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A Phenomenological Study of the Experiences of Higher Education Students with Disabilities

Allen J. Heindel
University of South Florida, heindel.allen@gmail.com

A Phenomenological Study of the Experiences of Higher Education Students with Disabilities with Online Coursework

by

Allen J. Heindel

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Major Professor: Glenn G. Smith, Ph.D.
Daphne D. Thomas, Ph.D.
Stephen J. Thornton, Ph.D.
Jennifer R. Wolgemuth, Ph.D.

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DEDICATION

It is with gratitude that I dedicate this achievement to my wife, Mary Heindel, my aunt, Marilyn Katzenmeyer, and my late mother, Marion Dawn Allen. In their own ways, each of these wonderful women has shown an unwavering willingness to support me in this pursuit. Without their guidance, inspiration, and support this project would never have reached fruition. They each showed confidence in me when I needed it and helped me to persevere; I hope I can make you proud. I thank you and I love you.

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DEFINITIONS OF TERMS

Accommodation: (see *Reasonable Accommodation*).

Assistive technology: any item, piece of equipment, or product system, whether acquired commercially off-the-shelf, modified, or customized, that is used to increase, maintain, or improve the functional capabilities of individuals with disabilities (Technology Related Assistance for Individuals with Disabilities Act of 1988, 1988).

Asynchronous: a mode of education that does not take place simultaneously, in real time. The instructor may deliver instruction via video, computer, or other means, and the students view and respond at a later time. For example, feedback could be delivered via the web or videotapes, and the feedback could be sent via e-mail messages (Barron, 1999). Common forms of online asynchronous communication include e-mail, blogs, and threaded discussion forums (Thomas and Maddux, 2009).

Cognitive disabilities: a limitation in sensorimotor actions originating in the physical or chemical structures of the brain and producing observable and assessable limitations in routine task behavior. Broadly stated, a limitation of the ability to perceive, recognize, understand, interpret, and/or respond to information. A person with a cognitive disability has greater difficulty with one or more types of mental tasks than the average person. Most cognitive disabilities have some sort of basis in the biology and mental processes is the most obvious in the case of traumatic brain injury and genetic diseases, but even the more subtle cognitive disabilities often have basis in the structure or chemistry of the brain (Allen, 1987).

Cognitive presence: is an exploration phase where learners are gathering, confirming and sharing information from a range of resources. This includes dialogue where learners deconstruct their own experiences, brainstorm ideas and question themselves and others. "The extent to which learners are able to construct and confirm their own meaning through sustained reflection and discourse in a critical community of inquiry" (Garrison, Anderson, and Archer, 2001, p. 11).

convenience sample: results when the more convenient elementary units are chosen from a population for observation. Retrieved March 10, 2010 from http://www.socialresearchmethods.net/tutorial/Mugo/tutorial.htm

Critical discourse: characterized by the integration and analysis of information from multiple sources. Learners use this knowledge to begin to resolve their initial feeling of dissonance experienced from the triggering event. It is here where dialogue with an informed voice and higher order thinking influences proposed future actions and reflection (Lock and Redmond, 2006).

Disability: with respect to an individual, (a) a physical or mental impairment that substantially limits one or more of the major life activities of an individual, (b) a record of such an impairment, or (c) being regarded as having such an impairment (see, *e.g.,* 42 U.S.C. § 12102 (2)(A)). If the individual meets any one of these three tests, he/she is considered to be an individual with a disability for purposes of coverage under the Americans with Disabilities Act (Americans with Disabilities Act, 1990). Retrieved October 2, 2009 from .. Both working and learning are major life activities under the ADA (29 C.F.R. § 1630.2 (i)). Retrieved October 2, 2009 from http://edocket.access.gpo.gov/cfr_2001/julqtr/pdf/29cfr1630.2.pdf.

Distance education: at its most basic level "education [that] takes place when a teacher and student(s) are separated by physical distance, and technology (i.e., voice, video, data, and print), often in concert with face-to-face communication, is used to bridge the instructional gap (Willis, 1995).

Externally heterogeneous: in data analysis, the term used to describe bold and clear differences between categories.

Interaction: for purposes of this study relates to characteristics of a learning environment that supports student communications, shared learning experiences, teamwork, building a sense of community, and promoting an increase in student contacts (Johnson, Aragon, Shaik, and Palma-Rivas, 2000).

Internally homogeneous: in data analysis, the term used to indicate that everything in one category holds together in some meaningful way.

Knowledge in action: is the goal of online collaborative learning experiences. It is the center of the framework and is the culmination of all the work that has occurred previously. Learners apply their knowledge conceptually or within the real world. This should provide opportunities for learners to further explore new questions that emerge from the work and foster the iterative inquiry cycle.

Learning community: in the online environment, is "a general sense of connection, belonging, and comfort that develops over time among members of a group who share purpose or commitment to a common goal". The community within online collaborative learning is initially created through teaching presence where the educator intentionally plans activities that promote social presence and a sense of belonging. All participants within a learning community have a role in sustaining and nurturing the learning community enabling critical discourse that is crucial to collaborative learning (Conrad, 2005, pg. 2).

Motor (*or dexterity) disabilities*: disabilities that affect one's ability to learn motor tasks (moving and manipulating objects) such as tying shoes, walking, writing, etc. To be considered a disability, the problem must cause a person to have motor coordination that is significantly below what would be expected for his/her age, and the problem must interfere with the activities of learning and daily living. Retrieved October 3, 2009 from http://www.about-cerebral-palsy.org/definition/motor-disability.html

Online education: (sometimes referred to as virtual education, internet-based education, web-based education) is characterized by (1) the separation of teachers and learners which distinguishes it from face-to-face education, (2) the influence of an educational organization which distinguishes it from self-study and private tutoring, (3)the use of a computer network to present or distribute some educational content, and (4) the provision of two-way communication via a computer network so students may benefit from communication with each other, teachers and staff (Keegan, 1988).

Physical disabilities: under the first test, test A for "disability", an individual must have a physical or mental impairment. As explained in paragraph (1)(i) of the definition, "impairment" means any physiological disorder or condition, cosmetic disfigurement, or anatomical loss affecting one or more of the following body systems: neurological, musculoskeletal, special sense organs (which would include speech organs that are not respiratory such as vocal cords, soft palate, tongue, etc.), cardiovascular, reproductive, digestive, genitourinary, hemic and lymphatic, skin, and endocrine. It also means any mental or psychological disorder, such as mental retardation, organic brain syndrome, emotional or mental illness, and specific learning disabilities (Americans with Disabilities Act, 1990). Retrieved October 2, 2009 from http://www.ada.gov/reg2.html.

Purposive sample: selected in a deliberative and nonrandom fashion to achieve a certain goal. Retrieved March 10, 2010 from http://www.cmh.edu/stats/definitions/purposive.htm

Reasonable Accommodation: under Title I, a modification or adjustment to a job, the work environment, or the way things usually are done that enables a qualified individual with a disability to enjoy an equal employment opportunity. Reasonable Accommodation is a key nondiscrimination requirement of the Americans with Disabilities Act (ADA). Retrieved February 26, 2010 from http://www.jan.wvu.edu/LINKS/adaglossary.htm.

Satisfaction: relates to perceptions of being able to achieve success and feelings about the achieved outcomes (Keller, 1983).

Structured interview: though also used as a quantitative research method, structured interviews can also be used as a qualitative research methodology (Kvale and Brinkman, 2008). These types of interviews are best suited for engaging in respondent or focus group studies in which it would be beneficial to compare/contrast participant responses in order to answer a research question (Lindlof and Taylor, 2002). Retrieved March 19, 2010 from http://en.wikipedia.org/wiki/Structured_interview.

Sensory disabilities: the term shall include the following:

1. Hearing - The capacity to hear, with amplification, is limited, impaired, or absent and results in one or more of the following: reduced performance in hearing acuity tasks; difficulty with oral communication; and/or difficulty in understanding auditorally-presented information in the education environment. The term includes students who are deaf and students who are hard-of -hearing.
2. Vision - The capacity to see, after correction, is limited, impaired, or absent and results in one or more of the following: reduced performance in visual acuity tasks; difficulty with written communication; and/or difficulty with understanding information presented visually in the education environment. The term includes students who are blind and students with limited vision.
3. Deaf-Blind - Concomitant hearing and visual impairments, the combination of which causes severe communication and other developmental and educational needs.

Retrieved February 26, 2010 from http://www.doe.mass.edu/sped/definitions.html.

Social presence: "the ability of participants in a community of inquiry to project themselves socially and emotionally, as 'real' people (i.e., their full personality), through the medium of communication being used". The online environment needs to be a safe place for participants to express their thoughts and experiences and where all perspectives are valued and accepted to promote sustained critical discourse (Garrison, Anderson, and Archer, 2001, pg. 94).

Structure: for purposes of this study, course structure is measured by assessment of a learning environment that allows students to work at their own pace, quality of the course syllabus, structure of course activities, organization of the content, student input into topics selection, teaching methods, and student assessment (Johnson, Aragon, Shaik, and Palma-Rivas, 2000).

Support: for purposes of this study, support is defined in two ways:

> *Instructor support:* student perceptions of the comprehensiveness and usefulness of feedback, student encouragement, and the instructor being able to help students identify problem areas with their studies;
>
> *Departmental support:* student perceptions regarding the information the department provided to them, inquiring about their learning needs, and providing a communication link between the students and the instructor (Johnson, Aragon, Shaik, and Palma-Rivas, 2000).

Teaching presence: "the design, facilitation and direction of cognitive and social processes for the purpose of realizing personally meaningful and educationally worthwhile learning outcomes." Teaching presence needs to be developed over the course of the project to achieve knowledge in action. It anchors the other six elements of the online collaborative framework (Anderson, Rourke, Garrison, and Archer, 2001, pg. 5).

ABSTRACT

Distance education has the potential to offer a meaningful alternative for students with disabilities. Colleges and universities have opportunities to provide quality online courses to students with disabilities; yet data show these students may often choose to discontinue higher education pursuits. Little is currently known about how students with disabilities experience the distance learning environment or how institutions of higher education. This phenomenological study focuses on the quality of the learning experiences and learner satisfaction of students with disabilities in distance education courses.

The purpose of this study is to investigate 1) how online learning is experienced by students with disabilities, 2) what factors facilitate or inhibit their online learning, and 3) how what instructors do to facilitate online learning is perceived by students with various disabilities. This study examines how students with various disabilities assess the quality of distance education coursework in terms of three constructs: course interaction, structure, and support. Data was gathered via interviews with consenting participants who had affirmatively responded to a study participation solicitation email and completed a brief survey.

Sadly, discussions of topics related to students with disabilities experiences are still rare in the distance education literature. These interview data suggest that, despite having many tasks to which they must attend, more training for instructors is needed on how to work with students with disabilities. The Offices of Students with Disabilities Services and instructors should develop a way to work together, rather than separately, in a proactive rather than reactive

fashion, to better serve the needs of students with disabilities. Further research in this area may allow students with disabilities with online courses in higher education to become more vocal about their needs from their individual perspectives and in their own words, and pave the way for improving the quality of the online learning environment for them.

CHAPTER ONE:

INTRODUCTION

Introduction

According to the U. S. Census Bureau, 100% of the nation's colleges and universities now provide internet access to students (U. S. Census Bureau, 2012). This universal access to the internet, coupled with myriad ideas and information made available has created new challenges and opportunities for educators. With almost seven million students using online technology to access postsecondary courses, distance education has emerged as a viable alternative and supplement to the traditional in-class university experience (Commission on the Regulation of Postsecondary Distance Education, 2013).

The Sloan Foundation found in its 2010 survey of 2,500 colleges and universities that the "21% growth rate for online enrollments far exceeds the less than 2% growth of the overall higher education student population. Over 5.6 million students were taking at least one online course during the Fall 2009 semester; an increase of nearly one million students over the number reported the previous year (Allen and Seaman, 2010). In a five-year period from 2002-2007, the (university where this research study was conducted) has seen a 54% increase in the number of distance course sections offered (Smith, Heindel, and Torres-Ayala, 2008). Nearly 30% of all U. S. higher education students now take at least one online course (Allen and Seaman, 2010). Distance education will continue to be an area of interest for research as colleges aim to improve their levels of services and to serve the students and faculty who participate in such programs

(Instructional Technology Council, 2008). Three-quarters of postsecondary institutions report that the recent economic downturn has increased demand for online courses and programs (Allen & Seaman, 2010). Given the promise of distance education to serve larger numbers of students, higher education institutions are challenged to assure the effectiveness of the students' educational experiences delivered through distance education.

Distance education has the potential to offer a meaningful alternative for students with disabilities. The National Center for Education Statistics (NCES) reports that 10.8% of undergraduate college students identified themselves as having a disability in 2007-2008 (U. S. Census Bureau, 2008). The numbers of students with disabilities participating in higher education continues to grow; however, the graduation rate for college students with disabilities is only half that of their non-disabled classmates (Rutowski and Cocchiarella, 2009). Colleges and universities have opportunities to provide quality online courses to students with disabilities; yet data show these students may often choose to discontinue higher education pursuits. The reasons for their lack of persistence and their retention may include academic failure and/or organizational stereotyping. These reasons, coupled with adult situational factors as family responsibilities and fear of repeating earlier educational experiences, further decrease the likelihood that these students will develop lifelong learning strategies and seek out either formal or informal educational opportunities (LaPlante, Kennedy, Kaye, and Wenger, 1996). Since educational level is closely linked to vocational and economic success, lifelong success for those with disabilities may be linked to the effectiveness of their higher education experiences. This study focuses on the quality of the learning experiences and learner satisfaction of students with disabilities in distance education courses.

Statement of Problem

Despite the increase in online course offerings in higher education (Allen & Seaman, 2010), many question the effectiveness of this mode of learning. While the "No Significant Difference" findings between face-to-face and online distance learning classes in higher education are established in the literature (Barry and Runyan, 1995; Russell, 1999), it is probably accurate to say that a summation of this research to date fails to demonstrate any evidence of any significant performance differences. The problem with "no significant difference" is that it glosses over the differences in the online medium that might be uniquely supportive of particular ways of learning and knowing. Computer-based telecommunications connect people beyond limitations of time and space to promote interactions among people who might not otherwise interact (Swan, 2003). These connections afforded by the technology may be especially important to higher education students with disabilities. This notion is bolstered by a subsequent review which concludes that designing interactions into the distance education courses, whether to increase interaction with the material to be learned, with the course instructor, or with peers, positively affects student learning (Bernard, et al., 2009). As you will read in chapter four, there may be no online courses into which there is no interaction, but there are online courses that offer very little in the way meaningful interactions, either with the course material, with the course instructor, or with peers.

Little is currently known about how students with disabilities experience the distance learning environment or how institutions of higher education and their faculty members can do a better job of facilitating online learning for students with disabilities. Hurst (1996) noted that the lived experience of disabled students has been missing from previous studies (as cited in Fuller, et al., 2004). Seven years later, Tinklin, et al. (2004) pointed out the continued need for such an

emphasis: 'Until institutions consult their disabled students directly they will remain ignorant of the difficulties and barriers faced by disabled students as they go about their daily business.

The focus this study was to understand how students with various disabilities experience online learning. The study sought descriptions of the quality of the online learning environments they experienced; more specifically, to understand the degree of interaction, structure, and support, which are characteristics of quality online learning environments. These component parts of distance learning were explored from the unique perspective of students with various disabilities. These unique perspectives can be helpful to instructors in discovering how they might better facilitate online learning for students with various disabilities. This study identified ways to improve the quality of the distance learning experience for these students and to inform faculty of strategies to more effectively support the unique learning needs of students with various disabilities. A primary challenge is how online courses can provide a satisfying and effective learning environment for all students. Research done by Open Institute of the United Kingdom and Rochester Institute of Technology's National Institute for the Deaf indicates online learning is effective for students with hearing disabilities (Long and Bell, 2006). Based on information gathered from higher education students across disability groups, this study will contribute to the scant body of research investigating whether underserved populations, e.g., students with disabilities, find success in coursework delivered through distance education.

Purpose of Study

The purpose of this study is to investigate 1) how online learning is experienced by students with disabilities, 2) what factors facilitate or inhibit their online learning, and 3) how what instructors do to facilitate online learning is perceived by students with various disabilities.

This study examines how students with various disabilities assess the quality of distance education coursework in terms of three constructs: course interaction, structure, and support.

Kim-Rupnow, Dowrick, and Burke (2001) investigated, through an analysis of the literature, whether the increase of distance education programs led to better access and better outcomes for students with disabilities. The findings of these authors was positive, however inconclusive due to the lack of studies in the field of online learning, specifically as relates to students with disabilities in higher education. Questions of how to structure coursework to make courses accessible to learners with disabilities, how to accommodate particular support needs, and how the institution and the instructor can accommodate students with disabilities need to have informed answers. This study is important to providing information that will be valuable to improving the distance education learning experiences of students with disabilities in higher education settings and to provide insights to higher education institutions and faculty members about improving the distance education experiences for students with disabilities.

Theoretical Rationale

Online learning has evolved from a teacher-directed and static content environment to a constructivist environment that is learner-centered and collaborative (Lock and Redmond, 2006). A range of theoretical constructs discussed in recent years are relevant to the understanding of distance education and the distance learner. Three such concepts deriving from Cognitive Theory are (1) interaction (Hillman, Willis, and Gunawardena, 1994; Johnson, Aragon, Shaik, and Palma-Rivas, 2000; Kirby, 1999; Moore, 1989; Moore and Kearsley,1996; Murphy, Drabier, and Epps, 1998; Vrasidas and McIsaac, 1999), (2) transactional distance (Jung, 2001; Moore, 1990; Saba and Shearer, 1994), and (3) social learning (Feenberg and Bellman, 1990; Hackman and Walker, 1990; McIsaac, 1993; Short, Williams, and Christie, 1976). These three constructs

provide a framework for how learning occurs in distance education. Also, interaction and social learning theory, both key components of transactional distance, have been shown to be effective ways to improve learning outcomes.

Other relevant constructs include collaboration and constructivism. Effective collaboration "involves interactions with other people, reciprocal exchanges of support and ideas, joint work on the development of performances and products, and co-construction of understandings through comparing alternative ideas, interpretations, and representations" (Wiske, Franz, and Breit, 2005, p. 105). The underlying principle of constructivism is that learners "construct their own understandings of the world in which they live" (Sergiovanni, 1996, p. 38). "Social constructivism reminds us that learning is essentially a social activity, that meaning is constructed through communication, collaborative activity, and interactions with others (Swan, 2005, p. 5). Some researchers perceive online learning as more equitable and more democratic than classroom learning (Harasim, 1990; Levin, Kim, and Riel, 1990) because it allows for multiple points of view.

The Community of Inquiry model is consistent with a social constructivist view of learning (Lapadat, 2002), which states that knowledge is not handed down by instructors, but is constructed by students as they engage course content and one another in discourse. However, as with any other pedagogy, there are limits to the effectiveness of learning communities. Some students do not like learning with others, and some faculty find collaborating with students and other faculty to be difficult. Nevertheless, there is ample evidence to support the notion that learning communities enhance student learning (Cross, 1998).

Importance of Study

1. Larger numbers of online courses in higher education settings require significant research so that institutions can improve quality.

2. 700+ students at the research study site are identified as disabled. Data can improve their experiences and possibly retention.

Research Questions

How do students with various disabilities assess the quality of their learning experience in terms of course interaction, structure and support provided in online learning environments?

1. How do students with various disabilities experience online learning?

2. How do students with various disabilities describe quality in terms of interaction, structure, and support?

3. What factors are reported by students with various disabilities that facilitate or inhibit their learning in an online environment?

4. How do students with disabilities perceive what instructors do to better facilitate their students' online learning?

Delimitations

This study was limited to postsecondary students with disabilities at one southeastern university who had registered with the Office of Students with Disabilities Services. As such, generalization is necessarily limited to similar groups of students.

This was a qualitative research study utilizing phenomenology to examine the experiences with online learning of students with various disabilities in higher education. Qualitative research tends to ask more open-ended questions, exploring the implications of each. Further, qualitative research values local, idiosyncratic findings without any claim of statistical generalizability (Paul, Kleinhammer-Trammill, and Fowler, 2006). Phenomenology is a philosophy as well as a methodology for understanding lived experience.

The identification of participants for a study of students with disabilities required special attention to protecting the privacy of the participants. Following the recommendation of the Registrar's Office, the researcher worked with the Director of the Office of Student Disability Services to solicit students with disabilities who would volunteer to be study participants. Due to federal privacy laws, permission for the inclusion of students with disabilities in this research study was contingent upon direct e-mail responses from students with disabilities. The necessary approval was subsequently granted by the Institutional Review Board (IRB).

Limitations

One possible limitation of this research study is the sample size; there were 12 interview participants. Small sample sizes are typical in the literature regarding students with various disabilities in higher education. The sampling of students with disabilities to participate in this study was purposive. In purposive sampling, the sample is judged on the basis of the purpose and rationale for each study and the sampling strategy used to achieve the purpose of the study. The trustworthiness, meaningfulness, and insights generated from qualitative inquiry have more to do with the information-richness of the cases selected and the observational/analytical capabilities of the researcher than the sample size (Mugo, 2000).

The sample was necessarily drawn from students with disabilities who volunteered for the study. Although this research may be limited by a small sample from a single university in the southeastern United States, I suggest that they are, if not generalizable, strongly indicative of the experience of students with disabilities in postsecondary online courses. Of course, replications of this study should be performed to assess the reliability of its findings, and to add to the available data regarding students with disabilities in postsecondary online courses.

Table 1. Distance Learning Constructs

Theory - constructs	Importance of concept to study	Studies reviewed
Transactional Distance Theory	Interaction with content, instructors, and classmates affects student learning. Course structure and dialog can reduce the pedagogical problems created by transactional distance.	Moore, 1990; Saba and Shearer, 1994; Jung, 2001
Social Learning Theories		
interaction	Exchange of ideas and information between learner and teacher, and among learners facilitates learning. Increased satisfaction may depend on quality and quantity of interactions. Interactions may lead to more engagement among students and learning at a higher level. Designing interaction into distance education courses positively affects student learning.	Moore, 1989; Hillman, Willis, and Gunawardena, 1994; Moore and Kearsley, 1996; Murphy, Drabier, and Epps, 1998; Vrasidas and McIsaac, 1999; Johnson, Aragon, Shaik, and Palma-Rivas, 2000; Bernard, et al., 2009
social learning	Learning is an increasingly social process. Distance learning provides opportunity for participation. Students rate asynchronous discussion as highly interactive and social.	Short, Williams, and Christie, 1976; Feenberg and Bellman, 1990; Hackman and Walker, 1990; McIsaac, 1993
collaboration	Distance learning may enhance collaboration. Collaboration involves sharing and generating new knowledge through interactions with others. Co-construction of understandings through comparing alternative ideas, interpretations, and representations may result.	Wiske, Franz and Breit, 2005
constructivism	Meaning is constructed through communication, collaborative activity, and interactions with others.	Sergiovanni, 1996; Lock and Redmond, 2006

Conclusion

This chapter began with a brief overview of the growth of distance education. Chapter one has also provided a general explanation of this study, a statement of the problem, the purpose of the study, the theoretical framework for the study, the research questions driving this study, delimitations and limitations, and relevant definitions important to the study. The chapter has also suggested the possibility that distance education, properly structured and delivered, may provide a quality learning environment for one or more categories of higher education students with disabilities. The remaining chapters of this dissertation will describe literature relevant to this proposed study and research methods for this study. Chapter two reviews literature in a manner that describes what is currently known about distance education as relates to students with disabilities, outlining the theoretical framework that was used as the basis of this study. Chapter three contains a detailed description of the methods of research to be used in this study. This includes how study participants were selected, how data was collected, and an overview of the data analysis methods.

CHAPTER TWO:

LITERATURE REVIEW

Introduction

A review of the literature will be organized around educational research that relates to the study focused on the following research questions:

1) How do students with various disabilities experience online learning?

2) How do students with various disabilities describe quality in terms of interaction, structure, and support?

3) What factors are reported by students with various disabilities to facilitate or inhibit their learning in an online environment?

4) How do students with various disabilities perceive what instructors do to better facilitate their students' online learning?

Chapter two begins with a general review of the limited amount of literature related to students with disabilities and their experiences in higher education settings, including both findings generally related to higher education, then more specifically online learning and a brief summary of accessibility. Next follows a brief outline of the literature related to effective online learning environments beginning with transactional distance, which has been traditionally identified as a problem for all distance learners, including students with disabilities. This section will be followed by literature related to quality distance learning environments including interaction, collaboration and social learning, and finally the Community of Inquiry model, which suggests the linkages between interaction with content, other learners, and the instructor

are all parts of the learning process. In each discussion of the components of quality distance learning environments, the literature and findings for all students will be related as well as the few specific studies relating to students with disabilities. Following this general discussion is a review of the literature related to support for students with disabilities in the online learning environment with emphasis on assistive technologies. Next, there is a brief discussion of findings related to learner satisfaction in online learning and how that learning can best be measured. Finally, the summary of literature ends with a section on prior experience with computers and number of online courses taken in distance education and the relationship to learner satisfaction and perceived outcomes.

Fuller, et al. (2004) studied the experience of higher education students with disabilities in the United Kingdom. Results suggest that there are certain barriers within higher education and that four key areas of support are necessary to assure a quality learning experience. First, there need to be a variety and flexibility in approaches to teaching and learning. Second, assessments need to be varied and modified based on need. Third, access to information needs to be provided for both faculty and for the disabled students themselves. Finally, the actions and attitudes of staff in relating to students with disabilities are important. Though Fuller's findings are not specific to distance education, these findings are relevant to the experience of students with disabilities in higher education settings and relate to the structure and support necessary to assure their success.

