THE DEVELOPMENT OF AN INSTRUMENT TO ASSESS STUDENT OPINIONS OF THE QUALITY OF DISTANCE EDUCATION

A Dissertation

by

ELIZABETH HENSLEIGH CHANEY

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

August 2006

Major Subject: Health Education

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ABSTRACT

The Development of an Instrument to Assess

Student Opinions of the Quality of Distance Education. (August 2006)

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In the past decade, there has been an enormous growth of distance education courses and programs in higher education. However, the potential of distance education is tempered by one overriding question: How do you ensure that distance education coursework and degrees are of high quality? The purpose of this study is threefold: (1) to identify quality indicators of distance education; (2) to provide implications of the identified quality indicators for health education researchers and practitioners; and, (3) to develop an instrument to assess student opinions of the quality of distance education. Dillman's (2000) steps of pretesting and the instrument development framework in the *Standards* (1999) were used, and data were collected from students enrolled in four health education on-line courses during the Spring 2006 semester at Texas A&M University. MPlus (Muthen & Muthen, 2002) was used to conduct reliability and validity analyses of the instrument. The results of the study revealed common benchmarks and quality indicators that all parties deem important in designing, implementing and evaluating distance education courses and programs. Additionally, an instrument was produced that resulted in both valid and reliable scores.

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CHAPTER I

INTRODUCTION: HISTORY, THEORY, AND QUALITY INDICATORS OF DISTANCE EDUCATION

A controversial topic in higher education today revolves around the enormous growth of distance education (Novak, 2002; Meyer, 2002). According to Mehrotra, Hollister, and McGahey (2001), "distance learning, or distance education, is not a future possibility for which higher education must prepare, it is a current reality creating opportunities and challenges for educational institutions; a reality offering students expanded choices in where, when, how, and from whom they learn; a reality making education accessible to ever larger numbers of persons" (p. ix).

Interest in the concept of distance education has grabbed the attention of university and college administrators, faculty, and other professionals all over the world (Willis, 1994; Birnbaum, 2001; Moore & Anderson, 2003). A myriad of questions, concerns, and opinions from professionals in these university and college settings regarding the topic of distance education has bombarded the literature base. What is distance education? Where is it going? What types of technology should be used? What is the market? What type of support does distance education need from administration/faculty? What types of incentives are needed for faculty to be interested? What are the differences in traditional, on-campus courses versus coursed delivered via distance education? What are student perceptions of distance education? However, with all the excitement and

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This dissertation follows the style of *Health Promotion Practice*.

buzz around the potential applications of interactive computer technology, the one big question that professionals have been asking for years is, How do you ensure that distance education coursework and degrees are of high quality? (Meyer, 2002; Moore & Anderson, 2003).

According to Sherry (2003), "translating ideals of academic excellence into applicable terms for providers and users of distance education is not an easy task…[however] in this new century, with distance education expanding worldwide, the urgency of quality assurance is apparent" (p. 435). The issues surrounding quality of distance education have been discussed and debated by many different parties, including: federal government, state governments, accrediting associations, faculty, and even students (Meyer, 2002). Regardless of who is interested in quality of this unique educational environment that distance education establishes, "all stress the need to have a better understanding of what contributes to quality" in distance education courses and programs (Meyer, 2002, p.1). The purpose of this literature review is threefold: (1) to provide an extensive look into the history and new emergence of distance education, and (2) to provide an overview of the practice and research regarding distance education, specifically in the area of quality and (3) to investigate ways in which to assess quality of distance education programs and courses.

What Is Distance Education?

In order to determine quality indicators of distance education, one first must have an understanding of the following question: *What is distance education?* To say that this

is a "loaded" question is an understatement, because there is not one clear-cut answer that is universally accepted. As mentioned by Hanson, Maushak, Schlosser, Anderson, Sorenson, and Simonson, (1997), the word "'distance' has multiple meanings…the term, 'distance education' has been applied to a tremendous variety of programs serving numerous audiences via a wide variety of media, [and] finally, rapid changes in technology challenge the traditional ways in which distance education is defined" (pg. 1).

Although there is difficulty in finding a universal definition of distance education, the ideas surrounding the educational endeavor are somewhat similar, and it is important for professionals involved in any type of distance education to be able to clearly define which theoretical underpinnings and definitions of distance education are foundational in their respective courses or degree programs (Keegan, 1996). The generic term "distance education" encompasses many different terms that have previously been used to describe education that takes place in a nontraditional environment. For example, distance education subsumes terms such as, correspondence study, home study, independent study, external study, distance learning, distance instruction and distance teaching, although the terms are not synonymous (Keegan, 1996). For the purposes of this literature review, the suitable term for the form of education and the educational environment to be discussed is distance education. As portrayed by the following definitions, there are many differing views of the research and practice of distance education, and these views will help to give insight to the theory of distance education highlighted by each definition (Hanson et al, 1997).

Definitions of Distance Education Cited in the Literature

Rudolf Manfred Delling's (1966), who is a German historian and bibliographer, definition states (Keegan, 1986, p. 57),

> Distance education (Fernunterricht) is a planned and systematic activity which comprises the choice, didactic preparation and presentation of teaching materials as well as the supervision and support of student learning and which is achieved by bridging the physical distance between student and teacher by means of at least one appropriate technical medium (Delling, 1966, p. 186).

To G. Dohmen (1967), a former director of the German Distance Education Institute (DIFF) at Tubingen (Keegan, 1996),

> Distance education (Fernstudium) is a systematically organized form of self-study in which student counseling, the presentation of learning material and the securing and supervising of students' success is carried out by a team of teachers, each of whom has responsibilities. It is made possible at a distance by means of media which can cover long distances. The opposite of 'distance education' is 'direct education' or 'face-to-face education': a type of education that takes place with direct contact between lecturers and students (Dohmen, 1967, p. 9).

O. Peters (1973), who worked at DIFF in Tubingen (Keegan, 1996), defines distance education as the following:

> Distance teaching/education (Fernunterricht) is a method of imparting knowledge, skills and attitudes which is rationalized by the application of division of labour and organizational principles as well as by the extensive use of technical media, especially for the purpose of reproducing high quality teaching material which makes it possible to instruct great numbers of students at the same time wherever they live. It is an industrialized form of teaching and learning (Peters, 1973, 206).

The definition presented by Michael Moore in 1973 and again, without any edits or changes, in 1977 states (Keegan, 1996),

> Distance teaching may be defined as the family of instructional methods in which the teaching behaviors are executed apart from the learning behaviors, including those that in a contiguous situation would be performed in the learner's presence, so that communication between the teacher and the learner must be facilitated by print, electronic, mechanical, or other devices (Moore, 1973, p. 664; 1977, p. 8).

B. Holmberg's 1977 definition of distance education incorporates his research, as he "writes from a developed knowledge of the literature in English, German, and the Scandinavian languages (Keegan, 1996, p. 42).

> The term 'distance education' covers the various forms of study at all levels which are not under the continuous, immediate supervision of tutors present with their students in lecture rooms or on the same

> premises, but which, nevertheless, benefit from the planning, guidance and tuition of a tutorial organization (Holmberg, 1977, p. 9).

For D. Garrison and D. Shale (1987),

> Distance education implies that the majority of educational communication between (among) teacher and student(s) occurs noncontiguously. It must involve two-way communication between (among) teacher and student(s) for the purpose of facilitating and supporting the educational process. It uses technology to mediate the necessary two-way communication (Garrison & Shale, 1987, p. 11).

In 1988, Hilary Perraton published her definition as,

> Distance education is an educational process in which a significant proportion of the teaching is conducted by someone removed in space and/or time from the learner (Perraton, 1988, p. 34).

In 1989, Barker and colleagues provided a definition of distance education that captured the emergence of telecommunication technologies (Keegan, 1996).

> Telecommunications-based distance education approaches are an extension beyond the limits of correspondence study. The teaching-learning experience for both instructor and student(s) occur simultaneously – it is contiguous in time. When an audio and/or video communication link is employed, the opportunity for live teacher-student exchanges in real time is possible, thereby permitting immediate response to student inquiries and comments. Much like a traditional classroom

> setting, students can seek on-the-spot clarification from the speaker (Barker et al, 1989, p. 25).

In 1990, M. Moore, the editor of *The American Journal of Distance Education*, provides another view of distance education, as his definition states,

> Distance education is all arrangements for providing instruction through print or electronic communications media to person engaged in planned learning in a place or time different from that of the instructor or instructors (Moore, 1990, p. xv).

P. Portway's and C. Lane's (1994) four volume publication on telecommunications technologies in distance education states the definition of distance education given by Lane.

> The term 'distance education' refers to teaching and learning situations in which the instructor and the learners are geographically separated, and therefore, rely on electronic devices and print materials for instructional delivery. Distance education includes distance teaching – the instructor's role in the process – and distance learning – the student's role in the process (Portway & Lane, 1994, p. 295).

In order to develop a definition of distance education, Keegan (1996) analyzed each of the earlier definitions of distance education cited above and incorporated this form of education into five characteristics.

1. The quasi-permanent separation of teacher and learner throughout the length of the learning process (this distinguishes it from conventional face-to-face education);
2. The influence of an educational organization both in the planning and preparation of learning materials and in the provision of student support services (this distinguishes it from private study and teach-yourself programmes);
3. The use of technical media – print, audio, video, or computer – to unite teacher and learner and carry the content of the course;
4. The provision of two-way communication so that the student may benefit from or even initiate dialogue (this distinguishes it from other uses of technology in education); and
5. The quasi-permanent absence of the learning group throughout the length of the learning process so that people are usually taught as individuals rather than in groups, with the possibility of occasional meetings, either face-to-face or by electronic means, for both didactic and socialization purposes (Keegan, 1996, p. 50).

According to Moore and Kearsley (1996),

> Distance education is defined as planned learning that normally occurs in a different place and requires a well-defined system of delivery that includes modified teaching techniques, alternative modes for communication, including, but not limited to technology, as well as

> alternative administrative and organizational components (In Birnbaum, 2001, p. 1).

In a book entitled, *Distance Learning: Principles for Effective Design, Delivery and Evaluation,* Mehrotra, Hollister and McGahey (2001), define distance education as:

> Any formal approach to instruction in which the majority of the instruction occurs while educator and learner are not in each other's physical presence (p. 1).

Lastly, Picciano's (2001) definition of distance education, as cited by Birnbaum, states,

> Distance education uses three current and popular forms [of media]; (a) broadcast television, (b) two-way videoconferencing, and (c) asynchronous learning networks (Birnbaum, 2001, p. 4).

Asynchronous distance education "provide for multi-modal, Web-based delivery of instruction that can be reviewed by the student at any time" (Birnbaum, 2001, p. 4). This type of distance instruction allows students to access the materials, lectures, instruction, etc. from any place and at any time, as opposed to synchronous distance education.

It is evident from the varying definitions of distance education that as technology improves and the demand for interactive computer-based technologies increases, the idea of what distance education encompasses changes; however, the basic premises of distance education remain the same. Within the 10 years since the World Wide Web was developed for users to connect to the Internet, the possibilities for distance

education seem practically limitless, and with these new possibilities, come new emerging definitions of distance education. From these definitions, new theories of distance education begin to emerge. Distance education theories will be discussed later in the literature review, but an example of a new emerging theory from a compilation of definitions and research will be given here. B. Holmberg (2003) introduced a new theory of distance education based on empathy in the 2003 Handbook *of Distance Education* (Moore & Anderson, 2003), and he built upon past attempts to formulate such a theory, along with the use of other definitions and theories proposed by numerous professionals (Holmberg 1983; 1985; 1991; 1995; 1997; 2001; Holmberg, Schuemer, & Obermeier, 1982). In this new theory, Holmberg focuses on teaching, learning, and organization (or administration); the following is a summary of the theory:

1. Distance education mainly serves individual learners who cannot or do not want to make use of face-to-face teaching (i.e. usually working adults who wish to learn for career purposes or for personal development).
2. Distance learning is guided and supported by noncontinguous means, primarily preproduced course materials and mediated communication between students and a supporting organization (school, university, etc.) responsible for course development, instructional student-tutor interaction, counseling, and administration of the teaching-learning process inclusive of arrangements for student-student interaction. Distance education is open to behaviorist, cognitive, constructivist, and other modes of learning. It may inspire metacognitive approaches.

3. Central to learning and teaching in distance education are personal relations between the parties concerned, study pleasure, and empathy between students and those representing the supporting organization. Feelings of empathy and belonging promote the students' motivation to learn and influence the learning favorably. Such feelings are fostered by lucid, problem-oriented, conversation-like presentations of learning matter expounding and supplementing the course literature; by friendly mediated interaction between students, tutors, counselors, and other staff in the supporting organization; and by liberal organizational-administrative structures and processes. Factors that advance the learning process include short turnaround times for assignments and other communications between students and the supporting organization, suitable frequency of assignment submissions, and the constant availability of tutors and advisors (Holmberg, 2003, p. 81-82).

From this example, it should be apparent how one's definition of distance education could potentially shape an emerging theory of distance education, and it is also important to remember that although technology advancements are ever changing and will more than likely result in new ideas of distance education, the underlying concept of distance education remains the same, which is to educate individuals in a nontraditional environment (i.e. classroom-type setting) through a variety of media. Additionally, Hoffman notes that it may be more beneficial to look at ways in which to converge the ideas of distance education with that of traditional education, rather then analyze definitions that differentiate between the two (Hanson et al, 1997).

History of Distance Education

Although there has been a recent explosion of distance education, particularly due to the new technologies available, the origin of distance education can be traced back to over 100 years ago (Hanson et al, 1997; Meyer, 2002; Birnbaum, 2001, Mehrotra et al, 2001). According to Moore (1990), distance education, referred to in Moore's writing as correspondence study, began in the late 1800's. Correspondence study was developed in Germany by two researchers named Charles Toussaint and Gustav Langenscheidt, who were both language teachers in Berlin (Watkins, 1991). Another pioneer of distance education is Englishman, Isaac Pitman. He taught shorthand via correspondence study in England in the 1840's (Verduin & Clark, 1991). The concept of correspondence study made its way to the United States in 1873, when Anna Eliot Ticknor founded a Boston-based society named The Society to Encourage Studies at Home. Within 24 years, this society had attracted approximately 10,000 students (Watkins, 1991).

The state of New York authorized academic degrees through the Chautauqua College of Liberal Arts from 1883-1891 to students completing the required correspondence courses. Support for the new educational method is apparent in Yale Professor William Rainey's comments about correspondence study [distance education].

> The student who has prepared a certain number of lessons in the correspondence school knows more of the subject treated in those lessons, and knows it better, than the student who has covered the same ground in the classroom. The day is coming when the work done by

> correspondence will be greater in amount than that done in the classrooms of our academies and colleges; when the student who shall recite by correspondence will far outnumber those who make oral recitations (Watkins, 1991, p. 4).

Since the early 1900's, distance education has been incorporated into the practices of many institutions, as has the traveling of faculty to meet students off campus to conduct educational instruction (Moore, 1990). According to Meyer (2002), in order to help alleviate the demands of travel for faculty and students, institutions began utilizing available technologies, such as audio connections (i.e. telephones), videotapes, and television, to conduct distance education efforts. These types of delivery methods and media continued to be used, as distance education began to grow as a form of education.

Beginning in the 1980's, satellite telecommunications used to transmit broadcasting of lectures and instruction to off-campus locations became a popular way to conduct distance education. From the late 1980's to the 1990's, microwave-based interactive video was utilized, and this method of educational delivery was used until land-based interactive video was developed and used in the late 1990's. When the Internet and the World Wide Web became available, "a growing comprehension that education need not be site- or time-bound" began to develop throughout university and college settings.

As noted by Meyer (2002), research conducted by the National Center for Education Statistics (1999) indicated that higher education institutions offering distance

education courses from Fall 1995 to academic year 1997-98 increased from 33 percent to 44 percent. Seventy-two percent of two-year public institutions and 79% of four-year institutions offered distance education courses. Within the same time period, the study reported that the number of degree or certificate programs and courses doubled from 860 to 1,520 programs and from 25,730 to 52,270 courses. Student enrollment experienced a two-fold increase, from 753,640 to 1.6 million. Additionally, Internet use increased to 60% of institutions during 1997-1998. Meyer's (2002) analysis of the study indicates that "this doubling of effort (courses and programs) and student response from 1995 to 1997-1998 is a tribute to institutional entrepreneurialism, even though at times the demand for and potential seen for Web-based distance education outpaced what higher education could currently provide" (p. 3). Another study that reveals the increase in distance education course offerings in higher education was conducted by Green (2001), and the results of this project, entitled The Campus Computing Project: 2001 Results in Claremont, CA, indicated that during the time of the study, 55% of college campuses provided web-based course registration and 56% offered courses that are taught completely online. The increasing percentages of distance education offerings indicate that the support of distance education from institutions of higher education has only increased from year to year.

Support for distance education goes well beyond the university/college setting. According to Mingle's (1998) report entitled, *New Technology Funds: Problem or Solution*, in 1996-1997, legislatures appropriated over $370 million to technology applications in higher education. In a report by the National Education Association

(1997) entitled, *Going the Distance: State Legislative Leaders Talk about Higher Education and Technology*, state legislatures indicate their support for distance education to help improve access, student learning, cost of higher education, and productivity of administration and faculty efficiency. In 1999, the National Governor's Association published *Transforming Learning through Technology*, and in 2001, the association developed two additional reports on the use of technology in postsecondary education and in the workforce, which provided information on how governors can benefit from investing in technology applications in the educational and worksite settings (National Governor's Association, 1999, 2001a, 2001b.). Lastly, in a U.S. Department of Education Agenda Project, ideas on how to improve the Higher Education Act was contemplated, and within this report, distance education was given high priority and the importance of department support in adopting the ideas surrounding distance education was emphasized (U.S. Department of Education, 2000). As noted by Meyer (2002), "the support of the federal government has been essential in the effort to revise current regulations to remove barriers to new forms of distance education and to extend federal benefits (i.e. student aid) to distance education students," although this role is more constrained than the state government role (p. 5).

Brief Overview of Distance Education Theories

The opening sentence in the 2003 *Handbook of Distance Education* states, "America's approach to distance education has been pragmatic and atheoretical" (Saba, 2003, p. 3). In addition, Charles Wedemeyer, a theorist who has made notable contributions in the area of distance education theory, claims that distance education has

yet "to develop a theory related to the mainstream of educational thought and practice" (Keegan, 1996, p. 56). As noted by Saba (2003), distance education's roots in the United States date back to the 1800's; however, the first scholarly journal, *The American Journal of Distance Education*, was not started until 1987, by Michael G. Moore. This journal and the symposia of the American Center for the Study of Distance Education, organized by Moore, emphasize the importance of distance education theory and recognize the contributions of research and practice in the discipline of distance education (Saba, 2003).

Distance education theories, developed from leading scholars in the discipline, such as Holmberg, Wedemeyer, Moore and Peters, can be categorized into three broad groups (Keegan, 1996; Saba, 2003).

1. *Theories of autonomy and independence*. Borje Holmberg, Charles Wedemeyer, Rudolf Delling, and Michael G. Moore developed theories of distance education that placed the learner in the middle of the educational process (Keegan, 1996; Saba, 2003). According to Saba (2003), "the centrality of the learner is one of the distinguishing features of distance education, and understanding this fact is essential for discerning why it is essentially different from other forms of education" (p. 4).
2. *Theory of industrialization*. Otto Peters, Desmond Keegan, Randy Garrison, and John Anderson are theorists in distance education that have developed theories that are mainly interested in how the field functions and how it is organized. Structural concerns and issues (e.g. industrialization) are the main

foci of this group of theories, along with how those issues influence the teaching and learning process (Keegan, 1996; Saba, 2003).

3. *Theories of interaction and communication.* Contemporary ideas and views of Holmberg, John A. Baath, Kevin C. Smith, David Stewart, and John S. Daniel highlight the constructs of interaction and communication as important factors in distance education (Keegan, 1996).

In order to better understand the ideas behind the development of each type of distance education theory, descriptions of several well-known theories are given in the following sections.

Theory of Independent Study by Charles Wedemeyer

For Wedemeyer (1981), the fundamental nature of distance education is "a distinct 'nontraditional' type of education," which focuses on the independence of the student learner (Keegan, 1996, Saba, 2003). The ideal distance education system that encompasses what Wedemeyer believed to be the essence of distance education is made up of ten characteristics. In order to emphasize independence and autonomy, the system should:

1. Be capable of operation any place where there are students – or even only one student – whether or not there are teachers at the same place at the same time;
2. Place greater responsibility for learning on the student;
3. Free faculty members from custodial-type duties so that more time can be given to truly educational tasks;

4. Offer students and adults wider choices (more opportunities) in courses, formats, methodologies;
5. Use, as appropriate, all the teaching media and methods that have been proved effective;
6. Mix and combine media and methods so that each subject or unit within a subject is taught in the best way known;
7. Cause the redesign and development of courses to fit into an "articulated media program";
8. Preserve and enhance opportunities for adaptation to individual differences;
9. Evaluate student achievement simply, not be raising barriers concerned with the place, rate, method, or sequence of student study; and
10. Permit students to start, stop, and learn at their own pace (In Keegan, 1986, p. 63).

Additionally, Wedemeyer indicated four essential elements involved in every teaching-learning scenario: a teacher, a learner(s), communications system, and information to be taught or learned. His philosophy of successful distance education efforts included the development of a relationship between the teacher and the student (Hanson et al, 1997); however, Wedemeyer's proposal on the separation of teaching from learning, included the following six characteristics of independent study:

1. The student and teacher are separated.
2. The normal processes of teaching and learning are carried out in writing or through some other medium.

3. Teaching is individualized.
4. Learning is made convenient for the student in his own environment.
5. The learner takes responsibility for the pace of his or her own progress, with freedom to start and stop at any time (In Keegan, 1986, p. 64).

Theory of Independent Study – Michael G. Moore

Building on the work of Wedemeyer, Moore (1983) formulated a theory that investigates two variables in distance education programs: learner autonomy and distance between learner and teacher (Hanson et al, 1997). The latter variable became known as "transactional distance", which is used to define the unique relationship between the student learner and the teacher (Saba, 2003). For Moore, two factors are the essence of 'distance' – two-way communication (dialog) and the level of responsiveness to the needs of the individual learner (structure) (Hanson et al, 1997). According to Saba (2003), "Moore's concept of transactional distance is important because it grounds the concept of distance in education in a social science framework and not in its usual physical science interpretation…this is a significant paradigm shift" (p. 5).

