysis of students' perceptions regarding the quality of their online learning experiences, their ratings of

overall course quality, their ratings of overall quality of interactions in each dimension, and their reported frequencies in which quality elements were present in the online courses provided essential information for describing quality online learning at the University.

5. Discussion and Recommendations

Summary

This study described how online learning is enacted in a university setting by addressing what university students report about their perceptions of the quality of their learning in online environments and what university students report about the ways in which online learning experiences are enacted across a large university. Using literature related to theories of teaching and learning as well as research-based elements of online design, a theory of online learning quality was developed that included six dimensions of quality interactions (instructor-learner, learner-learner, learner-content, learner-instructional strategies, learner-interface, and social presence). A questionnaire to assess the quality of online courses from students' perceptions was created using the theory of online learning quality as a framework. The questionnaire was administered to undergraduate and graduate, full and part time students enrolled in online courses in the Fall 2008 semester at a large, metropolitan Washington D.C. university.

Six questions focused this study:

1. What do university students report about the quality of online courses?

2. What do university students report about the frequency with which certain quality elements are used in online courses?

3. Is there a difference in university students' rating of overall online course quality by academic unit, academic load, and academic status?

4. Is there a difference in university students' rating of overall quality in each dimension (instructor-learner, learner-learner, learner-content, learner instructional strategies, learner-interface, and social presence) by academic division, academic load, and academic status?

5. Which quality dimensions contribute to university students' perceptions of overall online course quality?

6. Which quality elements contribute to university students' overall perceptions of quality for instructor-learner interactions, learner-learner interactions, learner-content interactions, learner-interface interactions, learner-instructional strategies interactions, and social presence?

Data were analyzed descriptively and statistically. Students' reports about the quality of online courses and the frequency with which quality elements were used were analyzed descriptively. Several hypotheses were formulated and analyzed using ANOVAs and t-tests to determine if differences in students' overall ratings of course quality and dimension quality existed. Multivariable regression analyses were used to determine which dimensions contributed to overall online course quality ratings and which quality elements contributed to overall dimension quality ratings.

Data analyses showed that overall online course quality at the University was highly rated by students. Differences existed between the academic divisions for overall course quality rating, for learner-learner interactions, and for social presence. Several

commonalities and distinctions were identified between academic divisions regarding overall course quality, dimension quality, and the frequency with which elements of quality were used in online courses. A difference also existed between undergraduates and graduates for overall quality of social presence ratings. Learner-content, learner-instructional strategies, and learner-interface interactions were identified as contributors to students' perceptions of overall online course quality. Several design elements were identified as contributors to overall quality for instructor-learner interactions, learner-content interactions, learner-instructional strategies interactions, learner-interface interactions, and social presence. There were no learner-learner elements identified as contributors to overall quality of learner-learner interactions.

Findings from this study provided the basis for several recommendations regarding the design of online learning environments and further research. In addition, a portrait of online learning at the University was crafted from the findings on students' perceptions of overall course quality, overall quality pertaining to each dimension of interaction, and the frequency elements were used in the design of online courses.

A Portrait of Online Learning

An intended outcome of this study was a portrait of online learning in a higher education setting. From this study, a number of conclusions are drawn about the use and quality of online learning at the University and crafted into a portrait. The portrait of online learning quality at the University served as a descriptive case to provide insight on how large universities similar in character may implement online environments and provide quality online learning experiences for students.

Delivery Mode

Information collected from faculty on the ways online learning was implemented across the University in Fall 2008 showed that all four delivery modes defined by the researcher are represented at the University. Faculty chose to use online learning for enhancing or supporting face to face learning more often than offering fully developed online courses as Web-only or hybrid. Web-supported delivery modes were used more than Web-enhanced modes.

Online learning uses were found across all academic divisions with the exception of the Institute for Conflict Analysis (ICAR) in which no use of online learning in any delivery mode was reported. Academic divisions vary in use of online learning in any of the delivery forms. The College Humanities and Social Sciences (CHSS) and the College of Education and Human Development (CEHD) led academic divisions in use of online learning. The School of Public Policy (SPP), The College of Visual and Performing Arts (CVPA), and the School of Management (SOM) used online environments the least.

While all faculty ranks (professor, associate professor, assistant professor, instructor, and adjunct) reported using some form of online learning, School of Information Technology and Engineering (ITE) adjuncts used online learning more often than other ranks across the academic divisions, and they used all four delivery modes.

Enrollment in Online Courses

The majority of students enrolled in Fall 2008 online courses were female. The average age was 29.30. Online enrollments were split between undergraduates and graduates. Also, there were close to equal numbers of full time and part time students.

Overall Course Quality and Dimension Quality

Overall quality of courses offered at the University in Fall 2008 was rated positively. CHSS had the lowest overall course quality ratings. Overall, quality of instructor-learner interactions was positive across the University. However, the quality of instructor-learner interactions was less positive in CHSS than those in other academic divisions. Overall, quality of learner-content interactions was positive across the University but was not as high in CHSS when compared to the other academic divisions. The overall quality of social presence was rated positively at the University level, but SOM and ITE were not rated as highly as the other divisions for this dimension. The overall quality of social presence was lower for undergraduate students than it was for graduate students. The overall quality of learner-interface interactions across the University was not only positively rated but higher than all the other dimensions. The learner-interface quality in CHSS was lower than in the other academic divisions.

Overall, quality of learner-instructional strategies interactions was also positive but not as positive as instructor-learner interactions, learner-content interactions, social presence, and learner-interface. HHS had the highest rated quality of learner-instructional strategies interactions, and CHSS had the lowest. Finally, learner-learner interactions

received the lowest quality rating among the six quality dimensions. HHS had the highest quality of learner-learner interactions, and CHSS had the lowest learner-learner quality.

Frequency of Quality Elements Used

A diversity of design elements was used occasionally across the University to promote instructor-learner interactions. Elements relating to how an instructor presents online teaching persona, such as projecting knowledge and personality, recognizing students as individuals, and using a conversational tone in online interactions, were frequently used across all academic divisions. The University faculty frequently responded to online students in a timely, thoughtful, and meaningful manner and provided. Instructors rarely led chats and discussions but valued participation in discussions. CEHD and the College of Science rarely used online lectures, whereas SOM, HHS, and ITE frequently used them.

Elements of learner-learner interactions were used rarely or never across the academic divisions. From all the tools available to facilitate learner-learner interactions such as chat, Web 2.0, email, Web-audio, Web-video, only discussion boards were used occasionally and mostly in CEHD, CHSS, and HHS. More frequent opportunities for learners to learn from peers and to have meaningful interactions with peers were offered by HHS, CEHD, and CHSS.

Common elements of learner-content interactions used frequently across all divisions were clearly stated course objectives and use of timeline and due dates. ITE rarely tied course grade to participation. Elements based on more objectivist principles

such as online quizzes and tests and instructor-generated summaries and outlines were rarely found in online courses at the University.

Several elements facilitating learner-instructional strategies interactions were used frequently in the University online courses. In particular, instructional strategies which facilitated application of knowledge, connections to real world situations, and the solving of real world problems were frequently used in all online courses. However, more innovative approaches of situating instruction in real world contexts such as the use of simulations and role-playing were rarely used among all academic divisions. ITE and SOM rarely facilitated opportunities for exploration of learner-generated issues or opportunities to explore issues beyond the course content. In addition, ITE and SOM courses rarely provided opportunities for reflection on content. Critical thinking about the content was rarely used in SOM. Online courses in HHS had the highest frequency of use of collaborative group projects. ITE courses had the highest frequency of use for tutorials among the academic divisions.

With regard to facilitating learner-interface interactions in online courses at the University, most quality elements were frequently used. However, instructor-created Web pages, online grade books, multimedia, and color were less frequently present in the design of online courses. Course management systems were most frequently used to deliver online content. With regard to delivery tools, however, ITE online courses were the exception. Instructor-created Web pages were used most frequently as a course delivery tool in ITE.