Research suggests that the unique characteristics of the online medium may both help and hinder certain kinds of learning (Gibson, 1996). A better understanding of those characteristics that aid and those that hinder would serve to improve the learning effectiveness of online instruction. In a 2005 study, Muilenberg and Berge sought to examine the perceptions of online

students in an effort to increase faculty ability to design instruction. The researchers wished to identify barriers, issues, and success factors from the students' perspective that might affect learning outcomes (e.g., learning effectiveness, learner attitudes, and motivation). A large-scale exploratory factor analysis study was conducted (N=1,056) that determined the underlying constructs that comprise student barriers to online learning. The eight factors found were: (1) administrative issues, (2) social interaction, (3) academic skills, (4) technical skills, (5) learner motivation, (6) time and support for studies, (7) cost and access to the Internet, and (8) technical problems (Muilenberg and Berge, 2005). Independent variables that significantly affected student ratings of these barrier factors included: gender, age, ethnicity, type of learning institution, self-rating of online learning skills, effectiveness of learning online, online learning enjoyment, prejudicial treatment in traditional classes, and the number of online courses completed (Muilenberg and Berge, 2005).

The experiences of students with disabilities in higher education settings

The literature involving students with disabilities remains scant at best. Most of the research in this field has centered on adults in a rehabilitation setting. The studies that do exist are largely descriptive, for the purpose of influencing policy, and thus have a limited scope. Extant studies are also largely qualitative; tools used include surveys, case studies, and observations. Emergent themes include student and faculty perceptions of accommodations for disabilities (both physical and cognitive), and the impact upon the student.

Reviewing literature more specific to higher education students with disabilities and online learning yielded few studies. In a comprehensive search, Kinash, Crichton, and Kim-Rupnow (2004) found only forty-three publications released between 2000-2003 that were situated at the intersection of online learning and disability. Of those forty-three, twenty-two

(51%) are didactic, presenting guidelines and how-to information in regard to a single topic, or combination of topics, including accessibility, communication tools, instructional design, pedagogy, policy, teaching strategies, and universal design. The next highest category (thirteen, or 30%) yielded only descriptions of vendor products and/or educational programs. Only five articles (10%) could be counted as research.

Two of the five articles presented as research were conference presentations by the lead author concerning preliminary results from the same research project of interactively interviewing online learners who were blind (Kinash, 2002; Kinash, 2003). Of the three remaining articles, one centered on how an online support staff assisted a visually-impaired instructor to teach online (Tobin, 2003), and two articles were selected for review by the authors because they employed a survey approach to data gathering. Cook and Gladhart's study (2002), entitled "A survey of online instructional issues and strategies for postsecondary students with learning disabilities," offers guidance in accessible course design. Many of the references contained in Cook and Gladheart's study were from articles discussing either the issue of online learning or disability, but did not consider the two issues in tandem (Kinash, Crichton, and Kim-Rupnow, 2004).

Kim-Rupnow, Dowrick and Burke's (2001) analysis of the literature was driven by the question "Do the increase of distance education programs and use of advanced technology indicate better access and better outcomes in higher education for persons with disabilities?" (p. 25). Technology has sufficiently advanced to bring a distance classroom to the home of anyone with a computer connected to a modem and a (high-speed) telephone line. Also, the format of distance education has greatly increased access to higher education for students with disabilities, regardless of types and levels of disability (Kim-Rupnow, Dowrick, and Burke, 2001). Findings

by these researchers focused on the importance of necessary support for all students, like prior experience with computers, while some findings were tailored toward supporting students with disabilities specifically, such as technical assistance to make content accessible (Kim-Rupnow, Dowrick, and Burke, 2001).

Although advancements in technology may now allow educators to better serve students with disabilities, there is still a need to better understand the impact of distance education, specifically educational outcomes, as relates to students with disabilities (Coombs and Banks, 2000). It seems critical that higher education institutions restructure their online course offerings to meet the diverse needs of students. Newell and Debenham (2005) suggest that distance learning may be the only practical means of access to higher education for those with severe disability or chronic illness. A major reason for students with disabilities enrolling in various job-related training programs is to earn a career-related certificate or degree (Haugen and King, 1995; Leutke-Stahlman, 1998; Noren, 1995). To guide such restructuring efforts, researchers have called for a formative and summative evaluation of distance education programs at institutional, regional, and national levels at regular intervals (Bramble and Rao, 1998; Moore, 1999).

A recent study has attempted to inform universities about the educational outcomes attained by students with disabilities in higher education settings. A questionnaire was administered to 2,351 graduates who were disabled students in distance learning programs, in the United Kingdom (Richardson, 2009). Findings indicate graduates of distance education programs rate these programs lower; however, a significant number of the graduates obtain degrees, an indicator of high levels of achievement. Another study (Kim, Lee, and Skellenger, 2012) compared the overall level of satisfaction of 101 graduates of distance education vs.

campus based programs in university personnel preparation program in visual impairment. Of the graduates surveyed 12% had visual impairments, 5% had other disabilities and the rest had no disabilities. Findings indicate there is no significant difference between graduates of on campus programs when compared with distance education delivery systems. Yet, these students reported lower levels of faculty to student interactions and student to student interactions in the distance education environment. Similarly, several studies report no significant difference with respect to satisfaction when comparing traditional and distance education programs (Abdous and Yen, 2010; Skylar, et.al., 2005; Thurmond, et al., 2002).

Accessibility

No review of the literature related to the experience of students with disabilities would be comprehensive without looking at the issue of accessibility. Accessibility is a general term used to describe the degree to which a system is usable by as many people as possible without modification (Nielsen, 2000). More broadly stated, accessibility means designing environments with the aim of making them accessible by everyone, people with handicaps included, with a minimum number of problems (Ommerborn and Schuemer, 2002). The accessibility of computer-mediated information and the convenience of distance delivery in online learning have the potential to "level the playing field" for students with disabilities (Coombs and Banks, 2000), offering greater accessibility for those who may not be able to navigate the difficulties evident in attending face-to-face classes on campus. The disability rights movement advocates equal access to social, political and economic life which includes not only physical access, but access to the same tools, organizations and facilities for all, regardless of disabilities.

One of the key concepts in the right to education is access; access to the means to fully develop as human beings as well as access to the means to gain skills, knowledge, and credentials. This is an important perspective through which to examine the solutions to access enabled by Open Educational Resources and online learning (Geith and Vignare, 2008). Nevertheless, full accessibility does not appear to be experienced by learners with disabilities (Magrane, 2000). Most online environments are still not accessible to students with disabilities or those using assistive technologies (First and Hart, 2002). People with disabilities are half as likely to have Internet access as those without disabilities: 21.6% versus 42.1% (U. S. Department of Commerce, 2000). As access to cyberspace is surveyed each year, the gaps between groups are growing larger, even though the number of individuals gaining Internet access increases across all groups (U. S. Department of Commerce, 2000). For purposes of this research, computer accessibility refers to the usability of a computer system by people with disabilities or age-related limitations (Nielsen, 2000). It is largely a software concern. However, when hardware or software is used to customize a computer for a disabled person, that equipment is known as Assistive Technology.

In studying the technology used for web access, Schmetzke (2001) investigated the degree to which distance education websites were accessible. Checking 219 websites using Bobby, a website accessibility evaluation tool (web address: http://www.cast.org.bobby), Schmetzke found that only 15% of the beginning webpages were free of accessibility errors. His findings showed that the technology affects the accessibility of a web-based course (Schmetzke, 2001). Schmetzke also performed a literature review on the obstacles that people with disabilities encounter in an online environment. He found that only a few articles addressed this issue, and that these articles were written from more of a technological perspective. When

Congress passed the Americans with Disabilities Act (ADA) in 1990, the World Wide Web did not exist as it does today. Most electronic information was displayed as text on the computer screen, which is easily read with screen readers. It seems fair to say that legislators and web designers were not considering poor web design issues back in 1990. Thus, it is no surprise that the original ADA, while mandating equal access to an institution's resources, does not specifically address the design of web-based information services. However, subsequent interpretations of the ADA do address this issue (Schmetzke, 2001).

In their 2008 study, Geith and Vignare examined Open Educational Resources in terms of acess, using the "4-A Framework of the Human Rights Obligations" by Tomasevski (Tomasevski, 2001). The 4-A's emphasize rights *to* as well as rights *in* education, and include availability, accessibility, acceptability, and adaptability. Under the 'right *to* education,' access can be defined in terms of the availability of schools and teachers. Also under the 'right *to* education,' access can be defined the elimination of legal, administrative and financial barriers including obstacles to access posed by fees, distance and schedule, as well as discriminatory denials of access. Thus, the right *to* education depends on both the availability of key infrastructure and its obstacle-free accessibility. However, these alone will not guarantee the full range of human rights obligations. Education must also be acceptable and adaptable, to both individuals and communities (Geith and Vignare, 2008).

Tomasevski's fourth "A" is adaptability of education to all constituencies, including people with disabilities. This dimension helps to define access in terms of its obligation to adapt to the unique needs and cultures of a wide range of users, such as minorities, indigenous people, workers, people with disabilities, and migrants (Geith and Vignare, 2008). Burgstahler believes online distance learning can be one of the easiest ways to accommodate students with

disabilities. Text-based, asynchronous tools such as e-mail, discussion boards, and listserv distribution lists generally pose no special barrier for students with disabilities. If a prerequisite for a course is for the student to have access to electronic mail, students with disabilities can choose an accessible electronic mail program to use. A student who requires assistive technology to access e-mail will have resolved any issues before enrolling in an online course (Schenker and Scadden, 2005). Common characteristics of an accessible online course for students with disabilities might include captions for media, spoken version of text, allowing course content to be paused, restarted or repeated, or providing color images in text format (World Wide Web Consortium, 2010).

The quality of effective online learning environments

Understanding quality online learning environments requires a review of literature related to the problem presented by transactional distance, alleviated in pedagogical practice by interaction, collaboration and social learning. The Community of Inquiry model, which brings together the concepts of interaction, collaboration, and social learning, is also discussed.

Transactional Distance

The concept of transactional distance (TD) was first offered by Moore (1990) and has been the focus of numerous studies. Moore and Kearsley (1996) refer to transaction in distance learning as "the relationship between instructors and learners in special environments where they are geographically separated from one another and must use a resulting set of pedagogical approaches to compensate" (pg. 200). TD has been shown to be complex, encompassing such variables as academic and social interactions, as well as course structure and learner autonomy. The TD in online course offerings is so great that the teaching methods used

cannot be just like those used in the face-to-face classroom; pedagogical approaches must be adapted for the distance learning environment. TD is a problem for all distance education students, but especially for students with disabilities who may have access issues, difficulties with communication, or may be marginalized by instructors or other students. The proposed study provides an opportunity to understand more fully the extent to which distance learning provides an opportunity to provide a quality learning environment and increase the satisfaction and learning outcomes for those with various disabilities.

Of importance in reducing TD in online courses are two variables - dialog and structure. Dialog is the extent to which, in any educational program, learner and educator are able to respond to each other; structure describes the rigidity or flexibility of the program's educational objectives, teaching strategies, and evaluation methods (Moore, 1991). Recent research has attempted to find ways to measure the structure and dialog elements of TD. Chen and Willits (1999) conducted an exploratory factor analysis to determine the factors that make up dialog and structure, and learner autonomy. They found that dialog consisted of three dimensions: (a) in-class discussion, (b) out-of-class discussion, and (c) out-of-class electronic discussion. This study will add to the limited knowledge about the extent to which students with disabilities in the higher education setting engage in substantive interactions in the distance education environment which have the potential to lead to greater satisfaction, and ultimately, higher rates of retention.

Interaction

The concept of interaction has been important in education historically. According to John Dewey (1938), the goal of education is to develop reflective, creative, responsible thought. Dewey believed that an optimal educational process required two key processes: interaction and the continuity of interaction. In the online environment, dialog may include both the interaction

between and among the students or interaction between the instructor and the student. The extent and nature of dialog is determined by the educational philosophy of the individual or group responsible for the design of the course, by the personalities of the teacher and learner, by the subject matter of the course, and by environmental factors (Moore, 1991). Moore (1989) suggested three kinds of interactions important to students: Learner-content, learner-instructor, and learner-learner. Interaction is defined by Moore and Kearsley (1996) as an "exchange of information, ideas, and opinions between and among learners and teachers, usually occurring through technology with the aim of facilitating learning" (pgs. 128-132).

Two recent studies by Maor and Volet (2007) and Persico, Pozzi, and Sarti (2010, as cited in Nandi, et al., 2012) support the work of theorists. Findings indicate that interactivity is important to student learning in the online environment. Earlier studies found in the literature related to online interaction (Kirby, 1999; Moore, 1989; Moore and Kearsley, 1996; Murphy, Drabier, and Epps, 1998; Vrasidas and McIsaac, 1999) provided descriptions of the various formats used, the instructor's experiences, and participant's reactions. A research study by Mikulecky (1998) evaluated the level of interactions and determined the critical components of online interactions. Though there are numerous options available for online interactions, those described most often in the literature included discussion board, e-mail, and listservs (Tallent-Runnels, et al., 2006).

Interactions with instructors are critical in all learning environments; they are perhaps more critical online (Mazzolini and Maddison, 2003; Picciano, 1998; Sher, 2009; Swan, et al., 2000; Thurmond and Wambach, 2004; Weiner and Mehrabian, 1968). Since there is no classroom meeting in which students may connect with their instructors, instructor-student interactions must be made explicit. In 2004, Albion and Ertmer (as cited in Nandi, et al., 2012)

further explained facilitation with instructors by defining facilitation by instructors in online courses as the ways in which faculties teach, guide, assess and support student learning. In fully online courses, the relationship of interaction to perceived success appears to be a very important one. In a 2007 study, three researchers from Florida State University examined the relative importance of 19 instructor actions in an online course. They found that instructors believe that learner performance is likely tied to instructor actions that are focused on course content and provide both models both proactive and reactive information to learners about their ability to demonstrate knowledge of course material, but learner satisfaction is more likely tied to learners' feeling that their interpersonal communication needs are met. Learners rated items focused on communication needs and being treated as individuals as most important, aligning their stated preferences with the instructors' perceptions of what actions are most satisfying to learners (Dennen, Darabi, and Smith, 2007). Mazzolini and Maddison (2007, as cited in Nandi, et al., 2012) suggest somewhat differing perspectives between the appropriate role of instructors when comparing perceptions of students and instructors themselves. Students believed instructors should ask follow up questions, introduce new ways of thinking or concepts, answer student questions as soon as possible, and provide feedback. Instructors reported they spent their time most frequently answering student questions, asking leading questions and asking questions to continue the discussion thread.

Both students and faculty typically report increased satisfaction in online courses depending on the quality and quantity of interactions (Hackman and Walker, 1990; Shea, Fredericksen, Pickett, Pelz, and Swan, 2001; Swan, 2001). In Spring 2000, students enrolled in courses in the SUNY (State University of New York) Learning Network (SLN) completed a survey that asked them to comment on their satisfaction with and learning in this online learning

environment (Shea, Fredericksen, Pickett, Pelz, and Swan, 2001). The survey consisted of twenty-five multiple choice questions that utilized a 4-point response scale to assess degrees of satisfaction and learning. Demographic data were collected on variables such as student age, gender, academic level, distance from campus, and previous computer skills. These demographic data were analyzed against items that assessed student attitudes about topics such as (1) level of interaction with classmates, (2) level of learning compared to a traditional face-to-face (F2F) classroom, (3) overall satisfaction with their specific course, and (4) overall satisfaction with online learning in general.

Results from Shea, Fredericksen, Pickett, Pelz, and Swan (2001) were divided into four categories: (1) course satisfaction, (2) reported learning, (3) participation, and (4) relationship of learning and satisfaction with other variables. The results reported support the notion that online learning is best viewed through a focus on its social nature. Regarding course satisfaction, 79% of students were satisfied with their online course regardless of background, while only 11% reported any level of dissatisfaction. Regarding reported learning, 78% of students felt their level of learning was very high in the online environment, while only 11% felt they did not learn a great deal. Regarding participation, more than twice as many students felt they participated as much or more online (47%) than in a traditional f2f classroom (17.4%). Regarding the relationship of satisfaction and learning with other variables, when course instructors provided prompt feedback of high quality, significant correlations were found with high satisfaction and high levels of learning. The same can be said of faculty who provided clear expectations of how to proceed in the course successfully. When students received clear expectations, significant correlations were found with high levels of satisfaction and perceived learning.

Vrasidas and McIsaac (1999) examined the nature of interaction in an online course from both student and teacher perspectives. The researchers looked at a graduate online course in the use of telecommunications for instruction at a major southwestern university. Students were graded in five areas: assignments, discussions, a midterm examination, a final research paper, and subsequent presentation of the final research paper. There were eight scheduled discussions during the course moderated by students; four took place face-to-face and four occurred online. Data analysis showed that the four major factors influencing interaction were structure, class size, feedback, and prior experience with online learning (Vrasidas and McIsaac, 1999).

A paper entitled "Building Knowledge Communities: Consistency, Contact and Communication in the Virtual Classroom" reported very high correlations and relationships between interaction in online courses and student satisfaction (Swan, et al., 2000). Researchers from the SUNY (State University of New York) Learning Network reached these conclusions based on online questionnaires (N=1,406) completed at the end of the Spring 1999 semester. The Spring 1999 survey contained eight demographic questions and 12 questions relating to student satisfaction, their perceived learning, and activity in the courses they were taking.

Survey results suggested that almost half of the students who were enrolled in online courses lived within thirty minutes of the campus; of these students, both distance and time were factors in their expressed preference for and satisfaction with online learning. A second finding showed large numbers of students (88%) reported high levels of confidence in their computer skills, perhaps explaining the high levels of interaction and learner satisfaction found (Swan, et al., 2000).

Recent studies by Romiszowski and Mason (2004), Stahl (2004), Schrire (2006), and Mandernach, Dailey-Herbert, and Donnelli-Sallee (2007) (as cited in An, Shin, and Lim, 2009)

found that positive outcomes such as knowledge construction, critical thinking and problem solving are found to be enhanced by asynchronous communication in blended and online courses that require communication among students and students with their instructors. Several researchers note that students perceive online discussion as more equitable and more democratic than traditional classroom discussions (Boshier, 1988; Harasim, 1990; Levin, Kim, and Riel, 1990; Siegel, Dubrovsky, Kiesler, and McGuire, 1998). In fact, course discussions are one of the most influential features of online courses. Wells (1992) asserts that subjects that require brainstorming, discussion, and reflection are best suited to the online format. This may be due to the unique nature of online conversations; namely the fact that all students have a voice with no students being able to monopolize the conversation. The asynchronous nature of the discussion makes it impossible for even the instructor to control. Also, because it is asynchronous, online discussion allows students a chance to reflect on their classmates' responses before creating their own and submitting them to the rest of the class. This helps to foster an atmosphere of mindfulness by the students, thus resulting in more reflection in the course overall (Swan, et al., 2000). These factors may prompt students with disabilities to greater levels of interaction with their fellow students and instructors, and thus they may function more effectively in their coursework. Studies by Bhattacharaya (1999) and Davidson-Shivers, Tanner, and Muilenburg (2000) (as cited in An, Shin, and Lim, 2009) suggest that students prefer asynchronous online discussion to synchronous discussions because it allows time for students to provide thoughtful reactions to questions posed and insights to one another.

Although potentially more time consuming (Dumont, 1996), asynchronous Internet-based courses may offer the easiest means to increase student involvement in these courses. This asynchronous delivery method allows for greater access to distance education for students with

disabilities. Asynchronous courses do not require students and instructors to be online simultaneously at any given point, which makes it easier for students to set their own schedule for participating in the course. People who may be more introverted in a group setting may participate more in an electronic format, perhaps due to perceptions of relative anonymity (Dyson, 1997), and enhanced social presence or reduced self-presentation anxiety (Corston and Colman, 1996; Gefen and Straub, 1997; Strauss, 1996). A recent study (Nandi, et al., 2012) attempted to assess the quality of discussion in fully online courses through analysis of discussion forum activities in two fully online computing courses at a large university in Australia. Findings indicate that neither fully student-centered, nor fully instructor-centered discussion is ideal; rather a combination of both approaches is advantageous to positive outcomes.

Relevant to students with disabilities in higher education are findings that suggest online interactions may lead to more engagement among students and to learning communities which ultimately can lead to student learning at higher levels of Bloom's taxonomy (Bloom, et al., 1956). For example, students who feel a sense of connectedness rather than isolation are very likely better prepared to become more actively involved in course learning, which results in higher order thinking and knowledge building (Bober and Dennon, 2001; Engstrom, Santo, and Yost, 2008). When comparing face-to-face classrooms with asynchronous learning environments, Swan (2003) concludes that asynchronous learning environments appear to be particularly supportive of experimentation, divergent thinking, and complex understandings. Thus, increased interaction is a particularly important element for the success of students with disabilities in higher education and may result in greater learner satisfaction.

Online communities may also provide opportunities for students with disabilities to be positively engaged with other learners. The asynchronous online environment offers students with disabilities additional time to develop ideas and formulate responses than may be afforded them in traditional face-to-face classes, as well as assistive devices which may enhance their abilities to communicate. With universal participation now expected in most online courses, in the form of minimum numbers of weekly discussion board postings, the unique communication tools afforded by the online environment provide students with disabilities with more ways to take a meaningful role in interactions. All online students, especially those with disabilities, should be made to feel secure and self-confident if they are to request assistance from instructors and have a meaningful rapport with them and with their fellow students. To further promote interaction, instructors should interact with students with disabilities about their individual situations and learning processes so they can provide students with individualized support (Schenker and Scadden, 2005).

Collaboration / Social Learning

The process of "sharing and generating new knowledge together with one's peers" (Slotte and Tynjälä, 2005, p.193) as part of a learning community is known as collaboration. Effective collaboration "involves interactions with other people, reciprocal exchanges of support and ideas, joint work on the development of performances and products, and co-construction of understandings through comparing alternative ideas, interpretations, and representations" (Wiske, Franz, and Breit, 2005, p. 105). In education, small group activities have traditionally been used for their benefit to distance learning. The Internet shows great potential for enhancing collaboration between people and the role of social software has become increasingly relevant in recent years.

Haythornthwaite (2006) suggested that characteristics of online collaboration include "knowledge creation, group learning, development and maintenance processes, computer-mediated communication, and presentation of these issues in online learning environments" (p. 7). Key facets of online collaborative learning include the seamless integration and infusion of technology into the classroom (Good, O'Connor, and Luce, 2004). However, Riel (1996) stressed that online communities are defined by the relationships between the participants rather than the technology being used. The development of an online community for collaborative learning through the use of discussion boards is extremely beneficial for all students, but for students with disabilities in particular it offers greater opportunity for shared experiences (Gerrard, 2007).

Two recent studies, by Cho and Lee (2008) and Staggers, Garcia, and Nagelhour (2008) (as cited Aitkin, 2010), report that collaborative learning through use of online groups are found to be successful distance learning processes. Earlier studies had pointed to the possibilities that Internet-based instruction provides greater potential for collaborative learning (Fussel and Benimoff, 1995; Leidner and Jarvenpaa, 1995). This enhanced collaboration may occur for a variety of reasons. It has been suggested that the opportunity for simultaneous participation provided by the medium eliminates a student's need to compete to be recognized by the instructor and fellow students (Gallupe, et al., 1992; Strauss, 1996). Students who may be less demonstrative and outspoken in a group setting may participate more in an online format. This increased participation may be due to perceptions of relative anonymity (Dyson, 1997) and enhanced social presence or reduced self-presentation anxiety (Corston and Colman, 1996; Gefen and Straub, 1997; Strauss, 1996). Therefore, more introverted students can participate without competing for attention, and more extroverted students no longer have to wait to be

recognized to participate in the discussion (Strauss, 1996; Yellen, Winniford, and Sanford, 1995). In online courses, students must "line up" to be recognized and have a chance to participate. This allows students time to observe and reflect before commenting, which puts them on even ground with the "participational bullies" in the class (Finley, 1972). These characteristics of Internet-based courses would then help make participation more equitable across participants (Dede, 1990; Hiltz, Johnson, and Turoff, 1986; Strauss, 1996). A recent study (Zydney, deNoyelles, and Seo, 2012) explored the potential of the use of a protocol, a strategy often used in face-to-face interactions, to guide online participation. Findings indicate the use of the protocol in asynchronous discussion led to more shared group cognition, more student ownership of the discussion, and empowered students to facilitate themselves lessening faculty work load.

The unique characteristics of the online learning environment may well allow students with disabilities to benefit from more opportunities to interact with fellow students and to build relationships with fellow students that might not otherwise be afforded students with disabilities. Due to the unique nature of online conversations, namely the fact that all students have a voice with no students being able to monopolize the conversation, Swan, et al. (2000) found that most students believed their level of interaction with their instructor, with their peers, and with the course materials was as high or higher than in traditional face-to-face courses. Student comments showed that in many cases, respondents felt that the asynchronous format actually supported interactivity and involvement (Swan, et al., 2000).

Sustained online conversations can be the foundation of a classroom community that invites students to participate and engage thoughtfully, without fear of marginalization due to discrimination, and confidently, with a sense of mutual respect and responsiveness to differences

(Bender, 2003; Meyers, 2008). Online discussions can be more collegial and informal than those which occur in the face-to-face classroom. Students often feel more willing to disclose information (e.g., personal experiences, beliefs) online, likely due to the anonymity provided by the Internet. Online forums allow students to express themselves thoughtfully and without interruption, which is particularly significant for those who are at greater risk for marginalization in class due to their gender, race, social class, or even personality style (Bender, 2003).

The Community of Inquiry model

Another model which assists in understanding quality online learning experiences is Garrison, et al.'s (2000) Community of Inquiry model of online learning. The model of the Community of Inquiry assumes that learning occurs through the interaction of three core elements: cognitive presence, social presence, and teaching presence (Garrison, Anderson, and Archer, 2000). Cognitive presence in this model is equated with interaction with content, teaching presence with interaction with instructors, and social presence with interaction among students. This Community of Inquiry model provides a graphic representation of how all three forms of interaction work together to support online learning. The Community of Inquiry model resonates with a social constructivist view of learning (Lapadat, 2002), which states that knowledge is not handed down by instructors, but is constructed by students as they engage course content and one another in discourse. In asynchronous learning networks, informal conversations and other social behaviors can be used to create and maintain a sense of community (Hoadley and Pea, 2002).