The second part to Moore's theory involves learner autonomy; due to the distance between the teacher and the learner, a distance education student must accept responsibility for the learning process. Moore categorizes distance education programs into two categories: (1) learner-determined or "autonomous" and (2) teacher-determined or "non-autonomous" (Hanson et al, 1997). In order to determine to degree of autonomy, Moore utilizes the following three questions:

1. Is the selection of learning objectives in the program the responsibility of the learner or of the teacher (autonomy in setting of objectives)?
2. Is the selection and use of resource persons, of bodies and other media, the decision of the teacher or the learner (autonomy in methods of study)?
3. Are the decisions about the method of evaluation and criteria to be used made by the learner or the teacher (autonomy in evaluation)? (Keegan, 1986, p. 75).

Theory of Industrialization – Otto Peters

Peters (1988, 1994) theory of industrialization incorporates the idea that distance education is an industrialized method of teaching and learning, which can reach a mass audience (Hanson et al, 1997; Saba, 2003). He compares distance education to the industrial production of goods, and in 1988, he introduced new terminology to be used in analyzing distance education.

1. Rationalization: the utilization of methodical measures to decrease the amount of input of power, money, and time that is required (Hanson et al, 1997). In distance education, "ways of thinking, attitudes, and procedures can be found which only established themselves in the wake of an increased rationalization in the industrialization of production processes" (Peters, 1988, p. 98).
2. Division of labor: the dividing of duties or tasks into simpler subtasks (Hanson et al, 1997). With distance education, all tasks, such as conveying information, assessment and performance recording, are conducted by

individuals separately. Peters (1988) stated, "the division of labor is the main prerequisite for the advantages of [distance education] to become effective" (p. 100).

3. Mechanization: without machines, distance education would not be possible (Peters, 1988). "Duplicating machines and transport systems are prerequisite, and later forms of distance learning have the additional facilities of modern means of communication and electronic data processing installations" (p. 101).
4. Assembly line: workers usually remain stable, and the objects on which they are working move past them (Hanson et al, 1997). This is similar to instruction materials in distance education, because they are "designed, printed, stored, distributed, and graded by specialists" (Hanson et al, 1997, p.10).
5. Mass production: large quantities of good production. According to Peters (1988), the demand of distance education outweighs the supply in universities and colleges; therefore, large-scale operations, which are not common with traditional classes, have become the trend. Peters claims that such operations can help to enhance quality. He stated, "the large number of courses produced forces distance teaching organizations to analyze the requirements of potential distance learners far more carefully than in conventional teaching and to improve the quality of the courses" (Peters, 1988, p. 103).

6. Preparatory work: this involves determining "how workers, machines and materials can usefully relate to each other during each phase of the production process." Peters (1988) indicated that he believes that success of distance education depend on a "preparatory phase." "It concerns the development of the distance study course involving experts in the various specialist fields with qualifications also often higher than those of other teachers involved in distance study" (p. 104).
7. Planning: includes the "system of decisions which determines an operation prior to it being carried out." Peters (1988) notes the high importance of planning, due to the fact that "the contents of correspondence units, from the first to the last, must be determined in detail, adjusted in relation to each other and represented in a predetermined number of correspondence units. The importance of planning is even greater when residential study is a component of a distance education program" (p. 104).
8. Organization: Peters (1988) defines this construct as"creating general or permanent arrangements for purpose-oriented activity." He claims that "organization makes it possible for students to receive exactly predetermined documents at appointed times, for an appropriate university teacher to be immediately available for each assignment sent in" (p. 105). The concept of organization is "optimized in large distance education programs" (Hanson et al, 1997, p.10).

9. Scientific control methods: Peters (1988) indicates that these are the methods by which "work processes are analyzed systematically, particularly by time studies, and in accordance with the results obtained from measurements and empirical data the work processes are tested and controlled in their elementary details in a planned way, in order to increase productivity, all the time making the best possible use of working time and the staff available" (p. 106).
10. Formalization: In order to have successful distance education, the phases of the manufacturing process must be predetermined exactly, and this is termed formalization (Peters, 1988; Hanson et al., 1997).
11. Standardization: restricts the "number of types of one product, in order to make these more suitable for their purpose, cheaper to produce and easier to replace." A characteristic of distance education is that "not only is the format of the correspondence units standardized, [so is] the stationery for written communication between student and lecturer, and the organizational support, as well as each single phase of the teaching process, but also the academic contents" (p. 107).
12. Change of function: changing of the roles of workers within the production process (Hanson et al, 1997). "The original role of provider of knowledge in the form of the lecturer is split into that of study unit author and that of marker; the role of counselor is allocated to a particular person or position. Frequently, the original role of lecturer is reduced to that of a consultant

whose involvement in distance teaching manifests itself in periodically recurrent contributions" (p. 108).

13. Objectification: the decrease of the "subjective element which used to determine" the work of craftsmen (p. 108). According to Peters (1988), in distance education, "most teaching functions are objectified as they are determined by the distance study courses as well as technical means. Only in written communication with the distance learner or possibly in a consultation or the brief additional face-to-face event on campus has the teacher some individual scope left for subjectively determined variants in …teaching method" (p. 109).
14. Concentration and centralization: Due to the large amount of capital needed for large-scale productions, the trend has been to established "large industrial concerns with a concentration of capital, a frequently centralized administration, and a market that is not seldom monopolized" (p. 109). According to Hanson and colleagues (1997), "it is more economical to establish a small number of such institutions serving a national population, rather than a larger number of institutions serving regional populations (p. 11).

Peters' theory of industrialization has received much attention, and according to Saba (2003), "industrialization has been a feature of distance education for many years…in fact, it is hard to imagine distance education without some elements of industrialization" (p. 5). However, with the development and use of the Internet in the

recent years, a potential for a "postindustrial form of education" has led to criticisms of the theory of industrialization (Saba, 2003, p. 6).

Garrison and Anderson (1999), built their research around the distinction between the role of what Daniel's (1998) research terms the "mega university" and research universities. This research also draws on "Schramm's (1977), distinction between 'big media' and 'little media'" (Saba, 2003, p. 6). Garrison and Anderson (1999), "argued that, whereas mega universities might rely on big media to respond to a mass audience, research universities might rely on little media to offer a seemingly postindustrial form of education, or 'little distance education' (LDE)" (Saba, 2003, p. 6).

Due to the emergence of a postmodern era in the area of distance education, Peters changed his definition of distance education from…

> A rationalized method – involving the division of labor – of providing knowledge which, as a result of applying the principles of industrial organization as well as the extensive use of technology, thus facilitating the reproduction of objective teaching activity in any numbers, allows a large number of students to participate in university study simultaneously, regardless of their place of residence and occupation (Saba, 2003, p. 12)

…to the following extended definition of distance education, which acknowledges the postindustrial era:

> Distance education can be defined as a complex, hierarchical, nonlinear, dynamic, self-organized, and purposeful system of learning and teaching (Saba, 2003, p. 12).

Theory of Interaction and Communication – Borje Holmberg

In 1986, Holmberg developed a theory of distance education that fits into the classification of a communication theory. The following are seven background assumptions for this theory:

1. The core of teaching is interaction between the teaching and learning parties; it is assumed that simulated interaction through subject-matter presentation in pre-produced courses can take over part of the interaction by causing students to consider different views, approaches and solutions to generally interact with a course.
2. Emotional involvement in the study and feelings of personal relation between the teaching and learning parties are likely to contribute to learning pleasure.
3. Learning pleasure supports student motivation.
4. Participation in decision-making concerning the study is favorable to student motivation.
5. Strong student motivation facilitates learning.
6. A friendly, personal tone and easy access to the subject matter contribute to learning pleasure, support student motivation and thus facilitate learning from the presentations of pre-produced courses, i.e. from teaching in the form of one-way traffic simulating interaction, as well as from didactic communication in the form of two-way traffic between the teaching and learning parties.

7. The effectiveness of teaching is demonstrated by students' learning of what has been taught. (Holmberg, 1986, p. 123).

In 1986, Holmberg formed his "normative teaching theory" from the above assumptions:

> Distance teaching will support student motivation, promote learning pleasure and make the study relevant to the individual learner and his/her needs, creating feelings of rapport between the learner and the distance – education institution (its tutors, counselors, etc.), facilitating access to course content, engaging the learner the activities, discussions and decisions and generally catering for helpful real and simulated communication to and from the learner. (Holmberg, 1986, p. 123).

In 1995, Holmberg developed an expanded and more comprehensive theory of distance education, and it is divided into eight different parts. This new theory incorporates concepts, such as the idea of the centralized learner, student freedoms and independence, the concept of free access to learning opportunities and equity, mediated communication and deep learning, personal relationships, study pleasure and empathy between students and instructors, and the idea of serving conceptual learning and problem learning (Holmberg, 1995). The new theory also emphasizes that "distance education is open to behaviorist, cognitive, constructivist, and other modes of learning" (Holmberg, 1995, p 7-8). For a more in-depth look at the eight divisions of Holmberg's new theory, refer to Holmberg's document, entitled *The Sphere of Distance –Education Theory Revisited* (1995).

Systems Methodology

As evident by the previous discussion on the few well-known theories of distance education, rapid changes in the field, whether it is brought about by sudden shifts of paradigms, such as the push toward postindustrial economics, or by technological advances and/or global developments, requires "a paradigm congruent with the pragmatic temperament in order to absorb" all of the changes (Saba, 2003, p. 17). According to Saba (2003), pragmatism can help formulate a systems view of distance education, and "provides a foundation for employing systems philosophy, methodology, and technology to establish an epistemology capable of serving the field in the foreseeable future" (p. 17).

In order for distance education to be considered an educational paradigm, theories of distance education must provide explanations for the whole of education and not only explanations of when the student and teacher are separated in time and space (Saba, 2003). Communication technology has helped to close the gap between learners and teachers, but "if students and teachers are separated by the total absence of dialog, as occurs in many classrooms across the country and around the world, bringing them together until they stand nose to nose will not offer a solution" (Saba, 2003, p. 17). Therefore, Vazquez-Abad and Mitchell (1983), Coldeway (1990), Moore and Kearsley (1996), and Saba (2003) emphasize the need for a "systems methodology" approach to understanding the complexity of distance education.

Saba (2003) provides an example of systems dynamics modeling, and the example will be given here to better explain the modeling procedures. In 1989, Saba

used a systems method to demonstrate Moore's transactional distance concept by creating a causal loop between dialog and structure (In Saba, 2003). The causal loop, presented in Saba (2003), indicates a negative feedback loop between structure and dialog. This model provides "a mechanism for determining how much transactional distance is desired and required at each point in time…if the learner needs more direct instruction, structure and transactional distance will both increase…if the learner requires more autonomy, transactional distance decreases as dialog increase and structure decreases" (Saba, 2003, p. 13). The inverse relationship between structure and dialog is considered the highest hierarchical level in the system, but these constructs can be investigated further in feedback loops that define other constructs, such as learner control and instructor control (Saba, 2003).

As mentioned by Saba (2003), a systems approach allows distance education to subsume "other forms of education, including what is generally known as face-to-face or traditional education" (p. 17). This approach also suggests that distance education emerged from the postindustrial culture; "while schools traditionally tried to standardize instruction to make people on the factory capable of performing routine jobs, the challenge of distance education is to respond to individual differences and make instruction as diversified as possible" (Saba, 2003, p. 17). Saba (2003) urges researchers to understand that the utilization of a systems approach will require data collection from the individual learner, including: prior knowledge, achievement of learning objectives, and assessment of new knowledge. The original studies in distance education utilized experimental methods that Saba (2003) describes as "ill-equipped to shed light on

dissimilarities between distance and face-to-face education that might exist" (p. 18); therefore, the need for further research is this area is needed.

Original Studies in Distance Education

A discussion of the earlier studies conducted in the area of distance education is important in this literature review for two reasons: (1) to obtain a better understanding of the history of distance education and (2) to provide criticisms of the research that may eventually lead to future studies, as the field strives for high quality distance education practice and research.

As noted by Meyer (2002), one of the most quoted and perhaps most misunderstood research study conducted in the field of distance education was by Russell (1999). In this comprehensive study, Russell reviewed 355 studies on distance education from the year 1928 to 1998. A majority of the studies in Russell's work compared instruction via some type of distance education technology (i.e. videotape, interactive video, telecourses, and television) to traditional, on-campus courses. The student measures that were compared consisted of test scores, grades, student satisfaction, and/or other measures that were specific to a certain study in the review. The results were overwhelming consistent; statistical tests indicated "no significant differences" between the distance education groups and the traditional, on-campus groups (Meyer, 2002). As noted by Meyer (2002), the important finding from Russell's work is that regardless of what technology was utilized, the results were the same – "no significant difference in student achievement" (p. 14). Therefore, from these results, Russell indicated, "there is nothing inherent in the technologies that elicit improvements

in learning," however, "the process of redesigning a course to adapt the content to the technology" can help to enhance the course outcomes (Russell, 1999, p. xiii). Meyer (2002) re-emphasized these findings by stating, "learning is not caused by the technology but by the instructional method 'embedded in the media'" (p. 14). Finally, Russell (1999) concludes, "No matter how it is produced, how it is delivered, whether or not it is interactive, low-tech or high-tech, students learn equally well" (p. xiv). The same "no significant difference" results were found in two studies conducted by Saba (2000, 2003), when data gathered from hundreds of comparative studies between traditional classroom instruction and mediated education were analyzed (Saba, 2003); however, as mentioned earlier, Saba questioned the research designs and foundational theories (or lack thereof) of these comparison studies (Saba, 2003).

In an extensive review of original comparison studies conducted by Meyer (2002), she indicates her surprise in the number of comparison studies, similar in experimental design as the studies reviewed by Russell (1999) that have been conducted, even after Russell's work implied the need for additional research. The studies of Bourne, McMaster, Rieger, and Campbell (1997), Davies and Mendenhall (1998), Dominguez and Ridley (1999), Gagne and Shepherd (2001), Johnson (2001), Miller (2000), Mulligan and Geary (1999), Ryan (2000), Schulman and Sims (1999), Sener and Stover (2000), Serban (2000), Wegner, Holloway and Garton (1999), and Wideman and Owston (1999) compare distance education delivery methods to traditional forms of educational delivery only to find that there is "no significant difference" in student achievement (Meyer, 2002). However, Meyer's analysis does indicate that "several

[studies] found differences in completion or student satisfaction," although no differences were found in final grades or exams (Meyer, 2002, p. 14).

In a study conducted by Schutte (1997), online students were compared to face-to-face students in terms of the number of points earned for the course; results indicated that online students earned more points (out of 200) than the on-campus students. In Benbunan-Fich's, Hiltz's, and Turoff's (2001) study on the differences in face-to-face and asynchronous distance education learning groups, the asynchronous group carried out broader discussion and submitted reports that were more complete than the face-to-face groups; however, the face-to-face group worked through case study problems more sequentially. Another study conducted in 2000 by Hartman, Dziuban, and Moskal, compared asynchronous learning networks (ALN) to traditional courses, and the results indicated that ALN courses had lower withdrawal rates and higher rates of success. Hilz's 1997 study on ALN's indicated that students within the ALN tended to procrastinate, which could be related to any number of factors (i.e. asynchronous design, quality of student, proactive actions and behaviors of faculty and student); however, the results also showed that the ALN students felt they had worked harder in the course, had better access to their professor, and were appreciative of the convenience of learning from a distance (Hilz, 1997).

Other comparative studies include Sener (2001) and Neuhauser (2002), which also compared asynchronous distance education courses to face-to-face courses. Sener (2001) found that community college students who participated in ALNs had improved student success rates and high student satisfaction rates. The comparison of two sections

of the same course, one taught on-campus and the other via asynchronous distance education methods, by Neuhauser (2002) resulted in no significant differences of the two courses in tests scores, assignments, and final grades; however, the online group's overall averages were slightly better than the on-campus group's averages.

In a meta-analysis of 24 studies comparing student satisfaction of distance education courses versus on-campus, traditional courses, Allen, Bourhis, Burrell, and Mabry (2002) conclude that there is a slight preference of students to take courses delivered in a traditional method over distance education; however, the findings also support that students are equally as satisfied with instruction via distance education as with traditional course delivery. As evident by the research presented, a majority of the research studies conducted on comparing traditional courses to distance education courses result in similar findings. With that being said, it is also important to note that there are many criticisms of the comparative research studies conducted in this area (Meyer, 2002). A discussion of these criticisms will help dissect where the field of distance education has been thus far, in terms of research and practice, and where the field needs to go in the future.

Criticism of Distance Education Research

In a report funded by the American Federation of Teachers and the National Education Association, entitled *What's the Difference: A Review of Contemporary Research on the Effectiveness of Distance Learning in Higher Education*, Phipps and Merisotis (1999) firmly criticize the "no significant difference" research studies. According to Phipps and Merisotis (1999), the most significant problem with the

comparative research studies is "that the overall quality of the original research is questionable and thereby renders many of the findings inconclusive" (p. 3). Phipps and Merisotis indicate the lack of certain elements of quality in experimental designs, such as control variables, which increases the inability to show cause and effect, randomization, and validity and reliability measures of instruments used to gather data. They, along with Clark (1994) and Russell (1999), conclude that "perhaps the value of technology is that it leads to the question, What is the best way to teach students?" (In Meyer, 2002, p. 16).

Other critiques of these comparative research studies include Moore and Thompson (1997), who bring attention to the poor research designs and lack of control variables in the studies. In a meta analysis on comparing technology-based delivery modes to traditional delivery methods, Joy and Garcia (2000) also emphasize the weak research designs that did not incorporate control measures for certain important variables. Also, the point is even further emphasized by the fact that in a review of 170 articles published in magazines and in online journals by the American Center for the Study of Distance Education (1999), only 6 out of 170 incorporated a quasi-experimental design. In a review of articles from 1990 to 1997 by Berge and Mrozowski (2001), results showed that 84% of the research articles were case studies or descriptive, 7% were experimental studies and the remaining 8% were correlation studies. As mentioned by Meyer (2002), "the majority of articles published on distance education, Web-based education, and quality continue to be position papers, personal experiences, and advice

to others contemplating a Web-based course. These articles may provide excellent advice, but they rarely present the results of well-designed research" (p. 17).

The important message revealed in the previous overview of distance education studies and the criticisms of these studies is that the primary aspect of research and practice in the field of distance education that is overwhelmingly questioned by professionals in the field (and outside the field) is overall quality. In order to have a high degree of quality in distance education practice, there must be high quality research conducted to report findings that can then be applied to practical settings of distance education. This translation of research into practice, particularly high quality research, will help practitioners in the area of distance education design, implement and evaluate their programs and courses based on sound processes identified in the research.

Definitions of Quality

In order to improve the quality of distance education offerings in practice and research, one must first know what quality is and how to assess quality in distance education programs. According to Meyer (2002), "the lack of consistent, agreed-on definitions for what quality is" can be very problematic (p. 22). Oblinger (1998) asked,

> "Is quality assessed on faculty expertise or volumes in the library? Are some criteria more important than others? Further, how much weight should be placed on the traditional input variables, i.e., faculty degree or rank, library volumes, number and variety of degree programs, Carnegie classification. Which process variables should we use, those dealing with instructional models, attention to student learning styles and other

> important differences, the use made of technology, faculty/student ratios or class size, contact hours, or opportunities to be taught by full professors? And what outcome variables indicate quality – the final GPA, student satisfaction, alumni giving, or some assessment of what has been learned (if possible)? (In Meyer, 2002, p. 23).

These are the types of questions that are pondered by university/college administrators and faculty, the federal government, state governments, and researchers/practitioners in the field of distance education on a daily basis. It is difficult to provide a universal definition for quality, because the meaning of quality can change for different role players (Fresen, 2002). As stated by Nunan and Calvert (1992), the construct of quality has meanings attached that are "embedded in the language of educational discourse, have a history, and are constantly being reshaped and reformulated….[therefore] the term quality defies any definition which will be universally accepted" (p. 7).

It is the purpose of the remaining sections of this literature review to further investigate quality indicators of distance education and to identify previous instruments used to assess quality of distance education programs. It should be noted, however, that "investigating the quality of distance education is…a complex undertaking which is located in an inherited context of time, place and power" (Nunan & Calvert, 1992, p. 6). With that caveat in place, the implications of the compilation of articles and reports on quality indicators and instruments to assess quality in distance education should help the reader develop mechanisms of improving quality in their own programs and courses.

What Parties Are Interested in Quality?

To begin our discussion on quality of distance education programs, it is important to identify who is interested in defining, assessing, and ensuring quality in distance education. The federal government is interested, particularly the U.S. Department of Education, for several reasons. Quality education is a high priority for the department, and the rules, according to U.S. Department of Education, of establishing such quality have been revised to include support for distance education. Additionally, the department has established a Distance Education Demonstration Program, which has partnered with the U.S. Congress of the Web-Based Commission to develop a report (In Meyer, 2002) that emphasizes the importance of distance education efforts, and it encourages the creation of more Web-based learning opportunities. (Meyer, 2002).

Secondly, the accrediting associations in education are interested in defining quality, as it relates to distance education. Before the recent expansion of distance education throughout educational systems across the globe, accrediting institutions relied on traditional measures of quality, mainly input and process measures, which made the focus the process instead of the learning outcomes. The joint statement, entitled *Statement of the Regional Accrediting Commissions on the Evaluation of Electronically Offered Degree and Certificate Programs and Guidelines for the Evaluation of Electronically Offered Degree and Certificate Programs*, from the six regional accrediting associations (Middle States Commission on Higher Education, North Central Association – Commission on Institutions of Higher Education, New England

Association of Schools and Colleges, Northwest Association of Schools and Colleges, Southern Association of Schools and Colleges, and Western Association of Schools and Colleges) indicate support of online education (Council of Regional Accrediting Commissions, 2000).

The quality assurance measures for distance education, identified by the Council for Higher Education Accreditation (1998), are similar to traditional quality measures, in that faculty control plays a big role. Therefore, according to Meyer (2002), "accreditation has become a battlefield between those who would use traditional accrediting standards to forestall the changes wrought by distance education and those who would change accreditation" (p. 9). The question then becomes, if traditional measures of quality are not appropriate for distance education, then what measures will be appropriate?