Most quality elements associated with social presence were rarely used in online courses at the University. Welcome messages occasionally were designed into courses as were opportunities for students to share experiences and beliefs. CEHD used a greater number of social presence quality elements more frequently than the other academic divisions. Online courses from COS and ITE rarely incorporated elements which facilitated social presence.

The portrait of online learning quality at the University presented an overall impression that online courses offered at the University in Fall 2008 were of high quality. In addition, the portrait also revealed differences among the academic divisions regarding quality and the frequency certain quality elements were used.

Discussion

The process used to understand how quality online learning was enacted at a large university provided insight into some of the challenges related to assessing online learning quality in higher education as reported in the literature. First, the meaning of quality changes depending on the perspective of the stakeholder (Meyers, 2002). In this study, a theory of online learning quality was derived from the literature on students' perspectives regarding factors and indicators that lead to successful online learning experiences.

Second, a definition of online learning is not consistent in higher education and is often referred to as distance education (Harasim, 1989; Yoon, 2003). In this study, a comprehensive definition of online learning developed by Dabbagh and Bannan-Ritland (2005) was used. In this way, online designs lacking pedagogical models, learning

technologies, and instructional strategies to facilitate interactions between instructors and learners separated by distance and time, were not considered as online learning models (i.e., video-taped face to face courses distributed and/or televised to students across distances).

Third, the use and quality assessment of online learning in higher education is not guided by established and comprehensive policies (Tallent-Runnels, et al., 2007). Therefore, online courses at universities are often viewed in the same manner as traditional courses and distinguished only by the fact that 51% or more of the content is delivered in online environments. Many of the "factors found to have an impact on the effectiveness of distance education are also factors that would affect the effectiveness of face-to-face education" (Zhao et al., 2005, p. 1865). However, psychological and communication gaps between instructors, learners, and content are inherent in online environments and require additional factors to bridge the gap. Moore (1991) identified this gap as transactional distance. Factors used to decrease transactional distance were identified in this study as instructor-learner, learner-learner, learner-content, learner-instructional strategies, learner-interface and learner-social presence quality dimensions. Without acknowledgement that these dimensions are necessary to provide meaningful learning experiences, online learning environments are merely judged by traditional evaluation systems (Twigg, 2001b).

The practice at the University of recognizing online courses as those with 51% or more of the content online environments neglects other online delivery modes such as hybrid environments. Any use of online learning associated with teaching and learning

has implications for quality. In this study, four different delivery modes were defined in order to capture online learning uses in addition to those courses officially designated as Web-only by the University. As shown by the prevalence of Web-enhanced and Web-supported environments identified in this study, the line between face to face education and online education is becoming blurred (McIssac & Gunawardena, 1996), possibly necessitating the redefining of quality once again.

Without university-wide established guidelines for online learning and a common definition of online learning, shared vision on implementation and quality is not possible. A lack of shared vision for online learning creates barriers to the use of online learning by faculty (Berge & Muilenburg, 2001). The low number of online course offerings across the University, the absence of any online learning use in certain academic divisions, and the difficulty in identifying uses of online learning may indicate a lack of shared vision.

With or without established policies, overall online learning quality was rated positively from University students' perspectives in this study. The concerns for quality in online learning were well-documented in the literature. Herrington et al. (2005) suggested that online learning environments are simply frameworks to impart inert knowledge rather than to support meaningful learning and active use of knowledge. Researchers have argued that online environments are typically replications of traditional face to face classes (Cox, 2005; Twigg, 2001a) and that these environments reflect the objectivist-based, teacher-centered practices traditionally found in higher education. The researchers advocated the use of a constructivist perspective in the design of online environments for which the practice of online learning is well suited (Dabbagh, 2005).

Based on the findings, a variety of constructivist-based design elements associated with learner-instructional strategies (LIS) interactions were used frequently across all the academic units. Participants across the academic divisions reported that connections between content and the real world were frequently made, real world problems were available to solve, and course knowledge was applied. Objectivist-based LIS design elements such as the availability of tutorials were rarely or never used in most academic divisions. This demonstrated that a shift towards more constructivist-based instructional strategies in online designs is emerging.

Although epistemological perspectives may be changing in online environments in favor of constructivist perspectives, innovative strategies and newer learning technologies to facilitate these approaches have not found their way into online environments. Role-playing and simulations were almost never found in online courses across all divisions. Participants reported that Web 2.0 technologies such as blogs and wikis, Web-audio, and Web-video were rarely or never used to support learner-learner interactions. This finding confirmed other findings in the literature regarding adoption and integration of technology in higher education. Ertmer (2005) posited that low level use of technologically-enhanced pedagogy is widespread; high-level use is more infrequent. Georgina and Olson (2008) found a correlation between technology literacy and pedagogical practice integration. The researchers found that K-12 teachers adopt more innovative technologies than faculty in higher education. According to Georgina and Olson (2008), faculty do not integrate higher levels of technology because (a) it takes too much time to learn about the tools, create with the tools, and learn to teach with the

tools, (b) lack of technology support personnel, (c) feelings of isolation and a lack of support from other colleagues who do not understand the importance of using innovative tools, (d) the use of new technologies is not a department priority, and (e) technology is not consistently or uniformly available.

In addition, the widespread use and dependence on course management systems (CMSs) may have constrained innovative practices of faculty in this study. The reported high frequency of use of CMSs across the University indicated that online courses were frequently delivered via this technology tool. CMSs offer instructors a standardized way to deliver content, communications, and assessment as well as means to control distribution (Bailin, 2002). However, these features have caused CMSs to be the target of much criticism. While the CMSs are appreciated by instructors as a template for posting course content, the tool does not facilitate thinking about course design beyond the template functions (Herrington, Reeves, & Oliver, 2005). Additionally, the perceived ease of use often leads to the direct transfer of face to face content material without consideration of essential quality dimensions. Thus, the focus of course design is on the delivery information rather than teaching (Zemesky & Massey, 2004). Herrington et al. (2005) concurred by stating,

> The [faculty] often yield to the seductive appeal of a course management system, where it is easy enough to populate a weekly schedule with static resources and decontextualized tasks. In an effort to survive, teachers focus on content (the product orientation), rather than the process of educating the student (the customer orientations). (p. 357)

Other researchers have addressed these challenges and have created courses that use CMSs which were perceived as high quality by students (Norton & Hathaway, 2008b; Song, 2005). Papastergiou (2006) studied the use of constructivist-based design principles in CMSs and found that CMSs' features do support constructivist- based instructional strategies but only with increased faculty workload. The findings of this study were in agreement that constructivist-based activities can be supported by CMSs. This is demonstrated by the intersection of study findings: frequently used CMSs, frequent use of several constructivist-based instructional strategies, and overall positive course quality ratings. Despite the potential of CMSs to support constructivist-based design principles, Papastergiou (2006) found that alternative forms of assessment and collaborative knowledge building activities were not possible with CMSs. Her findings regarding the inability of CMSs to support collaborative knowledge building activities were of interest to this study with respect to lower ratings for learner-learner interactions.

Collaboration with peers and virtual teaming are cited in the literature as essential quality elements (Pena-Shaff et al., 2005; Tseng et al., 2004; Vonderwell, 2003). Peer to peer interactions often hindered student learning and thus, students' perception of quality (Swan, 2001). Low participation in discussions, perceived unavailability of peers, and delayed responses are all cited in the literature as obstacles that impact learner-learner interactions (An & Kim, 2006; Pena-Shaff et al., 2005; Reisetter et al., 2007). Given lower student ratings for the quality elements related to tool use in this study, this literature is supported. It might be that when students are asked to do no more than discuss, interactions with peers are considered to be of less quality.