In the previously described Community of Practice model, Rourke, et al. (1999) regarded social presence as one of the three fundamental "presences" that support learning, the other two being cognitive presence and teaching presence, defining social presence as "the ability of

learners to project themselves socially and affectively into a community of inquiry." Social presence allows the learner to present him/herself to others as a "real person". Social presence, though an affective outcome, is of importance to cognitive learning.

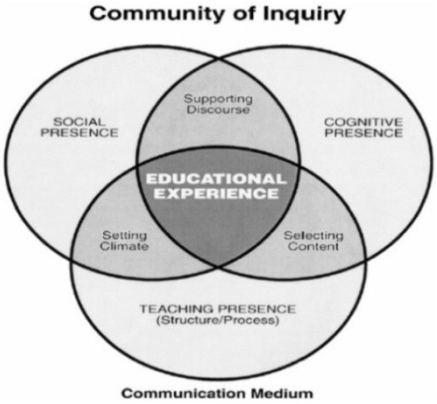

Figure 1. Community of Inquiry Model

Social presence is a contributor to students' success in the educational experience. Students in the interaction find the group experience enjoyable and fulfilling and are willing to remain in the community of learners, thus indirectly facilitating the process of critical thinking carried out in the community of learners (Garrison, Anderson, and Archer, 2000). This is of particular importance to students with disabilities; the online environment offers students with disabilities an opportunity to be anonymous, with respect to their disability and equal, without fear of marginalization. Collaboration among learners becomes an essential part of the cognitive outcomes experienced by learners since cognition cannot be separated from social context, an observation provided by John Dewey (1959) over 100 years ago.

Support

With universal participation now expected in most online courses, acquiring needed support services may provide the motivation for students with disabilities to take a meaningful role in interactions and to maintain their enrollment in higher education and ultimately to

graduate. Retention rates for students with disabilities must be improved if these students are to function maximally in job and life roles. This study will provide data to understand the supports that will allow students with varying disabilities to remain meaningfully engaged in higher education.

With the numbers of distance education courses growing rapidly, the need for postsecondary education institutions to improve access and accommodations for students with disabilities is important, but not sufficient by themselves to guarantee their success. Many other factors influencing success are reported including self-determination of the learner, prior technology experience related to computer use, clear career goals, and individualized plans targeted to the learner's needs (Kim-Rupnow, Dowrick, and Burke, 2001), but key among these many factors is the support services that are provided. Support centers on the perception of the student with disability on the usefulness of what is provided them (Massachusetts Department of Elementary and Secondary Education, 2010). Other themes especially relevant to students with disabilities are the availability of technical assistance to facilitate content accessibility (examples include transcribed text and interpretation), formats that are not effectively translated by text readers (such as tables and graphics), university supports extended to students with disabilities (such as access to home computers and assistive devices), and existence of an individualized education (and/or accommodation) plan for students with disabilities (Kim-Rupnow, Dowrick, and Burke, 2001).

Support services are responsive to a wide variety of needs. Students with disabilities receive assessments for assistive technology, assistance and/or referral for funding and external services (e.g., not available through a university disabilities services office), help with study skills and organizational strategies, extension of course contract dates, and/or alternative

methods for writing examinations (Moisey, 2004). Support services appear to be a critical factor in addressing the needs of students with disabilities. Students with disabilities who received more types of support services tended to have somewhat more success in terms of course completions (Moisey, 2004). The findings from a paper entitled "Legal Obligations and Workplace Implications for Institutions of Higher Education accommodating Learning Disabled Students" concurred with this premise, stating that when colleges and universities offer support services that help students in finding accessibility solutions, students exceed their academic goals at a higher rate than in institutions where students (and faculty) are not supported in finding alternate learning and teaching methods (Levy, 2001).

The assessment of students with disabilities is another important issue that directly affects their academic persistence, and thus their retention in higher education (Waterfield and Parker, 2006). Accommodations refer to a change in the way a test is administered, or a change in the testing environment (U. S. Department of Education, 2010). Alternative strategies for assessment serve to minimize the impact of a student's disability at the time of assessment, allowing for greater accommodation of the functional differences that arise as a function of the student's disability - their methods of communication, learning styles, and any relevant physical considerations. Such allowances will allow students with disabilities to better demonstrate their abilities. Without these allowances, assessment results are more likely to reflect the impact of the student's disability and prevent them acquiring independence in their learning. Over time, such alternative strategies will "level the playing field" for all students with disabilities and probably will have a constructive impact on student retention. Accommodations provided for assessments are generally grouped into the following categories: (1) presentation (e.g., repeat directions, read aloud, large print, Braille, etc.), (2) equipment and material (e.g., calculator,

amplification equipment, etc.), (3) response (e.g., mark answers in book, scribe records response, point, etc.), (4) setting (e.g., study carrel, student's home, separate room, etc.), and (5) timing/scheduling (e.g., extended time, frequent breaks, etc.) (U. S. Department of Education, 2010). To illustrate this point, consider that the most popular tool for synchronous online group discussions is the electronic chat room, such as Elluminate. Such chats may present a barrier to a student with a disability. To be active in such discussions, students must express themselves immediately, without delay. This is a demand that cannot be met equally by all students. A visually impaired student might have difficulty reading and writing quickly enough to meaningfully participate in the discussion. A dyslexic student might feel shy about expressing themselves in a written medium. An asynchronous medium, such as a discussion board, might be an appropriate accommodation for some students (Schenker and Scadden, 2005).

Assistive Technology

One of the main forms of support provided to students with disabilities is assistive technology. Technological advances are beginning to create opportunities for success for in areas previously not considered appropriate for a person with a disability to pursue through the use of mediating devices. A working definition of assistive technology includes a broad range of items that individuals use, either physically or cognitively, to increase efficiency in task completion. Assistive technologies also allow for greater interaction, helping students with disabilities to more easily communicate with others. The requirements of universal participation are the norm in many online courses; therefore more participation may be facilitated as some barriers to communication are removed for students with disabilities through assistive devices. With regard to assistive technology use, previous life experiences and exposure to devices became two of the most salient issues.

Several studies (Bashir, Goldhammer, and Bigaj, 2000; Goodman, Tiene, and Luft, 2002; Riemer-Reiass and Wacker, 2000) have shown that combined with support, persons using assistive technology have started to obtain educational successes and gain competency in social and vocational skills while increasing potential for additional benefits, including a more positive self-image, a broader range of school and work possibilities, and an increased understanding of individual rights and responsibilities within a society, and a developed capacity to exercise them (Bedford, 2005).

For many adults with disabilities, assistive technology is a new concept. Before the Individuals with Disabilities Act of 1973, accommodations were seldom, if ever, discussed for students with disabilities. Although the IDEA made accommodations mandatory, technology was not discussed as part of a typical individual education plan (IEP) until a couple of decades later (Scherer, 1993). Therefore, many adults with disabilities never experienced the realization of new capabilities with the use of technological devices and subsequent academic achievement. Also, many individuals have experienced the onset of disabilities later in their adult years, due to accident, illness, or deterioration of an existing condition. As a result, the concept of using technology to enhance the educational experience can be foreign or even frightening for individuals who have little experience with technology, thus further "marginalizing" them from the higher education experience. Caution must be exercised to insure that individual experiences and social factors which might influence a person's desire or ability to use the technology are considered.

There are a wide range of disability considerations to which one must attend. Students with visual disabilities may be totally blind or partially sighted. Those who are totally blind use synthetic speech or Braille displays to read materials presented on computer screens. Specialized

adaptive software, or screen readers, are used to read text and to navigate through documents and the Internet. Students who have partial sight may magnify text on the screen to allow them to read it more easily. Selection of colors and contrast of images and background also help many students with visual disabilities (Schenker and Scadden, 2005).

Students with hearing loss may be hard of hearing or totally deaf. Those who are hard of hearing normally are able to use their own hearing aids and listening devices to amplify audio presented by their computer. Those students who are totally deaf need alternative methods for materials presented in audio. For example, the audio from a web-based video must be accompanied by a text transcript of the speech or a version containing sign language images that are accessible on demand (Schenker and Scadden, 2005).

Students with learning disabilities may have difficulty processing materials or discussions presented by their computer. Use of a screen reader, like those used by blind students, often alleviates such difficulties (Schenker and Scadden, 2005).

Learner Satisfaction

Satisfaction can be defined as student perceptions of being able to succeed and feelings about the achieved outcomes (Keller, 1983). Several studies have explored student satisfaction related to online learning (Abdous and Yen, 2010; Debourgh, 1998; Enockson, 1997; Johanson, 1996; McCabe, 1997; Skylar, et.al, 2005; Thurmond, et al., 2002). Of these, the most recent studies, specifically those by Abdous and Yen (2010), Skylar, et.al (2005) and Thurmond, et al., (2002) (as cited in Kim, Lee, and Skellenger, 2012), report no significant difference with respect to satisfaction when comparing traditional and distance education programs. In an earlier study assessing an online course from a university, Enockson (1997) found greater student satisfaction with online courses because they offered the students more flexibility and responsiveness to their

learning requirements and expectations. Johanson (1996) reached a similar conclusion through her study of an online classroom; she found that student satisfaction is positively impacted when (a) the technology is transparent and functions both reliably and conveniently, (b) the course is specifically designed to support learner-centered instructional strategies, (c) the instructor's role is that of facilitator and coach, and (d) there is a reasonable level of flexibility. Conversely, Debourgh found in his 1998 study that student satisfaction depends more on the quality of the instructor and the instruction than on the technology. These findings are supported by the previously mentioned study entitled "Building Knowledge Communities: Consistency, Contact and Communication in the Virtual Classroom," which revealed that, when asked to indicate their main reason for taking an online course, 37% chose "conflicts in personal schedule" and 15% cited "family responsibilities" (Swan, et al., 2000). Thus, the flexibility afforded by online courses with respect to time management results in greater student satisfaction.

Studies of learner satisfaction have been rather limited investigations of post-training perceptions of learners, asking how satisfied they were with their learning experience. In order to improve these rather limited measures of learner satisfaction, and subsequently theory and practice relative to online coursework in higher education, this construct must be explored through a variety of lenses (Johnson, Aragon, Shaik, and Palma-Rivas, 2000).

A recent study (Kim, Lee, and Skellenger, 2012) compared a distance education delivery mode with traditional on campus coursework when studying the level of satisfaction of 101 graduates related to a university personnel preparation program in visual impairment. There were found to be no significant difference in the overall level of satisfaction; however respondents reported lower levels of faculty-student and student to student interaction in the distance education environment.

An example of a validated approach to assessing a deeper degree of satisfaction by Jegede, Fraser, and Curtin (1995) identified eight components of effective learning environments: interactivity, institutional support, task orientation, teacher support, negotiation, flexibility, technological support, and ergonomics. This study examined five of the eight components studied by Jegede, Fraser, and Curtin: interactivity, institutional support, teacher support, flexibility, and technological support.

Picciano (2002) suggests an alternative approach. Ultimately, student perceptions of their learning may be as good as other measures because these perceptions may be the catalysts for continuing to pursue other coursework and other learning opportunities, or perhaps, unfortunately, choosing not to continue with their education (Picciano, 2002). Course completion and attrition rates are also thought to be important measures of student performance, especially relative to adult and distance learning (Hanson, et al., 1997; Moore, 1997; Phipps and Merisotis, 1999; Picciano, 2001). The course completion rates of students with disabilities are typically lower than those of other students (Geith and Vignare, 2008). Consistent with Picciano, the survey in this study asked participants to self-report on the overall level of satisfaction they felt with their online coursework. Similarly, in the interview, subjects were asked specific questions related to their satisfaction, and subjects were asked to discuss their record of retention in online coursework.

Prior Computer Experience / Number of Classes Taken

There are varying findings in terms of learner satisfaction and the impact of prior experience with computers and number of online courses taken. One of the variables that does not appear to inhibit online learning is student's computer skill prior to taking the course (Shea,

Fredericksen, Pickett, Pelz, and Swan, 2001). Students who reported low levels of computer skills before taking the course were no less likely to report high levels of learning and satisfaction in the course; in fact, the opposite appears true. The same may be said of online course experience. Students who had taken multiple courses through the SUNY Learning Network were no less likely to report high levels of learning and satisfaction than students who had never before taken an online course. Again, the opposite appears true, with students who took multiple courses rating their level of learning and satisfaction as higher than those who had never before taken an online course.

The findings from the 2001 study by Shea, et al. run counter to findings by Vrasidas and McIsaac whose 1999 study, as previously mentioned, found that students who were new to online learning were not comfortable participating in synchronous online discussions; they felt more comfortable in the asynchronous chat sessions because they could think and reflect on their ideas. These findings are in agreement with several other earlier studies (Anderson and Lee, 1995; Comeaux, 1995; Ritchie, 1993). Results from the previously mentioned Muilenberg and Berge (2005) study found that if one looks at the number of courses a student has previously taken, there is a marked decline in perceived barriers for students who have taken only one online course compared to those who have taken no online classes. This may be because students who take online courses already perceive lower barriers; or it may be that taking just one online course allowed students to either overcome the barriers or to see that they had overestimated the barriers. The number of online courses completed had a moderate effect on perceived barriers to social interaction, administrative instructor issues, and learner motivation; there was a small association between the number of courses taken and support for online learning (Muilenberg and Berge, 2005).

Kim-Rupnow, Dowrick, and Burke (2001) wrote an article documenting then-current examples of individuals and institutions to investigate factors related to exemplary learners and providers of distance education to students with disabilities. The authors believed their investigation would inform efforts at postsecondary institutions to plan proactively for accessible distance education courses, thus contributing to the potential of students with disabilities to obtain higher education and subsequent employment at a rate comparable to that of the general population (Kim-Rupnow, Dowrick, and Burke, 2001). The authors found only ten papers that fit their search criteria, with only two papers reporting the learner's reasons for taking distance education courses; case examples of the experiences of students with disabilities in higher education were characterized as "difficult to find" (Kim-Rupnow, Dowrick, and Burke, 2001). In the studies found, one of the most common learner characteristics was prior experience with computers. The authors stated that most of the papers indicate computers were used in the course, but that no specific difficulties were encountered that owed to the lack of technological experience among the students (Kim-Rupnow, Dowrick, and Burke, 2001).

This chapter provided a review of the literature related to the experiences of students with disabilities in higher education, quality online learning environments students with disabilities, support issues for students with disabilities in the online learning environment with emphasis on assistive technologies, and finally brief discussions of learner satisfaction and the impact of prior experience with computers and number of online courses taken on learner satisfaction and perceived outcomes. Table 2 provides an overview of these constructs and how they impact this proposed study.

Conclusion

This chapter has provided an overview of the research regarding distance education in the higher education setting; findings from the few specific studies pertaining to the experiences of several components that contribute to the quality of the online environment, beginning with the pedagogical issues in the online learning environment created by transactional distance. The chapter continued with findings relating to how the transactional distance can be narrowed and the quality of the learning environment impacted, by interaction, collaboration, social learning theories, and the Community of Inquiry model. Next, the section on the importance of supports for students with disabilities was followed by information on assistive devices provided students with disabilities in the online environment. This explanation was followed by brief discussions of findings in the literature related to learner satisfaction and prior experience with computers and number of online courses taken.

Table 2. Importance of Constructs to Study

Theory - constructs		Importance of concept to study		Studies reviewed
Students with Disabilities		There continue to be gaps in the research involving students with disabilities in higher education.		Kim-Rupnow, Dowrick and Burke, 2001; Kinash, Crichton and Kim-Rupnow, 2004
Accessibility		While enrollment of students with disabilities in colleges and universities has increased, few have been able to graduate and successfully gain employment. Common characteristics of an accessible online course include captions, spoken word narration, color images in text format, and ability to pause course content.		Magrane, 2000; Nielsen, 2000; First and Hart, 2002; Ommerborn and Schuemer, 2002; World Wide Web Consortium, 2010
Components of Effective Online Learning Environments				
Transactional Distance		Transactional distance refers to "a concept describing teacher-learner relationships when the parties are separated by space and time" (Moore, 1993). Attempts must be made to reduce transactional distance through dialog ("that humans in communication are engaged actively in the making and exchange of meanings, not merely about transmission of messages" (Evans and Nation, 1989, p. 37) and structure ("the variable that examined issues of students being allowed to work at their own pace, quality of the course syllabus, structure of class activities, organization of the content, student input in the topics selection, teaching methods, and student assessment" (Johnson, Aragon, Shaik, and Palma-Rivas, 2000, p. 40). TD is a problem for all distance education students, but especially for students with disabilities who may have access issues, difficulties with communication, or may be marginalized by instructors or other students.		Evans and Nation, 1989; Moore, 1990; Moore, 1991; Moore, 1993; Moore and Kearsley, 1996; Chen and Willits, 1999; Johnson, Aragon, Shaik and Palma-Rivas, 2000
Interaction		Both students and faculty typically report increased satisfaction in online courses depending on the quality and quantity of interactions.		Dewey, 1938; Bloom, et al., 1956; Weiner and Mehrabian, 1968;

Table 2. (Continued)

Theory - constructs	Importance of concept to study	Studies reviewed
Interaction (continued)	With universal participation now expected in most online courses, in the form of minimum numbers of weekly discussion board postings, the unique communication tools afforded by the online environment provide students with disabilities with more ways to take a meaningful role in interactions. Interactions with instructors are critical in all learning environments; they are perhaps more critical online. Interactivity is important to student learning online. Positive outcomes such as knowledge construction, critical thinking and problem solving are enhanced by asynchronous communication in blended and online learning courses that require communication among students and students with their instructors. Students prefer asynchronous online discussion to synchronous discussions because it allows time to formulate thoughtful reactions to questions posed and insights to one another. Neither fully student-centered, nor fully instructor-centered discussion is ideal; rather a combination of both approaches is advantageous to positive outcomes. Facilitation by instructors in online courses is the ways in which faculties teach, guide, assess and support student learning. Students believed instructors should ask follow up questions, introduce new ways of thinking or concepts, answer student questions as soon as possible, and provide feedback. Instructors reported they spent their time most frequently answering student questions, asking leading questions and asking questions to continue the discussion thread.	Moore, 1989; Moore, 1991; Moore and Kearsley, 1996; Mickulecky, 1998; Murphy, Drabier and Epps, 1998; Picciano, 1998; Bhayttacharaya, 1999; Kirby, 1999; Vrasidas and McIsaac, 1999; Davidson-Shivers, Tanner and Muilenberg, 2000; Swan, Shea, Fredericksen, Pickett, Pelz and Maher, 2000; Bober and Dennon, 2001; Dziuban and Moskal, 2001; Hartman and Truman-Davis, 2001; Shea, Fredericksen, Pickett, Pelz and Swan, 2001; Bender, 2003; Mazzolini & Maddison, 2003; Swan, 2003; Albion and Ertmer, 2004; Romiszowski and Mason, 2004; Stahl, 2004; Thurmond & Wambach, 2004; Schrire, 2006; Tallent-Runnels, et al., 2006; Mandernach, Dailey-Herbert and Honnelli-Sallee, 2007; Maor and Volet, 2007; Mazzolini & Maddison, 2007; Engstrom, Santo and Yost, 2008; Meyers, 2008; Sher, 2009; Persico, Pozzi and Sarti, 2010; Nandi, et al., 2012

Table 2. (Continued)

Theory - constructs		Importance of concept to study		Studies reviewed
Collaboration/ Social Learning		The development of an online community for collaborative learning through the use of discussion boards is extremely beneficial for all students, but for students with disabilities in particular it offers greater opportunity for shared experiences. The unique characteristics of the online learning environment may well allow students with disabilities to benefit from more opportunities to interact with fellow students and to build relationships with fellow students that might not otherwise be afforded students with disabilities. Collaborative learning through use of online groups are found to be successful distance learning processes. Use of a protocol in asynchronous discussion leads to more shared group cognition, more student ownership of the discussion, and empowered students to facilitate themselves, lessening faculty workload.		Dewey, 1959; Hiltz, Johnson and Turoff, 1986; Dede, 1990; Gallupe, et al., 1992; Fussel and Benimoff, 1995; Leidner and Jarvenpaa, 1995; Yellen, Winniford and Sanford, 1995; Corston and Colman, 1996; Riel, 1996; Strauss, 1996; Good, O'Connor and Luce, 2004; Slotte and Tynjälä, 2005; Wiske, Franz and Breit, 2005; Haythornthwaite, 2006; Gerrard, 2007; Cho and Lee, 2008; Staggers, Garcia and Nagelhour, 2008; Zydney, deNoyelles and Seo, 2012
Community of Inquiry model		In keeping with a social constructivist view of learning, the model shows that knowledge is not handed down by instructors, but is constructed by students as they engage course content and one another in discourse. Online environment offers students with disabilities an opportunity to be anonymous, with respect to their disability and equal, without fear of marginalization.		Rourke, et al., 1999; Garrison, Anderson and Archer, 2000; Hoadley and Pea, 2002; Lapadat, 2002
Support		Support services appear to be a critical factor and are a need for students with disabilities as well as for the faculty and staff members who work with them. Support centers on the perception of the student with disability on the usefulness of what is provided them. Support for students with disabilities may also take the form of alternative assessments. The assessment of students with disabilities is another important issue that directly affects their academic persistence, and thus their retention in		Kim-Rupnow, Dowrick and Burke, 2001; Fuller, 2004; Moisey, 2004; Waterfield and Parker, 2006; Richardson, 2009; MA Department of Elementary and Secondary Education, 2010

Table 2. (Continued)

Theory - constructs		Importance of concept to study		Studies reviewed
Support (continued)		higher education. Significant numbers of students with various declared disabilities obtain degrees.		
Assistive Technology		One of the main forms of support provided to students with disabilities is assistive technology. Technological advances are beginning to create opportunities for success for in areas previously not considered appropriate for a person with a disability to pursue through the use of mediating devices. More participation may be facilitated as some barriers to communication are removed for students with disabilities through assistive devices.		Scherer, 1993; Bashir, Goldhammer and Bigaj, 2000; Riemer-Reiass, Marti and Wacker, 2000; Goodman, Tiene and Luft, 2002; Bedford, 2005
Learner Satisfaction		Studies of learner satisfaction have been rather limited investigations of post-training perceptions of learners, asking how satisfied they were with their learning experience. If these limited measures of learner satisfaction, and thus online education theory and practice, are to be improved, this construct must be explored through a variety of lenses. Student perceptions of their learning may be as good as other measures because these perceptions may be the catalysts for continuing to pursue other coursework and other learning opportunities, or perhaps, unfortunately, choosing not to continue with their education. Retention and attrition rates are important student performance measures, especially as relates to distance learning for adults. No significant difference in learner satisfaction between traditional and distance education programs, though lower levels of interaction between faculty/student and student/student in distance education.		Keller, 1983; Jegede, Fraser and Curtin, 1995; Johanson, 1996; Enockson, 1997; Hanson, et al., 1997; McCabe, 1997; Moore, 1997; Debourgh, 1998; Phipps and Merisotis, 1999; Johnson, Aragon, Shaik and Palma-Rivas, 2000; Picciano, 2001; Picciano, 2002; Skylar, et al., 2005; Thurman, et al., 2002; Abdous and Yen, 2010; Kim, Lee and Skellenger, 2012

Table 2. (Continued)

Theory – constructs		Importance of concept to study		Studies reviewed
Effects of prior experiences with both computers and online coursework		Online learning does not appear to be inhibited by the students' computer skill prior to taking the course. Students who were new to online learning were not comfortable participating in synchronous online discussions; they felt more comfortable in the asynchronous chat sessions. If one looks at the number of courses a student has previously taken, there is a marked decline in perceived barriers for students who have taken only one online course compared to those who have taken no online classes. One of the most common learner characteristics was prior experience with computers; most students indicated computers were used in their course, but that no specific difficulties were encountered that owed to the lack of technological experience.		Ritchie, 1993; Anderson and Lee, 1995; Comeaux, 1995; Vrasidas and McIsaac, 1999; Kim-Rupnow, Dowrick and Burke, 2001; Shea, Fredericksen, Pickett, Pelz and Swan, 2001; Muilenberg and Berge, 2005

CHAPTER THREE:

METHOD

Introduction/Overview of Qualitative Methodology

This chapter describes the research approach used in this qualitative descriptive study. The purpose of this research was to gather data related to the experiences of higher education students with disabilities enrolled in online learning, and to provide information that will be valuable to improving the effectiveness of learning experiences of students with disabilities in higher education settings.

The focus of this study was to understand how students with various disabilities experience online learning. The interview protocol sought descriptions of the quality of the online learning environments they experienced. A phenomenological research methodology was chosen because, according to Giorgi (2012), "phenomenology wants to understand how phenomena present themselves to consciousness and the elucidation of this process is a descriptive task" (p. 6).

Phenomenology

Phenomenology may refer to either a research method or a philosophy (Crewell, 2003; Morse, 1991) Edmund Husserl (1859-1938) is credited with founding phenomenology (Zolnierek, 2011). Departing from scientific tradition, Husserl believed that subjectivity of the

immediate experience to be the source of knowing (Koch, 1995). He wished to "return things to themselves" through description (Husserl, 1970, p. 252; Smith and Fowler, 2006).

There are several schools of phenomenology; Cohen and Ornery (1994) have identified three: (1) eidetic or descriptive, guided by the work of Husserl, (2) hermeneutics, also referred to as interpretive or existential phenomenology, guided by the work of Heidegger, and (3) the Dutch (Utrecht) school of phenomenology, which combines descriptive and interpretive phenomenology and draws on the work of van Manen and others (Dowling and Cooney, 2012). As a research method, phenomenology is an approach that attempts to understand the hidden meanings and the essence of an experience as well as how participants make sense of an experience.

For this research study, I have chosen a descriptive phenomenological methodology as defined by Giorgi (1989). In descriptive phenomenology, Giorgi combines the philosophy of Husserl with the methodical, systematic and critical criteria of science to produce a methodology that assists the researcher in identifying and understanding the psychological essences, patterns, and structure of an experience. Giorgi (1997) concisely states "Phenomenology thematizes the phenomenon of consciousness, and, in its most comprehensive sense, it refers to the totality of lived experiences that belong to a single person" (p. 2).