State governments are also interested in the quality of distance education programs. Meyer (2002) noted that state governments usually play two roles in the area of quality in distance education: (1) some states oversee program approval or conduct reviews for distance education programs offered, and (2) states may be responsible for approving operations of institutions that are either out-of-state or unaccredited to operate within the state.

Faculty are also interested in the issue of quality in distance education. The American Association of University Professors (AAUP) developed two reports (2001a, 2001b) addressing the issues surrounding quality in distance education. Within these reports, the "issues of greatest interest to professors, including academic freedom,

intellectual property rights, faculty workload, and compensations" are identified (Meyer, 2002, p. 10). The last group interested in quality issues that are going to be discussed is the students. Although students, more than likely, have a different idea of what quality of distance education means, it is an important point-of-view (Meyer, 2002).

Quality Indicators of Distance Education

With the proliferation of distance education programs, the concerns and issues facing distance education, in terms of quality, come to the forefront. According to Gladieux and Swail (1999), the notion that expansion of distance education is being driven by demand rather than sound pedagogy has created some concern. As Sherry (2003) mentioned, "providing exemplary pedagogical experiences within rapidly changing technological environments" can be somewhat difficult and takes "the combined efforts of everyone in the distance learning enterprise" (p. 435). In order to meet the demands on distance education, meet the needs of administrators, faculty and students, and to incorporate sound pedagogical techniques into distance education courses and programs, structured guidelines on what high-quality distance education should look like, is needed.

Benchmarks and Guidelines for Quality in Distance Education

One of the first set of guidelines used by the Western Cooperative for Educational Telecommunications (WCET) in 1995 to assess the "best practices" of distance education programs were called the *Principles of Good Practice for Electronically Offered Academic Degree and Certificate Programs* (Western Cooperative for Educational Telecommunications, 1995). The principles were classified

into seven different categories, including: curriculum and instruction, role and mission, faculty support, resources for learning, student services, commitment to support, and evaluation and assessment. Modifications to these original principles have been made and incorporated into updated guidelines, which will be discussed later in this review (Meyer, 2002).

Chickering and Gamson (1987) developed the *Seven Principles for Good Practice in Undergraduate Education*, and in 1996, Chickering and Ehrmann recognize that the "technology is a 'lever' for implementing the seven principles" (Meyer, 2002, p. 78). The seven principles that represent 'good practice', include educational programs that: encourage contacts between students and faculty, develop reciprocity and cooperation among students, uses active learning techniques, gives prompt feedback, emphasize time on task, communicates high expectations, and respect diverse talents and ways of learning (Meyer, 2002, p. 78).

In order to conduct evaluations at postsecondary institutions throughout the United States, Sherry (2003) indicates that the eight regional accreditation commissions utilize standards called *Guidelines for Distance Education: Principles of Good Practice* (Western Association of Schools and Colleges, 1997). These guidelines share some similarities to the *Seven Principles for Good Practice in Undergraduate Education* by Chickering and Gamson (1987) and Brookfield's (1990) perspectives on adult learning. For a more in-depth analysis of the similar concepts emphasized in these guidelines, refer to Sherry's (2003) analysis of these standards (Sherry, 2003, p. 437-440).

The Instructional Telecommunications Council (ITC) developed characteristics of successful distance education programs in 1998. These characteristics include: (1) financial support and commitment from all key players of administration, (2) a strong rationale for utilizing distance education delivery methods in the institution, (3) a clear analysis of the audience (who they are and what their needs are), (4) faculty and training support, (5) student support services that allows easy access to the instruction, and (6) the appropriate amount of staff and personnel to conduct the program (Tulloch & Sneed, 2000; Meyer, 2002,p. 78).

The ITC published a summary of the practices in the area of distance education that had become "standard" for high-quality programs (Tulloch & Sneed, 2000). The practices were grouped into five different categories: (1) learning goals, content presentation, and learning activities, (2) interactions, (3) assessment/measurement, (4) tools and media, and (5) faculty support and faculty (Meyer, 2002). As stated by Tulloch and Sneed (2000) and emphasized by Meyer (2002), "there is a danger that best practices will become treated as rules, effectively blocking innovation and change" (p. 9). Distance educators should also be cautious of utilizing quality standards and guidelines established for traditional instruction to assess distance education, because this has already led to the "use of technology to mimic the techniques of face-to-face instruction", which may not be the correct route for this different form of educational delivery (p. 9).

The Institute for Higher Education Policy (IHEP) developed one of the most comprehensive statements regarding quality issues in distance education, entitled

"Quality on the Line: Benchmarks for Success in Internet-based Distance Education" (Institute for Higher Education Policy, 2000; Novak, 2002). The report was written and published with support provided from The National Education Association, the largest organization for faculty of higher education, and one of "the top three business providers of a software platform for delivering online courses," Blackboard (Institute for Higher Education Policy, 2000; Novak, 2002, p. 80). The IHEP was asked to write this report due to its previous experience in investigating quality in distance education. The IHEP's 1999 report, "What's the Difference? A Review of Contemporary Research on the Effectiveness of Distance Learning in Higher Education," is widely utilized as a source for discussion around the issue of quality in distance education. As mentioned in the executive summary and introduction of the IHEP (2000) report, the purpose of this report is not to "overcome many of the limitations of previous research" noted by the 1999 IHEP report, but to build on case studies conducted in order to validate benchmarks of quality in distance education courses, particularly Internet-based courses, and to determine "how important the benchmarks are to the institutions' faculty, administrators, and students" (Institute for Higher Education Policy, 2000, p. 1).

The methodology used to validate the benchmarks for quality consisted of three sequential phases. In the first phase, a comprehensive literature review was conducted in order to identify the benchmarks that have previously been recommended by other groups, organizations, and in scholarly articles and publications. The compilation of benchmarks from the literature resulted in a total of 45 benchmarks. Within the second phase, institutions with substantial involvement and experience in distance education and

that “are providing leadership in Internet-based distance education” were identified (Institute for Higher Education Policy, 2000, p. 9). In the third phase, site visits to each institution identified in the second phase were conducted by a staff member of IHEP in order to evaluate “the degree to which the campuses incorporated the benchmarks in their Internet-based distance learning courses and programs” (Institute for Higher Education Policy, 2000, p. 2). The institutional visits consisted of interviews with students, faculty and administrators, and each person interviewed was asked to complete a Likert scale survey. In addition, all students enrolled in distance education courses that were not able to take part in the interview were asked to complete a survey. In all, 147 respondents, spanning 6 different institutions, were interviewed and/or surveyed. The result of the third phase was the initial 45 benchmarks were narrowed down to the 24 benchmarks of quality in distance education (Institute for Higher Education Policy, 2000). Additionally, the results indicated “that, for the most part, the benchmarks for quality Internet-based distance education were considered important and, in general, the institutions strove to incorporate them into their policies, practices, and procedures” (p. 2).

The 24 identified benchmarks to ensure quality of distance education were classified into seven different categories: institutional support, course development, teaching/learning, course structure, student support, faculty support, and evaluation and assessment (Institute for Higher Education Policy, 2000).

Institutional Support Benchmarks

There are three benchmarks in this category:

1. A documented technology plan that includes electronic security measures (i.e., password protection, encryption, back-up systems) is in place and operational to ensure both quality standards and the integrity and validity of information.
2. The reliability of the technology delivery system is as failsafe as possible.
3. A centralized system provides support for building and maintaining the distance education infrastructure (Institute for Higher Education Policy, 2000, p. 2).

Several institutional support benchmarks, originally identified by the literature review, were deemed not essential for assessing quality of distance education programs. The two benchmarks excluded were:

1. Faculty are provided professional incentives for innovative practices to encourage development of distance learning courses.
2. There are institutional rewards for the effective teaching of distance learning course (Institute for Higher Education Policy, 2000, p. 23).

The recommendation to eliminate these two benchmarks sparked much controversy; however, the decision was made based on the fact that these characteristics were not *essential* elements to the institutions delivering high quality distance education, therefore, it was decided that they not be included in the final list of benchmarks. Additionally, it was also noted that "distance education should be treated no differently

than traditional classroom-based teaching" (Institute for Higher Education Policy, 2000, p. 23).

Course Development Benchmarks

Three benchmarks were classified as course development benchmarks for high quality distance education:

1. Guidelines regarding minimum standards are used for course development, design, and delivery, while learning outcomes – not the availability of existing technology – determine the technology being used to deliver course content.
2. Instructional materials are reviewed periodically to ensure they meet program standards.
3. Courses are designed to require students to engage themselves in analysis, synthesis, and evaluation as part of their course and program requirements (Institute for Higher Education Policy, 2000, p. 2).

The benchmarks that were excluded from the final list in this category are also interesting to discuss. Several benchmarks that incorporate student learning styles where eliminated from the list, although "the literature on learning styles and the ability to customize learning styles to meet individual student needs is extensive" (Novak, 2002, p. 82). The IHEP report indicated that these benchmarks "received a cool reception from many faculty and administrators" (p. 24). Many respondents in the case study indicated the following:

> Benchmarks addressing student learning styles [are] often platitudes with little basis in research and [are] very difficult to accomplish. While there is an implicit recognition of how students learn and an explicit understanding of the importance of interaction, constructive feedback, and other characteristics of good pedagogy, benchmarks that required these practices are not necessary to ensure quality (p. 24).

The remaining benchmarks that were deleted called for design teams, consisting of faculty, content experts, instructional designers, evaluation experts, etc., and broad peer review processes. These benchmarks were seen by many as "overkill" (p. 24).

Teaching/Learning Benchmarks

There are three benchmarks for the teaching/learning category:

1. Student interaction with faculty and other students is an essential characteristic and is facilitated through a variety of ways, including voice-mail and/or e-mail.
2. Feedback to student assignments and questions is constructive and provided in a timely manner.
3. Students are instructed in the proper methods of effective research, including assessment of the validity of resources.

Although important, the benchmarks excluded from this category included measures to ensure collaborative work and group work are of high quality (Institute for Higher Education Policy, 2000).

Course Structure Benchmarks

The final benchmarks in this category include the following:

1. Before starting an online program, students are advised about the program to determine (1) if they possess the self-motivation and commitment to learn at a distance and (2) if they have access to the minimal technology required by the course design.
2. Students are provided with supplemental course information that outlines course objectives, concepts, and ideas, and learning outcomes for each course are summarized in a clearly written, straightforward statement.
3. Students have access to sufficient library resources that may include a "virtual library" accessible through the World Wide Web.
4. Faculty and students agree upon expectations regarding times for student assignment completion and faculty response (Institute for Higher Education Policy, 2000, p. 3).

Two benchmarks that emphasized time expectations for students and faculty (i.e. amount of time per week for study and time periods for grading) were excluded from the final list of benchmarks (Institute for Higher Education Policy, 2000).

Student Support Benchmarks

The four student support benchmarks that were identified as valid benchmarks include:

1. Students receive information about programs, including admission requirements, tuition and fees, books and supplies, technical and proctoring requirements, and student support services.
2. Students are provided with hands-on training and information to aid them in securing material through electronic databases, interlibrary loans, government archives, news services, and other sources.
3. Throughout the duration of the course/program, students have access to technical assistance, including detailed instructions regarding the electronic media used, practice sessions prior to the beginning of the course, and convenient access to technical support staff.
4. Questions directed to student service personnel are answered accurately and quickly, with a structured system in place to address student complaints (Institute for Higher Education Policy, 2000, p. 3).

Student support is crucial in distance education, and although "many students who take a distance education course will never visit a campus and will not use campus-based student support services," it is critical to provide alternative forms of support in order to ensure the success of the student (Novak, 2002, p. 81).

Faculty Support Benchmarks

This category has four benchmarks related to faculty support, and these include:

1. Technical assistance in course development is available to faculty, who are encouraged to use it.

2. Faculty members are assisted in the transition from classroom teaching to online instruction and are assessed during the process.
3. Instructor training and assistance, including peer mentoring, continues through the progression of the online course.
4. Faculty members are provided with written resources to deal with issues arising from student use of electronically-accessed data (Institute for Higher Education Policy, 2000, p. 3).

According to Novak (2002), some key issues surrounding faculty involvement in distance education where not addresses; including: "To what extent are faculty members responsible for the development of an online course? What role should instructional designers play in this process? Are online courses best developed by a single faculty member or a team?" (p. 81).

Evaluation and Assessment Benchmarks

In this category of benchmarks, there are three benchmarks that were identified for the final list.

1. The program's educational effectiveness and teaching/learning process is assessed through an evaluation process that uses several methods and applies specific standards.
2. Data on enrollment, cost, and successful/innovative uses of technology are used to evaluate program effectiveness.
3. Intended learning outcomes are reviewed regularly to ensure clarity, utility, and appropriateness (Institute for Higher Education Policy, 2000, p.3).

This final classification of quality indicators in distance education is one of the most controversial topics in the area. As noted by Novak (2002), "differing opinions about the learning effectiveness and cost effectiveness of distance education are defended with passion along with an appeal to evaluate and assess every aspect of their enterprise" (p. 82). However, these benchmarks provide a guide on what variables should be investigated in order to evaluate quality of the distance education program.

The IHEP's report, *Quality on the Line*, provides an important foundation for research in the area of quality indicators in distance education. In light of additional research that introduces alternative perspectives to quality assessment, it is fair to conclude that "*Quality on the Line* outlines benchmarks that are necessary but not sufficient to ensure quality" (Novak, 2002, p. 83). The benchmarks provided in the IHEP's report emphasize pedagogical and curricular issues; however, issues surrounding policy, marketing and institutions are not well addressed (Novak, 2002). Therefore, it is crucial to take a closer look into the literature at different views and perspectives on benchmarking in distance education.

Professional accrediting organizations also provide guidelines and benchmarks for assessing quality of distance education. In fact, the primary way in which current distance education programs are reviewed for quality is by accreditation, which consist of "external peer review of institutions and programs to assure and improve quality" (Council for Higher Accreditation Facts Sheet, 2001). Due to the fact there are eight different accrediting agencies in the U.S., the criteria for reviewing educational programs among each group is slightly different; however, because of the pressure of

each association to develop guidelines to assess quality of distance education programs, the eight association combined forces to develop a joint *Statement of Commitment by the Regional Accrediting Commissions for the Evaluation of Electronically Offered Degree and Certificate Programs* (Council of Regional Accrediting Commissions, 2001 b). The report introduced a set of commitments believed to be of high importance in ensuring quality of distance education; these commitments were arranged into several classifications.

Classification #1 – Commitment to Traditions, Values, and Principles

The commission emphasizes the importance of developing standards around the core values of program mission statements. Secondly, they assert that student learning should take place in a dynamic and interactive environment, regardless of the format of delivery. Striving to meet the needs of students is another characteristic of distance education programs that the commission believes is of high priority, along with appropriate evaluation, assessment, and voluntary peer review procedures. Lastly, it is noted that commissions emphasize the responsibility of accredited institutions to provide any and all resources needed to support distance education (Council of Regional Accrediting Commissions, 2001 b).

Classification #2 – Commitment to Cooperation, Consistency, and Collaboration

Characteristics of commitments in the second classification are pertaining to the consistency across all regional commissions in their standards for review. This category also emphasizes that institutions creating new distance education degrees should be aware that these programs will be subject to careful review. In addition, institutions are

strongly encouraged to conduct self-evaluations of overall quality, and improvements should be made based on these evaluations (Council of Regional Accrediting Commissions, 2001b).

The last section of the joint statement is compiled into another document, *Best Practices for Electronically Offered Degree and Certificate Programs* (Council of Regional Accrediting Commissions, 2001a), which is a summary of what is considered "best practice" for distance education, written by the Council of Regional Accrediting Commissions and the Western Cooperative for Educational Telecommunications. This document includes "guidelines for the myriad details related to the offering of distance education programs, including benchmarks for each area of activity and protocols that will assist administrators with both internal and external reviews" (Novak, 2002, p. 85).

Institutional Context and Commitment is the first component identified in *Best Practices* (Council of Regional Accrediting Commissions, 2001a). This component pays close attention to how well the distance education program coincides with the mission of the institution and whether or not the institution has "secured the resources necessary to support students in this new initiative" (Novak, 2002, p. 85). The second component is *Curriculum and Instruction*, which emphasizes the importance of utilizing appropriate materials and curricula developed by qualified scholars in the field. It is within this component that "institutions are asked about provisions for interaction [between student and teacher] and the timeliness of instructor responses to students" (Novak, 2002, p. 85).

The third and fourth components included in the report are *Faculty and Student Support*. A compilation of personnel issues are incorporated into the faculty component; for example, issues involving compensation, intellectual property and workload are included. The student support component is concerned with services, such as: "assessment of readiness and advising, marketing information, full information about the course requirements and services, admissions, registration, and financial processes" (Novak, 2002, p. 85). One interesting inclusion within this component is a discussion on the importance of "building a sense of community for distance education students" (Novak, 2002, p. 85). According to the *Best Practices* report, "encouraging study groups, providing student directories, including off-campus students in institutional publications and events, and including these students in definitions of the academic community" are examples of activities that can help to build a sense of community for distance education students (p. 12). A very astute observation by Novak (2002) regarding the activities suggested by the *Best Practices* report to help build a sense of community is the "silence about new technology strategies that are used and promoted to build community", such as: "threaded discussions, chat rooms, and various e-mail services" (p. 86).

The final component in the *Best Practices* report is *Evaluation and Assessment*. The importance of sound evaluation practices are emphasized within this component, and the commissions are encouraging institutions to conduct frequent self-evaluations. Specifically, they would like institutions to engage in "sustained, evidence-based and

participatory inquiry as to whether distance learning programs are achieving objectives" (p. 12).

In a similar report, *Accreditation and Assuring Quality in Distance Learning*, conducted by the Council for Higher Education Accreditation (2002), the common platforms used to assess quality by the eight regional accrediting institutions and the nine national accrediting organizations are again discussed. However, the report provides a good summary of the seven key areas that are reviewed when quality of distance education is examined, which were identified in the *Best Practices* report (Council of Regional Accrediting Commissions, 2001a):

1. Institutional mission: Does offering distance education make sense in this institution?
2. Institutional Organizational Structure: Is the institution suitably structured to offer quality distance learning?
3. Institutional Resources: Does the institution sustain adequate financing to offer quality distance learning?
4. Curriculum and Instruction: Does the institution have appropriate curricula and design of instruction to offer quality distance learning?
5. Faculty Support: Are faculty competent engaged in offering distance learning and do they have adequate resources, facilities, and equipment?
6. Student Support: Do students have needed counseling, advising, equipment, facilities, and instructional materials to pursue distance learning?

7. Student Learning Outcomes: Does the institution routinely evaluate the quality of distance learning based on evidence of student achievement? (Council for Higher Education Accreditation, 2002, p.7).

Additional research conducted on quality of distance education indicates that the previously discussed approaches to assessing quality may not be enough to truly determine the degree of quality in a distance program. For example, Olgren (1998), suggests that one of the key factors to designing effective distance education programs is understanding the occurrence of learning and the learning process. She goes on to state that the emphasis on learning outcomes is not sufficient for assessing learning patterns; therefore, distance educators "will need to know more about their learners' cognitive strategies and prior knowledge in the content area" (p. 87).

The last set of published guidelines that will be discussed were developed by the American Federation of Teachers (AFT) in 2000. The AFT published the report, *A Virtual Revolution: Trends in the Expansion of Distance Education* (2001), which focuses on the important role of teachers in distance education. The report suggests that distance education can provide great benefits to the field of education, as long as the decision-making involving the academic processes stay in the hands of the teachers. The AFT claims that a majority of distance education reviewed is "built on corporate ideas about consumer focus, product standardization, tight personnel control, and cost effectiveness" and " these concepts are contrary to the traditional model of higher education decision-making" (p.4). As a result of the philosophical stance taken by the

AFT on distance education, 14 benchmarks for quality in distance education were presented in a document entitled *Guidelines for Good Practice* (AFT, 2000).

These benchmarks include standards that support a "strong role for faculty, such as retaining academic control, setting class size, and retaining creative control over the use and re-use of materials" (Novak, 2002, p. 88). Also, the AFT stresses the importance of "ensuring that faculty are in control of shaping and approving courses and integrating them into a coherent curriculum" (p. 20). Lastly, the AFT "encourages institutions to experiment with offering a variety of subjects through distance education and become 'laboratories of program evaluation', which places the responsibility for creating new approaches on the institutions best suited to implement and evaluate them" (Meyer, 2002, p. 81).

In a comprehensive literature review of quality assessment in distance education, Sherry (2003) constructs a list of institutional, faculty, and student guidelines to evaluate quality. This is a compilation of guidelines suggested by numerous contemporary research studies; the comprehensive list, as drafted by Sherry (2003) and references will be provided; however, refer to Sherry's (2003) chapter on quality in distance education for a more in-depth look into the construction of the guidelines.

Institutional Guidelines

1. A change in the philosophical ideas of traditional and distance education to a "hub of learning" with a clearly stated mission and institutional responsibilities may help to enhance planning and implementation of distance programs (Parker, 1997; Regional Accrediting Commissions, 2000). (p. 451).

2. An organizational model that is flexible in governance, aware of institutional values and culture, incorporates academic supervision over courses and programs, and allows decision-making to go beyond "the chief information officer" may hasten the implementation process. (Parker, 1997; Regional Accrediting Commissions, 2000) (p. 451).
3. Distance education needs the allocation of financial resources, including the following (Greene, 2000; Institute for Higher Education Policy, 2000; Johnstone, 2000; Parker, 1997; Regional Accrediting Commissions, 2000; Stein, 2001; Web-based Education Commission, 2000) (p. 451).
    - Continuous funds to purchase, test, maintain and upgrade necessary technology.
    - Fiscal resources to support any training of faculty, staff and students.
    - Funds to distribute to faculty as compensation for engaging in the design and implementation of distance education courses. Compensation should recognize workload, intellectual property rights, and any incentive or reward issues.
    - Financial resources budgeted for instructional resources, including: copyright clearances, site licenses for materials used in instruction, virtual libraries, along with "cyber-based support services, such as online registration, university bookstore services, testing, tutoring, and academic counseling" (p. 451).

- Funds to support ongoing evaluation and research of the quality of the program.