This study also found that none of the twelve quality elements associated with learner-learner interactions were contributors to overall quality ratings of learner-learner interactions. It is possible that although quality elements for learner-learner interactions were reported in the literature as valuable and, in some cases, predictors of student success in online courses (Yang, 2007) the elements associated with the learner-learner quality dimension need further exploration. The lack of a model to account for variance in learner-learner interactions suggests that this construct is not well understood. Perhaps quality elements that facilitate learner-learner interactions have not yet been identified or the nature of learning with peers and through peer interactions are themselves not understood. It is also possible that the elements of quality for learner-learner interactions are intertwined with social presence interactions and those social presence quality elements tied to building online communities.

Although a large spectrum of quality elements were identified in the literature for each quality dimension, results of the study identified a reduced set of quality elements that account for variances. It may, in fact, be quality elements may fall into two categories: those that are essential and those that are additional design features which can be used to augment the quality of a dimension.

The overall quality ratings of social presence for undergraduates and graduates were significantly different. Undergraduates rated overall quality of social presence lower than graduates. This finding was not confirmed in the literature. However, the academic divisions which had the lowest overall quality rating for social presence, CHSS, ITE, and SOM, were mainly comprised of undergraduate students. It cannot be determined from

the analyses conducted in this study if the low quality ratings for social presence were a result of elements present or absent in the courses offered in these three Colleges or if some differences between undergraduates and graduates account for differences in the reported quality ratings for social presence. In addition, the majority of the SOM and CHSS courses identified for this study were hybrid courses. Therefore, the face to face setting of the hybrid course may have been designed to meet undergraduate students' social presence needs rather than the online environment which was the focus of this study.

When viewed at the individual academic division level, students from CEHD, CHSS, and HHS are provided opportunities to give and receive feedback, to have meaningful interactions with peers, and to learn from peers. The frequency ratings for these elements in courses offered by COS, ITE, and SOM are in the "rarely" used and "never" used category. It is possible that disciplinary content areas may explain the difference in frequency of use for learner-learner interactions. Smith et al. (2008) investigated CMS tool usage at a large metropolitan university over a five year period and analyzed differences between online courses in hard-pure, hard-applied, soft-pure, and soft- applied disciplinary quadrants. The researchers found significant differences in the tool usage between disciplines. Applied disciplines were more diversified in their interactions and directed more towards community practice. It is a possibility that the differences seen in the frequency of use of learner-learner quality elements in this study are related to differences in disciplinary content. This study analyzed data at the academic division level and, therefore, it is unknown for certain which courses might be hard-pure,

hard-applied, soft-pure, and soft-applied disciplines. As a result, it is not possible to explain the nature of disciplinary differences seen in this study.

On a concluding note, the discrepancy between low overall quality ratings and high frequency usage ratings is mentioned here. CHSS ratings for overall course quality, overall instructor-learner quality, overall learner-learner quality, overall learner-content quality, overall learner-instructional strategies quality, and overall learner interface quality were lower than those of the other divisions. Interestingly, frequency of use for quality elements in each dimension was not lower for CHSS than other divisions and, in some case, was higher. With lower overall quality ratings in nearly all the dimensions, it might be expected that lower element frequencies of use would be lower for CHSS. This brings into question the potential for frequency of use of quality elements to fully account for overall course quality. It may be possible that the implementation of online learning for CHSS students contained elements in the design that were not accounted for in the study's theoretical constructive but that contributed to overall rating of course quality. Conversely, it may be the nature of the disciplines within CHSS which account for the equal or higher ratings of the frequency of use of quality elements and yet the lower overall ratings of the quality dimensions. This discrepancy warrants further consideration related to both the conceptual framework used to develop this study's definition of quality and the nature of the interactions between disciplinary area and online learning design.

Recommendations

As a result of the findings in this study on assessing quality dimensions and elements in higher education, several recommendations are offered. These recommendations address the practice of designing for and instructing in online environments. In addition, several recommendations for future research are offered. From the experience of collecting data for this study, it was discovered that the practice of online learning is not clearly defined in higher education. Often online learning is defined as distance education, yet it is a unique learning environment with its own definition, components, and quality concerns. Online learning policy is not advocated here as this practice tends to develop a "one size fits all" mindset. However, what is recommended is acknowledgment that online learning is different from distance education and requires the availability of staff development which focuses on teaching and learning in online environments rather than on how to use the tools.

From this study, quality elements associated with each of the six quality elements were presented. The intention was not to imply that all elements must be present in order to achieve quality but point to the need to make design choices that meet instructional goals and course content need. The designing/choosing of quality elements as part of a particular online learning design ought to be a part of staff development.

Several recommendations for research are also presented. Using the OLQI framework, it would be interesting to study students' perceptions about the importance of each quality element for their learning. The connection between frequency and importance would shed new light on students' perspectives about their online learning

experience. It would be interesting to see from students' perspectives if the quality elements in a particular design were actually important for their learning.

This research was designed to capture one portrait of online learning. If the implementation of online learning is to be fully understood and the quality of online environments assessed, multiple cases should be conducted. Further research is recommended across multiple settings and varying institutional categories.

Findings in this study as well as the literature presented touched briefly on disciplinary differences and differences between online courses across disciplinary quadrants (pure-hard, applied-hard, pure-soft, applied-soft). The findings in this study indicated that differences between academic divisions in both overall dimension qualities and the frequency certain quality elements are used might be related to differences in curriculum and teaching styles. Further study is needed to explore and better define the relationship between content and online learning design.

A comparison of constructivist-based and objectivist-based design features needs further study. While the literature suggests that online learning environments is moving toward constructivist perspectives, emerging literature suggests that an integrated approach might be more suitable. Additionally, this study identified positive quality ratings for both objectivist-based design features and constructivist-based design features. Further study is needed to distinguish these perspectives, to understand their contributions to online learning design, and to examine their impact on student learning and students' perceptions of quality.

Finally, separating Web-only from hybrid delivery modes and assessing the online learning quality of each is recommended as an extension of this study. In addition to the quality of the online learning component, quality aspects of hybrid courses are the connections between the face to face environment and the online environment. A comparison of students' perceptions of online learning quality in the Web-only delivery mode and their perceptions of quality in the hybrid delivery mode (quality of interactions in the online learning environment, quality of interactions in the face to face environment, and the quality of the connection between the two environments) would offer an additional layer to a portrait of online learning quality in a higher educational setting.

Conclusion

The prevalence of online learning in higher education warrants serious consideration of how these environments are implemented to provide quality experiences for students. Too often the focus of online learning staff development has been on the use of the tool rather than the design of the learning environment. The literature is rich with evidence that instructional design should be the focus of staff development efforts.

From the literature, the use of several design elements has shown to have impact on the quality of online experiences. This study connected and categorized that evidence and proposed a substantive theory of online learning quality. Although this theory was developed at a low level of abstraction, two particulars, which add to the complexities of assessing online learning quality, were revealed. The substantive theory was used to develop a portrait of online learning in a higher education setting and provided evidence

that instructional design for online learning environments should consider disciplinary content. Further reflection on this evidence revealed to the researcher that faculty involvement in the process of defining quality criteria for online learning environments is essential. Faculty are the instructional designers within their respective content area and ultimately, are the evaluators of their students' learning. Faculty with experiences in designing online environments have responsibilities to be available to support the efforts of those faculty who may not be quite as experienced.

Use of the online learning quality theory in this study also led to evidence that quality elements of learner-learner interactions as reported in the literature are not well-understood. This finding provides opportunities for redefining and rebuilding the theory to seek better understandings about learner-learner interactions and other dimensional interactions that may have influence on the quality of learner-learner interactions. Exploring more deeply into online learning quality to discover other elements that instantiate learner-learner interactions opens new opportunities for research. Theory developed in this study represents a beginning step in the assessment of online learning quality. The results of this study provide an indication that this researcher and others are making progress in unveiling the complexities of online learning quality and moving towards understanding.