Phenomenological research seeks understanding of the meaning and significance of a particular phenomenon as it is lived (van Manen, 1990). Researchers such as Giorgi (1985) and Van Manen (1990) have applied these ideas to pedagogy and other areas of social sciences (Smith and Fowler, 2006). Also, part of phenomenological method consists of distrusting any method, and it involves deconstructing the various theoretical perspectives, assumptions, and conceptualizations that prevent us from interpreting experience as we live it, pre-reflectively

(van Manen, 2002). Phenomenological writing aims to engage the reader in the phenomenon itself; to render living experience immediately sensible, near and recognizable. The researcher is charged with using words to draw the reader (and the writer him- or herself) closer and "into" the experience itself (van Manen, 2006). Phenomenological research should consider the following principles:

- Nature of conscious experience
- Intentionality of directed action
- Person in context
- Situated human experience

(Smith and Fowler, 2006)

Conscious experience is one of the most basic principles of phenomenology. According to van Manen (1990), "to be conscious is to be aware, in some sense, of some aspect of the world" (p. 9). Since phenomenology deals with examining a specific phenomenon as experienced by individuals, it is important to consider the nature of conscious experience and its potential impact on research. Rather than some monolithic entity, conscious experiences may be more usefully understood as dynamic and nuanced interactions with the world around us (Smith and Fowler, 2006). Within the range of our experiences with a phenomenon, our consciousness regarding the experience may function on multiple levels. At any given time, while participating in an activity or experience, there may be aspects of the phenomenon for which we are fully conscious, semi-conscious, or even completely unconscious (Smith and Fowler, 2006).

The actual discrete components (physical, psychological, emotional, etc.) that comprise an authentic experience of a phenomenon are nearly innumerable. Given this vast array of potential elements that represent the "experienced truth" of a phenomenon, individuals attend to

selected portions of the entire experience and communicate this abridged narrative to the researcher. This is an important point about what I heard from the participants in interviews. It is meaningful for the researcher to realize that from an infinite number of possible narratives with which the participant could communicate their experience, they chose their particular narrative as being representative of their "experienced truth."

In this study I attempted to uncover the "experienced truth" of a sample of higher education students with various disabilities in relation to on line coursework. Through the interview process I delved into their experiences, in particular, seeking to understand their perspectives on the interaction they had with other learners and with their professors in the on line environment. Also I sought to understand the students' experiences of how support was offered and given by instructors, and from the university department charged with providing services to students with disabilities. Throughout the interviews I observed students' verbal and non-verbal responses and used follow-up questions to gain a deeper understanding of their experiences.

The second principle of phenomenology is the concept of intentionality. Not to be confused with the more common definition meaning "the performance of a planned action," "intentionality" as introduced by Brentano (1889) and Husserl (1927) suggests that every human experience and action is directed toward something in the world (Pollio, et al., 1997). As a phenomenological concept, intentionality is the act of forming an inseparable connection with the world (van Manen, 1990), and serves as a frame for understanding the nature of the experienced event.

To be successful in the higher education environment requires a student with a disability to exhibit the will to access and use the support that is made available. Of interest in this study

was each student's proactivity in accessing the accommodations necessary to be successful in the online coursework. Similarly, I was interested in uncovering the extent to which the students were able to remain motivated to complete the online coursework despite difficulties they may have encountered. I also delved into whether the students had ever dropped an online course, and asked in what ways they thought the availability of online coursework had influenced their willingness to continue their education.

The third principle of phenomenology allows for the importance of individual context. Pollio and colleagues (1997), speaking about the interplay between context, individuals, and consciousness, said "What seems to be the case is that we learn and relearn who we are on the basis of our encounters with objects, ideas, and people … what we are aware of in a situation reveals something about who we are (pg. 8)." The phenomenological researcher understands this value and listens to the participant's interview responses attempting to understand the narrative of the phenomenon that is being communicated as also being about the person "behind" the narrative.

Listening to the responses of each of the students in this study provided a window into how each student had coped with online coursework and how the higher education environment had been experienced by each of them. Given the student's individual disability such as blindness or attention deficit disorder, his/her response in the interview provided me with a deeper understanding of the challenges the particular disability presented.

The fourth principle of phenomenology is the "situatedness of the human experience." Pollio and colleagues (1997) said "The situatedness of human experience, however, requires us to emphasize not only that there is a situation but that situation is significant only in the unique

way it is experienced by the person (pg. 15)." The phenomenological researcher is interested in the person and the meaning embedded in his/her context.

In this research I worked toward gathering phenomenological data related to the unique perspective of a student with a particular disability and his/her experience with online coursework at a large southeastern university. My line of interview questions and follow-up questions were designed to gain data related to accessibility, to interaction in the on line environment with other students and/or instructors, as well as the role of course structure and support services offered to the student. These data may inform faculty and the department charged with supporting students with disabilities as to ways in which the services may be extended or improved in this particular context.

Self as Researcher

My major is Instructional Technology, and I believe that online coursework using asynchronous tools may benefit students with disabilities significantly resulting in better learning outcomes. Further, I think students with disabilities may engage in higher-level thinking when using asynchronous tools, and that online communities provide opportunities for students with disabilities to be positively engaged with other learners. The old notion that those with disabilities are "defective" and "in need of fixing" should not be perpetuated within institutions of higher learning. Many individuals with disabilities have been denied the full menu of educational benefits through programmatic barriers which have been created via these dominant beliefs that Hedlund (2000) described as "collectively shared notions and normatively expressed expectations" (p. 769) of minority cultures through the devaluing of opposing ideas. As a result, opinions and needs within the disability community may go unheard by higher educators and

administrators operating from a mainstream paradigm. It seems critical that higher education institutions restructure their online courses to meet the diverse need of students with disabilities.

Technology can now connect people beyond the limitations of time and space to promote interactions among people who might not otherwise have the opportunity. I believe the relatively recent development of smart phones and tablet computers, for example, suggests a desire for greater portability than is afforded by a desktop or laptop computer. I think this has, in turn, fed the current popularity of social platforms such as Facebook or Twitter. This seems to suggest that students now desire instant access, to be able to interact anywhere, anytime with those in their circle. Such recent technological developments may provide opportunities for students with disabilities to be positively engaged with other learners.

My own experiences with online education were mostly as a student; though I did serve as a Teacher's Assistant for an online class taught by my Major Professor. I enjoyed them for the most part, but was struck by how diligent one must be to simply get answers or clarification to questions, let alone sustain a meaningful conversation with an instructor or classmate. In a face-to-face (F2F) class, one can just verbally offer a comment or ask a question, but in an online class, a student must sometimes be quite persistent, especially if no one responds to them. The asynchronous nature of the interactions, though allowing for a flexible schedule, a key feature of online education, may also be a shortcoming. If we accept that interaction in online courses is largely asynchronous, and that interaction in online courses is, more often than not, still thought of as "not being enough" by students, one might infer that asynchronous forms of communication may not lead to in-depth interaction.

I became interested in this topic for my research study after observing students with disabilities in face-to-face courses I took in my Master's and Ph.D programs. Deaf students had

people signing for them in class; generally there were two signers, one to provide relief to the other over the course of a three-hour class session. Seeing this was my first exposure to student accommodations. Witnessing what my classmates with disabilities had to do to function in this F2F class gave me pause; I observed the greater degree of difficulty with such seemingly routine activities as taking accurate notes, communicating with others, getting clarification on difficult questions these students experienced. I then began to consider the challenges my classmates with disabilities faced in an online course.

My mother's health issues, specifically Multiple Sclerosis, also influenced my desire to pursue unique combination of major and cognate, and subsequently this research. As her condition progressed, from halfway across the country, we were able to keep in touch via Skype software and an inexpensive web camera. I am grateful for the happiness these technological advances gave her and the time together, albeit virtual, that they afforded us. I began to better understand the possibilities for the computer as a tool to afford greater interaction and connection to those with disabilities.

Participants

This phenomenological study focused on data obtained from a purposeful sample of students with disabilities enrolled in one or more online courses at a large southeastern university. A common approach within education research, this purposeful sampling technique is often used when the characteristics of a specific group of individuals matches the attributes of the phenomenon being studied (McMillan and Schumacher, 2006). The identification of participants for a study of students with disabilities requires special attention to protecting the privacy of the participants. This researcher investigated appropriate procedures through contact

with the university Registrar's Office. Following the recommendation of the Registrar's Office, the researcher worked with the Director of the Office of Student Disability Services to solicit students with disabilities who would volunteer to be study participants. Due to federal privacy laws, permission for the inclusion of students with disabilities in this research study was contingent upon direct e-mail responses from students with disabilities. The necessary approval was granted by the Institutional Review Board (IRB). A reproduction of the e-mail message that I received to grant approval is provided in Appendix A. I have typed out the email message, rather than include a picture of the email printout, to preserve the anonymity of the institution at which this study was conducted. An example of the e-mail message that was sent out to solicit the participation of students with disabilities is provided in Appendix B.

Eighteen students responded to the solicitation email. Of these, four students either (1) subsequently declined to be interviewed, (2) revealed that they had taken no online courses in their academic careers, or (3) revealed that they were not registered with the Office of Students with Disabilities Services. As such, these six students were removed from consideration for this study. Consequently, there were 12 study participants. As a group, these 12 study participants had the following characteristics: Seventy-five percent of study participants were female, and sixty-seven percent were white. The remaining thirty-three percent self-identified as Hispanic/Latino (17%), Black (9%), and Other (9%). Thirty-three percent of study participants self-identified as having blindness/low vision, and thirty-three percent self-identified as having hearing loss. Twenty-five percent of study participants self-identified as having learning disabilities. Seventeen percent of study participants self-identified as having ADD/ADHD, and seventeen percent of study participants self-identified as having physical/medical disabilities. Of the 12 study participants, thirty-three percent self-identified as having multiple disabilities.

Data Collection

Data were collected during the Fall 2010 semester, all semesters during 2011, and the Spring 2012 semester. This study employed two modes of data collection: (1) a student survey, and if the student was agreeable, (2) a student interview with each participant to gather additional data related to accessibility, interaction, presence, satisfaction, structure, and support.

Interested students with disabilities were asked to fill out the web-based survey. Eighteen students with disabilities responded to the online survey. An online survey item asked if the person would subsequently allow themselves to be interviewed. The survey was used to provide baseline data about participant demographics and their experience with the most recent online course they had taken with regard to interaction, structure, and support. More importantly, the survey offered some insight into the student prior to the subsequent interview, if the student gave consent. This research had originally projected using a mixed-methods approach, but the richness of the resultant interviews more readily lent itself to a qualitative phenomenological approach. Twelve students with disabilities consented and interviews were conducted either in-person or via Skype computer software. These Skype calls were recorded with the participant's knowledge using an add-on called Pamela. The participant interviews were transcribed.

Surveys

The survey used in this study, the Course Interaction Structure and Support Survey - Modified (CISSS-M), was based on the Course Interaction, Structure, and Support (CISS) instrument created by Johnson, Aragon, Shaik, and Palma-Rivas (2000). CISS is a validated course rating system used to obtain general student perceptions of the quality of their learning experiences. In order to be consistent with the purpose and specific needs of this research study,

modifications to the original CISS instrument included revised directions, and rewording items that mentioned "the department" to "the (university where this research study was conducted)'s Office of Students with Disabilities Services." Permission was granted by the lead author of the CISS instrument to the current researcher to use the instrument with modifications for the purposes of this study. The letter requesting permission and the lead author's subsequent response is provided in Appendix C.

The original CISS is a hybrid instrument, whose items were selected from three instruments: (1) the Instructor and Course Evaluation System (ICES), (2) the Distance and Open Learning Scale (DOLES), and (3) the Dimensions of Distance Education (DDE) instrument (Johnson, Aragon, Shaik, and Palma-Rivas, 2000). The ICES instrument is a validated instructor rating system comprised of multiple items measured with a 4-point response scale. The DOLES instrument assesses student perceptions of their learning experience related to the eight components of effective learning environments: interactivity, institutional support, task orientation, teacher support, negotiation, flexibility, technological support, and ergonomics (Jegede, Fraser, and Curtin, 1995). Because the DOLES instrument fails to recognize two types of interaction, instructor to student and student to student, both critical to success in the online environment, a search for a second instrument became necessary. The DDE instrument is made up of 94 items grouped by four broad categories: instruction, management, telecommuting, and support. These four broad categories are then divided into fourteen sub-categories addressing the effectiveness of distance education programs. The selection of items on online instruction from the DOLES and DDE instruments was overseen by content experts. The CISS instrument was pilot tested in three courses, one undergraduate engineering course containing 43 students, and two graduate education courses containing a total of 25 students (Johnson, Aragon, Shaik, and

Palma-Rivas, 2000). The survey items that comprise the original CISS instrument are provided in Appendix D.

The Course Interaction Structure and Support Survey - Modified (CISSS-M), a modified version of the established Course Interaction Structure and Support (CISS) survey instrument, was used in this study to obtain the perceptions of students with disabilities with regard to the quality of their online course experiences. The CISSS-M was designed to measure three constructs: course interaction, structure, and support. The CISSS-M consists of a total of 50 items; 14 items in part one, and 36 items in part two. In addition, data on learner satisfaction were also gathered through open-ended questions as part of the survey. The CISSS-M instrument was administered electronically to study participants through use of Survey Monkey, a survey software package commonly used in higher education. On average, it was expected that it would take study participants approximately 15 minutes to complete the survey instrument. A copy of the survey items that comprise the CISSS-M is provided in Appendix E.

Part one of the survey requested information including name and course number of the most recent online course taken, basic demographic information (gender, age, ethnic background, academic status), and how much previous computer experience each of the students had. Students were then asked to self-identify their handicapping condition(s) by selecting from a published list of six conditions for which a student may register for accommodation with the Office of Students with Disabilities Services. Finally, students were asked how many previous online courses they had taken, what kind(s) of assistive technology they needed to participate in online coursework, whether the requested assistive technology was provided, and to what extent the student made use of the assistive technology provided.

Part two of the survey consisted of 36 items: 32 Likert-scale questions to gauge their perceptions of course interaction, structure, and support in the most recent online course they had taken. The four final items were short-answer questions asking what the student liked most, liked least, what percentage was synchronous, and what percentage was asynchronous. I sought to solicit specific ways the most recent online course each student had taken could be improved for students with disabilities.

Interviews

A semi-structured interview protocol was developed for use in conducting face-to-face interviews with study participants who consented to be interviewed. The interview protocol consisted of 22 questions. It was developed to guide the interview, addressing the main areas of accessibility, interaction, presence, satisfaction, structure, and support. The interview questions were developed to gain deeper insight into learners' experiences when they engaged in various online courses. Interview questions were developed from a review of themes within the literature related to interaction (learner-to-learner, learner-to-instructor), course structure, instructor support and department (i.e., Office of Students with Disabilities Services) support in the online environment, as well as learner satisfaction. Study participants were asked to reflect and report on recommendations they had for improving online learning for students with disabilities. The interviews provided a more in-depth analysis of the participant's overall experience with online coursework. The Interview Protocol is included in Appendix F.

The interview questions served as a guide rather than a fixed protocol for each interview. At times, the researcher used additional follow-up questions to clarify or expand upon learners' responses in keeping with the phenomenological approach used in this study. The

phenomenological interview should be structured enough to focus the conversation on the study participant's experience with the phenomenon of interest, but also open enough to allow free expression of all relevant elements (Smith and Fowler, 2006). The interviews, with one exception, took no more than sixty minutes for each study participant to complete. Interviews were recorded, with one exception.

Briefly, the literature concerning quality as it relates to qualitative interviewing focuses on four interrelated facets of research: (1) use of interview data to inform the research questions posed, (2) interaction facilitated by interviews within the actual interview generated "quality" data, (3) quality being addressed in the research design and the conduct of the research and the analysis of the data, and (4) ensure that methods and strategies used to demonstrate the quality of interpretations and representations of the data are consistent with the theoretical underpinnings of the study (Freeman, et al., 2007; Schwandt, 2001).

Roulston (2010) created a typology to help novice researchers understand conceptions of qualitative interviews. It contains six conceptions of interviewing that she labels as: neo-positivist, romantic, constructionist, postmodern, transformative, and colonizing (Roulston, 2010). One should understand there are no clear demarcations between these six conceptions, they are merely suggestive, and not prescriptive. Key questions with respect to these six conceptions of interviewing include: (1) what are the theoretical assumptions underlying this conception of interviewing? What kinds of research questions are made possible from this perspective? (2) what methodological issues are highlighted in the literature in qualitative inquiry with respect to this conception? (3) what are criticisms of this conception of interviewing and/or research? and (4) what kinds of approaches have researchers documented to establish the 'quality' of research using interviews from this conceptualization? (Roulston, 2010).

I believe this research study falls mainly within the neo-positivist conception, and partially within the romantic conception. Both the neo-positivist and romantic conceptions are aligned with phenomenology in that both assume that the interviewee (IE) has an "authentic self" that can be revealed or "got at" through an interview. The neo-positivist conception to ensuring quality calls for multiple methods of data collection, the elimination of interviewer bias by asking questions that do not lead the interview participant, and ensuring the research process is accessible and transparent. Truth and accuracy of the interviews is of utmost concern, along with showing how the researcher minimized his or her influence on the generation of the data (Roulston, 2010).

In keeping with these neo-positivist tenets, this study gathered data from both interviews and a 50-item survey instrument. As an interviewer, in the interest of obtaining data, I did my best to elicit a response from each interview participant. This sometimes meant that I had to restate the question or give further clarification of what I was asking. Finally, I explained my research thoroughly to each student in my email responses to those who responded to my initial participant solicitation letter (Appendix B), including copies of the participant recruitment flyer briefly explaining the study (that they saw in the Office of Students with Disabilities Services that originally prompted them to respond) and a copy of the "minimal risk" form filled out for the Institutional Review Board, which explains this study in much deeper detail. This email also included my telephone number, requesting that the interested student call me with any questions or concerns that they may have had with the research.

The romantic conception for ensuring quality calls for, among other things, methodological issues that ask good questions in a sequence that generates self-disclosure, greater reliance on conversational interviewing techniques, and a researcher sensitive to how the

sequencing of questions impacts data generation and researchers contributions to the interview talk may be included in the final report (Roulston, 2010). In contrast to the neo-positivist conception of interviewing, when used for social research, the interviewer (IR)-interviewee (IE) relationship is one in which genuine rapport and trust is established by the IR with the hopes of generating a conversation that is both intimate and revealing (Roulston, 2010).

Ethics and Reflexivity

Reflexivity can be narrowly viewed as the analytic attention to the researcher's role in qualitative research. The use of the term in general research discussions assumes that the researcher should engage in continuous self-appraisal and self-critique and explain how his/her own experience has or has not influenced the research process (Koch and Harrington, 1998). Etherington (2004) states reflexivity requires researchers to operate on multiple levels, and Horsburgh (2003) acknowledges that the researcher is intimately involved in both the process and product of the research endeavor (as cited in Dowling, 2006).

As a researcher, I was cognizant of the fact that this was a sensitive population from whom I sought data, and thus made every attempt to be sensitive to the needs of my interviewees. While none explicitly requested accommodations for our interview sessions, I made sure to accommodate any logistic concerns, such as scheduling the time or location communicated by the participant. I tried to set the interviewees at ease by displaying a friendly, personable demeanor during the interviews, whether conducted face-to-face or via Skype. After conducting the first two interviews, in an attempt to improve my interviewing skills, I changed the order of the interview questions to set the interview participant at ease. I realized it might be better to begin the interview by asking the more general questions from my Interview Protocol

(see Appendix F) relating to satisfaction, about experience with computers and various communication tools, and if they liked or disliked their experience with online learning, rather than by asking more specific questions relating to accessibility, specifically assistive technology. This encouraged openness and seemed to reassure the interviewees. I believe this change in interview question sequence helped to set a more open conversational tone in an effort to create a rapport and elicit meaningful responses from the interview participants. I have maintained strict confidentiality with the resultant interview data, having shared it only with a peer reviewer.

Another way that my interviewing tactic changed as the interviews progressed was that I decided to drill-down further on some questions. Of particular interest were those questions involving interaction, both instructor-student and student-student. A common practice in many online courses is for students to make a certain required number of weekly postings to a class discussion board on a certain topic. I began asking participants if there were ever occasions when they felt compelled to make more than the minimum number of discussion board posting, and what the reasons were.

Data Analysis

Data analysis for this phenomenological study was conducted using the descriptive phenomenological method as defined by Giorgi (1989). Giorgi (1997) states "Phenomenology thematizes the phenomenon of consciousness, and, in its most comprehensive sense, it refers to the totality of lived experiences that belong to a single person" (p. 2). As outlined by Giorgi (1989), there are five basic steps that comprise the descriptive phenomenological method.

1. Prior to the analyzing the data, I bracketed my previously acquired knowledge about students with disabilities and/or online coursework. The goal was to remain open to the data revealed by the study participant.
2. Participant interviews were transcribed and notable quotes highlighted. I read through the data from each study participant in order to get a sense of the whole, making notes and notes and codes in the margins to identify potentially relevant indicators of the experience. This process is known as "horizontalization." This step is based on the Gestalt-Phenomenological perspective that emphasizes the assumption that all parts of a description "are related to each other and that one cannot understand the relationship between the parts unless one goes through the entire description at least once" (Giorgi, 1989, pg. 48).
3. I read through the description slowly, breaking it into smaller meaning units. In reviewing the interview transcriptions, every time I sensed a transition in meaning, I placed a slash mark on the page. Giorgi (1989) states that meaning units can vary in length and are not dependent on set criteria; instead they are identified by the researcher through an intuitive and spontaneous awareness of transitions in meaning.
4. I translated each meaning unit into psychologically worded "transformed meaning units." These meaning units are more concise, directly highlighting the psychological aspects of the description, what the study participant said implicitly in his/her own words. Giorgi (1989) believes this step to be the most difficult. The researcher's challenge is to use psychologically descriptive, common sense language without sliding into theoretically based interpretations of the data.

5. In the last step, I reviewed the transformed meaning units, looking for patterns and essential elements that were then synthesized into a written structure of the experience.

In the fourth and fifth steps of this process, imaginative variation was used to determine what was and what wasn't truly critically important to the meaning unit or structure of the experience. In the process of imaginative variation, the researcher removes the study constituent from the structure to determine if the phenomena collapses or remains essentially intact. If the phenomenon collapses, the constituent is a crucial part of the structure of the phenomenon.

To write the participant profiles in chapter four, I first printed out the 12 interview transcriptions and labelled them with the six category names (accessibility, interaction, presence, satisfaction, structure, and support) from the Interview Protocol. As I labelled each of interview transcriptions, I noticed some participants returned to either a certain topic or experience from a past online course more than once. As I reviewed the transcriptions, I found some participants answered more than one question from my interview protocol in similar, if not the same, ways. For instance, Participant 8 expressed her frustration with the lack of interaction in her online courses several times, in response to questions about interaction, structure, satisfaction and support. Obviously, these duplicate responses signaled issues that were very important to the participants. Thus, from these duplicate responses key themes emerged.

After all 12 interviews were coded, I made a list of all the codes I had, and checked to see that I had labelled them the same way using the same verbiage. Naturally, some codes on the list were similar (meant the same thing, but were not worded precisely the same way), but some needed to be corrected so that the same syntax was used. I also condensed some of the wordier themes to be more concise. Next, I listed the codes under each section of the Interview Protocol for each of the 12 participants, and then added applicable participant quotes for each code. As I

compiled the list, I began to notice that some codes appeared more frequently than others; these codes became themes.

Once the data were interpreted, a general structure was created that synthesized the patterns and essential constituents in common. These constituent themes were also analyzed using imaginative variation to verify whether they were truly essential to the experience of higher education students with disabilities taking online courses. After coding the interviews, the survey data was compared against the interview transcriptions to see if the participant's views during the interview were consistent with what was revealed in the survey, or if any new themes had emerged. A participant profile for each of the 12 interviewees was then written. From these 12 participant profiles, six prevalent themes emerged. Each of these emergent themes are listed at the end of chapter four. In chapter five, these six emergent themes are then discussed with respect the research questions supporting this study, and referenced to their similarity or dissimilarity to the reported literature.

Trustworthiness

In hopes of persuading readers that the findings are worth paying attention to, this study may be judged by the trustworthiness criteria as described by Lincoln and Guba (1985). Qualitative researchers will find it useful to ask themselves four questions:

(1) *"Truth value"*: How can one establish confidence in the "truth" in the findings of a particular inquiry for the subjects (respondents) with which and the context in which the inquiry was carried out?

(2) *Applicability*: How can one determine the extent to which the findings of a particular inquiry have applicability in other contexts or with other subjects (respondents)?

(3) *Consistency*: How can one determine whether the findings of an inquiry would be repeated if the inquiry were replicated with the same (or similar) subjects (respondents) in the same (or similar) context?

(4) *Neutrality*: How can one establish the degree to which the findings of an inquiry are determined by the subjects (respondents) and conditions of the inquiry and not by the biases, motivations, interests, or perspectives of the inquirer? (Lincoln and Guba, 1985, pp. 290)

These four terms are typically used in quantitative research in relation to the four questions of internal validity, external validity, reliability, and objectivity. Lincoln and Guba propose four analogous terms to be used in qualitative research: credibility, transferability, dependability, and confirmability (Lincoln and Guba, 1982).

Credibility

To demonstrate "truth value," the qualitative researcher must show that his or her representation of "the truth" (since findings and interpretations are constructions of the qualitative researcher) has been represented adequately, and that they are credible. Credibility, then, is the qualitative researcher's equivalent of internal validity (Lincoln and Guba, 1985, pp. 296).

Lincoln and Guba present five major techniques for showing credibility: (1) activities that enhance the likelihood that credible findings and interpretations will be produced (prolonged engagement, persistent observation, and triangulation), (2) an activity that provides an external check on the inquiry process (peer debriefing), (3) an activity aimed at refining working hypotheses as more information becomes available (negative case analysis), (4) an activity that

makes possible checking preliminary findings and interpretations against archived "raw data" (referential adequacy), and (5) an activity for providing for the direct test of findings and interpretations with the human sources from which they have come – the constructors of the multiple realities being studied (member checking) (Lincoln and Guba, 1985, pp. 301).