4. Incorporate strategic plans to help in the decision making processes associated with blending traditional and distance education courses into a program, for example (Green, 2000; Inman et al, 1999; Institute for Higher Education Policy, 2000; Johnstone, 2000).
5. In order to emphasize the importance of quality assurance in distance education, Sherry (2003) suggests incorporating the "development, implementation, dissemination, and review of policies and technological solutions in accordance with laws and requirements" that meet specific standards of distance education into the governing structure of the distance education program. (Institute for Higher Education Policy, 2000; Kearsley, 2000; Parker, 1997; Regional Accrediting Commissions, 2000; Web-based Education Commission, 2000) (p. 452).
6. To support contingency plans, pilot test the program prior to initiation. (Quality Assurance Agency for Higher Education, 2001)
7. Incorporating ways to address the key institutional factors that help to improve success in higher education, such as access to resources and financial aid, may actually result in equitable access for possible constituencies (Pascarella et al., 1996, Tinto, 1993) (p. 452).
    - To help with the availability of financial aid, changes in the limitations placed on distance education funding by certain federal regulations can help,

along with changes in tuition based on geographical areas (i.e. out-of-state tuition) and financial aid services to help with the expenses of hardware and software needed in the distance course.

- To increase access to resources, a method of selecting technologies that are universally available, affordable, and adaptable to accommodate different student impairments (i.e. visual, auditory or motor) should be established.
- Incorporating physical resources ("regularly upgrade computer workstations for faculty and Web-based course application packages with their embedded communications tools") and human resources (e.g. support staff to provide continuous technical assistance) with plans for newer technology for distance education may help to improve communications between faculty and students (p. 452).

8. Rigorous evaluations of distance education programs may highlight "conflicting situations" or areas that need to be improved (p. 452):
    - The incorporation of systems analyses representing certain situations in distance education, such as educationally underprepared or overworked students, individual learners who are culturally distant or suffering from low confidence levels, or students who pose the threat of dropping out, may lead to better retention rates and improved overall support. (Dabbagh, 2000; Institute for Higher Education Policy, 2000; Morrison & Adcock, 1999; Parke & Tracy-Mumford, 2000; Phipps & Merisotis, 1999; Regional Accrediting Commissions, 2000; Thompson, 1998).

- Compare overall program objectives to "learning outcomes, student satisfaction, and resource and technology use through the employment of multiple methods may provide information that meets the standards for utility (focused information needed by intended users), feasibility (realistic, careful, cost-effective data gathering and tactful reporting), accuracy (valid and reliable), and propriety (adherence to legal and ethical procedures that respect the welfare of all affected)" (Institute for Higher Education Policy, 2000; Regional Accrediting Commissions, 2000) (p. 452).

9. Activities to help "build a sense of community" for distance learners (Institute for Higher Education Policy, 2000).
10. Bring awareness to the institutional standards set by accrediting organizations, increase marketing strategies for program and course availability, and provide access of educational program selections to both online and off-line potential students (Institute for Higher Education Policy, 2000).
11. Emphasize the fact that distance education programs are centered around the learner, not the technology, in order to portray that the "institution respects the goal of helping everyone in the community to leas a balanced life more than utilitarian solutions" (Yeaman, 2000). (p. 453).

Faculty Guidelines

1. One way in which to enhance team efforts to design and instruction of distance education courses, to interdisciplinary efforts, and to decreasing the gap between

face-to-face instruction and distance education is to reconceptualize decisions regarding curricula (Institute for Higher Education Policy, 2000; Parker 1997).

2. Distance education can be enhanced through effectively designed instruction (Dabbagh, 2000; Kearsley, 2000; Parker, 1997; Ragan, 2000):
    - Programs and courses that incorporate "constructivist principles that move students along a continuum to self-direction and have a valid and credible content have a likelihood of conveying to the learners that expectations for their success are high" (p. 453).
    - Flexible, problem-based instruction, that includes a variety of perspectives, may help improve levels of achievement.
3. Active and reflective learning may be supported by emphasizing clear learning goals and objectives that relate to the learning outcomes (Ragan, 2000, Inman et al, 1999, Regional Accrediting Commissions, 2000).
4. Conducting orientation sessions to explain the course (i.e. objectives, goals, technology) portrays support for student learning (Institute for Higher Education Policy, 2000; Kearsley, 2000; Regional Accrediting Commissions, 2000):
    - Orientations sessions may open up the door for increased student-instructor communication.
    - Directions on how to navigate through the technologies utilized will help make the use of those technologies easier throughout the course.
5. Providing advice to students on successful distance learning activities, may help "students acquire realistic expectations, and tangible aides, such as guides and

clear due dates, may help students avoid procrastination (Institute for Higher Education Policy, 2000; Kearsley, 2000; Parker, 1997; Regional Accrediting Commissions, 2000) (p. 453)

6. Directions on how to utilize the avenues of communication with others, such as chat rooms, message board, e-mail, may help the learner with discussions. Also, during the instruction, it may be useful to identify all the types of interaction – social, procedural, expository, explanatory, and cognitive – to encourage students to engage in these types of interactions (Bailey & Luetkehans, 1998; Burge, 1998, Dabbagh, 2000; Lesniak & Hodes, 2000; Offir & Lev, 2000; Winograd, 2000).
7. In order to solicit interchanges between the instructor and the student, communication from the faculty member that asks for some feedback from the student in a certain time period may help (Burge, 1998; Dabbagh, 2000; Inman et al, 1999; McIsaac et al, 1999).
8. The incorporation of adapted design and Web-based materials to accommodate visually, hearing, and mobility impaired students may help enhance the expertise of the students (Kraft, 2000; Lowe & Roberts, 2000; Sherry, Billig, Jesse& Watson-Acosta, 2001).
9. In order to support deep cognitive processes, provide metacognitive models to students and allow them to create their own model (Marland, 1997; Olgren, 1998).

10. "Worldware, with its shared editing features, may draw multiple students into considering content during editing" (Anderson & Garrison, 1988) (p. 454).
11. Incorporate technology-based evaluations to collect data on students' learning and use of technology to improve teaching and learning in the distance education environment (Institute for Higher Education Policy, 2000; Regional Accrediting Commission, 2000; Sherry et al, 2001; Wade, 1999).
12. In order to identify and apply technological approaches and the research findings documented as "best practice", active participation in continuous professional development is necessary (Barone, 2001; Ehrmann, 1997).
13. "Authentic reassessments of the teaching and learning climate may lead to clarity and appropriate learning outcomes (Institute for Higher Education Policy, 2000).

Student Guidelines

1. Before enrolling in a distance education course, potential students should conduct a rigorous self-assessment on characteristics, such as: their attitude toward distance education, financial resources, support from others, access to technology and literacy to the forms of technology used, the types of learning environments that work best for them, etc. (Dabbagh, 2000; Institute for Higher Education Policy, 2000; Kearsley, 2000; Regional Accrediting Commissions, 2000).
2. "Students from diverse cultural backgrounds who engage in explicitly communicating their expectations for online behavior early in the course to all involved may avoid inadvertent future cultural gaffes (Kearsley, 2000) (p. 454).

3. Students who utilize computer-based "agenst' to locate guides, online materials, updated content material, and processes for software, are "drawn into the content of the learning materials more readily, thus supporting their cognitive strategies (Anderson and Garrison, 1988; Inman et al, 1999) (p. 454).

Due to the vast amount of research conducted on quality indicators of distance education, only a select number of benchmarks and guidelines were discussed in the previous section. For more information on different ideas, models, and emerging thoughts on quality in this form of education, refer to the following references: Benke, Brigham, Jarmon and Paist, 1999; Benson, 2003; Gross, Gross, and Pirkle, 1998; Lee and Dziuban, 2002; Leh and Jobin, 2002; Marks, Sibley, and Arbaugh, 2005; Nunan and Calvert; 1992; Ragan, 1999; Sloan Consortium, 2004; St. Pierre, 1990; Trentin, 2000; Yeung, 2001. (Please note that this list is not a complete reference list of all research conducted on this topic, but the studies and reports listed here provide the reader with additional, and perhaps, alternative perspectives to quality in distance education).

As evident by the brief discussion on benchmarks, guidelines, and indicators of quality in distance education, the factors that comprise a high quality distance education program varies, depending on who you ask; however, the commonalities running through each perspective are essential aspects that should be incorporated into existing and future distance education efforts, in order to work towards improved quality in distance education. Therefore, the next step for professionals in the field of distance education is to integrate these quality assurance factors into the design, implementation and evaluation of current and future distance education efforts.

How to Assess Quality in Distance Education

Now that we have a better understanding of the indicators research studies have identified as essential to ensure quality in distance education, the next phase is to identify how to assess if programs and courses delivered via distance education meet the standards of quality. In order to measure quality, rigorous evaluation methods, utilizing valid and reliable instruments and research designs, should be implemented. According to Thompson and Irele (2003), obtaining valid and reliable data requires that evaluators must first have a clear purpose and then be able to match that purpose to the appropriate tools.

Rigorous evaluation tools and approaches includes an array of data collection methods, such as surveys, personal diary entries from students, learning outcome instruments (i.e. tests, essays), product assessment criteria, participant observations, questionnaires, interviews, and pilot testing (Moore & Kearsley, 1996, Cyrs, 2001). The primary focus of the remainder of this review is on issues of cultural bias and validity and reliability measures of survey instruments used to assess quality of distance education; however, for a more comprehensive review of evaluation models and tools utilized in the field, refer to Thompson and Irele (2003). The following sections provide a brief synopsis of the important elements of instrument construction, and provide information on instruments that have been previously utilized to assess quality of distance education.

Overview of Validity Measures

Validity is the "degree to which evidence and theory support the interpretations of test scores entailed by proposed uses of tests;" therefore, it is considered "the most fundamental consideration in developing and evaluating tests (*Standards for Educational and Psychological Testing*, 1999, p. 9). Instruments utilized to assess quality of distance education should be validated, which involves "accumulating evidence to provide a sound scientific basis for the proposed score interpretations" (*Standards for Educational and Psychological Testing*,1999, p. 9). For example, to begin validating an instrument to assess distance education qualities, researchers must develop an interpretation of test scores, including a rationale for the proposed interpretation. The "proposed interpretation refers to the construct or concepts that test is intended to measure" (*Standards for Educational and Psychological Testing*, 1999, p. 9). Examples of constructs include: student learning outcomes, student, faculty, and/or administrative attitudes, self-efficiency, learning styles, and performance of learner with distance education technology.

It is the responsibility of both the test (i.e. survey instrument) developer and the test user to validate the instrument; the developer of the instrument should provide evidence of validation, while the user should evaluate the evidence. Significant contributions are made "to the validity evidence"…"as other researchers report findings of investigations that are related to the meaning of scores on the test" (*Standards for Educational and Psychological Testing,* 1999, p. 11). Therefore, it is important for distance education researchers to validate instruments developed to assess quality.

There are different notions to validity, or better stated, different types of evidence to support validity. The four types of validity evidence investigated in this review, include: face validity, concurrent validity, predictive validity, and construct validity.

1. *Face validity* – the items appear to be relevant to the constructs being investigated (Gomm, Needham, & Bullman, 2000).
2. *Concurrent validity* – "refers to a measurement device's ability to vary directly with a measure of the same construct or indirectly with a measure of an opposite construct. It allows you to show that your test is valid by comparing it with an already valid test." (AllPsych ONLINE, 2005).
3. *Predictive validity* – In the 1974 *Standards for Educational and Psychological Testing (Standards)*, predictive validity referred to a type of "criterion-related validity". This type of validity applies "when one wishes to infer from a test score an individual's most probable standing on some other variable called a criterion" (*Standards for Educational and Psychological Testing*, 1999, p. 179-180). The term "criterion-related validity" was changed to "criterion-related evidence" in the 1985 version of the *Standards*. The 1999 Standards states that "predictive evidence indicates how accurately test data can predict criterion scores that are obtained at a later time." (p. 180).
4. *Construct validity* – "the results achieved from using the instrument predict those matters which the theory underlying the instrument's design says they should predict" (Gomm, Needham, & Bullman, 2000, p.82).

The reporting of validity results should incorporate statements on the types of evidence to support validity. General statements, such as the test or instrument is "valid" is rarely, if ever, accepted (*Standards for Educational and Psychological Testing*, 1999). It is also important to remember that the scores are being tested for validity evidence, not the instrument; therefore, it is incorrect to say that the instrument is valid.

Overview of Reliability Measures

According to the *Standards* (1999), reliability "refers to the consistency of such measurements when the testing procedure is repeated on a population of individuals or groups" (p. 25). Reliability measurements are reported in three different forms: standard deviation of measurement error or variance, standard reliability coefficients, or "IRT-based test information functions" (*Standards for Educational and Psychological Testing*, 1999, p. 27). The three broad categories of standard reliability coefficients that are traditionally accepted include: "(a) coefficients derived from the administration of parallel forms in independent testing sessions (alternate-form coefficients), (b) coefficients obtained by administration of the same instrument on separate occasions (test-retest or stability coefficients); and (c) coefficients based on the relationships among scores derived from individual items or subsets of the items within a test, all data accruing from a single administration (internal consistency coefficients)" (*Standards for Educational and Psychological Testing*, 1999, p. 27).

Reliability reporting should entail more than a statement of reliability coefficients. Test developers and researchers should also include the methods used to get the coefficient, "the nature of the group from which the data were derived, and the

conditions under which the data were obtained" (*Standards for Educational and Psychological Testing*, 1999, p. 31). As mentioned with validity reporting, it is not sufficient or acceptable to make general statements such as, "the instrument is reliable" (*Standards*, 1999); therefore, researchers need to provide enough evidence to support the statement of reliability.

Cultural Bias in Instrument Construction

In terms of test construction, *bias* "refers to construct-irrelevant components that result in systematically lower or higher scores for identifiable groups of examinees" (p. 76). According to Frary and Giles (1980), *cultural bias* refers to a situation whereby a definable cultural subgroup results in lower average scores on assessment or evaluation instruments than other groups, but when tested on independent instruments of the same measures, the cultural subgroups perform the same or better than the other groups (Frary & Giles, 1980). Cultural bias "is the result of a general lack of fairness in testing, selection, and prediction among culturally different student groups" (p.51). (McGough, & Eschenmann, 1982). In order to conduct "fair" evaluations and assessments of distance education programs, it is important for researchers to incorporate procedures within the test/instrument construction process that will help to reduce cultural bias.

There are several perspectives of cultural bias. One view of this type of bias is "the question of bias does not depend upon the validity of individual items but instead upon the overall capability of the instrument to equate the information fairly to non-biased groups." (McGough & Eschenmann, 1982, p. 51). This perspective of cultural bias is not concerned with the content validity of individual items, as long as the overall

instrument predicts equally well for all cultural and ethnic subgroups. Another perspective emphasizes internal construction of the assessment tool to reduce or eliminate the problems associated with cultural bias. For individuals supporting this view, cultural bias is "a statistically significant interaction between instrument items and ethnic characteristics" (McGough & Eschenmann, 1982, p. 51); however, one biased item does not deem the entire instrument culturally biased. In this perspective of cultural bias, it is important to incorporate procedures into instrument construction that require the "balancing (modification) of individual items to provide for an overall culturally fair instrument" (McGough & Eschenmann, 1982, p. 52). According to the *Standards* (1999), "a more widely accepted view would hold that examinees of equal standing with respect to the construct the test is intended to measure should on average earn the same test score, irrespective of group membership. Unfortunately, because examinees' levels of the construct are measured imperfectly, this requirement is rarely amenable to direct examination" (p. 74). Refer to McGough and Eschenmann (1982) for an in-depth look into approaches for identifying cultural bias.

An examination of cultural bias in evaluation issues pertaining to distance education is of particular importance, because distance education methods afford the field of education the opportunity for individuals of different cultures and ethnicities, regardless of geographical location, to come together and share experiences. Therefore, it is important for procedures to reduce cultural bias to be incorporated into construction of tools/instruments evaluating the quality of distance education. This is crucial in order to extract more accurate pictures of quality in distance education courses/programs. The

following section provides an overview of the validity, reliability and procedures to reduce cultural bias in assessment tools or instruments used previously to assess quality in distance education.

Brief Review of Previous Instruments Used to Assess Quality in Distance Education

Stewart, Hong, and Strudler (2004) constructed an instrument that "allows instructors to conduct a comprehensive evaluation of the quality of Web-based courses" (p. 131). One of the limitations to the instrument construction was the inability to locate a previous instrument to assess construct validity; however, the researchers established a panel of experts to review the content of the instrument in order to ensure content validity. The instrument was pilot tested, reliability coefficient scores were calculated (Cronbach's alpha), and a factor analysis was utilized to determine the structure of the data. There was no mention of procedures used to reduce cultural bias (Stewart, Hong, & Strudler, 2004).

In a study conducted by Roblyer and Wiencke (2003), a rubric to assess interactive qualities in distance education was developed based on theory and research findings. Reliability and validity (i.e content validity) results were reported in the study; however, the study did not include procedures to help reduce cultural bias. Similarly, Chiou and Chung (2003) developed an instrument to measure interaction in synchronous distance education. The procedures for the development of this assessment tool involved testing the reliability (Cronbach's alpha) and content and construct validity of the instrument. However, as with the previous instruments, there was no mention of

procedures to ensure the reduction of cultural bias in Chiou and Chung's instrument construction.

Richardson and Price (2003) used two questionnaires developed by Ramsden (1991) and Ramsden and Entwistle (1981), The Course Experience Questionnaire (CEQ) and a short version of the Approaches to Studying Inventory (ASI), to obtain information on approaches to studying and students' perceptions of quality in distance education courses. Reliability and validity were examined using the reliability coefficient, Cronbach's alpha, and a factor analysis was conducted. The results indicated that the "ASI was unsatisfactory, but the CEQ is a useful tool for monitoring perceptions of academic quality across different modes of course delivery" (Richardson and Price, 2003, p. 54). However, the issue of cultural bias was not investigated in this study. In another study, conducted by Richardson (2005), an extended version of the CEQ (Wilson et al, 1997) and the Revised Approaches to Studying Inventory (RASI) (Entwistle et al, 2000) was utilized to assess the relationships between students' perceptions of academic quality and their approaches to studying for distance education courses. The reliability and internal consistency of the CEQ and RASI was evaluated by Cronbach's alpha (1951) and the construct validity was assessed using exploratory factor analysis. Both instruments proved to have satisfactory reliability and validity for use in distance education; however, as with the previous studies, there was no procedures on reduction of cultural bias discussed (Richardson, 2005).

Cheung (1998) developed a student evaluation instrument for distance education, which concentrated on the effectiveness of distance teaching. The study evaluated "the

interrater reliability and construct validity of student evaluations collected by the questionnaire…through analysis of variance and hierarchical confirmatory factor analysis, respectively" (Cheung, 1998, p. 23). The results indicated that the "35-item instrument developed on the basis of the conceptual framework could generate valid and reliable student evaluations" (p. 37). It is interesting to note that this study also did not address the issue of cultural bias.

There are many other studies that involve instrument construction for assessment of distance education courses, including: Abrami and Surkes (2004); Cartwright, Thompson, Poole, and Kester (1999); Perrine, (2003); and Thurmond, Wambach, Connors, and Frey (2002). The procedures utilized for developing these instruments involve measures to test reliability and validity of the scores of the instrument; however, each of these studies lacks the procedures to eliminate cultural bias in the instrument construction process.

Where to Go From Here

Obviously, quality is a major concern for all parties involved in distance education. The research paints a clear picture of where this field has been but provides an abstract picture of where it is going. Clearly, more theory-driven research studies need to be conducted in order to have a better understanding of the uncertainties surrounding the idea of distance education, specifically in the area of quality assurance. According to the Institute for Higher Education Policy's report, *What's the Difference* (Phipps & Merisotis, 1999), the quality of original research conducted in distance education is questionable and bears several shortcomings that raise many questions

about the quality of distance education. The shortcomings and gaps cited in this report provide a starting point for further research and investigations.

A vital component to good research in the area of distance education relates to the evaluation and assessments of current and future programs. One of the gaps in the current literature is the use of valid and reliable instruments to assess indicators of quality in distance education (Phipps & Merisotis, 1999); therefore, an area of research that is needed is the development of a valid and reliable instrument, based on theory, that can incorporate the quality indicators identified in the literature to accurately assess the quality of distance education programs and/or courses. Of course, this is only one area of research that is needed, and although this review provides many different views on what denotes quality in distance education and previous instruments that have proven to be valid and reliable in assessing a variety of aspects of quality, there are two concepts lacking in much of the instrument construction used previously: (1) the use of emerging distance education theory in the development process, and (2) the incorporation of testing procedures to reduce or eliminate different types of bias, particularly cultural bias.

Concluding Comments

To say that distance education is a "hot" topic is an understatement. Many debates in the field of education have been centered on the topic of distance education. In fact, the buzz around the idea of distance education has echoed in the ears of university/college administrators, faculty, staff, students, and federal and state governments, and with this, many different opinions, views, and ideas regarding issues

of distance education have emerged. As evident by this literature review, the accumulation of ideas make it rather difficult to "justify firm conclusions about many of the issues treated by the research studies" in the area of distance education. However, several "tentative conclusions" regarding quality of distance education can be made from the research studies identified and reviewed in this paper (Meyer, 2002, p. 101).

First, it is safe to say that it is difficult to define the terms quality and distance education. There are no universal definitions to describe quality and distance education, as each term subsumes very complex concepts that depends on an array of factors, such as technology, faculty characteristics, the student, instructional design, etc (Meyer, 2002). Second, the majority of distance education research up to this point has consisted of atheoretical, pragmatic research designs and programs (Saba, 2003). Third, there is an enormous amount of literature on quality of distance education. This ranges from opinion pieces and perspectives on quality to research studies and case studies conducted on identifying key quality indicators for distance education. As stated by Meyer (2002), one of the biggest misconceptions about the field of distance education is that there is limited research on the topic; this is gravely wrong. There are hundreds of studies on quality of distance education; the problem is that many of the studies are not grounded in some sort of theoretical foundation; therefore, researchers are hindered in making generalizations and in replicating the studies.

Fourth, there is a need for more research in distance education that goes beyond comparing traditional courses to distance education courses. Research on topics such as: what types of technology works best with what type of learning styles, which theories

best explain quality of distance education, and what instruction methods help students learn regardless of location, will help answer some of the questions surrounding distance education. Fifth, there are several criticisms of the overall quality of the original studies conducted in distance education. Among these complaints is the criticism that original research lacked the utilization of valid and reliable instruments, which makes the overall results of many studies questionable (Phipps & Merisotis, 1999). Therefore, the need to development valid and reliable tools and to validate current assessment tools is apparent. The sixth and final conclusion made from this review is that perhaps one of the most untouched areas of research in instrument construction for distance education quality is in the area of cultural bias.