Appendix A

SCHEV peer institutions (2007)

Peer Name	City	State
George Mason University	Fairfax	VA
Arizona State University- Tempe Campus	Tempe	AZ
Boston University	Boston	MA
George Washington University*	Washington	DC
Georgia State University	Atlanta	GA
Indiana University-Bloomington	Bloomington	IN
Indiana University-Purdue University-Indianapolis	Indianapolis	IN
Northeastern University*	Boston	MA
SUNY at Albany	Albany	NY
SUNY at Buffalo	Buffalo	NY
Syracuse University*	Syracuse	NY
University of Arkansas Main Campus	Fayetteville	AK
University of Cincinnati-Main Campus	Cincinnati	OH
University of Connecticut	Storrs	CT
University of Houston	Houston	TX
University of Kansas Main Campus	Lawrence	KS
University of Louisville	Louisville	KY
University of Maryland-College Park	College Park	MD
University of Memphis	Memphis	TN
University of Missouri-Columbia	Columbia	MO
University of Nebraska at Lincoln	Lincoln	NE
University of Nevada-Las Vegas	Las Vegas	NV
University of Nevada-Reno	Reno	NV
University of New Mexico-Main Campus	Albuquerque	NM
University of Oklahoma-Norman	Norman	OK
Wayne State University	Detroit	MI

* denotes private institution

Appendix B

Carnegie classification peer institutes (2005)

Peer Name	City	State
Auburn University Main Campus	Auburn University	AL
Florida Atlantic University-Boca Raton	Boca Raton	FL
Florida International University	Miami	FL
George Mason University	Fairfax	VA
Georgia State University	Atlanta	GA
Indiana University-Purdue University-Indianapolis	Indianapolis	IN
Mississippi State University	Mississippi State	MS
New Mexico State University-Main Campus	Las Cruces	NM
Old Dominion University	Norfolk	VA
San Diego State University	San Diego	CA
Temple University	Philadelphia	PA
Texas Tech University	Lubbock	TX
University of Akron Main Campus	Akron	OH
University of Alabama, The	Tuscaloosa	AL
University of Central Florida	Orlando	FL
University of Houston-University Park	Houston	TX
University of Louisiana at Lafayette	Lafayette	LA
University of Louisville	Louisville	KY
University of Memphis	Memphis	TN
University of Missouri-Kansas City	Kansas City	MO
University of Montana-Missoula	Missoula	MT
University of Nevada-Las Vegas	Las Vegas	NV
University of Nevada-Reno	Reno	NV
University of New Orleans	New Orleans	LA
University of North Texas	Denton	TX
University of Oregon	Eugene	OR
University of Puerto Rico-Rio Piedras Campus	Rio Piedras	PR
University of Texas at Arlington	Arlington	TX
University of Texas at Dallas	Richardson	TX
University of Texas at El Paso	El Paso	TX
University of Toledo	Toledo	OH
University of Wisconsin-Milwaukee	Milwaukee	WI
University of Wyoming	Laramie	WY
Utah State University	Logan	UT
Virginia Commonwealth University	Richmond	VA
Western Michigan University	Kalamazoo	MI

Appendix C

The Online Learning Quality Inventory (OLQI) matrix

Quality Dimensions

Instructor-Learner Interactions (IL)	Moore, 1989
Learner-Learner Interactions (LL)	Moore, 1989
Learner-Content Interactions (LC)	Moore, 1989
Learner-Instructional Strategies (LIS)	Jonassen et al., 1991
Learner-Interface Interactions (LIF)	Hillman et al.,1994
Social Presence (SP)	Gunawardena & Zittle, 1997

Quality Elements

1. Timely responses to your concerns from the instructor

Dimension	Objectivist, Constructivist, Both	References
IL	B	Jiang &Ting, 2000 Northrup, 2002 Russo & Campbell, 2004 Tseng, Wong, &Ku, 2004 Young & Norgard, 2006

2. Thoughtful communication from the instructor

Dimension	Objectivist, Constructivist, Both	References
IL	B	Young, 2006

3. Private communication with the instructor through email or private chat

Dimension	Objectivist, Constructivist, Both	References
IL	B	Flores, 2006 Gallien, 2008

4. Public communication with the instructor through discussion board

Dimension	Objectivist, Constructivist, Both	References
IL	B	Garrison & Cleveland-Innes, 2005 Yang & Cornelius, 2004

5. Frequent feedback on assignments and activities from the instructor

Dimension	Objectivist, Constructivist, Both	References
IL	B	Shea et al., 2001 Jiang & Ting, 2000

6. Meaningful and relevant feedback on assignments and activities from the instructor

Dimension	Objectivist, Constructivist, Both	References
IL	B	Jiang & Ting, 2000 Tallent-Runnels et al., 2007 Woo & Reeves, 2007IL

7. Active participation in discussions by the instructor

Dimension	Objectivist, Constructivist, Both	References
IL	B	Dennen et al., 2007 Young & Norgard, 2006

8. Online lectures from the instructor

Dimension	Objectivist, Constructivist, Both	References
IL	O	Garrison & Cleveland-Innes, 2005 Navarro & Shoemaker, 2000

9. The instructor led synchronous discussions (i.e. chat sessions)

Dimension	Objectivist, Constructivist, Both	References
IL	B	Akahori & Kim, 2003 Kim et al., 2005 Reisetter et al., 2007

10. The instructor led asynchronous discussions (i.e. discussion forums)

Dimension	Objectivist, Constructivist, Both	References
IL		Garrison & Cleveland-Innes, 2005 Swan et al., 2000

11. Conversational tone from the instructor

Dimension	Objectivist, Constructivist, Both	References
IL	B	Russo & Campbell, 2004

12. Opportunities to ask the instructor questions

Dimension	Objectivist, Constructivist, Both	References
IL	B	Aragon, 2003

13. Instructor's personality comes through

Dimension	Objectivist, Constructivist, Both	References
IL	B	Dennen et al., 2007

14. Instructor recognizes each student as an individual

Dimension	Objectivist, Constructivist, Both	References
IL	B	Johnson & Aragon, 2003

15. Instructor's knowledge is clear and evident

Dimension	Objectivist, Constructivist, Both	References
IL	B	Akahori & Kim, 2003 Seok, 2008

16. Instructor values and participates in online discussions

Dimension	Objectivist, Constructivist, Both	References
IL	C	Dennen et al., 2007 Jiang & Ting, 2000 Young & Norgard, 2006

17. Interaction with other students through threaded discussion board

Dimension	Objectivist, Constructivist, Both	References
LL	N/A	Thurmond et al., 2002

18. Interaction with other students through Web-audio

Dimension	Objectivist, Constructivist, Both	References
LL	N/A	Calandra, Barron, & Thompson-Sellers, 2008 Ice et al., 2008

19. Interaction with other students through Web-video

Dimension	Objectivist, Constructivist, Both	References
LL	N/A	Curtis & Lawson, 2001

20. Interaction with other students through real-time chat

Dimension	Objectivist, Constructivist, Both	References
LL	N/A	Thurmond et al., 2002

21. Interaction with other students through email

Dimension	Objectivist, Constructivist, Both	References
LL	N/A	Thurmond et al., 2002

22. Interaction with other students through blogs

Dimension	Objectivist, Constructivist, Both	References
LL	N/A	Stodel et al., 2006

23. Interaction with other students through wikis

Dimension	Objectivist, Constructivist, Both	References
LL	N/A	Moisey & Hughes, 2009

24. Opportunity to review assignments completed by other students

Dimension	Objectivist, Constructivist, Both	References
LL	C	Peltier et al., 2007 Yang, 2007