This research study employed the triangulation technique, in which a variety of data sources, different perspectives or theories, and/or different methods are pitted against one another to cross-check the data (Denzin, 1978). Once the interview transcripts were analyzed, and then themes developed, an objective outside party was solicited to peer review the interviews to ensure that potential themes were not overlooked, nor have themes identified that were not evidenced in the interview transcripts. The outside party possesses a doctoral degree, has participated in at least one other qualitative research project, and is familiar with the coding process. This offers two key advantages. First, multiple investigators enhance the creative potential of the study. Second, the convergence of observations from multiple investigators enhances confidence in the findings (Eisenhardt, 1989).

Transferability

In contrast to quantitative inquiry, generalizability (or external validity) is demonstrated by showing that the data have been collected from a sample that is somehow representative of the population to which generalization is sought (Lincoln and Guba, 1982). However, qualitative researchers downplay the notion of generalization because they doubt whether generalizations can be made about human behavior, given the passage of time and changing contexts (Lincoln and Guba, 1982). Still, the qualitative researcher believes that some degree of transferability is possible under certain circumstances. Such circumstances may be possible if enough "rich, thick

description" is available to make a reasoned judgment about the degree of transferability (Lincoln and Guba, 1982). The qualitative researcher must provide enough detail about a context to (1) impart a vicarious experience of it, and (2) facilitate judgments about the extent to which working hypotheses from that context might be transferable to a second similar context (Lincoln and Guba, 1982). My "rich, thick" description of the 12 participants' responses that consented to be interviewed for this research study will be forthcoming in chapter four. From these 12 participants' interview responses, recommendations may be made regarding how online learning could be improve for higher education students with disabilities.

Dependability

In quantitative research, reliability, or dependability, is said to be achieved when a study can be replicated, or repeated under the same circumstances in another location and at another time. If deviations are found between the two repetitions, the difference is chalked up to unreliability, or error (Lincoln and Guba, 1982). In qualitative research, however, research designs are emergent, and changes are made consciously. Also, emergent designs prevent an exact duplication of a study; especially given that a second inquirer may choose a different path from the same data. The qualitative researcher defines "dependability" to mean "stability" after discounting such conscious and unpredictable changes (albeit rational and logical) in research design (Lincoln and Guba, 1982).

Guba offered the argument that there is no credibility without dependability, with a demonstration of the former being sufficient to establish the latter. If it is possible using the credibility techniques outlined above to show that a study has quality, it should not be necessary

to demonstrate dependability separately. Although not without merit, this is viewed as a weak argument, as it deals with dependability in practice, but not in principle (Guba, 1981a).

A stronger method for showing dependability, and the one employed for this study, is characterized as "overlap methods," which is one type of triangulation process which supports claims of reliability to the extent that they produce complementary results (Lincoln and Guba, 1982). However, Guba notes that triangulation is typically done to establish validity, not reliability; however, by the argument above, demonstration of credibility is equivalent to demonstration of dependability. The "overlap methods" are simply one way of going about carrying out this argument, and not a separate approach (Lincoln and Guba, 1985, pp. 317).

Confirmability

As Scriven (1971) points out, intersubjective agreement is typically used to judge objectivity. What a number of people experience is objective, but what a single person experiences is subjective; Scriven calls this the "quantitative" sense of objectivity. However, he argues that there is also a qualitative sense in which the objective/subjective distinction may be made (Lincoln and Guba, 1985, pp. 300). What is important to the qualitative researcher is not quantitative agreement, but qualitative confirmability. The burden of objectivity should therefore be placed on the data, rather than the inquirer; it is not the inquirer's certifiability at issue, but the confirmability of the data (Lincoln and Guba, 1982). As with transferability, "overlap methods" triangulation was employed for this study, which is one type of triangulation process which supports claims of reliability to the extent that they produce complementary results (Lincoln and Guba, 1982). As mentioned above, the utility gained from this process is two-fold: (1) multiple investigators enhance the creative potential of the study, and (2) the

convergence of observations from multiple investigators enhances confidence in the findings (Eisenhardt, 1989).

Conclusion

This chapter offered an overview and rationale for the qualitative Phenomenological research methodology that this study used to gather and analyze data gathered regarding the quality of online coursework, especially for students with disabilities. Details regarding sample selection/participant solicitation were discussed, as well as a brief history of the validated survey instrument, which has been modified with permission of the lead author for use in this study. Details regarding the interviews and the interview protocol used were then presented, followed by a brief discussion of ethics and reflexivity, data analysis, and trustworthiness. The following chapter will describe the data that arose from the participant interviews.

CHAPTER FOUR:

PARTICIPANT PROFILES

Introduction

The purpose of this study was to investigate (1) how online learning is experienced by students with disabilities, (2) what factors facilitate or inhibit their online learning, and (3) how what instructors do to facilitate online learning is perceived by students with various disabilities. The focus this study was to understand how students with various disabilities experience online learning. The study sought descriptions of the quality of the online learning environments they experienced. Although the range of interview participant responses is intended to allow for as many as possible voices to be represented in this research study, not every interview participant discussed all six categories used in the interview protocol (accessibility, interaction, presence, satisfaction, structure, and support).

The 12 students with disabilities who consented to be interviewed will first be profiled individually. The six major themes that were identified from the 12 participant interviews will then be presented. The purpose of chapter four is to establish an understanding of the thematic analysis to be detailed in chapter five.

Table 3. Study Sample Overview

Participant	Age	Race	Gender	Academic Status	Disability (-ies)	Most recent online course	Major (if known)
1	28	white	female	graduate	blindness/low vision, hearing loss	EME 6936 *Current Trends in Educational Technology*	Library Info. Sciences
2	24	white	female	senior	blindness/low vision, hearing loss	LIN 2001 *Language Culture & Film*	(unknown)
3	42	white	female	senior	hearing loss	CIS 4253 *IT Ethics*	(unknown)
4	28	other	female	senior	physical or medical disability *(epilepsy)*	REL 4133 *Mormonism in America*	Religion and Education
5	32	white	female	graduate	ADD/ADHD	EDF 7407 *Statistics in Ed. Research*	(unknown)
6	20	white	female	sophomore	learning disabilities	OCE 2001 *Intro to Oceanography*	(unknown)
7	55	white	male	senior	learning disabilities *(dyslexia)*	PSB 3444 *Drugs and Behavior*	Psychology
8	66	white	female	senior	physical or medical disability *(COPD)*	PET 3252 *Issues in Sports*	Special Education
9	39	Hispanic	male	graduate	blindness/low vision	ISM 3113 *Project Management*	(unknown)
10	47	white	female	graduate	hearing loss	PHC 6421 *Public Health Law Ethics*	(unknown)

Table 3. (Continued)

Participant	Age	Race	Gender	Academic Status	Disability (-ies)	Most recent Online course	Major (if known)
11	32	Hispanic	female	senior	Learning disabilities, psychological disabilities	POS 2041 *American Government*	Mass Communications
12	26	Black	male	graduate	ADD/ADHD, blindness/low vision, learning disabilities *(dyslexia)*	MHS 4002 *Mental Health Svcs Delivery*	(unknown)

Participant Profiles

Participant 1

Participant 1 is a 28-year old white female, with extensive computer experience, who self-reported as having blindness/low vision and hearing loss. Along with the accommodation of extra time on tests, assistive technology required by participant 1 to engage in online learning includes digital textbooks, a screen reader, Braille display, and Optical Character Recognition (OCR) software for her computer. Her most recent online course was self-reported as EME 6936 "Current Trends in Educational Technology," taken during 2010 and with which Participant 1 self-reported as being "very satisfied." Participant 1 described herself as "very talkative, some say confrontational." Based on her own self-description, and desire for more flexibility, I believe that Participant 1 had no fear of advocating for herself. It should be noted that the interview of Participant 1 is the only interview for which I have no audio or video recording, and thus no interview transcript. Thus, I had only the notes taken during the interview available for analysis.

As mentioned, I believe that a theme of "flexibility" emerged from this Participant 1 interview, with discussion of issues that arise from the perspective of a student with low vision and hearing loss. Participant 1 desires flexibility regarding the dissemination of information and the use of open-source software in completing course assignments. During the interview, participant 1 stated that Elluminate was "challenging, too much going on." Participant 1 also revealed that she felt some of the material covered in her "Current Trends in Educational Technology" class was "too visual and application-specific. Interoperability should be emphasized over mastery of specific applications." These seem attributable to Participant 1 having diminished sight.

Participant 1 mentioned that she liked that all course information was also available "on MP3 (audio files) on iTunesU, the dissemination of information on more than one platform." Again, flexibility seemed important. When asked what course instructors might do differently to improve the support provided to her, Participant 1 bemoaned the lack of open-source options for use in completing an early-semester "Get to Know Me" webpage activity used to introduce class participants to one another. She also wished that all assignments be posted at the beginning of the semester, and that instructors provide "24/7 access, the ability to send a question at any point, instead of Office Hours." Participant 1 wants flexibility and multiple options.

Participant 2

Participant 2 is a 24-year old white female, with extensive computer experience, who self-reported as having blindness/low vision and hearing loss. Assistive technology required by participant 2 to engage in online learning includes transcription of voice and use of CTRL+ to increase on-screen font size. Her most recent online course was self-reported as LIN 2001 "Language, Culture, and Film," taken during the Fall 2009 semester, and with which Participant 2 self-reported as being "very satisfied." Participant 2 stated that the availability of online courses had no influence on her willingness to continue her education, and that she had never had occasion to drop an online course.

Participant 2 wishes for all videos to be captioned, returning to this subject several times during the interview. When discussing accessibility, Participant 2 said she "had (the Office of Students with Disabilities Services) SDS assist me when the materials didn't have captions and that helped me a lot." It was a fortuitous accident that Participant 2 learned of transcriptions off the PowerPoint slides used by her instructor. "They would have voiceovers on those PowerPoint

sections. Later, we found that the PowerPoints themselves required transcripts, so I've been using those files instead of using their transcript service."

When discussing satisfaction, specifically what aspect of online learning was unhelpful, Participant 2 said that she had difficulty with videos that were not captioned. "For example, there was a Hindu film; it was half in Hindi and half in English. It would have some titles in Hindu, but no captioning for English. For that reason, I missed out on English conversations."

> When asked how support to her could be improved, Participant 2 responded choosing films that are captioned, or a DVD that has actual captioning for English segments of the films. And to let others, hard-of-hearing or deaf people, have files of transcripts so they (SDS) don't have to frustrate everyone with their transcripts "coming in a few days" when there's already a file of it and no one else knew until later on.

This leads naturally into another important point made by Participant 2, regarding what she feels instructors might do differently to support students with disabilities. "Awareness of resources, like knowing transcriptions are available. I explained to them what I need and what they (SDS) do, and they understand, but before that they don't usually." Hopefully this knowledge was made available to other students "who don't use their vision very much" who may also rely greatly on captions.

Participant 2 allowed that computers were both helpful and useful as part of online learning

> except for the captioning part. It (online learning) allowed me to read what other people said about the video, which, before that class, I had a hard time following other discussions with students talking in classrooms because at other schools I

> didn't have CART (Computer-Assisted Real-time Transcription) closed-captioning in the classroom, so being able to follow a conversation or what they thought from their videos allowed me to see what they thought about it.

Participant 3

Participant 3 is a 42-year old white female, with extensive computer experience, who self-reported as having hearing loss. Assistive technology required by Participant 3 to engage in online learning includes ability to control sound volume, written direction of spoken instruction and closed-captioning or video links (or transcription of same). Her most recent online course was self-reported as CIS 4253 "Ethics in Information Technology," taken during the Fall 2010 semester, and with which Participant 3 self-reported as being "satisfied." Participant 3 stated she had never had occasion to drop an online course.

Participant 3, like Participant 2, also wishes that all videos be captioned. When discussing satisfaction, specifically when asked with what aspect of online learning she had problems with, Participant 3 responded that she was dissatisfied with having to watch videos.

> OK, in that course (CIS 4253 Ethics in Information Technology during the Fall 2010 semester) she had an online video which we were supposed to watch and the videos were … to me, they were not very good quality and it was very hard to understand.

For this reason, Participant 3 concentrated more on the assigned readings than the videos.

> We were to read the chapter, take an online quiz, watch the video, and she had a certain order that we had to do that in. The first two weeks I did watch the

videos; I kept having to rewind them because … they weren't closed-captioned, which was an accommodation.

Participant 3 allowed that computers were both helpful and useful as part of online learning in facilitating communication. "Well, it's an online course, I don't think it could have happened in the fact that we had a lot of group work and were able to share more effectively, yes." Participant 3 enjoyed the convenience of online learning in that "the quizzes were online, we could take them at our own pace; that was good. I also like the fact that I don't have to drive an hour to school and back again." Although she agreed that the availability of online courses influenced her willingness to continue her education, Participant 3 (like Participant 1) also would have preferred that all coursework for the entire semester be posted during the first week of class.

I was actually disappointed that I couldn't wrap this course up as soon as possible, because the group work prohibited that, and we had to make weekly postings (responding to other groups' postings), which also prohibited that. I had the assumption that if it was online, it was self-paced, but that's not the case.

During a brief discussion of Elluminate synchronous meeting software, Participant 3 identified a need for students with hearing loss when she bemoaned the cognitive overload that can occur when trying to follow a person speaking, classmates' text messages, and the PowerPoint slides being presented.

Hearing people can do at least two things at once. People with hearing loss can usually only do one thing at a time. We can't read and listen, work and listen, take notes and listen, and so on. Instead, we must stop everything and focus on

communication. In the hustle and bustle of today's world, that is a distinct limitation.

Having mentioned that, Participant 3 went on to laud the way Elluminate has participants "line up" to speak one at a time.

> We went on Elluminate to review that (the syllabus), so the document was there … on desktop sharing, so we were able to see where she was at. But I think the program limits how many can speak at one time … whereas in a normal classroom, you might have many people speaking at once. So in that regard, it's kind of good that it limits the auditory confusion of mass conversation.

When discussing support, specifically how her online learning was influenced by the flexibility of schedule that online learning provides, Participant 3 again bemoaned having to watch videos in another course she had taken.

> I did take this course (QMB 3200 Economic & Business Statistics II) which had … this was bizarre … a video of the professor teaching the course. I chose not to do it in that fashion, but to do it from home so I can rewind and adjust my own volume. I mean, it's a video any way you cut it, but for somebody with a hearing impairment if you watch a video in a classroom environment, and it's not closed-captioned and there's somebody talking and a lot of notes going on … you know, it's not the same, it's a little too much.

When asked how support to her could be improved, Participant 3 told of an instructor who refused her request for accommodation.

> Now in the classroom, in the big lecture hall, I did have a CART (Computer-Assisted Real-time Transcription) transcriptionist for notes, because the instructor

> wouldn't allow recording and I was having a really hard time keeping up with him. He … refused to wear the amplifier, the personal receiver. His thought was "we have one in the building, go get it from the Audio-Visual people, call that number," and I'm like … you signed a letter saying you'd wear it, you know? I was never so happy to get out of those big auditoriums in my life. Most of my instructors have been pretty good.

Many instructors are helpful, but not all.

> It's just that attitude. I know it's an accommodation, but it's what society says we can have, and this is what you agreed to, you signed the form. The follow-through sometimes just isn't there. And then to make you feel bad about this, I think, is wrong.

When asked how the Office of Students with Disabilities Services could improve support to her, Participant 3 suggested holding classes in smaller rooms, as the inherent distractions of large auditoriums make it difficult for students with hearing loss.

> My only concern was my first Stats exam; they kept letting people in late, and there was a lot of "excuse me," "move," and people asking questions. Very distracting, because now my focus is completely off my test and on that, because I have to focus really hard to hear.

When discussing presence, specifically when asked in what ways online interaction offered her more opportunities to contribute in class discussions, Participant 3 mentioned the theme of self-advocacy. "Well, I'm pretty vocal in class anyway … (laughs). I figure that's the only way I'm going to get what I need is to say "I need this," and ask questions and speak up when I don't understand things."

When asked how the online environment allows more engagement with instructors, Participant 3 mentioned her accommodation of receiving written information.

> They're forced to give us written information whereas they may not normally be forced to do that. That is one of my accommodations. Like the syllabus or if they have the outline already of a lecture, go ahead and give it to me. And since it's online, I think they tend to do more of it, just in general, for everyone, than they would in the classroom.

After stating that she was dissatisfied with having to watch videos as part of her online coursework, Participant 3 allowed that the flexibility of being able to review videos as often as needed was a positive feature of online classes.

> Even in my regular classes, like the links on my PowerPoint presentations oftentimes point to new resources, like YouTube or whatever; that stuff's not closed-captioned. So I may have to watch a YouTube presentation three times to get the full scope of it. And that's a good point about online learning, I can rewind the video and listen to it again.

Participant 4

Participant 4 is a 28-year old female of "other" ethnicity, with extensive computer experience, who self-reported as having a physical or medical disability. She subsequently disclosed that her physical or medical disability is epilepsy. Participant 4 requested no assistive technology. Her most recent online course was self-reported as REL 4133 "Mormonism in America," taken during 2010, and with which Participant 4 self-reported as being "satisfied."

Participant 4 stated that the availability of online courses had no influence on her willingness to continue her education, and that she had never had occasion to drop an online course.

> Participant 4 stated that online courses were sporadically offered.
>
> For example, in the Religion department, there might be a random course, like "Mormonism" was offered. I was searching for courses, because I'm also doing an Education major … so I think it was like only one or two online courses. So they prefer the one-on-one interaction of the classroom.

To me, a theme of "privacy" emerged from this Participant 4 interview, a critical topic from the perspective of any student with a disability. When discussing satisfaction, specifically when asked with what aspect of online learning she had problems with, Participant 4 responded that the only complaint she had about the course being online was "he's out of state."

> I needed to fill out a form with him, but he wanted me to just give all paperwork to somebody in the Religion department front office, and any Doctor's notes I was supposed to … There was no one here at the university that I could correspond, like a TA, without actually having to send private information, like scan it and send it via email. It would have been nice if there was a TA who I could have gone (to) and shown him if something had happened and I missed a period of time and we had to take a test, for example. I could've gone to the TA, "here's my Doctor's note, if you want a copy, here you go," rather than scanning it in, sending it to him, or giving it to the lady in the front office of the Religion department who may or may not have given it to him.

Ease of interacting with the instructor is noted as important both here and within the response from Participant 5. If too difficult, the student finds it too burdensome.

When discussing support, specifically how the quality of online learning was influenced by the expectations for the class being clearly stated by the instructor, her response returned to the "privacy" theme.

> For the Mormonism course, I have a week to take each test, and if for some reason I had a seizure during that week … and if I have a concussion, and all that kind of stuff. So I wasn't completely comfortable with scanning in my Doctor's notes … because they have all the stuff (my private information) from my Doctor's office on the notes. And then when I tried to email him (the instructor) he says "give all the paperwork to the lady at the front desk in the Religion department," that's what I felt uncomfortable with.

Participant 4 elaborated further on this "privacy" theme again later in the interview.

> It's hard because once we put our names on that (registering with SDS), as beneficial as it can be within school, it's also on our record permanently, which also affects our jobs and I can tell you that I've been turned down, though technically it's not legal, I've been turned down from jobs, and I've also had jobs where we organized their insurance plans specifically because of my disability, which has had a lot of repercussions, so me speaking publically about my epilepsy is something that I'm OK with, but I also have experienced those prejudices. I've been turned down from jobs, it's just frustrating, you know?

Parenthetically, it is illegal for an institution to serve students with disabilities differently because it believes its insurance costs will be increased (Leuchovius, 2003). Participant 4 gave voice to an important point that seems valid for many students for disabilities; specifically, is the

possible stigma of going public with your condition and being labeled worth the accommodations received?

When discussing interaction, specifically how beneficial to her was interaction with other students, Participant 4 smiled and said "Yeah, I like interacting with other students. I always like hearing other opinions, I love sociological perspectives, I love hearing all the different perspectives." It seems unfortunate, then, that later when discussing presence, specifically in response to being asked in what ways online interaction offered her more opportunities to contribute in class discussions, her response pointed out a lack of S-S interaction. "I guess that is more up to if discussions are available. The discussion boards, if the instructor makes them available. There were some discussion boards for the "Mormon" class, but basically only the instructor responded." This unfortunate sentiment was expressed by other interview participants; that all too often online S-S interaction was limited to the minimum two posts to the discussion board and emails regarding group projects.

Participant 5

Participant 5 is a 32-year old white female, with extensive computer experience, who self-reported as having ADD/ADHD (Attention Deficit Disorder/Attention Deficit Hyperactivity Disorder). Participant 5 chose not to disclose whether assistive technology was required or if it was used. Her most recent online course was self-reported as EDF 7408 "Statistical Analysis in Educational Research II," taken during 2010, and with which Participant 5 self-reported as being "very satisfied." Participant 5 stated that she had never had occasion to drop an online course.

In short, Participant 5 seemed to prefer online courses to F2F courses. When discussing satisfaction, specifically when asked to describe her experience with using computers as part of online learning, Participant 5 stated that

> I think what I liked about it was that it was accessible at all different times of the day; I don't have to wait to go to class to access something. My instructor and the TA were very accessible by email and chat. (The instructor) used Skype a lot, so it gave us a chance for Office Hours, so we didn't have to walk all the way over to (the instructor's) office. It was a lot easier because then I could save the conversation and refer back to it. So that was really helpful.

Interaction with the instructor is very important to students with disabilities.

Participant 5 agreed that computers were helpful given her learning needs. "I think they're helpful because you're able to organize information; for me, that's really important, so I can be more efficient." This relates to her ADD/ADHD, which makes focusing difficult. About her learning needs, she continued

> And plus, I don't necessarily learn well in a lecture, I like having the visual. Sometimes (the instructor) would do stuff on slides, but (the instructor) would be speaking over it too. I could see it in front of me, at my computer and be at my own pace.

When discussing the structure of the "Stats II" class, specifically when asked what kind of opportunities for collaboration with other students online learning provided, Participant 5 shared that she prefers blended, or hybrid, online classes to those that are fully online.

> In classes where I've done, I think it's called "hybrid," where some is online and some is in-class, I like that because I'm able to collaborate in discussion boards.

> That is helpful to me because then you have people who can go further with that, if you're interested in the same topic.

I found this to be an interesting observation as this is in contrast to remarks made by other interview participants, who bemoaned the discussion board as being the lone source of S-S interaction in their most recent online classes.

When discussing support, specifically how the quality of her online learning was influenced by flexibility of schedule, or expectations being clearly stated by the instructor, Participant 5 reiterated that "I found that it was much clearer when it was online … for me. I could always refer back to what was posted." It is well-documented that the flexibility of online classes is one of its features. From the responses of this student with ADD/ADHD, it seems to have been the context that was needed to allow her to succeed. All interview participants expressed appreciation for the flexibility afforded by online classes.

When asked how the support provided to her could be improved, Participant 5 voiced disappointed in the Office of Students with Disabilities Services.

> To me, they do very little in terms of support. I <u>do</u> think they worked very well with (the instructor). What was interesting was that I obviously had come to campus to take the exams, but they're not open on Saturdays, so obviously I wasn't taking it with anyone else. So they were very accommodating in terms of my exam stuff, but other than that they didn't offer extra support, which I thought was kind of odd, because I would assume that some accommodations that people need, especially if you're working online like that and trying to chat … I would think it would depend on your accommodations. I felt OK, but I just don't know if every person with every sensibility would be OK in that (online) environment.

Unfortunately, Participant 5 was not the only interview participant who had this opinion.

I took the opportunity to drill-down on this response by asking what kind of support had she sought that was not there for her. The focus of her response now switched from SDS to the instructor.

> I think just awareness. For me, every class, including online classes, I think sometimes instructors don't know how to support someone with a learning disability. I don't think they get it. I don't think it's anything specific, it's just the ability to be cognizant, not just turning in your Letter of Accommodations, but understanding what's really going on with the student and being able to communicate with them.

Participant 5 stated "I had a high level of interaction with the instructor." The level of interaction with her fellow students was not as high.

> For the fully online class, I personally was very connected to one person. We were working together offline, if that makes sense. But interactions with other students, that was limited to the one group project and maybe a couple discussions online where they ask a question.

Due to the complexity of the subject matter coupled with the course being fully online, it seems very prudent of Participant 5 to have partnered with a classmate as a strategy to foster more student-to-student interaction.

Regarding interaction, specifically to what extent online interaction allowed her to experiment with ideas, build knowledge, or gain complex understanding, Participant 5 said "I think it allows way more than the classroom." Participant 5 seemed to greatly prefer the online environment, stating further

> I think it allows you to at least try things you're not comfortable with, like Stats. That's a high anxiety class for most people, and you're able to process things the way you need to, you're not just bored in a lecture. Also, a huge thing I noticed was that compared to my friends who took it in-class, I seem to be able to apply it better. I felt like I actually retained more from having it online, because it forced me to engage with it.

Participant 6

Participant 6 is a 20-year old white female, with extensive computer experience, who self-reported as having learning disabilities. Assistive technology required by participant 6 to engage in online learning includes books on tape "the textbook on CD so I could listen to the chapters and follow along." Participant 6 said she "used it for every chapter." Participant 6 also said she requested the accommodation of "extra time on the tests/quizzes. As for the extra time, I was not given it. I was able to have my Mom help me read the tests so that I was able to get done in the time allowed." **I** found this denial of accommodation quite surprising, since other interview participants self-reported that they had availed themselves of the accommodation of extra time. Her most recent online course was self-reported as OCE 2001 "Introduction to Oceanography," taken during Summer 2010 and with which Participant 6 self-reported as being "somewhat satisfied." Participant 6 stated that she had never had occasion to drop an online course.