Distance education "encompasses a commitment to open opportunity and levels inequalities, a pedagogy that redirects some of the control and authority that conventionally lies with teachers toward the learners, a set of instructional design principles and methods of facilitating interaction, special leadership and managerial practices, a rethinking of educational policy, and a way of organizing resources that changes the balance of capital (technology) and labor (teachers) to create a more efficient system" (Moore, 2003, p.xxiii). Therefore, this form of education provides "the promise of better teaching, better quality of learning, and far better returns to public and private institutions for money invested in education and training" (Moore, 2003, p. xxiii). It goes without saying that distance education has its limitations; however, the "potential success of distance education" involves far more than the incorporation of technology into existing classroom tools and procedures. According to Moore (2003),

"if anything threatens the potential success of distance education more than the rejection and neglect it has received in the past, it is the danger of overenthusiasm about technology lending to underfunded, undermanned, poorly designed, and poorly managed programs" (p. xxiii). Technology cannot replace instruction in a distance education course.

The future opportunities for distance education are limitless. Clearly, distance education programs and courses are here to stay, and will, more than likely, increase in number for years to come. It is important for professionals to have a well-grounded understanding of "the costs involved and of the need for substantial investment, training, reorganizing of administrations, monitoring and evaluation of learning, and support of learners – of the need, that is to say for careful long-term planning and development of new and different delivery systems" (Moore, 2003, p. xxiii), and certainly the key aspects to designing and implementing high quality distance education programs and courses are crucial.

CHAPTER II

A PRIMER ON QUALITY INDICATORS OF DISTANCE EDUCATION IN HEALTH EDUCATION

In the past decade, there has been an enormous growth of distance education courses and programs in higher education (Novak, 2002; Meyer, 2002). According to Mehrotra, Hollister, and McGahey (2001), "distance learning, or distance education, is not a future possibility for which higher education must prepare, it is a current reality creating opportunities and challenges for educational institutions; a reality offering students expanded choices in where, when, how, and from whom they learn; a reality making education accessible to ever larger numbers of persons" (p. ix).

Interest in distance education applications has grabbed the attention of university and college administrators, faculty, and other professionals all over the world (Willis, 1994; Birnbaum, 2001; Moore & Anderson, 2003). The growth of distance education is particularly evident in the field of health education, with universities such as, The University of Alabama, Mississippi State University, University of Arkansas, University of Central Arkansas, East Carolina University, Texas Women's University and Texas A&M University, offering health education courses and programs, and Johns Hopkins University, Emory University, University of North Carolina – Chapel Hill, and University of Washington offering courses and programs in public health via distance education technology. Additionally, the American Association for Health Education (AAHE) in concert with the Foundation for the Advancement of Health Education (FAHE) are offering graduate level courses in health education through distance

education technology by partnering with university and instructional technology businesses (www.hepnetwork.org).

There are several reasons for this increased interest in distance education in higher education. Distance education programs: 1) allow students easier access to courses, which has the potential to decrease time to graduation, 2) provides opportunities for increased diversity and internationalization in terms of attracting more students from different parts of the country and world, because students can access the materials for the course from anywhere, 3) eases built environment constraints, because classroom space is not needed in a distance education course, 4) creates a new market of time- and location-bound students, and 5) increases revenue generation for the university or college.

Questions, concerns, and opinions in academia regarding distance education and related instructional technology are emerging in the professional literature. Academic administrators and professors are seeking answers to questions about distance education, including how to determine quality. According to Sherry (2003), "translating ideals of academic excellence into applicable terms for providers and users of distance education is not an easy task…[however] in this new century, with distance education expanding worldwide, the urgency of quality assurance is apparent" (p. 435).

The issues surrounding quality of distance education have been discussed by stakeholders, including: the federal government, state governments, accrediting associations, faculty, and even students (Meyer, 2002). Regardless of the stakeholders, "all stress the need to have a better understanding of what contributes to quality" in

distance education courses and programs (Meyer, 2002, p.1). Suffice to say, the enormous potential of instructional technology and distance education is tempered by one overriding question and concern: How do you ensure that distance education coursework and degrees are of high quality? (Meyer, 2002; Moore & Anderson, 2003).

To this end, the purpose of this article is twofold: (1) to identify quality indicators of distance education instruction, courses and programs, and (2) to provide implications of the identified quality indicators for health education researchers and practitioners.

Background/Methods

In order to generate a comprehensive list of quality indicators, a search of ten electronic databases was conducted. The databases included EBSCO, ERIC, PsychINFO, Ovid, Gale, Medline, PubMed, Wilson, Cambridge and CSA. Search engines, such as Google Scholar, were also used to identify distance education journal websites (i.e. *American Journal of Distance Education*) in order to access more articles and studies. Additionally, the resources available in Texas A&M University libraries (i.e. books, dissertations, conferences bulletins, etc.) were accessed to gather information on quality indicators of distance education. Key terms that were used to identify relevant studies were "distance education", "quality indicators", "quality of distance education", "web-based courses", "quality web-based programs", "quality instructional technology", "quality distance courses", and "literature review". Every paper that was identified through this process was taken into consideration, regardless of the year of

publication. The references of these initial papers were searched for more studies that could be included in the review.

The results of the literature search yielded 24,909 references related to distance education. When the search was narrowed by using the terms "quality" and "distance education," the results indicated 3,535 references related to the two terms. This is not to say that all 3,535 references had a main focus on quality of distance education, because the nature of the search engine is to compile references that include the search terms, which does not necessarily translate into a list of references all focusing on quality of distance education. Therefore, the results range from references with a main focus on quality of distance education to articles that merely include the two search terms, "quality" and "distance education". Due to the vast amount of literature on this topic, the researchers focused on the more recent articles on quality of distance education (1987 – 2005). This search protocol yielded the 165 articles and 12 books that were reviewed to gather information on the quality indicators and benchmarks of distance education for this current study. To access the systematic literature review, in its entirety (*History, Theory, and Quality Indicators of Distance Education: A Literature Review*, pp. 94), please refer to the following webpage: http://ohi.tamu.edu/distanceed.pdf. This article will focus on quality indicators of distance education, and how these indicators relate to the field of health education.

Quality of Distance Education in Health Education

Definitions of Quality

In order to improve the quality of distance education offerings in practice and research, one must first know what quality is and how to assess quality in distance education programs. According to Meyer (2002), "the lack of consistent, agreed-on definitions for what quality is" can be very problematic (p. 22). For example, Oblinger (1998) asked, Is quality measured by library volumes, Carnegie rankings, faculty rank, instructional methodology, contact hours, class size, or student GPA? These are the types of questions that are pondered in the field of distance education on a daily basis, and serve to highlight the difficulty in providing a universal definition for quality, because the meaning of quality can change for different stakeholders (students, faculty, administrators, instructors, etc) (Fresen, 2002).

Guidelines to Assess Quality in Distance Education

A summary list of the commonly cited categories of quality indicators for distance education was compiled from the comprehensive literature review mentioned previously (Table 2.1). This list from the literature review includes quality indicators

Table 2.1

Common Quality Indicators of Distance Education Identified in the Literature

• Student-Teacher Interaction	• Active Learning Techniques
• Prompt Feedback	• Respect Diverse Ways of Learning
• Student Support Services	• Faculty Support Services
• Program Evaluation and Assessment	• Strong Rationale for Distance Education that Correlates to the Mission of the Institution
• Clear Analysis of Audience	• Appropriate Tools and Media
• Documented Technology Plan to Ensure Quality	• Reliability of Technology
• Institutional Support and Institutional Resources	• Implementation of Guidelines for Course Development and Review of Instructional Materials
• Course Structure Guidelines	

identified in the following documents, publications, and articles: American Federation of Teachers, 2000; American Federation of Teachers, 2001; Chickering and Gamson 1987; Council for Regional Accrediting Commissions, 2000; Council for Regional Accrediting Commissions, 2001a.; Council of Regional Accrediting Commissions, 2001b.; Council for Higher Education Accreditation, 2002; Institute for Higher Education Policy, 2000; Meyer, 2002; Sherry, 2003; Tulloch and Sneed, 2000; Western Association of Schools and Colleges, 1997; and Western Cooperative for Educational Telecommunications, 1995. The quality indicators discussed below are the final list of indicators that were compiled from the literature review. It is important to note that this list includes the indicators that were *most commonly* cited throughout all of the literature, and does not include every indicator identified in the above documents. For example, Western Cooperative for Educational Telecommunications (1995), the Institute for Higher Education Policy (2000), the Council of Regional Accrediting Commissions (2001a.b),

and Sherry (2003) all indicated faculty support as an important quality indicator for distance education programs and courses; therefore, this indicator was included in the list.

Final List of Quality Indicators of Distance Education

Student – Teacher Interaction

There are numerous types of interaction in distance education, such as student-student interaction, student-content interaction, teacher-content interaction, teacher-teacher interaction, content-content interaction, and student-teacher interaction (Anderson, 2003). Although all of these types of interaction play a role in distance education, the type of interaction most often cited as a quality indicator in the systematic literature review was *student-teacher interaction*. According to Anderson (2003), "many of the pedagogical benefits of teacher-student interaction, especially those related to motivation (Wlodkowski, 1985) and feedback (Laurillard, 1997, 2000), are equally relevant in classroom-based and distance education" (p. 132-133). Course and program developers should design distance education courses in order to promote and facilitate healthy interactions between the learner and the teacher.

Student-teacher interactions are especially germane to health education and health promotion processes. In courses that deal with personal health issues, student-teacher interaction provides a forum for students to discuss their health behaviors and related implications with a health professional. For many, this is the first time in their life they have received such guidance. In courses that deal with the health education process, student-teacher interaction allows the student to observe how an experienced

health professional applies a health theory or process, and allows for the demonstration of the thought process used by the instructor.

Active Learning Techniques

Active learning techniques involve the student being engaged in interactive activities that can help to increase their "enthusiasm for learning as well as increased achievement beyond course expectations" (Hannafin et al., 2003, p. 250). Active learning strategies are particularly important in health education and health promotion. Health educators must find creative ways to encourage students or populations of interest to assess their personal health-related behaviors in order to promote healthy learning and decision making. There are many active learning techniques that can be incorporated into distance education courses or health education programs; for example, the following activities are health education active learning techniques used in a personal health class at The University of Alabama (Hensleigh, Eddy, Wang, Dennison, & Chaney, 2004): 1) "Healthier People Health Risk Appraisal (HRA), a computerized assessment of personal health risks. Students were asked to complete a personal risk assessment inventory, analyze the results of the computer analysis, and identify a personal plan of action to reduce risk. 2) Tailored Messaging on Stress. In this activity, students completed an on-line, personalized stress assessment. Based on their input, students received three tailored health/stress related E-mail newsletters which were sent directly to their personal E-mail address. 3) Behavior Change Log Book. The students were asked to proceed through a systematic online process to identify a personal behavior plan of action to modify a health risk behavior" (p. 45). Incorporating the

personal and humanistic elements of active learning strategies into distance education courses, such as student-teacher interaction and "perceived caring", "improves both student attitudes toward class and their perception of their learning" (Hannafin et al., 2003, p. 251).

Prompt Feedback

Most people prefer immediate knowledge of results over delayed. It is no different for education programs; therefore, prompt feedback to students is a key quality indicator of distance education programs. According to Sherry (2003), "communications from faculty that directly engages students and offers timely feedback may contribute to interchanges and the students' subsequent success in the course" (p. 454). Prompt feedback is important to reduce the oft-reported lack of presence of the instructor in distance education courses. Keep in mind that prompt feedback is a relative construct. Students in this digital age may calculate prompt feedback in minutes and hours, while the instructor may calculate prompt feedback in days. It is important to define feedback time in the course outline.

Respect Diverse Ways of Learning

In respecting the diverse ways in which students learn, Dillon and Greene (2003) argue that "our most important task as educators is indeed to help learners build a repertoire of approaches to learning so that they can learn to learn under the variety of circumstances that life will surely bring." (p. 238). Therefore, respecting different ways of learning involves helping students learn to become "more flexible in their approaches across the variety of learning settings they are sure to face" (Dillon & Greene, 2003, p.

239). When developing distance education courses and programs, it is important to incorporate different distance education activities and opportunities, such as chat rooms, discussion boards, and web search activities, to provide flexibility in approaches to learning. For health-related issues, student to student discussions on health issues help convey social norms and positive coping strategies.

Student Support Services

Student support services, such as admission services, library access and services, financial aid, and advisement to meet the "cognitive, affective, and administrative needs of the student" are vital to the success of any distance education program (Daniel & Mackintosh, 2003, p. 819, Berge, 2003). In the 2000 Campus Computing Survey (Green, 2000), 469 public and private U.S. colleges (two-year and four-year) were surveyed, and the results indicated that 76.1% have undergraduate applications online (55.4% in 1998), 83.1% provide an online version of the course catalog (65.2% in 1998), 35.5% offer online library services (17.9% in 1998), and lastly, 55.5% offer online courses (Green, 2000, Dalziel, 2003). Providing the same student support services available to residential students to distance education students is important to students, and is a key quality indicator of a distance education program. Although many distance education-related support services are controlled and maintained by the organization, the program planner should explore strategies to provide student support services equitably to all students.

Faculty Support Services

According to Wolcott (2003), "teaching at a distance, particularly online, is fast becoming a role expectation, especially for prospective and new faculty" (p. 549). In this new role, faculty need to be provided appropriate support in order to be successful in teaching via distance education. The Institute for Higher Education Policy (2000) developed faculty support benchmarks that involve faculty receiving the following: 1) the appropriate technical assistance for course development, 2) written resources to address any problems with students accessing electronic data for the course, 3) continual instructor training opportunities, and 4) appropriate assistance in the transition from traditional to distance education instructional methods. Accommodating faculty with sufficient support materials and training will help to increase the quality of distance education instruction.

Program Evaluation and Assessment

Evaluation and assessment of instructional techniques, such as teaching via distance education, is critical in improving and assuring quality. According to the *Statement of Regional Accrediting Commissions on the Evaluation of Electronically*

Offered Degree and Certificate Programs, institutions offering distance education courses or programs should conduct "sustained, evidence-based and participatory inquiry as to whether distance learning programs are achieving objectives. The results of such inquiry [should be] used to guide curriculum design and delivery, pedagogy, and educational processes, and may affect future policy and budgets perhaps having implications for the institution's role and mission" (Council of Regional Accrediting Commissions, 2000, p. 433).

Strong Rationale for Distance Education that Correlates to the Mission of the Institution

Educators designing and implementing distance education must align programs and courses with the mission of the institution. Distance education programs that do not articulate the overall vision of the institution do more harm than good (Watkins & Kaufman, 2003). One of the first tasks of the educator should be to identify where distance education fits in the overall mission statement. Table 2.2 provides examples of mission statements at selected universities offering health education distance education activities.

Table 2.2

Mission Statements of Universities Offering Distance Education (DE) Courses

University	Vision Statement Supporting DE Activities
The University of Alabama	*-Enrollment growth will be possible by attracting additional students from surrounding states who seek a high quality education, and through the growth of high quality distance education courses that attract serious students from around the world.* http://strategicplan.ua.edu/context.html
Mississippi State University	*-MSU will provide mentoring and support to the students admitted to maximize their chances of success and to help Mississippi reach and surpass the national average in the percentage of our population that holds a college degree, and will provide access for working and place-bound adult learners, particularly through its Meridian Campus and distance learning programs.* http://www.msstate.edu/web/mission.html
University of Arkansas	*-Our commitment to the state is exemplified by our distance education programs that reach out to students in locations around the state and by our nursing educators who prepare well-qualified nurses to serve all of our citizens.* http://coehp.uark.edu/687.htm
Texas A&M University	*-Texas A&M University will be known as a seedbed for the best distance and advanced forms of educational technology available (Vision 2020).*

Clear Analysis of Audience

In order to develop a high quality distance education course, the needs of the audience (including the institution, faculty, and students) should be identified. The characteristics, geographic location, available technologies, and goals of the learner must be identified, along with the "goals and missions of the learning organization, the costs that must be recovered, the costs of delivery, the political environment at the time for the learning organization, the faculty compensation, and the market competition" (Shearer, 2003, p. 275). A comprehensive approach to assessing the needs and analyzing the

intended audience will ensure that the needs of all parties involved are addressed and met in the design, implementation, and evaluation of the distance education course. For example, in the Organizational Elements Model (OEM), there are five levels of institutional assessment and planning: 1) Mega – "planning and assessment whose primary client and beneficiary is society and whose results are termed 'outcomes'", 2) Macro – "planning and assessment whose primary client and beneficiary is the institution and whose results are termed 'output'", 3) Micro – "planning and assessment whose primary clients and beneficiaries are the individuals and teams within the institution and whose results are termed 'products'", 4) Process – "planning and assessment whose primary focus is on institutional processes and activities", and 5) Inputs – "planning and assessment whose primary focus is on resources and assets" (Watkins & Kaufman, 2003, p. 511-512). The OEM provides a systems view to the needs of the institution and individuals involved.

Eddy, Donahue and Chaney (2001) provide an ecological perspective of distance education. This contextual-relative approach to distance education program planning purports that "1) the environment in which the program activity occurs will change across time, 2) the individual participating in the activity will change across time, and 3) the relationship between the student, technology, and professor will change across time" (Eddy et al., 2001, p.377). Figure 2.1 depicts some of the factors and stakeholders to consider when analyzing the audience to design quality distance education applications in university settings.

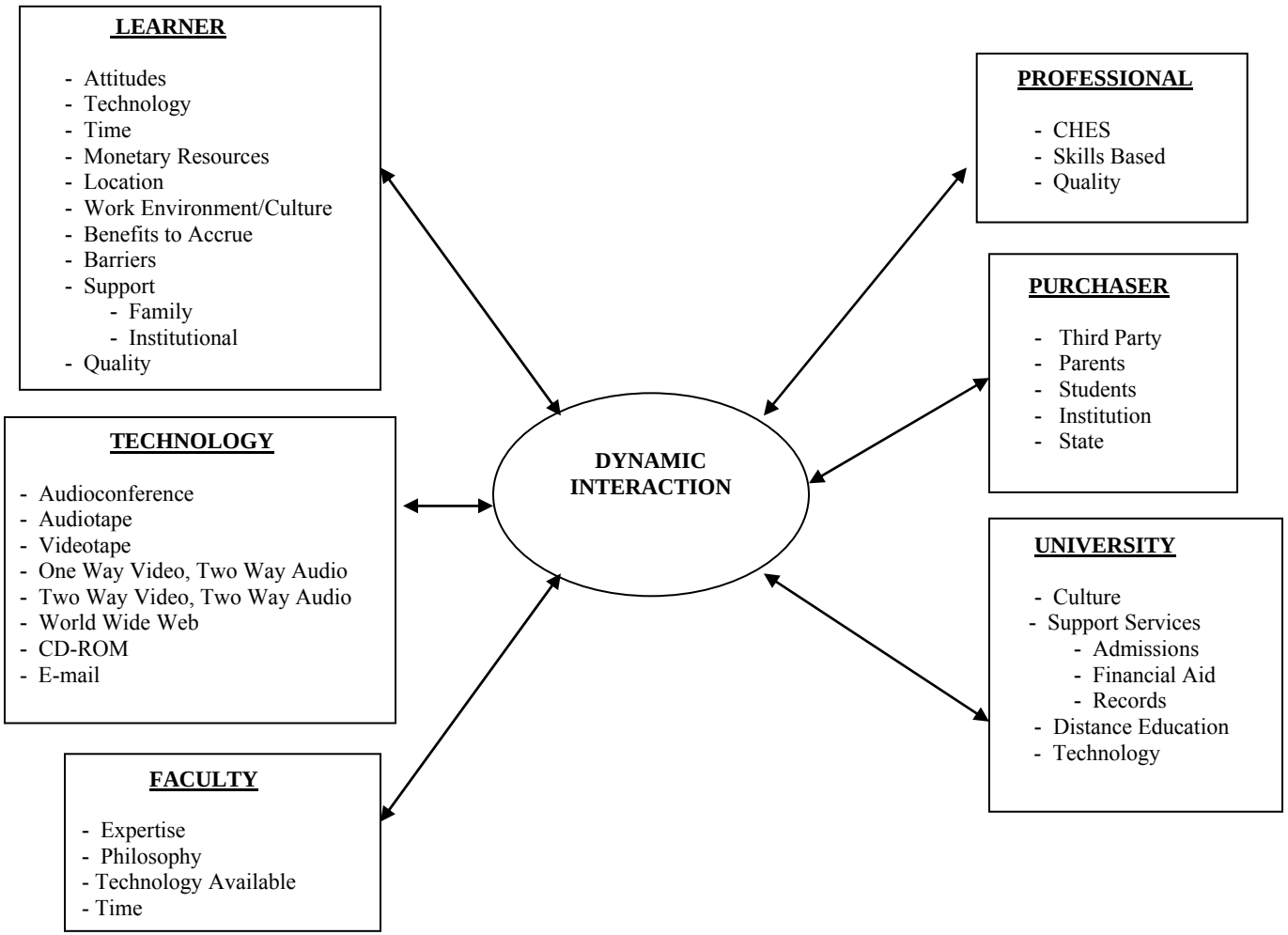


Figure 2.1. Factors Influencing Contextual Relativism in the Designing of a Distance Education Program in Health Education (Eddy et al., 2001)

These factors and stakeholders will change for programs in other settings, but the dynamic interaction likely to occur in any setting remains constant.

Appropriate Tools and Media

The development of a high quality distance education course involves the selection and use of appropriate tools and media. The most appropriate media of delivering instruction to students via distance education does not necessarily mean the newest, most expensive technology available; there are several factors to consider, such as: learner autonomy, types of interaction, access, and cost of the media. At the end of the day, technological tools and media should be chosen by "how it allows or does not allow the other elements of the course to behave in a systems environment where all the elements or variables interact" (Shearer, 2003, p. 275). To decide on what is appropriate for any particular distance education course, the educator must first assess the needs of the audience to identify what best meets their needs, and from there, take a look at technologies used in the past and how these types of media provided access, while promoting learner autonomy, interaction, and cost effectiveness. According to Shearer (2003), "there is no one best technology, and it is usually a combination of technologies that produces the best course in terms of meeting the learners' educational objectives, [therefore] "designers of instructional material for distance education courses understand the strengths and weaknesses of a vast array of technologies and how the older technologies have been deployed in the past to address the multitude of design factors" (p. 285).