25. Opportunity to provide constructive feedback to other students

Dimension	Objectivist, Constructivist, Both	References
LL	C	Akahori & Kim, 2003

26. Opportunity to get constructive feedback from other students

Dimension	Objectivist, Constructivist, Both	References
LL	C	Akahori & Kim, 2003

27. Relevant and meaningful online discussions with other students

Dimension	Objectivist, Constructivist, Both	References
LL	C	Picciano, 2002 Woo & Reeves, 2007

28. Course content learned from reviewing comments made by other students

Dimension	Objectivist, Constructivist, Both	References
LL	C	Beaudoin, 2002

29. Instructor use of a participation rubric

Dimension	Objectivist, Constructivist, Both	References
LC	B	Garrison & Cleveland-Innes, 2005 Pawan et al., 2003

30. A significant part of course grade depends on participation

Dimension	Objectivist, Constructivist, Both	References
LC	B	Aspden & Helm, 2004 Jiang & Ting, 2000 Pena-Shaff et al., 2005 Swan et al., 2000

31. Response to other students' postings required

Dimension	Objectivist, Constructivist, Both	References
LC	B	Johnson & Aragon, 2003 Rovai & Barnum, 2003

32. Use of teacher-generated summaries

Dimension	Objectivist, Constructivist, Both	References
LC	O	Garrison & Cleveland-Innes, 2005 Reisetter et al., 2007

33. Use of timelines and due dates

Dimension	Objectivist, Constructivist, Both	References
LC	O	Northrup, 2002

34. Course objectives clearly stated

Dimension	Objectivist, Constructivist, Both	References
LC	B	Dennen et al., 2007 Song et al., 2004

35. Use of online quizzes and/or tests

Dimension	Objectivist, Constructivist, Both	References
LC	O	Navarro & Shoemaker, 2000

36. Use of teacher-generated outlines

Dimension	Objectivist, Constructivist, Both	References
LC	O	Garrison & Cleveland-Innes, 2005

37. Use of open-ended questions in discussions

Dimension	Objectivist, Constructivist, Both	References
LIS	C	Garrison & Cleveland-Innes, 2005

38. Opportunities for critical thinking about the course content

Dimension	Objectivist, Constructivist, Both	References
LIS	C	Garrison & Cleveland-Innes, 2005

39. Opportunities for applying knowledge to other situations

Dimension	Objectivist, Constructivist, Both	References
LIS	C	Garrison & Cleveland-Innes, 2005

40. Freedom to explore and tackle interesting and learner-generated problems and issues

Dimension	Objectivist, Constructivist, Both	References
LIS	C	Stodel et al., 2006

41. Freedom to explore and inquire about content issues extending beyond the scope of the course.

Dimension	Objectivist, Constructivist, Both	References
LIS	C	Stodel et al., 2006

42. Use of role-playing

Dimension	Objectivist, Constructivist, Both	References
LIS	C	Lebaron & Miller, 2003

43. Availability of ample information and resources to complete assignments

Dimension	Objectivist, Constructivist, Both	References
LIS	B	Song et al., 2004

44. Clear connections between course content and real world applications

Dimension	Objectivist, Constructivist, Both	References
LIS	C	Clark, 2002 Lebaron & Miller, 2003

45. Presented with real world problems to solve

Dimension	Objectivist, Constructivist, Both	References
LIS	C	Herrington et al., 2004

46. Use of simulations

Dimension	Objectivist, Constructivist, Both	References
LIS	C	Northrup, 2002

47. Use of collaborative group projects

Dimension	Objectivist, Constructivist, Both	References
LIS	C	Kim et al., 2005 Johnson & Aragon, 2003 Swan, 2002

48. Activities designed to promote reflection on content

Dimension	Objectivist, Constructivist, Both	References
LIS	C	Garrison & Cleveland-Innes, 2005 Johnson & Aragon, 2003 Pena-Shaff et al., 2005

49. Presence of diverse perspectives

Dimension	Objectivist, Constructivist, Both	References
LIS	C	Pena-Shaff et al., 2005 Swan, 2002

50. Availability of models and examples to help clarify expectations for assignments

Dimension	Objectivist, Constructivist, Both	References
LIS	B	Song et al., 2004 Young, 2006

51. Tutorials available

Dimension	Objectivist, Constructivist, Both	References
LIS	O	Lebec & Luft, 2007

52. Course divided into modules

Dimension	Objectivist, Constructivist, Both	References
LI	B	Vonderwell & Zachariah, 2005

53. An online grade book

Dimension	Objectivist, Constructivist, Both	References
LI	B	Lebec & Luft, 2007

54. Clear navigation of course links

Dimension	Objectivist, Constructivist, Both	References
LI	N/A	Swan, 2000

55. Easy to read text

Dimension	Objectivist, Constructivist, Both	References
LI	N/A	Song & Kidd, 2005

56. Clear and easy to understand course layout

Dimension	Objectivist, Constructivist, Both	References
LI	N/A	Song & Kidd, 2005

57. Working hyperlinks

Dimension	Objectivist, Constructivist, Both	References
LI	N/A	Song & Kidd, 2005

58. Hyperlinks clearly indicate where they lead

Dimension	Objectivist, Constructivist, Both	References
LI	N/A	Song & Kidd, 2005

59. Availability of additional resource materials

Dimension	Objectivist, Constructivist, Both	References
LI	N/A	Lebec & Luft, 2007

60. Consistent course design

Dimension	Objectivist, Constructivist, Both	References
LI	N/A	Swan et al., 2000 Northrup, 2002 Young & Norgard, 2006

61. Clearly stated course expectations

Dimension	Objectivist, Constructivist, Both	References
LI	B	Garrison & Cleveland-Innes, 2005

62. Use of a course management system (i.e. Blackboard, WebCT)

Dimension	Objectivist, Constructivist, Both	References
LI	N/A	Song & Kidd, 2005

63. Use of instructor-created web-pages

Dimension	Objectivist, Constructivist, Both	References
LI	B	Added to balance CMS questionnaire item

64. Use of images, animations, video presentation, and/or audio presentation

Dimension	Objectivist, Constructivist, Both	References
LI	N/A	Song & Kidd, 2005

65. Color used to facilitate learning

Dimension	Objectivist, Constructivist, Both	References
LI	N/A	Song & Kidd, 2005

66. Humor encouraged

Dimension	Objectivist, Constructivist, Both	References
SP	B	Johnson & Aragon, 2003

67. Sharing personal stories encouraged

Dimension	Objectivist, Constructivist, Both	References
SP	C	Klobas & Haddow, 2000

68. Working with other students collaboratively encouraged

Dimension	Objectivist, Constructivist, Both	References
SP	C	Klobas & Haddow, 2000 Northrup, 2002 Vonderwell, 2003

69. Opportunity to share my experiences and beliefs

Dimension	Objectivist, Constructivist, Both	References
SP	C	Vonderwell, 2003

70. Activities designed to build trust among class participants

Dimension	Objectivist, Constructivist, Both	References
SP	B	Pena-Shaff et al., 2005

71. Use of welcome messages at the onset of course

Dimension	Objectivist, Constructivist, Both	References
SP	B	Johnson & Aragon, 2003 Jones et al., 2008

72. Use of student profiles

Dimension	Objectivist, Constructivist, Both	References
SP	B	Granitz & Greene, 2003

Appendix D

Online Learning Quality Inventory Fall 2008

Consent Form

RESEARCH PROCEDURES

This research is being conducted to assess students' perceptions of the features of online learning used in their online course and their perception of the quality of their online learning experience. If you agree to participate, you will be asked to take a survey. The survey will take about 20 minutes to complete.

RISKS

There are no foreseeable risks for participating in this research.

BENEFITS

There are no benefits to you as a participant other than to further research in online learning course design and instruction, and the opportunity to reflect on and evaluate the quality of your experience in this online course.