Postsecondary institutions that receive federal money, whether public or private, are required to make their academic programs accessible to qualified students with disabilities. The institution is tasked with providing physical, academic, and program access, which can

demonstrated through providing architectural access, providing aids and services necessary for effective communication, and by modifying policies, practices, and procedures (Leuchovius, 2003). Students must identify and request needed accommodations. A specialist then documents the student's disability and recommends suitable accommodation(s). In a study titled "Postsecondary education across the USA: Experiences of adults with disabilities," the authors' findings suggested that many students face difficulties requesting and receiving supports and accommodations, in part due to negative attitudes and lack of awareness of disability needs (Dowrick, Anderson, Heyer, and Acosta, 2005). It seems that lack of clarity and direction among postsecondary education personnel as to what is required and/or needed by students with disabilities is still at issue (Stodden, Roberts, Picklesimer, Jackson, and Chang, 2006).

When discussing satisfaction, specifically when asked with what aspect of online learning she had found helpful, Participant 6 reported that she enjoyed the assignment of making a video on a given topic. It should be noted that Participant 6 disclosed that this exercise was done in her high school "Team Sports" class, and not the "Introduction to Oceanography" class.

> We actually did research and everything and we made a video of a certain topic (subsequently revealed by Participant 6 to have been PowerPoint slides with accompanying narration). Then at the end of the year, in order to review the material, we reviewed everybody's videos.

Participant 6 stated that studying the other videos was helpful in learning the material.

> That was nice because everybody had different kinds of videos, so for different learning styles … for me, I saw a lot of visual stuff going with talking and that works really well for me. It was different from what the teacher had done, which was basically notes. So that was probably my favorite thing using technology.

Participant 6 much preferred this more interactive, visual learning approach to reading chapters and taking tests.

> Yeah, "Intro to Oceanography" was the one that I took online, the college one, and that one I hated because it was reading the book, taking the test … and, for me, don't ask me anything about oceanography; I don't know, I didn't learn anything. I probably would have found it interesting, but for me, taking the test and reading the book was pointless.

It seems that the learning of Participant 6 was better facilitated by the use of multiple sensory modalities.

> I do books on tape, so I'm used to hearing it and seeing it. And, for me, even you standing up there and me seeing you and hearing it, I learn a lot better, I can remember stuff a lot better than just "here's the book, read it."

Participant 6 agreed that computers were useful given her learning needs.

> Oh yeah, I think if they didn't have computers … I mean, even if it's a lecture class done online, when I have to use technology I think it helps a lot because you can do so many different things with it. In one of my classes, we watch YouTube videos all the time, just to show examples of what's going on.

Technology allows access to many resources.

When discussing structure, specifically how the online environment provided her with opportunities to work at her own pace, Participant 6 said she liked the flexibility of schedule.

> Well, that's just huge just in the fact that … I mean, the teacher basically had everything up and she had due dates. You could go ahead. Yeah, having it online

> and having all the assignments for the whole course given to us at the beginning, instead of every week, is really nice because I can turn it in early.

This was a common response from other interview participants, an appreciation of the flexibility of schedule and self-pacing (and reduction of travel) afforded by online classes.

When discussing support, specifically how the support provided to her could be improved, Participant 6 intimated that she preferred F2F classes to online.

> But I won't take (online) classes in the fall or spring, unless for some reason I absolutely have to, because I like having that person … knowing "OK, you're teaching it." I just feel like I'd rather have to go to the class and listen, and be able to talk to you. "OK, there's a face with everything."

When I followed-up with a question asking what she got out of coming to a F2F class, she responded "I don't know, I just think I enjoy it more." Participant 6 desires interaction that she doesn't feel she is getting from online classes.

> I guess … I wonder if it's because I … there's almost like there's more of a caring for me to do good. I'd rather sit in class and see people talk and I will look at people's faces. I'm one of those people, I'm sitting in every lecture hall and somebody in the back's talking, and I … want to find you. To me, having that people contact it just … it makes me want to learn more.

When discussing support, specifically what the Office of Students with Disabilities Services might do differently (to improve support), Participant 6 spoke as though she was convincing herself of her preference for F2F classes while responding to my questions. "I think that in online classes it's hard because … SDS gave me, they emailed me, my accommodations and then I had to email it to the teacher." Participant 6 then revealed her concern with what she

believes are instructors providing accommodations to students with disabilities only out of necessity. "I kind of can tell how the teacher's going to react to me giving them my accommodations by what they have in the syllabus."

> Participant 6 had difficulty in articulating what accommodations she needed.
>
> I wish there was some way for SDS could be like 'OK, which accommodations are you going to need for this class?' especially if it's online. I think it's fine if you're meeting the teacher F2F, because you can tell them, but the online … they're (the instructors) are kind of having to look at the (Letter of Accommodations) document and look at the email, and I don't feel like everything sometimes clicks, you know? I'm not able to explain to them.

Her disdain for this class structure was exacerbated by her not receiving an accommodation of more time.

> And the thing I found is that the quizzes were timed, so I kind of had to work with her (SDS employee) if I ever needed more time. Luckily, I had my Mom there who was able to help me because she was able to read the questions.

Participant 6 went on to explain that her accommodations were not specific to classes she was taking. Students that register with the Office of Students with Disabilities Services receive a list of accommodations based on their self-reported learning disability. This generic list of accommodations may be difficult for some instructors. "Yes, accommodations that I get for everything; so, you know, I think it kind of confuses some of the teachers, especially if they're new and they've not seen a lot of it, they're like "what is this?"

When asked what instructors might do differently (to improve support), Participant 6 said that her instructor "handles it good," and immediately proceeded to disclose her anxiety with being timed.

> I felt I was really going to have to work if I needed to take extra time on my quizzes. I didn't need it, but I felt like it was going to be a big issue if I had because when it's timed they have to go mess around with it, and I don't know if they technically make one person have more time on the thing. And it stops automatically, so that was one thing that was really … I didn't like about taking online was the fact that for any sort of test you're going to have online, you're going to time me. Just the "timed," the anxiety of it; seeing that time in the corner freaks me out.

Participant 6 seemingly contradicted herself by now saying that she did not request more time from SDS, choosing instead to rely on the help of her mother. Again, I found this puzzling, as "more time" was an accommodation which seems likely to be granted, based on the responses of other interview participants in this study.

> "It wasn't explained to me how I could get extra time, so I was kind of able to do it. It was a pain in my butt, but I did it. I didn't like it, but in the same sense, she did let us take the test 2 or 3 times."

This statement also seems contradictory, as having more time and allowing multiple attempts on assignments are quite similar.

> Yeah, and depending on the disability you have, it depends what they're going to need. But if she had just looked at the accommodations … I also said "I don't think I'm going to need many of these accommodations, except for having more

time." I remember she emailed me back and it like a 'oh, just let me know' kind of thing. Yeah, but I still have the anxiety thing of "OK, look, I let you know, but how are you going to help fix this issue?" I was just … I don't know. And it was one of those things that, being in-person I could have easily said "OK, what can we do to figure this out?"

I am unsure what accommodation could have been provided the Office of Students with Disabilities Services to alleviate the anxiety of Participant 6, but again, it seems more discussion among all three parties would have allowed Participant 6 to have a better experience in her "Introduction to Oceanography" online class.

When discussing interaction, specifically describing the level of I-S interaction, Participant 6 said it was "very little. If you needed to email her a question, and she emailed us a few times saying 'I'm going out of town, so the papers won't be graded right away.' But there wasn't any interaction besides that." Participant 6 has a need for a relationship with her instructors, to actually meet them in-person.

I guess there are other teachers that … had online classes that I've had before, I probably would be more inclined to take their class because I've met them. Um, so that … meeting them, to get the syllabus and talking to them and get expectations I think would have been … If I knew that was going to happen, I would definitely be more inclined to take the class.

Unfortunately, when asked to describe the level of S-S interaction, Participant 6 again spoke of a lack of interaction. "The class we had online, we didn't … there was no group activity at all."

Participant 6 had a difficult experience in her "Introduction to Oceanography" online class. Her disdain for the "read/quiz" structure of the online class was exacerbated by her not

availing herself, for whatever reason, of the accommodation of more time. Again, it seems apparent that more discussion among all three parties (the student, the instructor, and the Office of Students with Disabilities Services) would have led to better learning experience for Participant 6 in her "Introduction to Oceanography" online class.

Participant 7

Participant 7 is a 55-year old white male who self-reported as having learning disabilities. During the interview, Participant 7 self-reported that "I'm dyslexic, it take me a little while to read." Participant 7 requested no assistive technology to engage in online learning, save the accommodation of more time on tests and quizzes. Participant 7 self-reported that he "made extensive use of just the computer, the Power Points and the in-class notes." During the interview, however, Participant 7 allowed that "the way my professor taught this course (PSB 3444 "Drugs and Behavior"), a student with a disability with extra time on tests, I believe, can succeed." Participant 7 self-reported being "very satisfied" with this course. Participant 7 stated that he had never had occasion to drop an online course. Participant 7 was by far the most positive of the 12 interview participants.

Participant 7 self-reported, curiously, as having no general experience with computers or ListServs, but extensive general experience with email and discussion boards. When discussing satisfaction, specifically when asked how much experience he had with computers, Participant 7 reported that he had "none, I learned it all on my own. Windows Vista … Dell taught me everything while I was going through … I had to buy a new computer and go through a whole process."

When asked specifically what aspect of online learning was unhelpful, Participant 7 echoed the popular theme of being anxious with timed assessments.

> Well, I took one online course. My "Religion" course I had to take quizzes online and tests online. And they were timed. It was hard, and I found out that sometimes when I was taking quizzes online, I would get bumped off accidentally. You know, it's a lot of pressure.

Participant 7 agreed that computers were helpful given his learning needs. When I asked him how computers were helpful, Participant 7 stated "writing papers," having utilized the services of the Writing Lab to learn how to write papers on the computer. Participant 7 also agreed that the availability of online coursework has caused him to continue his education. Participant 7 seemed to be especially motivated by this instructor's method of teaching.

> Yes, if I had this course in the same style and same format (blended). (The instructor) had one mandatory class meeting, they give you the course materials and you're on your own. I think … that's a great way of teaching myself.

When discussing structure, specifically how the online environment provided him with opportunities to work at his own pace, Participant 7 echoed the other participants' appreciation of the flexibility of schedule afforded by online courses.

> For instance, Quiz 2 is finished today it's going to close at 5:00 pm today. Well, I knew its Memorial Day weekend so I figured I'd jump on it … and get it over with. You know, set your own pace. It's a great course.

When discussing support, specifically what the Office of Students with Disabilities Services might do differently (to improve support), Participant 7 said "they were instrumental in giving me more time on exams." When asked what instructors might do differently (to improve support), Participant 7 said

> They were great. I have no qualms with any of my instructors, they were just supportive … it's great that I was just about as old as they were … (laughs). They put up with me, man. They wanted me to get through this stuff. It's a hard road to travel, it was an experience, you know, so I have to go to Grad School now, so … we'll see what happens.

When discussing accessibility, specifically in what ways the assistive technology provided helped with online classes, Participant 7 reiterated that he availed himself of no accommodations save more time on assessments. "No, everything was there. It was all black and white; all you've got to do is follow the rubric. Just more time on exams."

When discussing interaction, specifically when asked to describe the level of I-S interaction, Participant 7 said "I would probably keep in touch once a week, just to make sure I'm on track. If I don't understand something, I will shoot them an email and say 'I don't understand something, would you please explain it to me?'" Participant 7 then described the level of S-S interaction as "A+, they're great. My fellow students helped me a lot, I must say."

When asked to what extent online interaction allowed him to experiment with ideas, build knowledge, or gain complex understanding, Participant 7 pointed to the prevalent use of discussion boards in online classes, another common theme from the interview participants. "Back and forth with the discussion board helped us. Most of the questions on the exams were all from the discussion boards. Those discussion boards took most of my time." While S-S interaction was facilitated through the discussion board, I-S interaction was not. It seems this was purposeful on the part of the instructor. When I asked Participant 7 if the instructor communicated via the discussion board, Participant 7 said "no, (the instructor) just said 'make sure you review the discussion boards because they will be on the test.'" The instructor left it to

the students to discuss the assignments among themselves, as a strategy to build knowledge, but "when we had some issue we needed clarification on, then we would take it to him … or her."

Participant 8

Participant 8 is a 66-year old white female, with extensive computer experience, who self-reported as having a physical or medical disability. She subsequently disclosed her physical or medical disability is chronic obstructive pulmonary disease (COPD). Participant 8 requested no assistive technology. Her most recent online course was self-reported as PET 3252 "Issues in Sports," taken during 2010, and with which Participant 8 self-reported as being "satisfied." Participant 8 stated that the availability of online courses had no influence on her willingness to continue her education, and that she had never had occasion to drop an online course.

Participant 8 made her opinions of online coursework clear very early in the interview; in short, she prefers the immediacy of F2F classes. When discussing satisfaction, specifically when asked what aspect of online learning she found helpful, Participant 8 explicitly stated she "prefer(s) F2F, but I also enjoy online because it offers other things. More freedom, I can schedule my own time." Participant 8 then told me what was not helpful about online learning, flatly stating "I don't have any interaction with anybody and I don't like that. The only interaction was I would email the teacher if I had a question or something." She continued, now drawing on past experience to tell me what she disliked about online courses overall, rather than in the most recent online class she had taken.

> You asked what problems I had, I've found this all along; even when there is some give-and-take on … a discussion board, it seems almost impossible to get an

answer; people don't want to answer questions. In general, I find very little give-and-take in the online courses I've taken.

Participant 8 continued the theme of little or no interaction. "I don't like it, I like give-and-take between people, and I don't learn as much by myself. Just reading a book, hoping you get it, and taking a quiz? Or whatever they do?" I found the remarks of Participant 8 interesting and followed up by asking if that was her experience in all the online classes she had taken.

> Well, it's hard to remember the one I took when it was at (a nearby community college). I took "Biology" online … and was absolutely convinced I was going to pass that course, and I did everything but stand on my head … I may have also stood on my head … and I got an "A" in it. But it was not through online, it was through studying hard. I don't remember if that course had any give-and-take with the students … or with the teacher.

Participant 8 then stated that she only found S-S interaction via discussion board in her F2F classes.

> The only communication I remember online, on discussion boards, is in the courses … this is an interesting thing … is in the courses that aren't online courses, where I see the people. Where I go to class Monday and Wednesday, and there's a discussion board we're supposed to participate in … those people <u>do</u> participate in. But in the courses where I don't see the people, nobody participates, or there isn't even one offered.

Participant 6 then qualified this by saying "I don't remember, so don't quote me on this, but I don't remember if "Issues in Sports" had a discussion board. It must've …you would think … but there certainly wasn't any participation. Nobody participated." Participant 8 needed

immediate responses, whether from classmates or the instructor, and was not getting them in the online classes she had taken to that point. "And I miss the immediacy, not only of getting a question answered, but of reaction."

When discussing satisfaction, specifically when asked if computers were helpful given her learning needs, Participant 8 seemed to bristle a bit, almost becoming defensive.

> This is one of those questions … all based on my disability. I don't feel disabled, which is good. My disability is my breathing; COPD (Chronic Obstructive Pulmonary Disease) equals four packs a day. Um, and my weight which, coupled with my breathing, makes it difficult to … that's why I use a walker. But they're not disabilities that really matter when it comes to taking an online course. There is nothing that having a disability granted me in the way of perks that mattered when I took online courses, except I would get twice the time for tests. Other than that, it's not like there's … whatever other perks there are, I don't need them.

I found it interesting that Participant 8 was the only interview participant who referred to accommodations as perks. Based on her quote above, and that she requested no assistive technology, I believe this unique characterization of accommodations as "perks" indicates within Participant 8 a determined self-sufficiency. She then realized that she had used the wrong word, however. "Perks isn't the right word. It sounds like you want to be disabled."

When discussing structure, specifically how the online environment provided her with opportunities to collaborate with other students, Participant 8 again denigrated online interaction when compared with F2F interaction. "Really none, certainly less than F2F courses." When asked what tools she had used to collaborate with other students, Participant 8 offered no collaboration strategies.

> In online courses? None, because it hasn't been set up that way. Usually the student roster has listed the emails, and actually a couple of times, and I can't remember what courses or the circumstances, I have emailed students and I don't ever remember getting a response. Especially in courses where, and they do do this in online courses, the first thing you do is the introductory "Tell Me about Yourself." In this "Issues in Sports" course, and I did read all the … you want to get to know the people. I do, or get a clue about them. One person was from Chicago and had … said something I related to, and I responded, and it was like I was talking to the wind. I've had that experience a few times, people don't seem to respond.

When discussing support, specifically when asked how the quality of online learning was affected by having expectations clearly stated by the instructor, Participant 8 conceded that the instructor did set expectations for the course, allowing that "they always have been in any course I've taken. But it hasn't influenced … The syllabus says 'when you leave this course, you will be able to …' Yeah, right."

When asked how the support to her could be improved, Participant 8 reprised her earlier "accommodations as perks" comment.

> What support? As a disabled student taking an online course, the support means, I suppose, the perks. There wasn't anything else I needed. I loved the extra time. I don't know how it could be improved, because I'm not needy.

This notion of self-sufficiency echoes the comments of other students who needed only the accommodation of more time on assessment.

When discussing interaction, specifically when asked to describe the level of interaction with her instructor in her online courses, Participant 8 allowed that it was "adequate." When asked specifically to describe the level of interaction with her instructor in the "Issues in Sports" course, Participant 8 said "Less than adequate. You can't rate "sucked?" Yeah, that was … you couldn't even find … I don't even want to start telling you about that person. The instructor of that course was very hard to get ahold of." Participant 8 characterized the level of interaction with other students in online courses in general as "sadly low."

When discussing presence, specifically in what ways online instruction offered her opportunities to collaborate with other students, Participant 8 said flatly "Online courses? None. There just haven't been interactions. The whole thing is based on if there were interactions, and there really haven't been any."

I noted that Participant 8 seemed rather vague on the details of several of these less-than-optimal online learning experiences, as evidenced by the direct quotes "it's hard to remember the one I took when it was at (a nearby community college)," "I don't remember, so don't quote me on this," and "I can't remember what courses or the circumstances." Based on how she responded to my questions - the way in which Participant 8 flatly stated that she "didn't have any interaction, and I didn't like that" in response to the second interview question, and the fact that she returned to the "no interaction" theme several times throughout the interview - I got the strong impression that she had not enjoyed her experiences with online classes. I believe that Participant 8 felt frustrated about having what she perceived as another less-than-optimal experience in her most recent online course, specifically a lack of both I-S and S-S interaction, which subsequently left her bitterly dismissive of online coursework.

Participant 9

Participant 9 is a 39-year old Hispanic/Latino male, with extensive computer experience, who self-reported as having blindness/low vision. Assistive technology required by Participant 9 includes a screen reader, of which he makes extensive use. His most recent online course was self-reported as ISM 3113 "Project Management," taken during the 2006, and with which Participant 9 self-reported as being "not satisfied." Interestingly, Participant 9 offered little detail about his most recent online course; rather, he spoke more broadly about issues facing online learning in general as he responded to my interview questions. Participant 9 is an advanced user of technology. "Yeah, I work in supporting people in using technology … (laughs) … and I create materials for people to learn how to use technology."

When discussing satisfaction, Participant 9 agreed that computers were helpful given his learning needs. When I asked him how computers were helpful, Participant 9 praised recent advancements in optometric science for people with low vision.

> I need assistive technology, so obviously access to text in the past would have been much more difficult because when you get a text, a physical text, it's spaced in a certain format, unless you buy a large print version, or an audio version, which generally take a long time to produce. With digital text, you can amplify it, you can change the font, change the background. It's much more flexible. It can meet my needs, it's not a "one size fits all."
>
> Participant 9 then told me of challenges still faced by people with low vision.
>
> There are lots of devices that now have these features. The burden is now on the people who develop the content to incorporate the features that allow the technology to work. For instance, if I have a screen reader and I wanted to access

a webpage, if you did design a webpage with universal accessibility in mind, then I can't really access that information. No matter how good my screen reader is.

Participant 9 echoed the sentiment that instructors seem to lack understanding of students with disabilities. "We need some education with professors on how to design their courses to make them successful. There's a lot of potential there."

When discussing structure, specifically how the online environment provided him with opportunities to collaborate with other students, Participant 9 listed several strategies for collaboration. "There are a lot of different things; discussion boards, blogs, wikis, emails, Elluminate." Participant 9 then mentioned an issue that is important to students with disabilities. "One nice thing about online interaction if you're in a course, if you have a disability, it's not as visible." Online classes offer students with disabilities a chance to be judged on the quality of their academic work, and not defined by their disability. "Let's say, assuming the professor makes the course in a way that is accessible and I don't have any problems, there's really no way other students would know that I have a disability."

Participant 9 then discussed why he "strongly disagreed" that the Office of Students with Disabilities Services inquired about his learning support needs in this course.

> Here's the issue; the disability support of infrastructure at most major universities is basically there to meet the letter of the law … other than the spirit. It's also there primarily for the undergraduate population, so it really is geared towards testing and providing that kind of more structured support. Well, when you're a graduate student, a lot of the time you're taking "Independent Study." I can't remember the last time I took a test.

Participant 9 then suggested a variation to the accommodation of more time.

> I think when it comes to disability; they need to come up with more flexible structures, maybe adjusting Programs of Study, certain requirements. Like, we have a time requirement; you have to get this done. Well, when you're still in disability, sometimes it takes you twice as long to get things done, and yet you're expected to finish in the same time. It doesn't seem fair to me that we have to be held to the same timeline as everybody else. I almost quit my Ph.D. program because of that.

Participant 9 later allowed that the Office of Students with Disabilities Services was not to blame for perhaps being reactive, not proactive.

> Yeah, and you know that's not their fault entirely. I think they have a new person and she's trying to do the right thing. The problem has to do with university structure and how those offices are set up, and there were very few universities that I've heard of where the office is actually proactive, because of the structures they have to work within. It's there to prevent them from getting sued. Over and over what I've heard, because I've worked with them as a consultant on accessibility, is that nobody's complained. And it's like "Why don't you fix this now? It will save you headaches later."

A very important question, indeed, that must yet be resolved.

When discussing presence, specifically in what ways online interaction offered him opportunities to contribute in class discussions, Participant 9 made the observation that "it's gotten easier to do that "presence" thing because of tools like Elluminate. I do Skype and I use i-Chat as well."

When asked in what ways online allows him to be more engaged with other students, Participant 9 mentioned a theme I had yet to hear from prior interview participants; about social media tools now providing exposure to a bigger audiences and more timely information.

> With social networking, you can do a lot more informal learning, you're not just learning from your colleagues here, but you have a global audience of people. I use Twitter a lot. I have a big network of people in the accessibility community that I follow. It actually helps me stay up-to-date in my field much better than I would have been able to.

When asked in what ways the online environment allowed him to be more engaged with his instructor, Participant 9 said he found the I-S interaction to be lacking.

> Not in this example. Generally, the professors that I had … um, most of the online classes I took were in the IT (Instructional Technology) program, so I think that influenced things a bit because that's your thing if you're in IT. In another department, they might not be as well-skilled at doing online education.

Participant 9 raised a salient point in that online course offerings may vary widely across academic disciplines, perhaps due to lack of training of the instructors.

Participant 10

Participant 10 is a 47-year old white female, with extensive computer experience, who self-reported as having hearing loss. Assistive technology required by Participant 10 to engage in online learning includes captions or transcripts. Participant 10 also read lips as she self-disclosed during the interview that "I need your lips to read." Participant 10 also self-disclosed during the interview that "I'm totally deaf in one ear, and I hear probably 60% on the right." Her

most recent online course was self-reported as PHC 6421 "Public Health Law & Ethics," taken during 2011, and with which Participant 10 self-reported as being "very satisfied." Participant 10 stated that the availability of online courses had little influence on her willingness to continue her education, and that she had never had occasion to drop an online course. Her responses to most interview questions was very positive, Participant 10 was a very upbeat and enthusiastic interview participant. She offered positive responses to most interview questions, and seemed to enjoy her most recent online class, particularly the I-S interaction with regard to her instructor's willingness to consider multiple right answers. "(The instructor) is willing to accommodate different perspectives and that's good. In fact, I would say (the instructor) learns from us as well in this medium."

Participant 10 (like Participants 2 and 3) wishes that all videos be captioned. In fact, when discussing support, specifically how it could be improved, Participant 10 said

> Captions ... (laughs) … Real-time captions is my answer to everything! Putting simultaneous captions on all these materials online would make everything better for all students. I mean, I've had people who found out that I got special transcripts in classes, and they would email me and say "Can you share those with me?" … (laughs) … That's the answer to everything for a hard-of-hearing individual, is to caption everything.

Participant 10 advocated for the use of captions again later in the interview.

> Folks just don't have a clue that the lack of captions <u>can</u> cause you a problem. It's so easy! I spread the word, and I ask my doctors when I'm sitting in their office "Hey, can you turn on the captions for me and some other people?"

> Sometimes they look at me funny, because I'm young, but they get it. Then the next time I come in, the captions are on and everybody's using them!

Accommodations that help students with disabilities will help all students. Both students with auditory and visual learning style preferences would benefit.

Participant 10 spoke of a high level of interaction in the course. When asked to describe the level of interaction with her instructor, Participant 10 said "It's mostly been very positive and as swift as I need." When asked to describe the level of interaction with other students, Participant 10 exclaimed "Great! It's great to have discovered many students that are actually in my workplace that are online here that I wouldn't have met otherwise (as) they're working in different programs." Participant 10 heartily agreed that interaction with other students is beneficial. "Oh, it's very helpful. You can learn perspectives, which is important in some of these courses." Again, this is another example of the upbeat tone that Participant 10 brought to the interview.

When discussing structure, specifically when asked what kinds of opportunities online instruction allow for collaboration with other students, Participant 10 listed four that are commonly used in online classes.

> There were these discussion boards, group projects, emails, and then the Elluminate session is some way, but they're so short and you don't get to know people as intimately as when you're thrown in a group. Giving us an assignment and being tasked with working together builds all the camaraderie in the world, as well as puts you in problem solving situations. The Elluminate is more for your own … each individual person's benefit.

When discussing support, specifically when asked how the quality of her online learning was influenced by how the learning was assessed, Participant 10 said

> I think it can be very positive because you can see things when they release them to you. They will release answers, and then you can discuss with the professor online. Just as similarly as you would if you stopped by after class. "Hey, why did I get this thing wrong?" And that certainly helps further your understanding, as well as improves the whole assessment process.