Documented Technology Plan to Ensure Quality

Institutional benchmarks, such as documented technology plans, were identified as quality indicators for distance education. According to Institute for Higher Education Policy (2000), "a documented technology plan that includes electronic security measures (i.e. password protection, encryption, back-up systems) [should be] in place and operational to ensure both quality standards and the integrity and validity of information" (p. 2).

Reliability of Technology

Although the type of technology utilized in a distance education course can vary from course to course, an essential aspect to any technology used is reliability. A majority of the instruction, communication, and different types of interaction will occur through the use of some type of technology in a distance education course, and it is crucial that the "technology delivery system is as failsafe as possible" in order to provide the best quality possible.

Institutional Support and Institutional Resources

There are an array of institutional guidelines and support factors found throughout the distance education literature. In a study of best practices, Sherry (2003) states that "flexible governance and organizational structure that takes into account institutional culture and values, encompasses academic oversight of programs and courses, and extends decision making regarding technology beyond the chief information officer may lead to more creative responses and quicker implementation" (p. 451, Parker, 1997; Council of Regional Accrediting Commissions, 2000). It is important

to note that institutional culture and core values will either drive or hinder distance education in traditional higher education systems. These core values should be incorporated and considered in the development of distance education programming and courses. In addition, allocation of financial resources for distance education activities and materials, such as fiscal resources for technology support, training and support services, faculty incentives and compensation, instructional resources, and evaluation research and tools, is critical for high quality and successful distance education programs (Sherry, 2003).

Implementation of Guidelines for Course Development and Review of Instructional Materials

Development of materials and lectures for a distance education course involves a great deal of work at the front-end of the process. As a result, it is important for course designers to have guidelines to follow for course development. According to the Institute for Higher Education Policy (2000), it is critical that "guidelines regarding minimum standards [be] used for course development, design, and delivery, while learning outcomes – not the availability of existing technology – determine the technology used to deliver course content" (p. 2). These guidelines help to streamline the process of distance education course development, and also help to ensure the quality of the courses. In addition, it is important that instructional materials that are developed be "reviewed periodically to ensure they meet program standards" (Institute for Higher Education Policy, 2000, p. 2). Rigorous assessment, review, and evaluation of

instructional materials lead to improved editions of those materials, which in turn, improves the overall quality of instruction.

Course Structure Guidelines

The last quality indicator that appeared frequently in the distance education literature involves the overall course structure. According to the Institute for Higher Education Policy (2000), prior to the start of a distance education course, students should be informed and "advised about the program to determine (1) if they possess the self-motivation and commitment to learn at a distance and (2) if they have access to the minimal technology required by the course design" (p.3). Students should also be provided with all supplemental materials and information that describes educational and learning objectives, concepts, and outcomes for the course; these should be presented in a clear, straightforward statement. Faculty should also establish an agreement with the students regarding expectations, such as deadlines for assignments and faculty response. Additionally, students should have access to all library resources, including electronic library access (Institute for Higher Education Policy, 2000).

Concluding Comments

More than ever, there is an acute need to train the public health workforce in the generic processes to design, implement, and evaluate effective interventions to prevent or delay the onset of chronic and communicable diseases. The nature of the public health workforce requires unique approaches to train time-bound and location-bound professionals and pre-professional students. Distance education programming is one method to reach this group. Yet, to effectively prepare the public health workforce, these distance education applications must adhere to best process and best practice standards of quality. To this end, this study provides a comprehensive list of quality indicators of distance education that have been identified in the literature. As distance education becomes more prevalent in health education instruction and programming, health educators should refer to these quality indicators to guide the development and administration of high quality distance technology applications in health education.

CHAPTER III

DEVELOPMENT OF AN INSTRUMENT TO ASSESS STUDENT OPINIONS OF THE QUALITY OF DISTANCE EDUCATION COURSES

Distance education courses and programs are increasing in higher education, and "in this new century, with distance education expanding worldwide, the urgency of quality assurance is apparent" (Sherry, 2003, p. 435). The issue of quality surrounding distance education programming emphasizes the need for rigorous evaluation of distance education programs and courses. However, according to Stewart, Hong, and Strudler (2004), there is a "modest amount of research pertaining to evaluation" of distance education courseware, particularly web-based courses (p. 131). In order to evaluate student perspectives of quality of distance education programs and courses, an instrument that produces valid and reliable measurements of student opinions is needed. To this end, the purpose of this study was to develop a culturally sensitive instrument to assess quality of distance education programs and courses through evaluation of student attitudes, opinions and perceptions of distance education. The instrument, called SASODE (Survey to Assess Student Opinions of Distance Education) was developed, pilot tested, and used to evaluate the quality of health education courses offered via distance education in the Division of Health Education at Texas A&M University (TAMU).

Table 3.1

Common Quality Indicators of Distance Education

- Student-Teacher Interaction
- Prompt Feedback from Instructor
- Program Evaluation and Assessment
- Clear Analysis of Audience
- Documented Technology Plan to Ensure Quality
- Institutional Support and Institutional Resources
- Course Structure Guidelines
- Active Learning Techniques
- Respect Diverse Ways of Learning
- Faculty Support Services
- Strong Rationale for Distance Education that Correlates to the Mission of the Institution
- Appropriate Tools and Media
- Reliability of Technology
- Implementation of Guidelines for Course Development and Review of Instructional Materials

Note. The quality indicators listed above are results of a systematic literature review.

Foundation of Instrument Development

The foundation of the instrument development process used in this study was theory-driven and based on results of a systematic literature review of over 150 articles and 12 books, which culminated the 14 quality indicators listed in Table 3.1.

To view the systematic literature review (*History, Theory, and Quality Indicators of Distance Education: A Systematic Literature Review*, pp. 94) in its entirety, refer to http://ohi.tamu.edu/distanceed.pdf. Overall, these findings provided a basis for the quality indicators used to frame the development of SASODE.

The opening sentence in the 2003 *Handbook of Distance Education* states, "America's approach to distance education has been pragmatic and atheoretical" (Saba, 2003, p. 3). The application of theory surrounding the research and practice of designing, implementing, and evaluating distance education programs and courses is of extreme importance. Therefore, in addition to building SASODE on the quality indicators identified in the literature review, the instrument construction process was based on systems theory and models that are sophisticated, yet flexible enough to

capture changes that often occur in distance education. For the development of the SASODE, Social Ecological Model (SEM) (McLeroy et al., 1988), a commonly used systems approach to health education, was used. SEM purports that student opinions are affected by the following multiple levels of influence – intrapersonal, interpersonal, institutional, community, and public policy factors. In the development of SASODE, the intrapersonal and institutional levels of the SEM framework provided the theoretical underpinnings. Intrapersonal level measurements included items to evaluate students' knowledge, attitudes, perceptions, and beliefs about each quality indicator. In addition, quality institutional level measurements examined any activity conducted by the university or designee of the university (i.e. faculty), such as university policies, technological support, student services and faculty involvement.

Instrument Design Framework

The process of test development, outlined in the *Standards for Educational and Psychological Testing (Standards)* (1999), was used and combined with Dillman's (2000) four stages of pretesting to construct the instrument for the current study. Figure 3.1 outlines the adapted framework used to develop and test the SASODE.

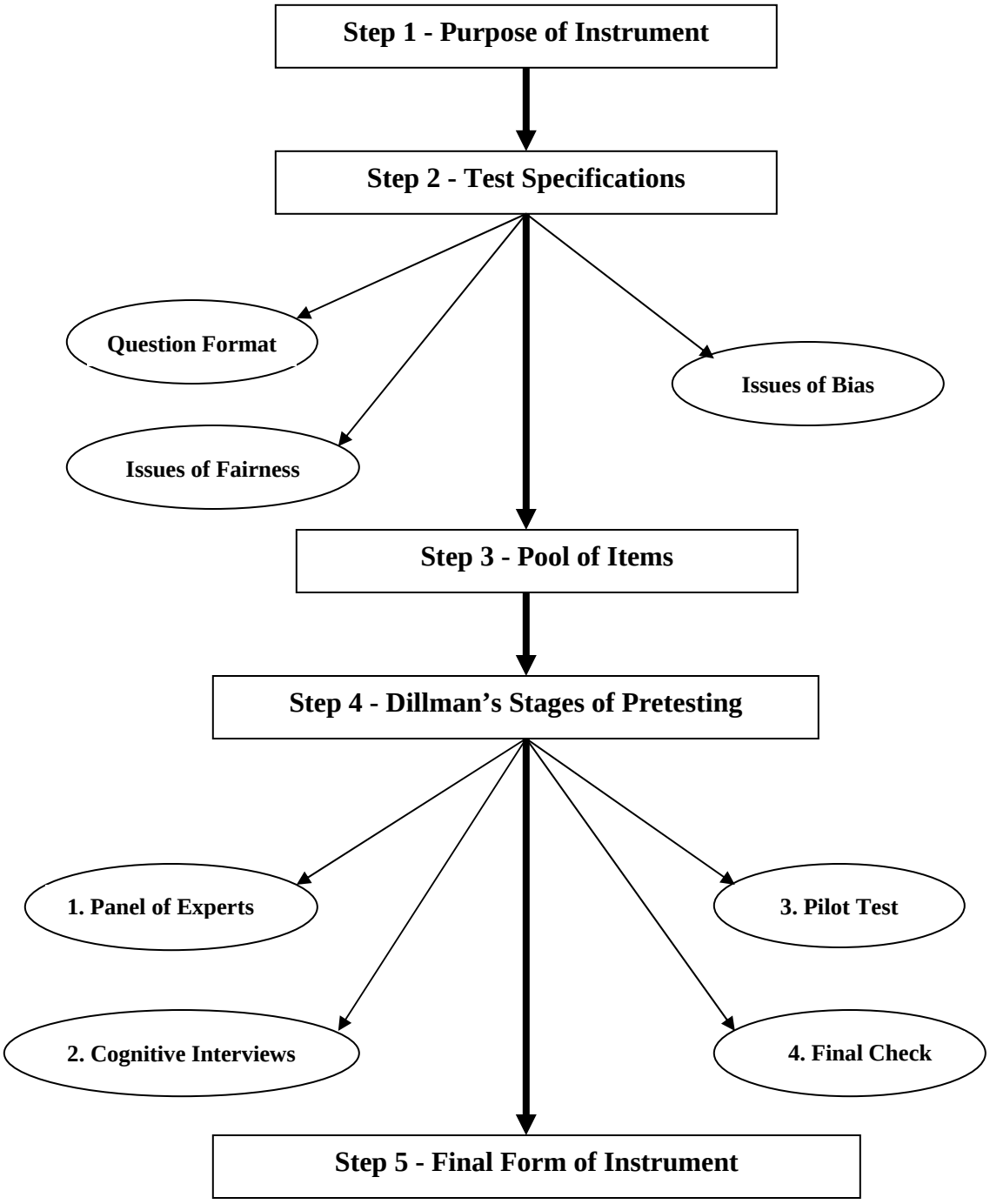


Figure 3.1. Instrument Design Framework

Step 1 - Purpose of Instrument

The first step of instrument design, as identified by the *Standards* (1999), is to describe "the extent of the domain, or the scope of the construct[s] to be measured" (p. 37). For the SASODE, the quality indicators from the intrapersonal and institutional levels of the SEM provided the scope of the constructs to be measured. Additionally, the scope of measured constructs is based on the work of Eddy, Donahue, and Chaney (2001), which identified SEM factors to consider when designing distance education programs in health education.

Step 2 - Test Specifications

The second step in the process is to design the instrument by identifying the test specifications. According to the *Standards* (1999), "the test specifications delineate the format of items, tasks, or questions; the response format or conditions for responding; and the type of scoring procedures"(p. 38). In terms of question format for SASODE, Likert scale questions, open-ended questions, and rank-order questions were included.

Issues of fairness refer to the idea "that examinees of equal standing with respect to the construct the test is intended to measure should on average earn the same test score, irrespective of group membership" (*Standards for Educational and Psychological Testing*, 1999, p. 74). Therefore, the instrument was constructed in order to establish equality of measures and outcomes for respondents, regardless of gender, race, ethnicity, or any other characteristic (*Standards for Educational and Psychological Testing*, 1999).

Lastly, issues of bias refer to "construct-irrelevant components that result in systematically lower or higher scores for identifiable groups of examinees" (*Standards*

for Educational and Psychological Testing, 1999, p. 76). Content-related bias is a result of inappropriate test content; however, test developers can assemble a panel of diverse experts to review the instrument for content, language, and questions that might be offensive or disturbing to different groups of test takers. A panel was assembled for this instrument development process, and will be further explained in the following steps of pretesting.

Step 3 - Development of a Pool of Items

Using the identified quality indicator benchmarks from the literature review, items were developed or chosen, based on the two identified levels (intrapersonal and institutional) of the Social Ecological Model (McLeroy, Bibeau, Steckler, & Glanz, 1988). The quality indicators assessed by using this model were: student-teacher interaction, prompt feedback from instructor, student support/services, student-technical assistance/instruction, evaluation and assessment, and course structure benchmarks. An initial pool of items was drawn from three sources: 1) Scanlan's (2003) instrument to assess quality of internet-based distance learning, 2) TAMU's current student evaluation forms, and 3) questions from the *Distance Education Program in Health Studies: Student Satisfaction Survey,* developed and pilot-tested at The University of Alabama. Dillman's Tailored Design Method (2000) was used to construct additional questions for the current study. The initial pool consisted of 75 items.

Step 4 - Dillman's Four Stages of Pretesting

Following the development of the pool of test questions and approval from the Institutional Review Board for the Protection of Human Subjects at TAMU, the items

were subjected to the four stages of pretesting, identified by Dillman (2000), and assessed for culture sensitivity. The methods and results of this four stage process are outlined below in sequential order.

Stage 1: Review by Knowledgeable Colleagues and Analysts

Methods

The initial pool of items was sent to a panel of experts for review. The panel consisted of nine professionals from across the country, whose expertise areas included: distance education, survey development and research, and cultural sensitivity in research. The main goal of this stage was "to finalize the substantive content of the questionnaire so the construction process can be undertaken" (Dillman, 2000, p. 141). The panel was also responsible for evaluating evidence of content-related bias and cultural sensitivity issues in the instrument.

In addition, the panel was asked to review and rank each item on a scale from 1 to 4; whereas, 1 = not important to include in survey, 2 = somewhat important to include in survey, 3 = important to include in survey, and 4 = extremely important to include in survey. Also, in order to minimize the number of similar items that measured the same quality indicator, the panel members were asked to label the items as either "keep" or "omit". For example, student-teacher interaction was measured by 6 items; however, several of the items might seem redundant and the quality indicator may be assessed with fewer items. Therefore, the panel members were asked to identify which items should be kept and which should be omitted for measurement of each quality indicator. During Stage 1, panel members also evaluated the instrument for face validity (i.e. the

items appear to be relevant to the constructs being investigated) (Gomm, Needham, and Bullman, 2000) and content validity, which is defined "as the degree to which the scale properly [reflects] student-related dimensions of quality" in the distance education courses (Scanlan, 2003, p. 4).

Statistical Analysis/Results

The results of the panel review for face validity and content validity revealed that 23 of the items were either redundant or did not adequately measure the intended quality indicator; therefore, the items were reduced from 75 items to 60 items. The criteria for deleting an item involved the rankings of the panel members. The rankings of each item from the panel reviewers were assessed, and if a majority (50 % or above) indicated the item was either *important* or *extremely important* to include in the survey and suggested to *keep* the item, then it was kept and included in the pilot study instrument. In addition, modifications to eight questions (either with wording or separating one question into two questions) were made. Also, two additional demographic questions, regarding race and ethnicity, were added to the SASODE as a result of the panel suggestions on the cultural sensitivity of the instrument.

The modifications recommended by the pool of experts resulted in a 62-item instrument, with five parts. Part I (four items) contained general distance education items to get a sense of students' overall experience and perception of quality of distance education (Likert scale items ranging from 1 = poor to 4 = excellent). Part II (thirty-seven items) consisted of the quality indicator items, based on the identified quality indicators mentioned previously. The first nine items in Part II were Likert scale items

ranging from 1 = very dissatisfied to 4 = very satisfied and 5 = not applicable. The last twenty-eight items were Likert scale items ranging from 1 = strongly disagree to 4 = strongly agree and 5 = not applicable. Items in Part III (ten items) were background information questions, which included items such as: what channels of communication students used to reach instructors, how many distance education courses students have taken, and how the distance education course in which they are currently enrolled compares to other courses. Part IV included four open-ended questions on the strengths and weaknesses of the course. Students were also given the opportunity to provide any additional comments and/or recommendations to help improve the quality of the distance education course. Lastly, items contained in Part V (seven items) were demographic questions.

Stage 2: Interviews to Evaluate Cognitive and Motivational Qualities

Methods

In this stage, 10 TAMU students that have either taken a distance education course in health education previously and/or currently enrolled in one of the distance education courses were asked the 62 items, individually, by an interviewer. The respondents were asked to think out loud when answering the questions. According to Dillman (2000), the interviewer "probes the respondents in order to get an understanding of how each question is being interpreted and whether the intent of each question is being realized" (p. 142). Cognitive interviewing, such as this, "is designed to produce information when the respondent is confused or cannot answer a question" (Dillman, 2000, p. 142).

Results

The cognitive interviews resulted in minor changes to the instrument. Wording on three items were modified to clarify the meaning of the question, and minor grammatical changes were made. No items were deleted during the cognitive interview process; therefore, the 62-item SASODE was administered to the sample population for the pilot study.

Stage 3: A Pilot Test

Methods

According to Dillman (2000), the pilot study should emulate the methods and procedures that are to be used in follow-up studies. To this end, 601 students enrolled in at least one of four distance education courses offered in the Division of Health Education at TAMU during the spring 2006 semester were asked to complete the pilot test. The asynchronous distance education courses selected consisted of two general health courses, Healthy Lifestyles and Women's Health, and two content-specific health courses, Human Sexuality and Consumer Health. Students were sent the SASODE and informed consent via e-mail, and asked to return the SASODE with their final examination. Several follow-up e-mails were sent to encourage student input. Responses were kept confidential, and students were asked not to put any identifiable information on their SASODE. Five-hundred sixty-eight students completed the pilot test for a response rate of 94%.

Statistical Analyses

Construct validity is "the results achieved from using the instrument predict those matters which the theory underlying the instrument's design says they should predict" (Gomm, Needham, and Bullman, 2000, p.82). In this study, construct validity was evaluated within Stage 3 by conducting a confirmatory factor analysis (CFA) to identify the factor scores of the items. In addition, predictive validity or criterion-related validity was assessed. This type of validity applies "when one wishes to infer from a test score an individual's most probable standing on some other variable called a criterion" (*Standards*, 1999, p. 179-180). According to Scanlan (2003), in order for an instrument assessing quality of distance education to have predictive validity, "it should explain or predict students' perceptions of the quality" of their experience in the distance course (p. 6). A CFA was conducted to determine if the scale "has meaningful component structure" (Scanlan, 2003, p. 5), and to develop a measurement model of quality

indicators. Then, a structural model was developed to test the relationship between the identified factors in the measurement model (based on the intrapersonal and institutional items) and the more global/institutional items (i.e. overall satisfaction with the distance education course) to assess convergent and predictive validity. Lastly, Cronbach's (1984) coefficient alpha (α) was used to determine internal consistency reliability.

Results

Sample Characteristics

Demographic analyses from the pilot study, using Statistical Package for the Social Sciences (SPSS 14.0), indicated the majority of the sample was female (83.3%), white/Caucasian (86%), and classified as seniors (39.7%). The sample represented all nine colleges across the university, with a majority of participants in either Education and Human Development (n=191, 34.2%) or Liberal Arts (n=141, 25.2%). Refer to Table 3.2.

Table 3.2

Demographic Analysis of Sample

Variable	N	Percent
Gender		
Male	97	16.7%
Female	470	83.3%
Race		
White/Caucasian	480	86.0%
Black/African American	32	5.7%
Asian	6	1.1%
Native Hawaiian/other Pacific Islander	3	0.5%
American Indian/Alaskan Native	2	0.4%
Other	35	6.2%
Class Rank		
Freshman	33	5.9%
Sophomore	140	24.8%
Junior	158	28.0%
Senior	224	39.7%
Other	8	1.4%
College		
Agriculture and Life Sciences	79	14.1%
Architecture	4	0.7%
Education and Human Development	191	33.6%
Geosciences	8	1.4%

Table 3.2 Continued

Variable	N	Percent
College		
Liberal Arts	141	25.2%
Look College of Engineering	17	3.0%
Mays Business School	23	4.1%
Science	42	7.5%
Veterinary Medicine	28	5.0%
Non-declared	21	3.7%
Other	5	0.9%

Construct Validity Measures

A confirmatory factor analysis (CFA) was used to summarize the relationship among the ordinal items in the Likert scale of Part II of the survey in a smaller number of quality indicators that the items were chosen to measure. In this measurement model, polychoric correlations, which "estimate the linear relationship between two unobserved continuous variables given only observed ordinal data", are fit in the model with Robust Weighted Least Squares (WLS), which is a method for estimating model parameters using categorical or ordinal data (Flora & Curran, 2004, p.467). The measurement model was estimated using the commercial software package, Mplus (Muthen & Muthen, 2002).

Robust WLS is an estimation method that requires that the distribution of the ordinal data is not extremely skewed or leptokurtotic. Otherwise, the standard error of the parameter estimates will be underestimated, and the chi-square model fit test statistic will be inflated. This will result in overrejection of adequately fit models (Flora & Curran, 2004). There were 15 items excluded from the CFA analysis due to non-normality, because skewness and kurtosis were larger than 3.0. After these items were removed from the analysis, the quality indicator, *prompt feedback from instructor*, was only measured by one item in the model. A Pearson-product moment correlation indicated that *prompt feedback from instructor* was highly correlated with *student-teacher interaction* (Pearson's $r = 0.852$); therefore, these two indicators were collapsed into one factor for the measurement model tests. It is important to note that the non-

normal items were not deleted from the final SASODE, because their inclusion in the final instrument was based on face and content validity measures.