CONFIDENTIALITY

The data in this study will be confidential. This is an anonymous survey. Therefore, names and other identifiers will not be placed on surveys or other research data. The electronic survey is provided through surveymonkey.com. The data is stored on surveymonkey.com data servers. While it is understood that no computer transmission can be perfectly secure, reasonable efforts will be made to protect the confidentiality of your transmission.

PARTICIPATION

Your participation is voluntary, and you may withdraw from the study at any time and for any reason. If you decide not to participate or if you withdraw from the study, there is no penalty or loss of benefits to which you are otherwise entitled. There are no costs to you or any other party.

CONTACT

This research is being conducted by Dawn Hathaway, a doctoral candidate and faculty member in the College of Education and Human Development at George Mason University. She may be reached at 703-993-2019 for questions or to report a research-related problem. You may also contact her advisor, Dr. Priscilla Norton of the George Mason Graduate School of Education at 703-993-2015. You may contact the George Mason University Office of Research Subject Protection at 703-993-4121 if you have questions or comments regarding your rights as a participant in this study. This research has been reviewed according to the George Mason University procedures governing your participation in this research.

CONSENT

The George Mason University Human Subjects Review Board has waived the requirement for signing the consent form. However, if you would like to sign a consent form prior to beginning the survey, please contact Dawn Hathaway at 703-993-2019 or dhathawa@gmu.edu. If you consent, please continue with this survey.

Version date: April 22, 2008

Online Course Identification

In this survey, I am interested in your perceptions about the online course in which you enrolled for Fall 2008. Throughout this survey, please keep in mind only the course you list below as you answer the questions.

*** What is the course identification number for this online course? (Ex: EDIT 714)**

Demographics

Online Learning Quality Inventory Fall 2008

*** Frequency used in this course**

	Never	Rarely	Occasionally	Often
Online course content connects with topics discussed in face to face meetings	◯	◯	◯	◯
Interactions with the instructor in the online environment carry over into face to face meetings	◯	◯	◯	◯
Interactions with classmates in the online environment carry over into face to face meetings	◯	◯	◯	◯

*** Importance for your learning**

	Unimportant	Somewhat Unimportant	Somewhat Important	Important
	◯	◯	◯	◯
	◯	◯	◯	◯
	◯	◯	◯	◯

Open-Ended questions

How would you describe your overall impression of this course?

What were the best features of this course?

What were the most challenging features of this course?

Describe your idea of a quality online course.

Thank you

Thank you for taking the time to complete this survey! Your responses will be helpful in understanding the frequency quality elements are used in online courses at George Mason University and the importance of those quality elements for student learning.

Online Learning Quality Inventory Fall 2008

*** Gender:**

- ◯ Male
- ◯ Female

*** Age:**

*** Academic Status:**

- ◯ Freshman
- ◯ Sophomore
- ◯ Junior
- ◯ Senior
- ◯ Graduate

*** Course Load:**

- ◯ Full-time
- ◯ Part-time

*** What is your primary location while taking this online course?**

- ◯ Within the United States
- ◯ Outside of the United States

*** Are you presently taking additional online courses this semester?**

- ◯ Yes
- ◯ No

Additional Online Courses

*** Please list all the course identification number(s) of other online courses you are taking in Fall 2008. (EX: EDIT 714)**

Overall Quality

Online Learning Quality Inventory Fall 2008

*** Please rate the following:**

	Not Good at all				Very Good
Overall quality of the course	◯	◯	◯	◯	◯
Overall quality of communication and interaction between you and the instructor	◯	◯	◯	◯	◯
Overall quality of communication and interaction between you and your peers	◯	◯	◯	◯	◯
Overall quality of interactions between you and the learning materials provided in this course	◯	◯	◯	◯	◯
Overall quality of interactions between you and the techniques used to engage, motivate, and facilitate your learning	◯	◯	◯	◯	◯
Overall ease of use and accessibility of this course and course materials	◯	◯	◯	◯	◯
Overall opportunity to participate and be "seen" and "heard"	◯	◯	◯	◯	◯

Instructor-Learner Quality Elements

Please indicate how frequently the following items were found in this course **AND** how important the item was for your learning, regardless of the frequency of use. For example: Webcams may have been used often in this course, but for your learning, Webcams may be unimportant.

*** Frequency used in this course**

	Never	Rarely	Occasionally	Often
Timely responses to your concerns from the instructor	◯	◯	◯	◯
Thoughtful communication from the instructor	◯	◯	◯	◯
Private communication with the instructor through email or chat	◯	◯	◯	◯
Public communication with the instructor through discussion board	◯	◯	◯	◯
Frequent feedback on assignments and activities from the instructor	◯	◯	◯	◯
Meaningful and relevant feedback on assignments and activities from the instructor	◯	◯	◯	◯
Active participation in discussions by the instructor	◯	◯	◯	◯
Online lectures from the instructor	◯	◯	◯	◯
The instructor led synchronous discussions (i.e. chat sessions)	◯	◯	◯	◯
The instructor led asynchronous discussions (i.e. discussion forums)	◯	◯	◯	◯
Conversational tone from the instructor	◯	◯	◯	◯
Opportunities to ask the instructor questions	◯	◯	◯	◯
Instructor's personality comes through	◯	◯	◯	◯
Instructor recognizes each student as an individual	◯	◯	◯	◯
Instructor's knowledge is clear and evident	◯	◯	◯	◯
Instructor values and participates in online discussions	◯	◯	◯	◯

Online Learning Quality Inventory Fall 2008

*** Importance for your learning**

Unimportant	Somewhat Unimportant	Somewhat Important	Important
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○

Learner-Learner Quality Elements

Please indicate how frequently the following items were found in this course **AND** how important the item was for your learning, regardless of the frequency of use. For example: Webcams may have been used often in this course, but for your learning, Webcams may be unimportant.

Online Learning Quality Inventory Fall 2008

*** Frequency used in this course**

	Never	Rarely	Occasionally	Often
Interaction with other students through threaded discussion board	◯	◯	◯	◯
Interaction with other students through Web-audio	◯	◯	◯	◯
Interaction with other students through Web-video	◯	◯	◯	◯
Interaction with other students through real-time chat	◯	◯	◯	◯
Interaction with other students through email	◯	◯	◯	◯
Interaction with other students through blogs	◯	◯	◯	◯
Interaction with other students through wikis	◯	◯	◯	◯
Opportunity to review assignments completed by other students	◯	◯	◯	◯
Opportunity to provide constructive feedback to other students	◯	◯	◯	◯
Opportunity to get constructive feedback from other students	◯	◯	◯	◯
Relevant and meaningful online discussions with other students	◯	◯	◯	◯
Course content learned from reviewing comments made by other students	◯	◯	◯	◯

*** Importance for your learning**

Unimportant	Somewhat Unimportant	Somewhat Important	Important
◯	◯	◯	◯
◯	◯	◯	◯
◯	◯	◯	◯
◯	◯	◯	◯
◯	◯	◯	◯
◯	◯	◯	◯
◯	◯	◯	◯
◯	◯	◯	◯
◯	◯	◯	◯
◯	◯	◯	◯
◯	◯	◯	◯
◯	◯	◯	◯

Learner-Content Quality Elements

Online Learning Quality Inventory Fall 2008

Please indicate how frequently the following items were found in this course **AND** how important the item was for your learning, regardless of the frequency of use. For example: Webcams may have been used often in this course, but for your learning, Webcams may be unimportant.