When discussing presence, specifically when asked in what ways does online allow you to be more engaged with other students, Participant 10 admitted that proactivity is a key to succeeding in online classes.

> You purposely have to stay connected because you don't see people and meet them as friends. You can't do study groups per se, unless you find someone in your geographic community. So staying engaged online is very important, but I find students will respond if you go into the group board and say "I'm confused about this," you'll get a lot of thoughts and somehow they all distill down to their good answer.

Participant 10 then reiterated the importance of differing perspectives in her online class.

> (The instructor) made our quizzes collaborative in that they stay open for a period of time, and she was encouraging that we ask each other questions and give our perspectives on what we thought the right answers would be. Only multiple choice questions, of course. Then when we were ready, we would take the individual assessment.

Participant 10 really enjoyed the interaction with her classmates, stating "To me, that's a great collaborative approach, such an open way of learning."

Participant 10 advocated for improving online education for students with disabilities through quality control.

> One of the things they need to do to improve online education is to make Quality Control a very, very important part of the piece as far as when the list directions out, they need to try every possible iteration multiple times under multiple conditions because they have students like me out there all over the place on these online, with multiple conditions as well as a disability.

Participant 10 then told me of her efforts trying to get her Student Government

> even more technologically connected. I asked because I couldn't be there physically to have them send me some information. I wrote to the Student Government Association President and asked "is there any thought of connecting your colleagues, your fellow students who are online, to your meetings and concerns?" I'm trying very much to feel like part of the community, you know, being that I have to in these online courses. But I think the people who are tangibly and physically there forget about us … quite a bit. And they could use their Elluminate sources to patch people in.

Students with disabilities could benefit from interaction via recently developed technological platforms, such as Facebook and Twitter, to help them feel more integrated with their respective communities.

Participant 11

Participant 11 is a 32-year old Hispanic/Latina female, with extensive computer experience, who self-reported as having learning disabilities and psychological disabilities. Participant 11 requested no assistive technology. Her most recent online course was self-reported as POS 2041 "American Government," taken during 2011, and with which Participant 11 self-reported as being "somewhat satisfied." Participant 11 stated that the availability of online courses had little influence on her willingness to continue her education, and that she has had occasion to drop an online course. "Yes, math, it was before I was tested for a math disability. It's actually what made me get tested for my disabilities."

I believe a theme of "structure" has emerged from this Participant 11 interview, with discussion of issues that arise from the perspective of a student with learning disabilities and psychological disabilities. When discussing satisfaction, specifically when asked with what aspect of online learning she had problems with, Participant 11 responded that she had difficulty with the structure of the online class.

> At first, I was struggling with it. I think it took me until the end of the semester to finally get a good grasp on … how to best utilize the tools provided by the professor to do well on the exam.

The many new tools now available within learning management system software to help facilitate online coursework can be daunting for a student with a learning disability. "Overwhelming, I guess it might be part of my … um, I have learning disabilities, so that might be part of the way I learn, it takes me awhile. I'm more successful when I try to overlearn something."

Participant 11 would have preferred explicit direction to flexibility of schedule.

> Usually when you have an online class, they're more … they don't tell you to read this chapter by this date, a lot of times professors don't do that. This professor was like "read chapter 12 on November 13," which helped me. At first, I was overwhelmed. I think maybe there was too much information.

Participant 11 told me she had taken two prior online classes and intimated that she preferred F2F classes. "I didn't do too well in those either … (laughs) … I think I do much better in a classroom." When asked is the availability of online courses influenced her decision to continue her education, again stated her preference for F2F classes.

> I want to keep going to school for myself, whether its online classes that are available or not. I personally feel that I do better in the classroom, though. And the structure, just because of me, the way that I am, structure is really helpful for me. That's what was so beneficial about this "American Government" class, and knowing exactly when your reading should be done.

This specificity of direction helped Participant 11 to efficiently parse out her time, which she found helpful.

Participant 11 prefers the routine of attending F2F classes and the in-person support of classmates.

> Coming here to class on campus you have the support of other kids in class that you can … Like, for me, it takes me awhile to warm up to people too. And trust people … and where's your level, are you on my intellectual level or not? When you're in a classroom, you can kind of see that, you can see who's interested, who's really interested in the material. Who's enthusiastic, who's slacking. It's

just so much easier to bond with someone for me … like that … (rather) than online. There's that kind of support you have when you're on campus too.

When discussing support, specifically when asked how support provided to her could be improved, Participant 11 recommended that the Office of Students with Disabilities Services conduct a mid-semester survey to initiate dialog regarding needed accommodations.

I think SDS should probably survey during the semester, like do a mid-semester survey, of what you're getting from your teachers. "How are you doing? Are you having any problems? Are your teachers receptive to your needs?" If there was a quick little survey that went out, 5 minutes you can fill in the information, and then your (program) advisor is alerted to your needs.

This echoes interview responses given by Participant(s) 3, 5 and 9, which bemoan lack of proactivity from the Office of Students with Disabilities Services, in that they don't fully inform students of what is available, oftentimes offering no accommodations except more time.

When asked what course instructors might do differently to improve support, Participant 11 skirted the issue somewhat by self-disclosing that some of her instructors aren't aware of her disability. "When they know you have a disability?" I must confess to having been perplexed by her selective non-admission of her disability.

Yeah, because you don't always have to turn in your letters. Like for me, you're not going to know I have disabilities unless I tell you. Because mine are learning and psychological, so you're not going to know. I can easily hide this, you know? Depending on if I trust you or not; how I feel about you, you know?

These comments regarding privacy echo those of Participant 4. Revealing you have a disability is indeed a very private thing. Participant 11 then came to the realization that privacy concerns

are secondary to academic success. "But then when I started to struggle, I've learned that I need to ask for help, you know? Some people don't advocate."

Participant 11 spoke of a discouragingly low level of interaction. When asked to describe the level of interaction with her instructor, Participant 11 said "Not so good in the "American Government" class, I'd write her an email and she wouldn't get back to me sometimes." When asked to describe the level of interaction with other students, Participant 11 said "Online … for this class? None at all."

When discussing presence, specifically when asked in what ways does online allow you to be more engaged with your instructor, Participant 11 seemed to stiffen her resolve against online classes. "Not so much, no. Not much either … (laughs)… No, not me, not me … (laughs) … it's not my style. I could see how it could work for other people, though." Participant 11 spoke as though she was convincing herself of her preference for F2F classes while responding to my questions, as did Participant 6. In an attempt to drill-down on her poor opinion of online classes, I challenged Participant 11, saying "You know, what I'm hearing is that you're a little timid, and you don't really want to reach out." Participant 11 then reprised her privacy concerns. "I don't think that's true either, because I could be outgoing. It's just when it comes to … OK, for my personality type, I guess. I can approach other people, but will I necessarily let you in? You know?" These comments from Participant 11 point out the need for instructors to help students feel comfortable enough interacting with them to allow full disclosure of sensitive personal information.

Participant 12

Participant 12 is a 26-year old black male, with extensive computer experience, who self-reported as having ADD/ADHD, blindness/low vision and a learning disability. He subsequently disclosed during our interview that his learning disability is dyslexia. Participant 12 chose not to disclose whether assistive technology was required or if it was used, as did Participant 5. During our subsequent interview, however, he shared that he uses corrective lenses for his low vision. His most recent online course was self-reported as LAE 4414 "Literature in Childhood Education," taken during 2011, and with which Participant 12 self-reported as being "satisfied." Participant 12 stated he was grateful for the availability and convenience of online courses as it enabled him to "continue my coursework while undergoing two back surgeries." Participant 12 said that he had never had occasion to drop an online course.

When discussing structure, specifically when asked what kinds of opportunities online instruction allow for collaboration with other students, Participant 12 mentioned the discussion boards in a positive light.

> I've actually had two courses where you had to respond to a … you had to post a comment to somebody else's response. That process, it was great because it was like doing a little blog. It was really great, other than not knowing who you're talking to by appearance. It was nice to be able to communicate with someone. A lot of students use online courses or the email system for … let's say you missed a lecture; it allows you to … it's another outlet to use all the resources.

Participant 12 had no qualms with interacting via the discussion board tool; in fact, expressed appreciation for the ability to "communicate with someone."

When asked how the online environment provided him opportunities to work at his own pace, Participant 12 stated his appreciation of the flexibility of online classes. Participant 12 also stated his preference for working ahead of deadlines.

> Again, the convenience factor. You can do it anytime, you know ahead of time what … obviously, when you're in a (F2F) class, you get a syllabus and the teacher has tentative dates when things are going to be due. I want to say about 70% of the time most of that stuff gets changed around … (laughs) … but when you have an online course, typically those dates are set in stone, unless the teacher themselves amend it. So, in "Childhood Literature," I knew that every week there was an essay due at the end of the week. In two weekends, I sat there and knocked out the whole first half of the semester. It allowed me to concentrate on that one class, while I can focus on these (other) courses that I actually need for my major. So that's one of those things; you can actually go ahead and do work ahead if you have the material and you have some extra time.

When discussing support, specifically when asked how the quality of his online learning was influenced by flexibility of schedule, course expectations being clearly stated, or how the instructor assessed learning, Participant 12 expressed regret of the lack of F2F interaction with the instructor.

> One of the tricky things about doing online classes is that you never have the opportunity to present something to a professor and get a F2F meeting. Although they have Office Hours, but if you see them in the class, you can just walk up to them after class and say "hey, I need help with this; it's just a simple question," because I wasn't an SDS student.

After this disclosure, Participant 12 told me that once he registered with the Office of Students with Disabilities Services, the instructor and the TA proactively offered him feedback.

> The professors actually made it easier to contact them. I had one professor, (he) had a TA, they would actually take my homework assignments aside and they would grade them themselves. They made themselves readily available via email; I always got a timely response from the professors. It was very easy to get ahold of the professors. I don't know if that's just because of the category I fell into, or if that's just the way the professor operated.

When specifically asked how the support provided to him could be improved, either by the Office of Students with Disabilities Services or course instructors, Participant 12 reiterated how easy he found it to reach his instructors. "You know, I never had a negative contact with … not being able to get in contact with professors right away." Participant 12 then said he hoped for training on the use of the learning management system when changes were made.

> I would say just help with Blackboard. You know, they're always updating Blackboard. There should be some way for students to get some help with Blackboard and things like that, but it's always up to the student's responsibility to just figure it out, you know?

Participant 12 also had only praise for the Office of Students with Disabilities Services.

> Yeah, they're actually great! They're … a really good support team there; I've never had a bad situation with them. It was always "OK, (Participant 12), what do you need? What can we help you with?" There were even instances where they would require you to schedule your tests a month ahead, especially around

> Finals time, because they would have a lot of students. I would come in and they were always very flexible.

Participant 12 then told me of an accommodation of modifying the course of study to allow for a substitute course that he received from the Office of Students with Disabilities Services. "I struggled in math, so instead of having to take a Statistics course, or high-level Algebra, they would give me … it wasn't a waiver, but it was kind of like … it was a substitute course." This disclosure from Participant 12 echoed the interview responses of Participant 9, who also called for a variation to the accommodation of more time (i.e., more time to complete the Program of Study).

When discussing interaction, specifically when asked to describe the level of interaction with his instructor, Participant 12 said "It was never a problem; I've even had teachers have Office Hours that they have set aside for their online courses. They actually do like a Skype of like a "Virtual Office Hours" and that's what it's coming to now."

When asked to describe the level of interaction with other students, Participant 12 said

> It would be just about the same. I wasn't one to just reach out to other students and say "hey, my name is (Participant 12)," but … it was actually about the same (level of interaction) as in a F2F course, other than exchanging emails or responding to someone's posts on the discussion board, which was basically most of the interaction you had.

Participant 12 then spoke of a lack of social connection when taking online classes.

> When I moved (here) and took my first online course, I extremely regretted it the first semester I was there because I didn't know anyone, so it made it harder to meet people. You go to a (F2F) class and sit next to someone, or see them around

> campus, and you say "Hi," or whatever. Well, you can't really do that in an online course, you've got to sit there and hunt them down. And it becomes a little weird after that … (laughs) …

When specifically asked how beneficial he found the interaction with other students, Participant 12 stated that, due to a lack of non-verbal cues, he found it to be not very beneficial. "Because someone has to initiate the contact, and most of the time these days we all … most people know how to read body language a little bit more. There's no reading of body language in online courses."

When specifically asked to what extent online interaction allowed for experimentation with ideas, or knowledge building, Participant 12 felt that F2F classes helped more, saying he felt it to be kind of limited.

> In my eyes, there's not a lot of room to be flexible. It's easier to talk than to sit there and try to type down exactly what you're trying to tell someone. If you have a project due, it's easier for everybody to meet in the group, rather than correspond via email.

When discussing presence, specifically when asked in what ways online interaction offered him opportunities to contribute in class discussions, Participant 12 bemoaned a lack of interaction beyond the minimum two weekly discussion board posts. "Unless it's one of those things where it's a requirement for the course for you to respond to discussion boards, most students won't. There's no ability to build on it unless another student takes the initiative." This echoed the response offered by Participant 10, that proactivity is a key to succeeding in online classes.

When specifically asked in what ways the online environment encouraged him to be more engaged with other students, Participant 12 explicitly stated his preference for F2F classes. "It encouraged me to take more classes on campus." Participant 12 seemingly sought a deeper, more resonant interaction than he believed online classes could provide. In an attempt to drill-down on his poor opinion of online classes, I then asked Participant 12 if it was fair to say that he preferred F2F over online. Participant 12 admitted that was true.

> It's a little tricky, but yeah, I actually do because you can develop those relationships with a professor, where it's a lot easier to ask them "can you write me a Letter of Recommendation?" Versus if I'm only taking courses online, "I've never met you, I only know what your work is like via your performance in this class." If you meet them in class, you have a chance to express a little bit of your personality throughout the semester.

Next, I asked Participant 12 if online learning was providing the interaction he needed, to which Participant 12 flatly said "No, you want to go have a conversation, especially with a math course. Sometimes it's hard to figure out what you're doing wrong." As heard from the interview responses of Participant 6, Participant 12 has a need for a relationship with his instructors, to actually meet them in-person.

Emergent themes / Essence

Six major themes emerged from this analysis of these data. I have labeled them as follows: (1) students with disabilities like the flexibility of schedule afforded by online classes, (2) students with disabilities have privacy concerns, (3) students with disabilities perceive a lack of interaction in online classes, (4) instructors lack understanding of students with disabilities,

(5) SDS did not fully inform students with disabilities of accommodation options, and (6) online context affords students more time to process information to gain understanding. These six major themes were identified as they were significant throughout the stories of the interview participants.

Regarding satisfaction, this group of 12 students with disabilities appreciates the flexibility of online learning; the ability to set their own pace with their coursework, having more time to process new information and gain understanding, and the affordance of not having to commute.

Privacy is also a concern for students with disabilities which can influence their satisfaction with online classes. Revealing you have a disability can be difficult.

> (The instructor) says "give all the paperwork to the lady at the front desk in the (academic) department," that's what I felt uncomfortable with. It's all so hard because once we put our name on that, as beneficial as it can be within school; it's also on our record permanently. I can tell you I've been turned down for jobs, and I've also had jobs where we organized their insurance plans specifically because of my disability.

Instructors must help students feel comfortable enough interacting with them to allow full disclosure of sensitive personal information.

Regarding support, this group felt that instructors lack understanding of students with disabilities, and instructors need to become more aware of available accommodations for students with disabilities – "like knowing transcriptions are available." This group also felt that the Office of Students with Disabilities Services did not fully inform students with disabilities of

accommodation options. This group felt that SDS offers no real support except "more test time." For some, however, this was the only accommodation they said they wanted.

Regarding interaction, this group found there to be a lack of interaction in online classes. This group believes that I-S interaction is critical for students with disabilities. Several interviewees said they eschew online courses for F2F courses, and spoke specifically of a need for F2F interaction with their instructor – "I still like to get to know my professors and build a little relationship."

This group believes instructors set low expectations for S-S interaction, which was limited to two weekly discussion board postings and group project work. Students' clarifying each other's questions is a very important form of S-S interaction in any course, but perhaps more critical in online classes.

This chapter offered rich descriptions of the 12 participant interviews that comprise the data for this research study. Six emergent themes from these interviews and a description of the essence of the collective experiences of the 12 interviewees were then presented. The following chapter will discuss the data from the participant profiles, referencing relevant studies from the literature review presented in chapter two.

CHAPTER FIVE:

SUMMARY

Introduction

This chapter presents the results of the phenomenological data analysis. This chapter will offer answers to the initial research questions based upon the data reported in chapter four. The research questions were:

- How do students with various disabilities experience online learning?
- How do students with various disabilities describe quality in terms of interaction, structure, and support?
- What factors are reported by students with various disabilities that facilitate or inhibit their learning in an online environment?
- How do students with disabilities perceive what instructors do to better facilitate their students' online learning?

Research Question 1

Learner Satisfaction

The first research question asks "how do students with various disabilities experience online learning?" This study focused on the quality of learning experiences and learner satisfaction of students with disabilities in distance education courses. As defined by John Keller

in 1983, satisfaction "relates to perceptions of being able to achieve success and feelings about the achieved outcomes" (Keller, 1983).

As previously explained in chapter 3, after the first two interviews, I decided to begin each subsequent interview with the questions regarding satisfaction, rather than accessibility, which is the first set of questions in the interview protocol. I felt uncomfortable beginning the first two interviews with a question centering on the participant's disability. I also believed the responses to the satisfaction questions would serve as a softer point of entry; setting a tone for the rest of the interview, and, more importantly, giving me an indication of whether the interview participant perceived their experience as positive or negative.

Regarding satisfaction, nine of the 12 interview participants self-disclosed that they were "very satisfied" or "satisfied" with the most recent online course they had taken (Participants 1, 2, 3, 4, 5, 7, 8, 10, 12). Five were "very satisfied," four were "satisfied." Three of the 12 interview participants stated that they were "somewhat satisfied" or "not satisfied" with the most recent online course they had taken (Participants 6, 9, 11). Two of these three interview participants bemoaned a lack of interaction. Also, two of these three students with disabilities flatly stated they preferred F2F interaction.

These data are consistent with those from a recent study titled "Comparison of levels of satisfaction with distance education and on-campus programs," that compared a distance education delivery mode with traditional on-campus coursework, and which reported no significant difference between graduates of on-campus programs when compared with distance education delivery systems (Kim, Lee, and Skellenger, 2012). The students in the 2012 study reported lower levels of both I-S interaction and S-S interaction in the distance education environment, however, as did the participants, students with disabilities, in this research study.

As this study investigates taking online classes via computer, it was useful to gather some baseline information on the computer background of each participant. Computer use is a separate skillset that some "technological immigrants" don't have. If a student must also learn how to use a computer while trying to keep up with an online class, this may lead to less satisfaction with the learning experience.

All interview participants self-reported having extensive experience with computers prior to taking their most recent online course. One interviewee, Participant 7, curiously self-reported having no computer experience, but "extensive" experience with e-mail and discussion boards, and "some" with ListServs. I believe this to be an oversight on the part of Participant 7, and thus feels justified in reporting all participants as having "extensive" experience with computers.

All interview participants agreed that computers were helpful and useful as part of online learning. Reasons given included more effective communication and the ability to access online resources during online classes. All but one of the interview participants stated that the availability of online classes had little or no effect on their choice to continue their education. In short, these students were going to continue their education regardless of the availability of online classes. Nine of the 12 interview participants had never felt it necessary to drop an online course in which they were enrolled. Of the three that had, one disclosed that it was due to struggling academically in the online class, which subsequently led her to be tested for her disability. The other two dropped the online classes in which they were enrolled while starting new jobs. As all 12 interview participants self-reported having extensive experience with computers prior to taking the online course, I don't believe any of the participants had a problem with computer use in navigating through their respective courses, with the possible exception of Participant 6. This is consistent with a research study titled "Implications for improving access

and outcomes for individuals with disabilities in postsecondary education" which reported no specific difficulties with students with disabilities using computers (Kim-Rupnow, Dowrick, and Burke, 2001).

Participant 6 self-disclosed that she was "somewhat satisfied" with her most recent online course, a fully online class in which she never met her instructor. Despite claiming to have had extensive computer experience, Participant 6 stated that "before I took online courses, I wasn't tech savvy. I could do what I needed to do, just the papers, some Word, Power Points, search the internet." This statement seems to contradict her claim of having extensive computer experience. Parenthetically, Participant 6 also self-reported having extensive experience with email, and some experience with the discussion board and ListServ tools. Perhaps her relative lack of computer experience (save emailing), coupled with her disdain for the course structure in her fully online Introduction to Oceanography course may partially explain her dim view of online coursework.

> Yeah, "Intro to Oceanography" was the one that I took online, was the college one, and that was … the one I hated because it was reading the book, taking the test … it was pointless. I took a class in high school online, and it was a lot of reading on the website, but we did activities that enforced the reading we had been doing, so I learned stuff there. But this one … not so much.

In a subsequent interview question regarding presence, Participant 6 flatly stated "it's not how I like to learn … which is why I don't take online classes." When I asked if her bad experience with her most recent online course had colored her overall perception of online classes, Participant 6 explicitly stated that she prefers not use technology and prefers to have F2F relationships.

> Yes and no. I think some of it, too, is I'm not a huge computer person. I'm one of those people, I don't like to have the online books. I don't want to do the online stuff, so I'm not as inclined to do the online. And some of it, too … I just … I want to be with the people.

Participant 6 has a strong preference for face-to-face relationships.

It seems reasonable to me that students' attitudes and perspectives regarding online classes may be influenced by the program in which they are enrolled. Perhaps a program that is conducted as a cohort in which classmates take all their courses together consists of mostly F2F classes, with few, if any, online classes offered. This might lead some members of that cohort to be less satisfied with online classes as opposed to F2F courses due to a perceived lack of S-S interaction. For instance, Participant 4 mentioned the paucity of online course offerings in both academic departments in which she is completing a double major. "I find that in the "Religion" department, there might be a random online course offered. Most classes in both the "Religion" and 'Education' departments are face-to-face."

Participant 9 remarked that the quality of online classes may be informed by the skill level of instructors within a given academic department.

> In another department (than Instructional Technology), they might not be as well-skilled at doing online education. So again, I don't know if completely online is a solution, I still like to get to know my professors and build a little relationship; you can't do that online, no matter how good the tools are.

Participant 4 mentioned that few online classes were offered by her academic department.

> Kind of sporadically offered. For example, in the Religion department, there might be a random course, like "Mormonism" was offered. I was searching for

> courses, because I'm also doing an Education major … so I think it was like only one or two online courses. So they prefer the one-on-one interaction of the classroom.

Research Question 2

Structure

The second research question asks "how do students with various disabilities describe quality in terms of interaction, structure, and support?" For purposes of this study, course structure is measured by assessment of a learning environment that allows students to work at their own pace, quality of the course syllabus, structure of course activities, organization of the content, student input into topics selection, teaching methods, and student assessment (Johnson, Aragon, Shaik, and Palma-Rivas, 2000).

Regarding structure, a blended course structure seems preferable to a fully online course structure. As mentioned by Participant 9, the initial class meeting of a blended online class, held on campus during the first week of the semester, can be quite valuable for all students. Participant 9 also noted that a blended online course structure seems to be gaining support in the literature.

> I like online, but not solely online, and I think that generally, in the literature, that seems to be gaining support, just because of the social presence which I mentioned. Maybe having a meeting at the beginning, one at the end, rather than completely online. It helps to have a meeting every once in a while. Possibly a blended approach, that's actually the one that's worked best for me.

An initial on-campus class meeting affords the instructor an opportunity to insure that expectations for the semester are clear and respond to any questions that may arise. It also allows the students to meet each other. This initial class meeting could also promote greater interest in responding to classmates' discussion board postings, as some students may have less interest in clarifying the questions or responding to discussion board posts of a fellow student whom they have never met. As mentioned by Participant 7, students clarifying questions for a classmate is an important form of S-S interaction that contributes greatly to academic success in an online class.

Participant 5 stated her preference for a blended course structure to enable discussion board collaboration.

> Well, maybe not in this class, there was an opportunity to do a group project which didn't work too well, when it was fully online, it was pretty much a disaster. It was helpful to have discussion boards, but what ended up happening was people that were comfortable with posting files and stuff, they would end up emailing and it would get really confusing and people dropped the ball a lot. But in class where I've done, I think it's called "hybrid," where some is online and some is in class, I like that, because I'm able to collaborate in discussion boards. That to me is helpful because then you have people who can go further with it, if you're interested in the same topic.

These data hearken back to one of the basic principles of online learning; transactional distance in online education (Moore, 1990). Transactional distance is a problem for all students, but especially for students with disabilities who may have access issues, difficulties with communication, or may be marginalized by fellow students. Of importance in reducing the

transactional distance inherent in online classes are dialog and structure (Moore, 1991), which the participants in this study felt they needed.

When asked what kind of opportunities online instruction allows her to collaborate with other students, Participant 3 shared that her most recent online course was not fully ready when the semester began. "She didn't have the discussion boards ready for the assignments, so it was like 'what am I supposed to do with this?' I'm ready to be done with this, and you're still setting up the course." Participant 5 shared that there were things posted that were incorrect in her most recent online course.

> I think making sure the information that is online… is accurate before posting it. What we noticed a lot of times was that he had already done the course previously online, and all he did was re-upload stuff or roll the course over in Blackboard. So there were a lot of mistakes or things he meant to fix; it would say "look at this slideshow," and then have a different one. It can get really confusing when you're trying to figure out Stats. I think you have to be careful with details when instructing a class like that because so many people are dependent on that.

All students depend on the information that is posted in their online classes being correct and posted in a timely manner, however, not just those with disabilities. Instructors must take care to have their online courses fully set up and ready to go before the first class session.