Missing data are problematic for virtually every survey study conducted, and this study is no different. Therefore, an imputation method, EM algorithm, was utilized to input missing data values for items measuring the quality indicators. The statistical software, NORM, was used to handle missing data values (Schafer, 1999). Additionally, the raw data was assessed for consistency of answers on positively worded questions and negatively worded questions. For example, one item states, "The instructor provided ***prompt*** feedback to my questions," and the answer choices range from 1 = strongly disagree to 4 = strongly agree. Another item in the same section states, "The feedback to my questions was ***delayed***", with the same Likert scale answer choices. These negatively worded questions were included in the survey to make sure students were not simply marking the same answer all the way through the survey, without reading the questions. Upon analysis of the raw data, 141 students (out of 568) indicated that either

they *agree* or *strongly agree* on both the positively worded and negatively worded questions that were assessing similar quality indicators or content, which created inconsistent answers. Therefore, these data were filtered and not used in the measurement model analyses.

Model Specifications

The hypothesized measurement model (Model 1), created based on the quality indicators identified in the intrapersonal and institutional levels of the SEM, contained five factors, which are the latent variables that represent the following quality indicators: Factor 1 - student-teacher interaction (included prompt feedback from instructor, because these two latent variables were collapsed), Factor 2 - student support/services, Factor 3 - student-technical assistance/instruction, Factor 4 - evaluation and assessment, and Factor 5 - course structure benchmarks. The Pearson's product moment correlation between Factor 4 and Factor 5 was extremely high ($r = 1.00$); therefore, these factors were collapsed into one factor. Refer to Figure 3.2.

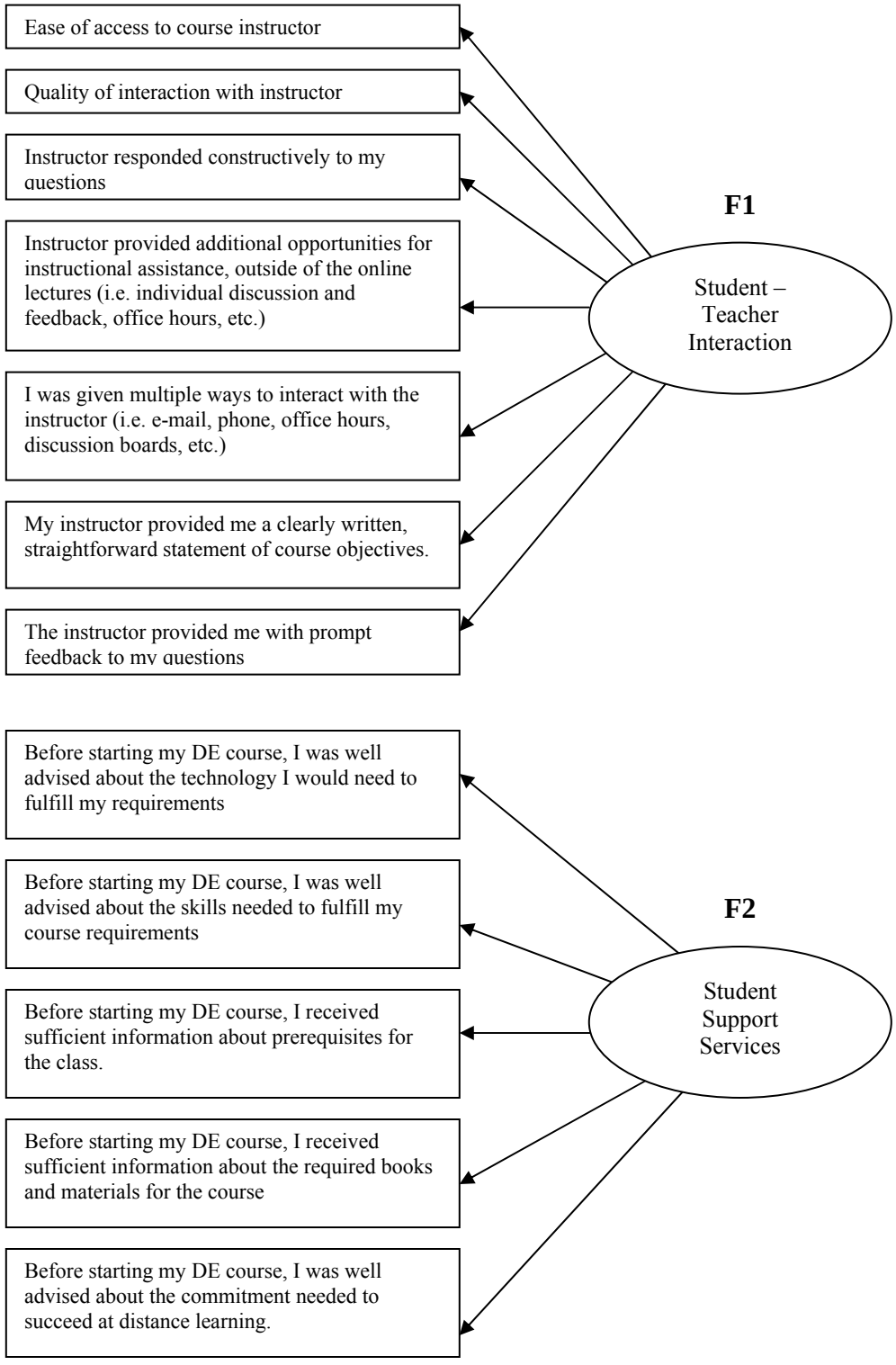
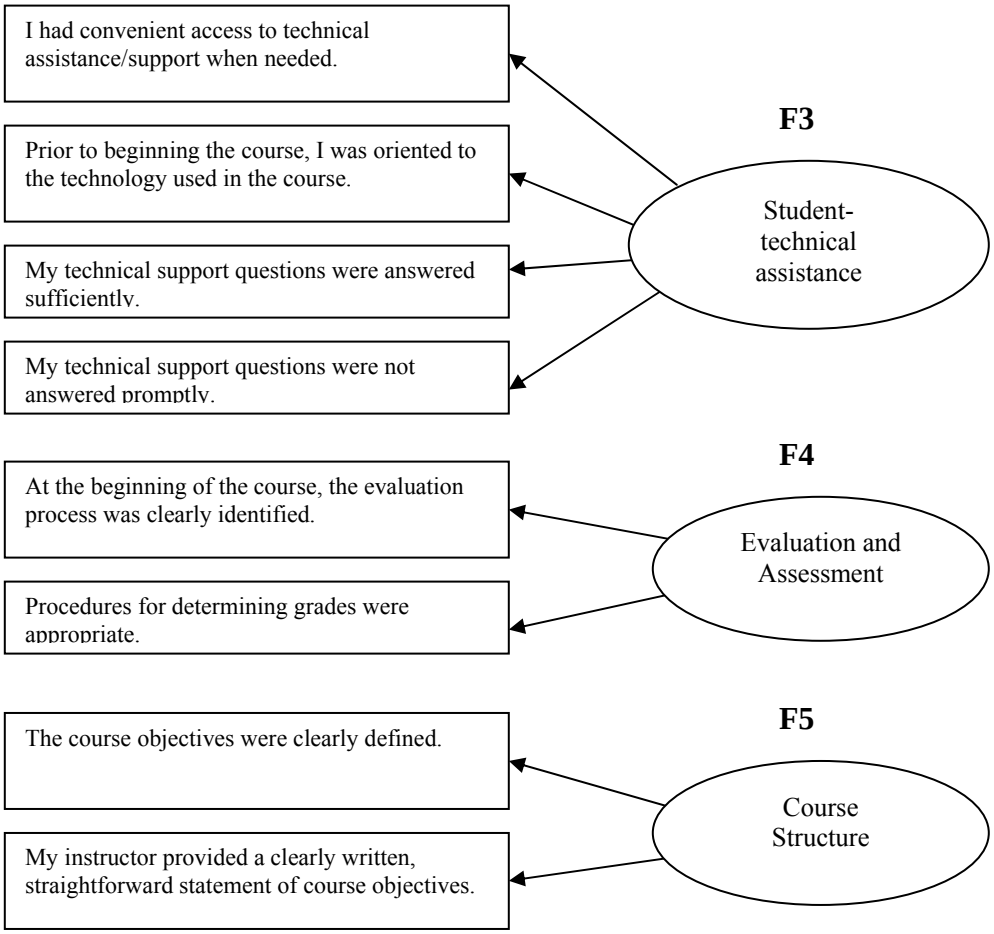


Figure 3.2. Confirmatory Factor Analysis Model 1 for F1 (Student/Teacher Interaction) and F2 (Student Support Services)



Fit Indexes for Model 1:
$\chi^2 = 529.5$, df = 65, p = 0.000
CFI = 0.877
TLI = 0.941
RMSEA = 0.113
SRMR = 0.071
WRMR = 2.04

Figure 3.2. Continued. F3 (Student – Technical Assistance/Instruction), F4 (Evaluation and Assessment), and F5 (Course Structure Benchmarks)

The fit indexes of Model 1 indicated that the model provided poor fit to the data. The chi-square goodness-of-fit index was statistically significant ($\chi^2 = 529.5$, df = 65, p = 0.000), which reveals that Model 1 is not a preferred model. However, according to Thompson (2004), chi-square statistical significance test is "not very useful in evaluating the fit of a single model," because chi-square values are dependent on sample size. Therefore, other fit indexes were evaluated to justify fit of the model. Bentler's (1990) comparative fit index (CFI) and TLI (Tucker and Lewis, 1973) were 0.877 and 0.941 respectively. According to Heubeck and Neill (2000), many researchers accept CFI and TLI fit indexes greater than 0.90; therefore, the TLI index in Model 1 is acceptable. However, Root Mean Square Error of Approximation (RMSEA = 0.113) is acceptable at 0.08 and lower, while Standardized Root Mean Square Residual (SRMR = 0.071) is acceptable at 0.05 or less (Heubeck & Neill, 2000); both RMSEA and SRMR for Model 1 did not achieve acceptable values to ensure proper model fit. Lastly, the Weighted Root Mean Square Residual (WRMR) was evaluated for acceptable rates of approximately 1.0; however, Model 1 WRMR was 2.04, which indicated Model 1 does not fit the data appropriately, and, therefore, modifications to the measurement model were required.

The modification indices revealed that the model would be improved by deleting two items from the survey. These items had multiple R^2 values of 0.150 and less; therefore, these did not explain much of the variance of the items, which means these items did not measure the quality indicators well. Additionally, modification indices indicated that by adding an additional observed variable to Factor 2 and Factor 5, the

model would better explain the data. The modification indices suggested making additional changes to the model to explain the quality indicators; however, the addition of items to the quality indicator factors did not make logical sense and was not supported by past research. For example, the modification index indicated that one of the student-teacher interaction items (i.e. "The instructor provided additional opportunities for instructional assistance, outside of the class lectures (individual discussion and feedback, office hours, etc.)") would better explain the evaluation and assessment quality indicator, which involves students' perceptions of evaluation procedures and overall course evaluations. This change was not supported by the literature and previous research on quality indicators; therefore, it was not adopted in the Model 2 specifications. Once the identified items were removed and the additional observed variables were added to Factor 2 and Factor 5, this model (Model 2) was evaluated for model fit. Refer to Figure 3.3.

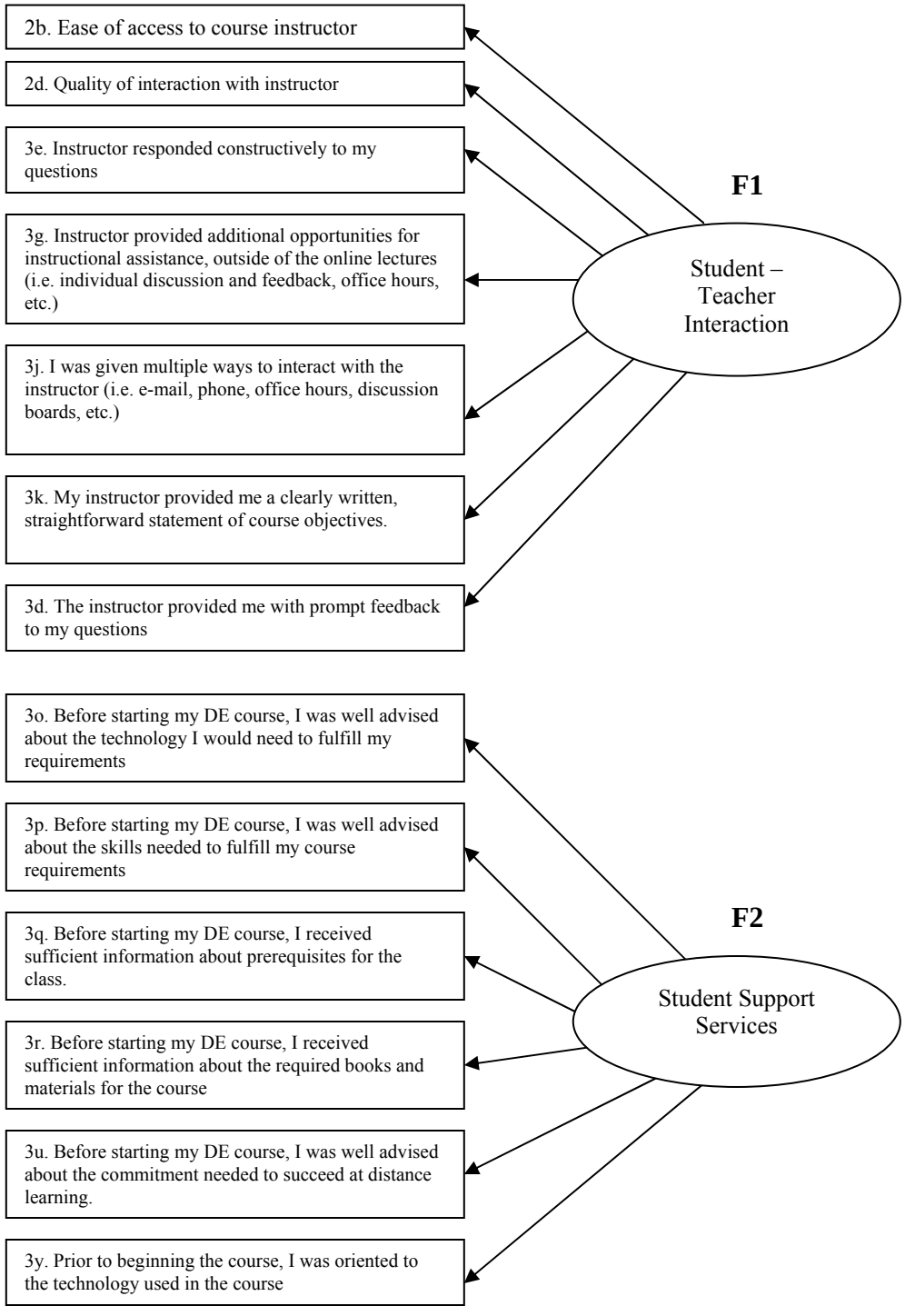
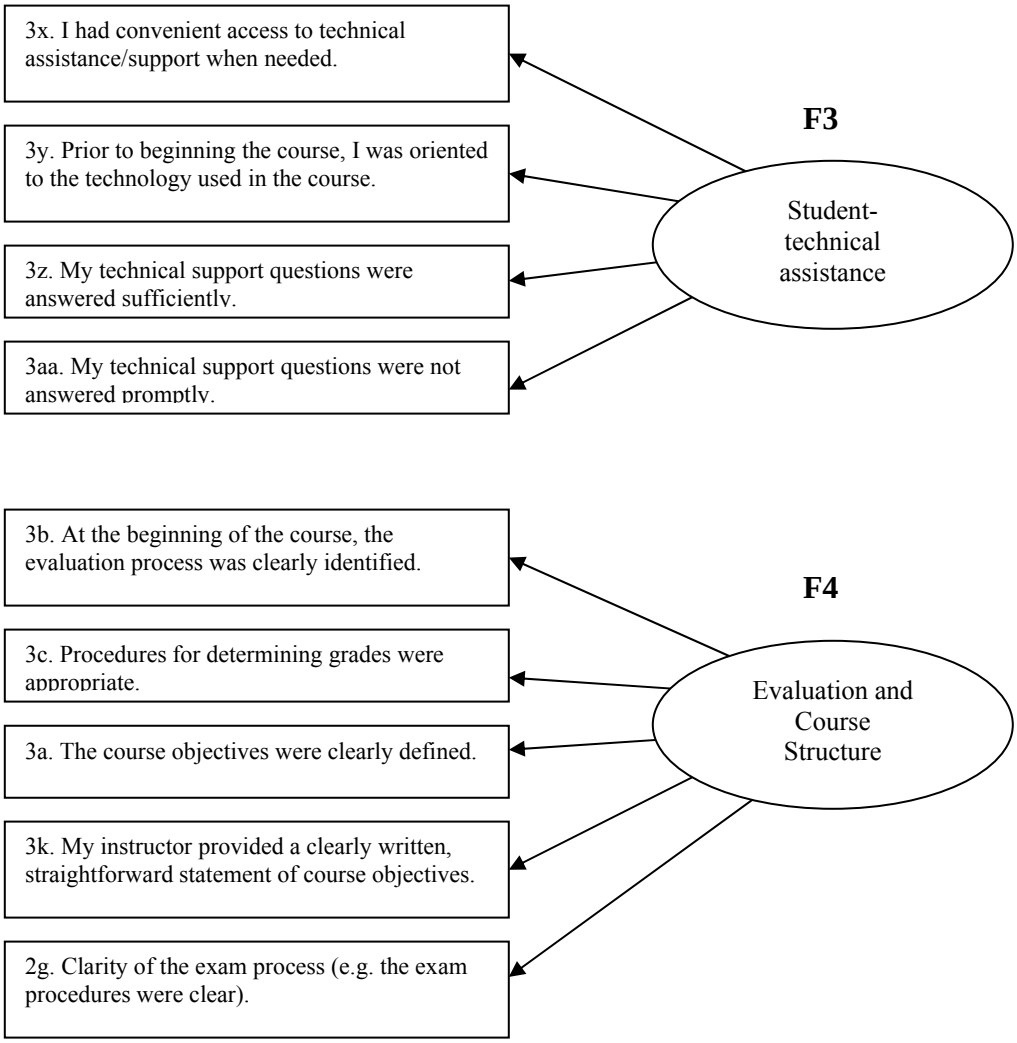


Figure 3.3. Confirmatory Factor Analysis Model 2 for F1 (Student/Teacher Interaction) and F2 (Student Support Services)



Fit Indexes for Model 2:
$\chi^2 = 383.311$, df = 57, p = 0.000
CFI = 0.952
TLI = 0.970
RMSEA = 0.116
SRMR = 0.065
WRMR = 1.811

Figure 3.3. Continued. F3 (Student – Technical Assistance/Instruction), and F4 (Evaluation and Assessment/Course Structure Benchmarks)

The fit indexes for Model 2 indicated a better fit for the data than Model 1. The chi-square goodness-of-fit ($\chi^2 = 383.311$, df = 57, p = 0.000) was statistically significant; however, other fit indices were analyzed to get a better idea of model fit and appropriateness. CFI (0.952) and TLI (0.970) were acceptable and indicated appropriate model fit; however, RMSEA (0.116), SRMR (0.065), and WRMR (1.811) did not necessarily meet the cut-off points mentioned earlier. Considering the complexity of the model and the high sensitivity of RMSEA, SRMR, and WRMR to model complexity (Potthast, 1993), the values of the three fit indices were close enough that Model 2 was not rejected as a good model for the data. Therefore, after two model tests, the fit indices were approximately satisfactory.

Table 3.3 provides the parameter estimates and the standard error for parameter estimates for Model 2.

Table 3.3

Parameter Estimates of CFA Model 2

Factor 1 (Student-Teacher Interaction)			
	Estimates	S.E.	Est./S.E.
Item 2b.	1.000	0.000	0.000
Item 2d.	2.161	0.431	5.012
Item 3e.	3.765	0.709	5.312
Item 3g.	0.890	0.269	3.315
Item 3j.	-0.361	0.222	-1.625
Item 3k.	-0.056	0.211	-0.264
Item 3d.	3.569	0.677	5.273
Factor 2 (Student Support Services)			
	Estimates	S.E.	Est./S.E.
Item 3o.	1.000	0.000	0.000
Item 3p.	1.081	0.043	25.150
Item 3q.	0.962	0.044	21.714
Item 3r.	1.005	0.048	21.088
Item 3u.	0.959	0.048	19.905
Item 3y.	0.638	0.055	11.509

Table 3.3 Continued

Factor 3 (Student-technical Assistance)			
	Estimates	S.E.	Est./S.E.
Item 3x.	1.000	0.000	0.000
Item 3y.	0.392	0.077	5.109
Item 3z.	1.608	0.096	17.347
Item 3aa.	1.579	0.091	17.347
Factor 4 (Evaluation/Assessment and Course Structure)			
	Estimates	S.E.	Est./S.E.
Item 3b.	1.000	0.000	0.000
Item 3c.	0.865	0.038	22.929
Item 3a.	1.089	0.047	23.394
Item 3k.	1.064	0.049	21.914
Item 2g.	0.353	0.069	5.127

A parameter estimate to standard error ratio (Est./S.E.) greater than +1.96 or below -1.96 indicates the factor loading is statistically significant. Two items (3j. and 3k.) did not have statistically significant factor loadings to their respective factors; however, the model became unstable and less appropriate for the data when these two items were deleted. Therefore, Model 2 remained unchanged.

Lastly, Table 3.4 lists the multiple R-square output produced by the CFA analysis in Mplus (Muthen & Muthen, 2002). These values are calculated for the continuous latent variables (underlying continuous variables that are not observed) rather than the observed categorical/ordinal variables. It is important to understand that multiple R-square values for ordinal or categorical outcome variables should not be interpreted as the proportion of explained variance; therefore, the parameter estimates and standard errors shed more light on model fit and appropriateness than the multiple R-square values (University of Texas, 2000).