*** Frequency used in this course**

	Never	Rarely	Occasionally	Often
Instructor use of a participation rubric	◯	◯	◯	◯
A significant part of course grade depends on participation	◯	◯	◯	◯
Response to other students' postings required	◯	◯	◯	◯
Use of instructor-generated summaries	◯	◯	◯	◯
Use of timelines and due dates	◯	◯	◯	◯
Course objectives clearly stated	◯	◯	◯	◯
Use of online quizzes and/or tests	◯	◯	◯	◯
Use of instructor-generated outlines	◯	◯	◯	◯

*** Importance for your learning**

Unimportant	Somewhat Unimportant	Somewhat Important	Important
◯	◯	◯	◯
◯	◯	◯	◯
◯	◯	◯	◯
◯	◯	◯	◯
◯	◯	◯	◯
◯	◯	◯	◯
◯	◯	◯	◯
◯	◯	◯	◯

Learner-Instructional Strategies Quality Elements

Please indicate how frequently the following items were found in this course **AND** how important the item was for your learning, regardless of the frequency of use. For example: Webcams may have been used often in this course, but for your learning, Webcams may be unimportant.

Online Learning Quality Inventory Fall 2008

*** Frequency used in this course**

	Never	Rarely	Occasionally	Often
Use of open-ended questions in discussions	◯	◯	◯	◯
Opportunities for critical thinking about course content	◯	◯	◯	◯
Opportunities for applying knowledge to other situations	◯	◯	◯	◯
Freedom to explore and tackle interesting and learner-generated problems and issues	◯	◯	◯	◯
Freedom to explore and inquire about content issues extending beyond the scope of the course	◯	◯	◯	◯
Use of role-playing	◯	◯	◯	◯
Availability of ample information and resources to complete assignments	◯	◯	◯	◯
Clear connections between course content and real world applications	◯	◯	◯	◯
Presented with real world problems to solve	◯	◯	◯	◯
Use of simulations	◯	◯	◯	◯
Use of collaborative group projects	◯	◯	◯	◯
Activities designed to promote reflection on content	◯	◯	◯	◯
Presence of diverse perspectives	◯	◯	◯	◯
Availability of models and examples to help clarify expectations for assignments	◯	◯	◯	◯
Tutorials available	◯	◯	◯	◯

Online Learning Quality Inventory Fall 2008

*** Importance for your learning**

	Unimportant	Somewhat Unimportant	Somewhat Important	Important
	○	○	○	○
	○	○	○	○
	○	○	○	○
	○	○	○	○
	○	○	○	○
	○	○	○	○
	○	○	○	○
	○	○	○	○
	○	○	○	○
	○	○	○	○
	○	○	○	○
	○	○	○	○
	○	○	○	○
	○	○	○	○
	○	○	○	○

Learner-Interface Quality Elements

Please indicate how frequently the following items were found in this course **AND** how important the item was for your learning, regardless of the frequency of use. For example: Webcams may have been used often in this course, but for your learning, Webcams may be unimportant.

Online Learning Quality Inventory Fall 2008

*** Frequency used in this course**

	Never	Rarely	Occasionally	Often
Course divided into modules	◯	◯	◯	◯
An online grade book	◯	◯	◯	◯
Clear navigation of course links	◯	◯	◯	◯
Easy to read text	◯	◯	◯	◯
Clear and easy to understand course layout	◯	◯	◯	◯
Working hyperlinks	◯	◯	◯	◯
Hyperlinks clearly indicate where they lead	◯	◯	◯	◯
Availability of additional resource materials	◯	◯	◯	◯
Consistent course design	◯	◯	◯	◯
Clearly stated course expectations	◯	◯	◯	◯
Use of a course management system (i.e. Blackboard, WebCT)	◯	◯	◯	◯
Use of instructor-created Web-pages	◯	◯	◯	◯
Use of images, animations, video presentations and/or audio presentations	◯	◯	◯	◯
Color used to facilitate learning	◯	◯	◯	◯

*** Importance for your learning**

Unimportant	Somewhat Unimportant	Somewhat Important	Important
◯	◯	◯	◯
◯	◯	◯	◯
◯	◯	◯	◯
◯	◯	◯	◯
◯	◯	◯	◯
◯	◯	◯	◯
◯	◯	◯	◯
◯	◯	◯	◯
◯	◯	◯	◯
◯	◯	◯	◯
◯	◯	◯	◯
◯	◯	◯	◯
◯	◯	◯	◯
◯	◯	◯	◯

Learner-Social Presence Quality Elements

Online Learning Quality Inventory Fall 2008

Please indicate how frequently the following items were found in this course **AND** how important the item was for your learning, regardless of the frequency of use. For example: Webcams may have been used often in this course, but for your learning, Webcams may be unimportant.

*** Frequency used in this course**

	Never	Rarely	Occasionally	Often
Humor encouraged	◯	◯	◯	◯
Sharing personal stories encouraged	◯	◯	◯	◯
Working with other students collaboratively encouraged	◯	◯	◯	◯
Opportunity to share my experiences and beliefs	◯	◯	◯	◯
Activities designed to build trust among class participants	◯	◯	◯	◯
Use of welcome message(s)at the onset of the course	◯	◯	◯	◯
Use of student profiles	◯	◯	◯	◯

*** Importance for your learning**

Unimportant	Somewhat Unimportant	Somewhat Important	Important
◯	◯	◯	◯
◯	◯	◯	◯
◯	◯	◯	◯
◯	◯	◯	◯
◯	◯	◯	◯
◯	◯	◯	◯
◯	◯	◯	◯

Delivery

*** How would you best describe the delivery of this online course?**

◯ **Web-only**: The interactions between me, the instructor, other learners, and the course content are in an online environment with no more than 3 face to face meetings during the semester.

◯ **Hybrid**: The interactions between me, the instructor, other learners, and the course contenet are partially in an online environment with between 4 and 12 face to face meeting during the semester.

Hybrid Quality Elements

Please indicate how frequently the following items were found in this course **AND** how important the item was for your learning, regardless of the frequency of use. For example: Webcams may have been used often in this course, but for your learning, Webcams may be unimportant.

Online Learning Quality Inventory Fall 2008

*** Frequency used in this course**

	Never	Rarely	Occasionally	Often
Online course content connects with topics discussed in face to face meetings	○	○	○	○
Interactions with the instructor in the online environment carry over into face to face meetings	○	○	○	○
Interactions with classmates in the online environment carry over into face to face meetings	○	○	○	○

*** Importance for your learning**

	Unimportant	Somewhat Unimportant	Somewhat Important	Important
	○	○	○	○
	○	○	○	○
	○	○	○	○

Open-Ended questions

How would you describe your overall impression of this course?

What were the best features of this course?

What were the most challenging features of this course?

Describe your idea of a quality online course.

Thank you

Thank you for taking the time to complete this survey! Your responses will be helpful in understanding the frequency quality elements are used in online courses at George Mason University and the importance of those quality elements for student learning.

Faculty Online Course Identification Form Fall 2008

6. Web-Supported delivery is defined as the use of web-based technologies for the purpose of posting syllabi, assignments and/or resources or to serve as a means of communication about content when learners and instructor are separated during internship or practicum coursework. For either case, learning is predominantly in a face to face environment with web-based technologies supporting face to face interactions.

Please list the course ID numbers and section numbers for all of your courses taught in Fall 2008 which are considered Web-supported.

7. Other: If courses you are teaching in Fall 2008 have online learning components but do not fit within the categories listed above, please describe the use of online learning in the courses as well as the course ID numbers and section numbers.

3. Thank You!

I appreciate your time in completing this form for the study. If you have any additional comments or questions, I can be reached through email at dhathawa@gmu.edu or by phone at 703-993-2019. Thank you!

Dawn Hathaway
Graduate School of Education

Faculty Online Course Identification Form Fall 2008

1. Demographic Information

As part of my doctoral dissertation, I am conducting a study to develop a portrait of online learning implementation at George Mason University. From my own experience as a CEHD faculty member, I know that online learning is used in ways that extend beyond the designation of "Net" course. This study begins with a process to identify those instances of online learning across the University.

This study is not designed to evaluate courses or instructors.