Table 3.4

Multiple R-square Values for CFA Model 2

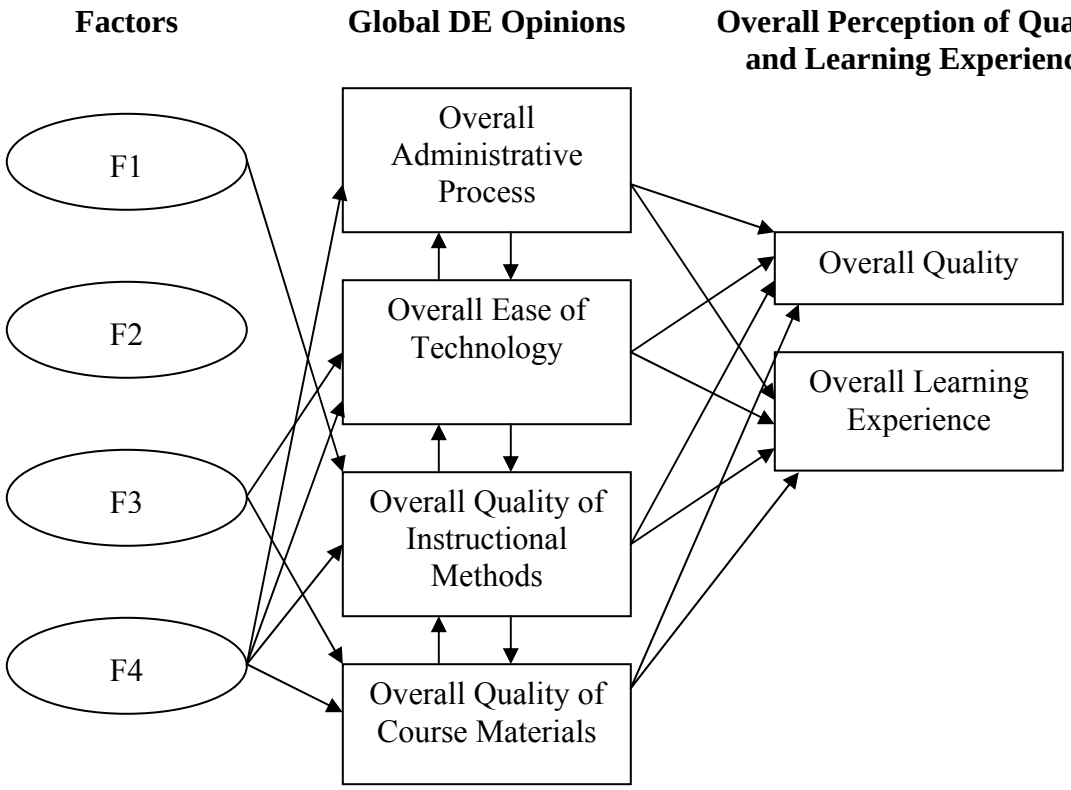
R-square for Items		
	Residual Variance	R-Square
Item 2a.	0.678	0.322
Item 2d.	0.689	0.311
Item 3a.	0.313	0.687
Item 3b.	0.420	0.580
Item 3c.	0.566	0.434
Item 3d.	0.152	0.848
Item 3e.	0.056	0.944
Item 3j.	0.640	0.360
Item 3k.	0.353	0.647
Item 3o.	0.491	0.509
Item 3p.	0.405	0.595
Item 3q.	0.529	0.471
Item 3r.	0.486	0.514
Item 3u.	0.531	0.469
Item 3x.	0.628	0.372
Item 3y.	0.695	0.305
Item 3z.	0.069	0.961
Item 3aa.	0.073	0.927

Predictive Validity Measures

A structural model was developed to test if the measurement model (Model 2) predicted students' perception of overall quality of distance education and their overall learning experience in distance education courses. Overall quality of distance education was measured by one general item: "I would rate the overall quality of the distance education course as…1 = poor, 2 = fair, 3 = good, 4 = excellent." The overall learning experience was measured by one general item: "Considering all factors combined, I would rate my online learning experience at TAMU as…1 = poor, 2 = fair, 3 = good, 4 = excellent". Furthermore, the structural model evaluated how the four factors in the measurement model were related to the following four general items of distance education: 1) "I would rate the overall administrative process of getting started with this distance education course (registering, intitial logon, etc.) as…1 = poor, 2 = fair, 3 = good, and 4 = excellent", 2) "I would rate the overall ease of use of the delivery technology (online lectures and related support resources such as remote library access)

as…1 = poor, 2 = fair, 3 = good, and 4 = excellent", 3) Rate the "Quality of instructional methods (online lectures, website, CD's, DVD's, etc.) as…1 = very dissatisfied, 2 = dissatisfied, 3 = satisfied, 4 = very satisfied, 5 = not applicable", and 4) Rate the "Quality of the course materials as…1 = very dissatisfied, 2 = dissatisfied, 3 = satisfied, 4 = very satisfied, 5 = not applicable".

The fit indexes for the structural model indicate that the model provides a satisfactory fit for these data. The chi-square goodness-of-fit (χ^2 = 473.405, df = 81, p = 0.000) was statistically significant; however, other fit indices were examined to further investigate model fit. CFI (0.936) and TLI (0.963) are acceptable and provide evidence of good model fit. Additionally, RMSEA (0.107), SRMR (0.072), and WRMR (1.668) were approximately satisfactory numbers. Refer to Figure 3.4.



Fit Indexes for Final Structure Model:
$\chi^2 = 473.405$, df = 81, p = 0.000
CFI = 0.936
TLI = 0.963
RMSEA = 0.107
SRMR = 0.072
WRMR = 1.668

Figure 3.4. Final Structural Model

The parameter estimates and standard errors of the estimates are in Table 3.5. As indicated in the table, parameter estimate to standard error ratios for the model reveal that Factor 1 (student-teacher interaction) and Factor 4 (evaluation and assessment) helps to explain quality of instructional methods. Factor 2 (student support/services) did not significantly explain any of the general distance education constructs; whereas, Factor 3 (student-technical assistance/instruction) helped to explain the overall ease of use of distance education technology and the quality of the course materials. However, the relationship between the quality indicator involving student-technical assistance/instruction (Factor 3) was negatively correlated with overall ease of use of distance education technology. This negative relationship could be due to the fact that students who needed more technical assistance probably did not find the distance education technology easy to use. Factor 4 (evaluation and assessment/course objectives) helped to explain all four of the general distance education constructs. Lastly, the four general distance education items helped to explain (and predict) overall quality of distance education and learning experience of students in distance education courses, with statistically significant parameter estimate to standard error ratios for each construct. Refer to Table 3.5.

Table 3.5

Parameter Estimates of Final Structural Model

Overall Administrative Process			
	Estimates	S.E.	Est./S.E.
Factor 4	0.686	0.105	6.553
Overall Ease of Technology			
	Estimates	S.E.	Est./S.E.
Factor 3	0.210	0.112	1.884
Factor 4	0.610	0.110	5.555
Overall Quality of Instructional Methods			
	Estimates	S.E.	Est./S.E.
Factor 1	0.500	0.266	1.880
Factor 4	0.575	0.098	5.886
Overall Quality of Course Materials			
	Estimates	S.E.	Est./S.E.
Factor 3	0.213	0.098	2.168
Factor 4	0.510	0.093	5.483
Overall Quality of Distance Education			
	Estimates	S.E.	Est./S.E.
Overall Administrative Process	0.285	0.045	6.287
Overall Ease of Technology	0.117	0.052	2.238
Overall Quality of Instructional Methods	0.285	0.045	6.375
Overall Quality of Course Materials	0.226	0.052	4.356

Table 3.5 Continued

Overall Learning Experience			
	Estimates	S.E.	Est./S.E.
Overall Administrative Process	0.342	0.038	9.075
Overall Ease of Technology	0.193	0.042	4.612
Overall Quality of Instructional Methods	0.199	0.045	4.450
Overall Quality of Course Materials	0.173	0.044	3.929

Reliability Measures

Cronbach's alpha (1984) was assessed for the four quality indicator scales, and all reliability measures were above the acceptable 0.70 alpha coefficient (Gable & Wolfe, 1993). Refer to Table 3.6. Cronbach's alpha was also assessed for each scale by

Table 3.6

Reliability Measures of Quality Indicator Scales

Quality Indicator Scales	Cronbach's alpha
Student-Teacher Interaction Scale	0.718
Student Support/Services	0.785
Student – Technical Assistance/Instruction	0.718
Evaluation and Assessment/Course Structure	0.711

eliminating one item at a time to see if the reliability improved by deleting items; however, no deletion improved the alpha coefficient significantly (improvement fell between 0.0012 and 0.0183). Therefore, no items were deleted from the reliability analysis.

Stage 4: A final check. Did we do something silly?

Methods

In this final step, test developers should ask a few people who have had no part in the development of the SASODE to answer the questions and check for problems

(Dillman, 2000). In the current study, three additional people were asked to review the survey for any wording or content problems.

Results

Stage 4 did not result in any additional changes or edits to the final version of SASODE.

V. Final Form of Instrument

The instrument design framework and results of the statistical analyses helped to refine the instrument to 60 items. These items measure global or general distance education opinions, four quality indicators (factors 1-4), background information, and demographic information. The final form of SASODE is available, free of charge, for educational use at http://ohi.tamu.edu/survey.html.

Concluding Comments

The results of the study reveal that utilizing the instrument design framework, adapted from the *Standards* (1999) and Dillman's (2000) four stages of pretesting,

Table 3.7

Legend of Items Measuring Quality Indicators in Final Distance Education Instrument

General/Global Distance Education Items		
	Overall Distance Education Opinions	Items: 1a, 1b, 1c, 1d.
Quality Indicator Items		
	Student-Teacher Interaction/Prompt Feedback	Items: 2b, 2d, 3d, 3e, 3f, 3g, 3j, 3k*, 3l*, 3m, 3n
	Student Support Services	Items: 2a, 2h, 3o, 3p, 3q, 3r, 3s, 3t, 3u, 3y*, 11a*, 11b*.
	Student-Technical Assistance/Instruction	Items: 3v, 3w, 3x, 3y, 3z, 3aa
	Evaluation/Assessment and Course Structure	Items: 2f, 2g, 3a, 3b, 3c, 3i, 3k, 3l.
	Overall Quality and Learning Experience	Items: 2c, 2e, 3h.
Background Information on Distance Education Courses		
	Items: 4, 5, 6a, 6b, 7, 8, 9, 10, 11a, 11b	
Open Ended Questions		
	Items: 12, 13, 14, 15	
Demographic Questions		
	Items: 16, 17, 18, 19, 20, 21, 22	

**Note*. These items assess more than one quality indicator, or are listed under more than one instrument section.

creates a culturally sensitive instrument, SASODE, that produces valid and reliable scores. SASODE can be used to assess student perceptions of quality of distance education courses, across disciplines, and provides rich data for evaluation purposes. The final version consists of five parts. Part I includes four items measuring global or general distance education opinions. The second part consists of thirty-five items measuring identified quality indicators, and three items measuring perceptions of overall quality. Table 3.7 provides information regarding which survey items correspond to specific quality indicators. Part III consists of ten background information questions regarding distance education, while Part IV includes four open-ended questions on strengths/weaknesses of the course and recommendations for improvement in quality. Lastly, Part V contains seven demographic questions.

CHAPTER VI

CONCLUSIONS

This dissertation research emphasized the growing nature of distance education in higher education and the urgency of quality assurance in distance education applications. The results of the systematic literature review revealed that different parties define distance education and quality in many different ways; however, common benchmarks and quality indicators that all parties deem important in designing, implementing and evaluating distance education courses and programs were identified. These common quality indicators, listed within the paper, along with the intrapersonal and institutional SEM levels, provided a blueprint for the development of a culturally sensitive instrument (SASODE) to assess student opinions of quality of distance education courses offered in health education.

The instrument development framework adapted from Dillman's steps of pretesting (2000) and the *Standards* (1999) resulted in the SASODE that produced both valid and reliable scores. This instrument is available for educational use, and should be utilized in other distance education settings to improve on the measurement abilities of the SASODE.

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APPENDIX A

Texas A&M University
Division of Health Education

Distance Education Courses in Health Education
Student Opinion Survey

PURPOSE AND BACKGROUND:

The purpose of this survey is to obtain your opinion on the Distance Education courses in Health Education offered by Texas A&M University, so that we can best meet your needs and those of future students. Your comments will remain anonymous and will be used to enhance the course quality.

COURSE NUMBER: HLTH ___ ___ ___ - 700

***Please circle* one code number for each question unless otherwise specified.**

I. GENERAL DISTANCE EDUCATION OPINIONS:

1. Please respond to the following general statements about your distance education experience **this semester** at Texas A&M University (TAMU).

	Poor	Fair	Good	Excellent
a. I would rate the overall quality of the distance education course as……...	1	2	3	4
b. I would rate the overall administrative process of getting started with this distance education course (registering, initial logon, etc.) as……	1	2	3	4
c. I would rate the overall ease of use of the delivery technology (online lectures and related support resources, such as remote library access) as……	1	2	3	4
d. Considering all factors combined, I would rate my online learning experience at TAMU as……...	1	2	3	4

II. COURSE OPINIONS:

2. On a scale of 1 to 4 (where 1 is Very Dissatisfied and 4 is Very Satisfied), in general, based on **your own** experience, how would you rate the various aspects of TAMU Distance Education undergraduate courses in Health Education?

	Very Dissatisfied	Dissatisfied	Satisfied	Very Satisfied	Not Applicable
a. Ease of course registration procedures (e.g. admissions requirements, tuition, and fees, etc.)……	1	2	3	4	5
b. Ease of access to course instructor……	1	2	3	4	5
c. Quality of course materials……	1	2	3	4	5
d. Quality of interaction with instructor……	1	2	3	4	5
e. Quality of instructional methods (online lectures, website, CD's, DVD's, etc.)……	1	2	3	4	5
f. Clarity of syllabus….	1	2	3	4	5
g. Clarity of exam process (e.g. the exam procedures were clear)…….	1	2	3	4	5
h. Sufficiency of the support materials, such as websites and online activities……	1	2	3	4	5

3. To what extent do you agree or disagree with the following:

	Strongly Disagree	Disagree	Agree	Strongly Agree	Not Applicable
a. The course objectives were clearly defined……	1	2	3	4	5
b. At the beginning of the course, the evaluation process was clearly identified……	1	2	3	4	5
c. Procedures for determining grades were appropriate…….	1	2	3	4	5
d. The instructor provided prompt feedback to my questions……	1	2	3	4	5
e. The instructor responded constructively to my questions……	1	2	3	4	5
f. Instructor feedback to my questions were delayed……	1	2	3	4	5
g. The instructor provided additional opportunities for instructional assistance, outside of the class lectures (i.e. individual discussion and feedback, office hours, etc.)……	1	2	3	4	5

	Strongly Disagree	Disagree	Agree	Strongly Agree	Not Applicable
h. The class was not a valuable experience…	1	2	3	4	5
i. This class helped me better understand the subject matter covered within the course……	1	2	3	4	5
j. I was given multiple ways to interact with the instructor (e.g. e-mail, phone, office hours, discussion boards, etc.)……..	1	2	3	4	5
k. My instructor provided a clearly written, straightforward statement of course objectives……	1	2	3	4	5
l. My instructor failed to provide a clearly written, straightforward statement of learning objectives or expectations……	1	2	3	4	5
m. In my distance education course, I almost always received constructive feedback on my questions……	1	2	3	4	5

	Strongly Disagree	Disagree	Agree	Strongly Agree	Not Applicable
n. I rarely received constructive feedback to assignments in my distance education course……	1	2	3	4	5
o. Before starting my distance education course(s), I was well advised about the technology I would need to fulfill my course requirements…..	1	2	3	4	5
p. Before starting my distance education course(s), I was well advised about the skills (e.g. computer skills) needed to fulfill my course requirements.....	1	2	3	4	5
q. Before starting my distance education course(s), I received sufficient information about prerequisites for this class……	1	2	3	4	5

	Strongly Disagree	Disagree	Agree	Strongly Agree	Not Applicable
r. Before starting my distance education course(s), I received sufficient information about required books and materials for the course……	1	2	3	4	5
s. Before starting my distance education course(s), I received poor information regarding special requirements, such as test proctoring……..	1	2	3	4	5
t. Before starting my distance education course(s), I was poorly advised about the self-motivation needed to succeed at distance learning……	1	2	3	4	5
u. Before starting my distance education course(s), I was well advised about the commitment needed to succeed at distance learning……	1	2	3	4	5

	Strongly Disagree	Disagree	Agree	Strongly Agree	Not Applicable
v. I was almost always able to gain access to my distance education course lectures……	1	2	3	4	5
w. I was almost always able to gain access to applicable TAMU network resources (e-mail, course website, etc.) when needed……	1	2	3	4	5
x. I had convenient access to technical assistance/support when needed……	1	2	3	4	5
y. Prior to beginning the course, I was oriented to the technology used in the course……	1	2	3	4	5
z. My technical support questions were answered sufficiently…	1	2	3	4	5
aa. My technical support questions were not answered promptly……	1	2	3	4	5

III. BACKGROUND INFORMATION:

4. Which of the following channels did you use to communicate with TAMU faculty and staff?

	Yes	No
a. Phone……..	1	2
b. E-mail……	1	2
c. U.S. Postal Service……	1	2
d. Fax……..	1	2
e. Meeting with Instructor……..	1	2

5. **OF THOSE USED**, which did you use the most? Rank the ones you used, where 1 = Most Used, 2 = Second Most Used, 3 = Third Most Used, 4 = Fourth Most Used, and 5 = Least Used.

	Rank
a. Phone…….	____
b. E-mail……	____
c. U.S. Postal Service……	____
d. Fax……	____
e. Meeting with Instructor…….	____

6a. Have you ever taken an online course before (at TAMU or anywhere else)?

Yes……	1
No……. (If **no**, skip to ***Question # 7***)	2

6b. If ***yes***, how does this class compare?

Better……	1
About the same…….	2
Worse……	3

7. Did you select to take Distance Education courses because of any of the following reasons?

	Yes	No
a. Time constraints……..	1	2
b. Schedule……..	1	2
c. Interests in self-study……..	1	2
d. Other (PLEASE SPECIFY)……	1	2

8. How did you hear about the Distance Education courses (Circle all that apply)?

	Yes	No
a. Advisor……	1	2
b. Friend……...	1	2
c. E-mail……..	1	2
d. Car Flier……...	1	2
e. Bulletin Board…….	1	2
f. Registration Website……...	1	2
g. Other (PLEASE SPECIFY)…….	1	2

9. How ***likely*** would you be to recommend the Distance Education course to a friend?

Very likely……..	1
Somewhat likely…….	2
Not too likely……..	3
Not at all likely……	4

10. How ***likely*** are you to enroll in other courses that use Distance Education technology?

Very likely……..	1
Somewhat likely…….	2
Not too likely……..	3
Not at all likely……	4

11a. Did you attend one of the orientation sessions?

Yes……	1
No……. (If **no**, skip to ***Section IV***)	2

11b. If ***yes*** (to Question 11a), did you find the orientation session useful?

Very useful……..	1
Somewhat useful…….	2
Not too useful……..	3
Not at all useful……	4

IV. OPEN-ENDED FEEDBACK

Directions: In this section, we ask that you take a few moments to provide some short **written comments** addressing a few key aspects of your distance education learning experience at TAMU. ***Your responses should pertain to the TAMU course in which you are currently enrolled.***

12. Please list any limitations you observed in using the technology (PowerPoint, Audio, Video).

13. List any weaknesses of the course.

14. List any strengths of the course.

15. Please provide any additional comments you feel appropriate and/or any recommendations you believe could help improve the quality of the distance education learning experience for you or your peers:

V. DEMOGRAPHIC INFORMATION:

16. Please indicate your gender:

Male…….	1
Female……..	2

17. How would you rate your skills in the following areas prior to enrolling in the Distance Education courses?

	Poor	Fair	Good	Excellent
a. E-mail skills…….	1	2	3	4
b. Word processing skills……	1	2	3	4
c. Web navigation skills……..	1	2	3	4

18. What classification are you?

Freshman……...	1
Sophomore……	2
Junior…….	3
Senior……	4
Other (PLEASE SPECIFY)……..	5

19. In which college are you enrolled?

Agriculture and Life Sciences…….....	1
Architecture…….....	2
Bush School of Government and Public Service……...	3
Education and Human Development…….	4
Geosciences……...	5
Liberal Arts……	6
Look College of Engineering……	7
Mays Business School……...	8
Science……..	9
Veterinary Medicine…….	10
Non-declared…….	11
Other (PLEASE SPECIFY)……..	12

20. Please indicate your race:

White/Caucasian……	1
Black/African American……..	2
Asian…….	3
Native Hawaiian/Other Pacific Islander……...	4
American Indian/Alaskan Native…….	5
Other (PLEASE SPECIFY)……..	6

21. Please indicate your ethnicity:

Hispanic/Latino/Mexican American……	1
Other…….	2

22. What is your approximate grade point average (one decimal place)?

_____

THANK YOU FOR COMPLETING THIS SURVEY AND FOR YOUR PARTICIPATION IN THIS COURSE!!!!

VITA

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Refereed Articles:

Rasberry, C. N., Chaney, E. H., Housman, J. M., Misra, R., & Miller, P. J. (in press). Determinants of nutrition label use among college students. *American Journal of Health Education*.

Chaney, E.H., Chaney, J.D., & Eddy, J.M. (2005). Utilizing a multi-level approach to support advocacy efforts in the advancement of health education. *American Journal of Health Education*, 37(1), 41-50.

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Textbook Contributions:

Hensleigh, K.E. (2004). Lay health advisors. *Nutrition and Well-Being A to Z*. Detroit, MI: Thomson Gale, 108.

Hensleigh, K.E. (2004). Maternal mortality rate. *Nutrition and Well-Being A to Z*. Detroit, MI: Thomson Gale, 42.

Hensleigh, K.E. (2004). Nutritional deficiency. *Nutrition and Well-Being A to Z*. Detroit, MI: Thomson Gale, 102-104.

Professional Affiliations:

The Society for Public Health Education (SOPHE) (Member 2002-Present)
American Association for Health Education (AAHE) (Member 2004-Present)
Elected as the Student Representative on the AAHE Board of Directors (2005 – Present)

Honors and Awards:

Outstanding Masters Student, College of Human Environmental Sciences, The University of Alabama (2002-2003)
Outstanding Doctoral Student, Department of Health and Kinesiology, College of Education and Human Development, Texas A&M University (2005-2006)