The Human Subjects Review Board (HSRB) has approved this study and the Faculty Online Course Identification form.

*** 1. Please indicate your Academic Division affiliation:**

*** 2. What is your Rank:**

◯ Professor ◯ Associate Professor ◯ Assistant Professor ◯ Instructor

2. Identifying Online Learning Courses

Please take a moment to think about the courses you are teaching or supervising in Fall 2008 and determine which of your courses fit into one of the following:

3. Web-only delivery is defined as 80% or more of instructor and learner(s) interactions with each other and content are designed for online delivery.

Please list the course ID numbers and section numbers for all of your courses taught in Fall 2008 which are considered Web-only.

4. Hybrid/Blended delivery is defined as 25% to 79% of the instructor and learner (s) interactions with each other and content are designed for online delivery.

Please list the course ID numbers and section numbers for all of your courses taught in Fall 2008 which are considered Hybrid.

5. Web-Enhanced delivery is defined as 1% to 24% of the instructor and learner(s) interactions with each other and/or content are designed for online delivery. Web-enhanced courses use web-based technologies to enhance courses designed as face-to-face courses.

Please list the course ID numbers and section numbers for all of your courses taught in Fall 2008 which are considered Web-enhanced.

Appendix F

Email to faculty requesting completion of Faculty Online Course Inventory (FOCI) form

Dear Faculty,

I am a doctoral student and a George Mason faculty member in CEHD, and I am conducting my dissertation study on how online learning is implemented in courses offered at George Mason University. This study is not designed to evaluate courses or instructors. Rather, in an effort to describe the web delivery designs used at Mason, this research seeks to provide a description of the various online learning models and students' reactions to potential learning features inherent in these models. The results of this study will not only inform George Mason University as we continue to think about online learning but the higher education community in general.

As a first step, I need to identify courses that have an online learning component (Web-supported, Web-enhanced, Hybrid, and Web-only). The best source of this information is the University faculty. Please take 5 minutes to access and complete the electronic form designed to identify your Fall 2008 courses with online learning components or to indicate that you are not using online learning.

The Faculty Online Course Identification form can be accessed at
http://www.surveymonkey.com/s.aspx?sm=8eaX5uA49FzZxiNrNQDKaQ_3d_3d

In an effort to reach as many faculty as possible, several strategies have been used. Some faculty may have already received this request from their College or Department. I apologize for any duplications.

This study is approved by the George Mason University Human Subjects Review Board. Your participation in this phase of the study is greatly appreciated. If you have any questions or comments, please contact Dawn Hathaway at dhathawa@gmu.edu or 703-993-2019.

Gratefully,
Dawn Hathaway

Dawn M. Hathaway
Instructor
Graduate School of Education MSN 5D6
George Mason University
4400 University Drive
Fairfax, VA 22030
office: 703.993.2019
fax: 703.993.2722

Appendix G

Email sent to faculty requesting permission to survey students

Dear **(Faculty name),**

Thank you for assisting me in phase I of my dissertation study by identifying your Fall 2008 courses which use online learning.

For phase II of my study, I would like to survey students in Web-only and Hybrid/Blended courses not for the purpose of evaluating instructors or courses but rather to capture students' reactions to certain features inherent in online courses. Both phases of the study are approved by the George Mason Human Subjects Review Board.

May I have your permission to survey your students in the **(Web-only Hybrid/Blended)** course you identified on the electronic form- **(course number, section number)**? If permitted, I will send an email with an introduction, consent information, and a survey link to students enrolled in this course.

Gratefully,
Dawn Hathaway

Dawn M. Hathaway
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Appendix H

Participant invitation email

Dear George Mason student,

As part of my doctoral dissertation, I am conducting a study to assess the implementation and quality of online learning in a university setting. I invite you as a student currently enrolled in **(course number, section number)** to participate in this survey. I have received permission from your instructor to contact you regarding this study.

In this survey, I am interested to know your perceptions about the quality of your online learning experience, the frequency you found certain quality elements used, and the importance of these quality elements for your own learning.

There are no risks for participating in this research, and your responses are confidential. While it is understood that no computer transmission can be perfectly secure, reasonable efforts will be made to protect the confidentiality of your transmission.

The survey will take 20 minutes to complete. All processes of the Human Subjects Review Board and survey policies at George Mason have been followed.

To view the Informed Consent Form and to begin the survey, please click on the URL: http://www.surveymonkey.com/s.aspx?sm=09OfWlqEBgbYezWochp9Mw_3d_3d

If you have any questions, please contact me at dhathawa@gmu.edu or my dissertation advisor, Dr. Priscilla Norton at pnorton@gmu.edu

Thank you for your time and participation,

Dawn Hathaway

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Appendix I

Consent Form

Online Learning Quality Inventory Fall 2008

Consent Form

RESEARCH PROCEDURES

This research is being conducted to assess students' perceptions of the features of online learning used in their online course and their perception of the quality of their online learning experience. If you agree to participate, you will be asked to take a survey. The survey will take about 20 minutes to complete.

RISKS

There are no foreseeable risks for participating in this research.

BENEFITS

There are no benefits to you as a participant other than to further research in online learning course design and instruction, and the opportunity to reflect on and evaluate the quality of your experience in this online course.

CONFIDENTIALITY

The data in this study will be confidential. This is an anonymous survey. Therefore, names and other identifiers will not be placed on surveys or other research data. The electronic survey is provided through surveymonkey.com. The data is stored on surveymonkey.com data servers. While it is understood that no computer transmission can be perfectly secure, reasonable efforts will be made to protect the confidentiality of your transmission.

PARTICIPATION

Your participation is voluntary, and you may withdraw from the study at any time and for any reason. If you decide not to participate or if you withdraw from the study, there is no penalty or loss of benefits to which you are otherwise entitled. There are no costs to you or any other party.

CONTACT

This research is being conducted by Dawn Hathaway, a doctoral candidate and faculty member in the College of Education and Human Development at George Mason University. She may be reached at 703-993-2019 for questions or to report a research-related problem. You may also contact her advisor, Dr. Priscilla Norton of the George Mason Graduate School of Education at 703-993-2015. You may contact the George Mason University Office of Research Subject Protection at 703-993-4121 if you have questions or comments regarding your rights as a participant in this study. This research has been reviewed according to the George Mason University procedures governing your participation in this research.

CONSENT

The George Mason University Human Subjects Review Board has waived the requirement for signing the consent form. However, if you would like to sign a consent form prior to beginning the survey, please contact Dawn Hathaway at 703-993-2019 or dhathawa@gmu.edu. If you consent, please continue with this survey.

Version date: April 22, 2008

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CURRICULUM VITAE

Dawn M. Hathaway graduated from Andrean High School, Merrillville, Indiana in 1980. In 1984 she received a Bachelor of Science in Agriculture, majoring in Environmental Science with a primary concentration in Soils. She received a second Bachelor of Science in Environmental Health with a major in Health Physics in 1986. She was employed as a health physicist for Los Angeles County, Harbor-UCLA Medical Center, Torrance, CA from 1986-1991. During the same time period, she was the alternate Radiation Safety Officer for California Bionuclear Corporation (Los Angeles, CA) and an adjunct for California State University, Dominguez Hills in the X-ray Technologist preparation program. She stayed at home for ten years with her children then returned to work as an Instructional Assistant for Fairfax County Public Schools, Greenbriar East Elementary (Fairfax, VA). In 2003, she received her M.Ed. in Curriculum and Instruction with a concentration in the Integration of Technology in Schools. She was a School-Based Technology Specialist for Fairfax County Public Schools, Cherry Run (Burke, VA) and also an adjunct for George Mason University in the Integration of Technology in Schools program. She presently is full time faculty as an instructor in the Instructional Technology program at George Mason University, working with K-12 teachers in the Integration of Technology in Schools Master's degree program.