Participant 11, who self-reported having learning disabilities and psychological disabilities, stated her preference for explicit direction to flexibility of schedule, in contrast to Participants 1, 3, and 6, who called for the entire semester's assignments to be posted on the first night of class, rather than week to week. Participant 11 shared that "Usually when you have an online class, they don't tell you to read this chapter by this date; many times, professors don't do

that. This professor was like "read chapter 12 on November 13," which helped me a lot." Some students with learning disabilities may benefit from having online courses with a more explicit course structure. Participant 12, despite proclaiming his preference for F2F classes, praised the structure of his most recent online course, specifically the ability to work at his own pace. "You can do it anytime, you know, ahead of time what … you can actually go ahead and work ahead if you have the material and some extra time."

Support

For purposes of this study, there were two types of support that were investigated. Instructor support is defined as student perceptions of the comprehensiveness and usefulness of feedback, student encouragement, and the instructor being able to help students identify problem areas with their studies (Johnson, Aragon, Shaik, and Palma-Rivas, 2000). Departmental support is defined as student perceptions regarding the information the department provided to them, inquiring about their learning needs, and providing a communication link between the students and the instructor (Johnson, Aragon, Shaik, and Palma-Rivas, 2000).

Regarding support, when asked how the quality of their online learning was influenced by course expectations being clearly stated by the instructor, a wide range of responses emerged. Students with hearing loss, interview participants 2, 3, and 9, mentioned the need for captions on all video recordings. Participant 3 explained a key reason for this; the hearing impaired need time to process. "People with hearing loss can usually only do one thing at a time; we must stop everything and focus on communication. That is a distinct limitation." Students with hearing loss depend greatly on captioning to enable subsequent review of materials they may have missed in real time. Participant 3 mentioned her use of audio rewind with the online videos used

in her course, QMB 3200 "Economics & Business Statistics II." "I chose to watch the videos at home, so I could rewind, and get my own volume." Participant 3 appreciated the flexibility afforded by being able to watch the video lectures at home where she was able to manipulate the recording as needed. Audio rewind (in online videos) can be an asset to students with hearing loss.

Under the Americans with Disabilities Act, reasonable accommodation is a key nondiscrimination requirement. Within a work context, accommodations are a modification or adjustment to a job, the work environment, or the way things are usually done that enables a qualified individual to enjoy an equal employment opportunity (Retrieved February 26, 2010 from http://www.jan.wvu.edu/LINKS/adaglossary.htm). At the (university where this research study was conducted), students with disabilities who register with the Office of Students with Disabilities Services (SDS) are granted accommodation(s) according to their respective disability. Accommodations offered by SDS help promote equality in participation and better facilitate the learning of students with disabilities who have registered with that office. Once registered with SDS, a Letter of Accommodation is made available to the student, who then forwards the letter to their instructor(s).

Regarding the accommodation of more time, two interview participants seemed happy to have had it, and felt they needed nothing else to be successful in online classes (Participants 7, 8). Three other interview participants (Participants 3, 5, 9) bemoaned what they believed to be a lack of proactivity by the Office of Students with Disabilities Services, and seemed disappointed that they were offered only the accommodation of more time. Several interview participants allowed that timed assessments causes them to be anxious; it could be argued that we are all subject to this foible, not just students with disabilities.

In chapter two, common characteristics of an accessible online course for students with disabilities were cited and might include captions for media, spoken version of text allowing course content to be paused, restarted, or repeated, or providing color images in text format (World Wide Web Consortium, 2010). This list of characteristics reprises specific concerns listed by several interview participants, particularly those with low vision and hearing loss. It could be argued, perhaps, that with respect to accessibility of online courses, conditions are not improving.

Related to the accommodation of more time, Participant 9 called for more flexible program structures.

> When it comes to disability, they need to come up with more flexible structures, maybe adjusting programs of study, certain requirements. Like, we have a time requirement; you have to get this done. Well, when you're still in disability, sometimes it takes you twice as long to get things done and yet you're expected to finish in the same time. I almost quit my Ph.D. program because of that. That's why I'm saying having a more flexible program structure, where if you're someone with a disability, maybe you can take more independent study-type things or work with a mentor. I think that would be really good; if I had had that from the start, I might not have felt like I wanted to quit.

As noted in chapter two, individualized plans targeted to the each learner's specific needs is a key factor influencing the academic success of students with disabilities (Kim-Rupnow, Dowrick, and Burke, 2001).

Participant 12 spoke appreciatively of the substitute course he took through working with the Office of Students with Disabilities Services.

> They would give me, it wasn't a waiver but it was a substitute course. I ended up taking the "Statistics" course, but because of the help I got at the center (Office of Students with Disabilities Services), it worked out fine. I was able to take a "Communications" course (rather than "Statistics") that would focus more on graphs, as opposed to actually doing applied calculations.

Interaction

For purposes of this study, interaction relates to characteristics of a learning environment that supports student communications, shared learning experiences, teamwork, building a sense of community, and promoting an increase in student contacts (Johnson, Aragon, Shaik, and Palma-Rivas, 2000). Cited in chapter two, earlier findings indicate that interactivity is important to students in the online environment (Moore, 1989; Moore and Kearsley, 1996).

Although many options for online interaction exist, those described most often in the literature included discussion board, email, and listservs (Tallent-Runnels, et al., 2006). When asked what types of interactions they had with instructors, most responses from participants in this study centered on the discussion board and email, although Elluminate was also mentioned. One interview participant answered "none." Interaction with the instructor is very important for students with disabilities**.** This is a key point as some interview participants spoke specifically of a need for F2F interaction with the instructor (Participants 11, 12). However, Participant 5 preferred this teaching strategy.

> I think what I liked about it was that it was accessible at all different times of the day; I don't have to wait to go to class to access something. My instructor and the TA were very accessible by email and chat. He used Skype a lot, so it gave us a

chance for Office Hours, so we didn't have to walk all the way over to his office.

It was a lot easier because then I could save the conversation and refer back to it.

So that was really helpful.

24/7 access to the instructor is also is very important to students with disabilities. Consistent with findings for students with disabilities, an earlier study mentioned in chapter 2 found that students and faculty report increased satisfaction with online classes, depending on the quality and quantity of the interactions (Hackman and Walker, 1990; Shea, Fredericksen, Pickett, Pelz, and Swan, 2001; Swan, 2001). Findings from two more recent studies also indicate that interactivity is important to student learning in the online environment (Maor and Volet, 2007; Persico, Pozzi, and Sarti, 2010, as cited in Nandi, et al., 2012). Increasing the quantity of interaction may lead to greater satisfaction and higher learning, but increasing the quality of such interactions may be more important (Bernard, et al., 2009).

As mentioned, nine of these 12 interview participants self-reported being "satisfied" with their most recent online course; all three interview participants who were "less than satisfied" reported both I-S and S-S to be lacking. Participant 8, despite self-reporting being "satisfied" with her most recent online course, kept returning to her theme of how little interaction she experienced in the online classes she had taken. In my opinion, this perceived lack of interaction is a problem as it may inhibit learning. Providing more interaction seems a key opportunity for the improvement of online classes. Some students with disabilities have a great need for a high level of interaction with the instructor and/or their classmates, and believe they cannot get this anywhere but in a F2F class.

Research Question 3

Support

The third research question asks "what factors are reported by students with various disabilities that facilitate or inhibit their learning in an online environment?" As noted in chapter 2, support services are responsive to a wide variety of needs. Students receive assessments for assistive technology; help with study skills and organizational strategies, extension of course contract dates, and/or alternative methods for writing examinations (Moisey, 2004). As previously explained, there are wide ranges of disability considerations to which one must attend. For instance, students with hearing loss may be hard of hearing or totally deaf. Those students who are totally deaf need alternative methods for materials presented in audio. Students with visual disabilities may be blind or partially sighted. Students who have partial sight may magnify text on the screen to allow them to read it more easily. Students with learning disabilities may have difficulty processing materials or discussions presented by their computer. The use of a screen reader, like those used by blind students, often alleviates such difficulties (Schenker and Scadden, 2005).

Regarding support, captions are very valuable to students with hearing loss. In fact, three interview participants (Participants 2, 3, and 10) self-disclosed that the films not being captioned was one of the things they liked least about their most recent online course, because, according to Participant 10,

> Captioning in real-time helps me hear the audio. Thus there are both in inputs going on at the same time, aural as well as visual. In addition, real-time captioning helps with watching the sequencing of a video vs. trying to follow a

transcript, which is impossible to do because you can't do in tandem. So learning is strengthened even more with captioning than simply providing transcripts.

As mentioned, Participant 3 explained that the hearing impaired need time to process sensory inputs, a key issue for students with hearing loss.

> People with hearing loss can usually only do one thing at a time; we must stop everything and focus on communication. That is a distinct limitation. My only concern was like my first Stats exam; they kept letting people in late, and there was a lot of movement in the classroom, you know, like "move," "excuse me," and people asking questions, you know? Because now my focus is completely off my test and on that, because I have to focus really hard to hear.

Participant 5 shared that she also needs time to process sensory inputs, due to her ADD/ADHD.

> Certain things they (instructors) may not think are barriers, like discussions in class, I have a really difficult time with because by the time I'm caught up paying attention to what's going on, with processing my own thoughts, they've moved on to the next topic.

As such, these two quotes (from Participant 3 and Participant 5 respectively) show that in-class distractions may also make it difficult for students with learning disabilities.

Participant 2 praised online classes for this same reason.

> It (online learning) allowed me to read what other people said about the video which, before that class, I had a hard time following other discussions with students talking in the classrooms because at other schools, I didn't have CART (Computer Assisted Real-Time Transcription) closed-captioning in the classroom.

As mentioned, Participant 3 said that audio rewind (in online videos) was asset to students with hearing loss.

> Even in my regular classes, like the links on my PowerPoint presentations, oftentimes point to new resources, like YouTube or whatever; that stuff's not closed-captioned, not everybody can hear it. So I may have to watch a YouTube presentation three times to get the full scope of it. And that's kind of a good thing about online learning. Rewind and listen to it again.

For some students with disabilities, however, synchronous meeting software used in online classes, like Elluminate, while providing more options for interaction, can pose problems. The concurrent aural and visual inputs can be quite challenging to students with hearing loss or low vision, for example. Recordings of each class meeting, that students may subsequently review, as mentioned by Participant 3, seem to be an acceptable alternative.

When asked how support provided to her could be improved, Participant 5 stated she that she found support from faculty to be lacking, and called for greater I-S interaction. I believe she summed it up eloquently when she said

> I think sometimes instructors don't know how to support someone with a learning disability, I don't think they get it. It isn't anything specific, just this ability to be cognizant, not just turning in your Letter of Accommodations, but understanding what's really going on with the student and being able to communicate with them. Not treating them differently. Just get to know the person beyond that one letter.

Participant 11 decision to not necessarily disclose her disability to her instructor also seemed to stem from her perceived lack of empathy from her instructor, a situation which may have greatly improved with more I-S interaction.

> I've assumed this teacher wasn't interested in teaching us because he wasn't as enthusiastic as my other teacher. It is pride, but it's also fear and insecurity and stuff like that. But then when I started to struggle, I learned that I need to ask for help.

SDS and instructors must be encouraged to partner together, to develop a way to work in concert, rather than separately. If these two separate factions could better coordinate, such efforts would better serve the needs of students with disabilities.

Presence

For purposes of this study, social presence is "the ability of participants in a community of inquiry to project themselves socially and emotionally, as "real" people (i.e., their full personality), through the medium of communication being used." The online environment needs to be a safe place for participants to express their thoughts and experiences and where all participants are valued and accepted to promote sustained critical discourse (Garrison, Anderson, and Archer, 2001, pg. 94).

Regarding presence, when asked in what ways online interaction offered opportunities to contribute in class discussions, a wide range of responses emerged. "It didn't," none," "discussion boards and group projects," and "interaction via discussion board is limited at best" characterize these less than favorable responses. Two interview participants stated their belief that online interaction lacks the non-verbal cues you get in-person. Participant 12, the second of two interview participants who believed S-S interaction to be not very beneficial, believed it was "because somebody has to initiate the contact, and most of the time these day we all … most people know how to read body language a little bit more. There's no reading of body language

in online courses." Participant 3 said "and you have to read, sometimes you don't get the visual cues you get in-person, and sometimes you might have some misunderstandings because of that."

Conversely, Participant 9 remarked

> I think it's gotten easier to do that "presence" thing because of tools like Elluminate. I do Skype and i-Chat as well with other students. For instance, if I have a project I have to get together, or we couldn't get together, I might Skype. With Elluminate, when you have too many people on there, it tends to bog down. Tools like that do help, especially when you're working on a project and you need to collaborate remotely.

When asked in what ways online interaction allows you to be more engaged with other students, again, a wide range of responses emerged. Predictably, "discussion board responses," "group work," were mentioned, and three interview participants revealed that they preferred F2F courses. Participant 8, despite self-disclosing that she was "satisfied" with her most recent online course, quickly made clear to me her dim view of online classes, which was largely based on a perceived lack of interaction. Participant 11 answered "more engaged than in life? Not my style." As mentioned, Participant 12 told me he was "encouraged to take more classes on campus."

Conversely, Participant 9 seemed hopeful.

> I think it's getting better and better. There are more chat tools, more different programs that you might use to engage with each other outside of class, which is important. I think with social networking you can do a lot more informal

> learning, you're not just learning from your colleagues here, but you have a global audience of people.

Participant 5 was enthusiastic about wanting to read her classmates' discussion board entries.

> I find myself wanting to read what they're posting. You never know when you're going to miss something; you don't want someone to bring up a point you're not going to get. But I think it depends on the person. For me, I don't want to miss anything.

I-S interaction is enhanced by being proactive. Participant 10 said "staying engaged is important because you don't see people and meet them as friends. You can't do study groups per se, unless you find someone in your geographic community." As mentioned, students clarifying questions for each other is an important form of S-S interaction in which some students may have less interest if they have never met their fellow classmates. In order to promote interaction, instructors should interact with students with disabilities about their individual situations and learning processes so they can provide students with individualized support (Schenker and Scadden, 2005).

When asked in what ways online interaction allow you to be more engaged with your instructors, another wide range of responses emerged. Five interview participants answered "minimal," "not in this example," "lacking, especially with off-site professors," and "online lacks relationship with the instructor, it's harder to build a relationship remotely," respectively. Conversely, Participant 5 stated her belief that the online context facilitates I-S interaction.

> I think it breaks down a lot of barriers and walls, because you have the ability to ask every type of question because you are working at your own pace in

> a way. If you had a question late at night or early in the morning, you could email it.

This comment by Participant 5 emphasizes again that 24/7 access to the instructor is very important to students with disabilities.

Online interaction masks disability. Earlier in our interview, when discussing structure, specifically what opportunities online instruction provides for collaboration with other students, Participant 9 gave voice to a very important point.

> One nice thing about online interaction, if you have a disability, it's not as visible. For instance, I have a friend who's in the military and he suffered a really bad injury, he's missing half his head. Well, you know, right now he's having a hard time trying to integrate back into society, and going to class where everybody where everybody is staring at you, people feeling uncomfortable around you. Assuming the professor makes the course in a way that is accessible, and I don't have any problems, there's really no way other students would know I have a disability.

Online interaction, facilitated by the use of discussion boards and emails, and synchronous meeting software like Elluminate and Skype, affords students with disabilities an opportunity to engage with the instructor, classmates, and the subject matter without necessarily being identified with their disabling condition.

Social presence is a key contributor to students' success in the educational experience. Students find the group experience enjoyable and are willing to remain in the community of learners, thus indirectly facilitating the process of critical thinking carried out in the community of learners (Garrison, Anderson, and Archer, 2000). This is of particular importance to students

with disabilities; the online environment offers an opportunity to be anonymous, with respect to their disability, and equal, without fear of marginalization.

Research Question 4

The fourth research question asks "how do students with disabilities perceive what instructors do to better facilitate their students' online learning?" As noted in chapter 2, the development of an online community for collaborative learning through the use of discussion boards is extremely beneficial for all students, but for students with disabilities in particular it offers greater opportunity for shared experiences (Gerrard, 2007). Studies by Bhattacharaya (1999) and Davidson-Shivers, Tanner, and Muilenberg (2000) (as cited in An, Shin, and Lim, 2009) suggest that students prefer asynchronous online discussion to synchronous discussions because it allows time for students to provide thoughtful reactions to questions posed and insights to one another.

Regarding structure, instructors may be setting low expectations for S-S interaction if only two weekly discussion board postings are required. Participant 4 allowed that "the discussion boards obviously work, if you have enough people willing to respond and get into an actual discussion beyond the required. Usually that's more in upper-level courses than in the beginning though." I noted that Participant 12 was pleased with this level of S-S interaction, specifically email responses to other students' inquiries and two weekly discussion board postings, while some interview participants characterized these as "little to no interaction with other students." In my opinion, instructors should take up the challenge of creating more engaging discussion board assignments that elicit more than a single response from each student.

Regarding support, when asked what course instructors might do differently, Participant 2 mentioned a lack of awareness by some instructors regarding what accommodations are available. "Like knowing transcriptions are available. When we found movies hidden off to the side in really small font and they were not very accessible." Restating the desire to have all videos captioned, Participant 2 also called for some coordination between instructors and the Office of Students with Disabilities Services.

> I guess maybe … the captioning. Do better working together with the Office so the transcripts are better with the videos. Meet the CART (Computer Assisted Real-Time Transcription) person in-person and watch the video, and (insure) it was English transcribed.

Participant 5 and Participant 11 found support from faculty to be lacking. Participant 11 said "I've thought that this teacher wasn't really interested in teaching us because he didn't act so enthusiastic as my other teacher did. I don't think he cares about me, you know? That's really what it's about." Participant 6 stated a belief that instructors accommodate only out of necessity.

> I kind of can tell how the teacher's going to react to me giving them my accommodations by what they have in the syllabus. If they have the simple line saying "The Accommodations" that they have to put on the class syllabus; some of them, I find, completely forget to put it in there, and those are the ones that I'm like 'OK, how am I going to deal with you?' So, to me, even reading the syllabus online, I know how you're going to react to me emailing you this stuff (my accommodations).

Participant 9 said "We need some education with professors on how to design their courses to make them successful. There's a lot of potential there that still remains unrealized."

Students with disabilities need to feel secure, which in turn boosts their self-confidence, empowering them to have a fruitful dialogue with the instructor and other students. Instructors should make it a point to interact with students with disabilities regarding their individual situations and learning processes so they can provide individualized support (Schenker and Scadden, 2005). Participant 11 made comments that illustrate the need for great sensitivity on the part of instructors to help to create an atmosphere in which students with disabilities will be more comfortable with disclosing their sensitive personal information.

Instructors might also provide alternative assignments for students with disabilities based on their learning needs. Previously referenced in the literature review, the findings from a paper entitled "Legal Obligations and Workplace Implications for Institutions of Higher Education accommodating Learning Disabled Students" stated that when colleges and universities offer support services that help students in finding accessibility solutions, students exceed their academic goals at a higher rate than in institutions where students (and faculty) are not supported in this fashion (Levy, 2001). As mentioned, Participant 12 told how the Office of Students with Disabilities Services gave him a substitute course based on his math disability. Instructors might also work in this manner to provide alternatives for students with disabilities based on their learning needs.

> They would give me, it wasn't a waiver but it was a substitute course. I ended up taking the Statistics course, but because of the help I got at the center (Office of Students with Disabilities Services), it worked out fine. I was able to take a "Communications" course that would focus more on graphs, as opposed to actually doing applied calculations.

These interview data suggest that more training for instructors is needed on how to work with students with disabilities. In my opinion, SDS and instructors must be encouraged to partner together, to develop a way to work in concert, rather than separately, in a proactive rather than reactive fashion, to better serve the needs of students with disabilities.

For the purposes of this research, computer accessibility refers to the usability of a computer system by people with disabilities or age-related limitations (Nielsen, 2000). It is largely a software concern. However, when hardware or software is used to customize a computer for a disabled person, that equipment is known as Assistive Technology (Nielsen, 2000).

The interview protocol for this research study contains only one interview question related to accessibility, which is "in what ways did the assistive technology provided to you aid you in your online coursework?" As mentioned, the need for captions by students with hearing loss was the main concern related to accessibility voiced during the interviews. Participant 3 spoke of films that were not captioned.

> (The instructor) had an online video which we were supposed to watch and the videos were, I don't know if they were like video tapes that she had converted? To me, they were not very good quality and it was very hard to understand. Of course, they weren't closed-captioned, which is an accommodation.

Participant 10 enthusiastically advocated for captioning.

> "Real-time captions" is my answer to everything! Put real-time captions on all these materials online would make everything better for all students. I

mean, I've had people who found out that I got special transcripts in classes, and they would email me and say "can you share those with me?" … (laughs).

Participant 1 spoke of PDFs that were inaccessible. "PDFs aren't always accessible. PDFs are just big pictures; they must be converted to text. Also, Word docs with boxes around text can be confusing, needs conversion." Participant 1 suggested modifying courses based on students' needs by providing substitute assignments for students with low vision who cannot see pictures. When instructors plan online classes, they may not consider the specific needs of students with low vision as they link to course web sites only to find most information is provided in an inaccessible image format (Schmetzke, 2001). This is a problem that would be seemingly easily remedied by making the instructor aware of the issue. As mentioned, a dialog between the student and the instructor would go far in helping to better serve the needs of students with disabilities.

Summary

In summary, the six major themes identified through the data analysis process were: "Students with disabilities like the flexibility of schedule afforded by online classes," "students with disabilities have privacy concerns," "students with disabilities perceive a lack of interaction in online classes," "instructors lack understanding of students with disabilities," "SDS did not fully inform students with disabilities of accommodation options," and "online context affords students more time to process information to gain understanding." Salient quotes from the interviews of the participant's experiences are also included to further illustrate these major themes and the research question to which they relate.

Theme 1 is labeled "Students with disabilities like the flexibility of schedule afforded by online classes." This theme relates to RQ2, thus the resultant data speak to how students with disabilities describe quality in terms of structure.

When asked how the quality of their online learning was influenced by flexibility of schedule, unsurprisingly, all interview participants mentioned this prevalent theme in their responses. In fact, two interview participants self-disclosed that "being able to work at my own pace" was one of the things they liked most about their most recent online course. Related to schedule flexibility, three interview participants also told me they appreciated the convenience of not coming to campus for class, thus saving transportation costs and commuting headaches (Participants 3, 6, 9). Participant 9 said "Being able to take a class when it fits my schedule, if it meets my needs of transportation and availability, that's good." It must also be noted that four other interview participants stated that they would rather come to campus for class, as they preferred F2F interaction with the instructor, their fellow students, or both (Participants 6, 8, 11, 12).

Theme 2 is labeled "Students with disabilities have privacy concerns." This theme relates to RQ1, thus the resultant data speak to how students with disabilities experience online learning.

The interview data confirmed that privacy is a critical issue for students with disabilities. I first became aware of this while learning how to gain access to the population of students with disabilities registered with the Office of Students with Disabilities Services. Students with disabilities may feel uncomfortable with disseminating their private details to anyone other than the instructor or an SDS employee. Instructors must be sensitive to this issue.

Participant 4 claimed to have been denied employee benefits once the employer learned of her disability. Due to such experiences, Participant 4 was particularly frustrated that "there was no one here at the university, like a TA or anything that I could correspond with without having to send private information via email."

> It's hard because once we put our name in that (register with the Office of Students with Disabilities Services), as beneficial as it can be within school, it's also on our record permanently, which affects our jobs. I can tell you that I've been turned down from jobs, and that I've had jobs where we organized their insurance plans specifically because of my disability, which has had a lot of repercussions. I can't get insurance, and once I can no longer be on my parents' health insurance, if I can't get a job, the only insurance available to me is Medicaid. Even though I may not fiscally qualify for it, as a teacher, I have no idea about that, but I have been denied by every other insurance.

Participant 8, when asked how the support provided could be improved, said, curiously, "What support? As a disabled student, the support means, again, the perks. I'm not needy; I don't need anything else (except the accommodation of more time)." Although privacy concerns were not explicitly stated, the dismissive, almost petulant response given by Participant 8, with reference to accommodations as "perks," reinforced to me that this was a very sensitive topic.

Participant 11 did not always disclose her disability to her instructors, perhaps due to privacy concerns, "depending on if I trust you or not … how I feel about you." This may have resulted in her not receiving the needed accommodations, leading to less satisfaction with the learning experience. However, students with disabilities must also be willing to advocate for themselves and request needed accommodation(s). The privacy of students with disabilities,

because it is an extremely sensitive issue, must be considered on a case-by-case basis. Privacy is a key concern of students with disabilities and can influence their satisfaction with online classes.

Theme 3 is labeled "Students with disabilities perceive a lack of interaction in online classes." This theme relates to RQ2, thus the resultant data speak to how students with disabilities describe quality in terms of interaction.

Regarding satisfaction, when asked what they found not-so-helpful about using computers as part of online learning, most interview participants bemoaned a lack of interaction, either with the instructor or other students. In response to being asked what she found helpful about computers as part of online classes, Participant 8 told me that "I don't have any interaction with anybody and I don't like that." Participant 8, despite self-reporting being "satisfied" with her most recent online course, kept returning to her theme of how little interaction she experienced in the online classes she had taken.

Participant 12 said he felt the interaction of an online class to be "an inadequate substitute" for interaction in a F2F class as he believes F2F "interaction uses multiple modalities to increase learning that online misses." Despite self-disclosing that he was "satisfied" with his most recent online course, Participant 12 told me that he was "encouraged to take more classes on campus" when discussing presence.

Participant 9 self-disclosed that he was "not satisfied" with his most recent online course and that he found the I-S interaction to be lacking.

> I don't know if completely online if a solution, I still like to get to know my professors and build a little relationship. You can't do that online, no matter how good the tools are. There's a lot that's lost online. Like, if you have a

student, and they come to an online chat and you're just doing text, you can't know that student is upset. It helps to have a meeting every once in a while.

Regarding structure, when asked what opportunities online instruction provided for collaboration with fellow students, common interview responses included "very little," "group work," and "discussion board postings." When asked what tools they used to collaborate with other students, most responses centered on the discussion board and email, though Blackboard group pages, Elluminate, Skype, blogs and wikis were also mentioned. When asked to describe interaction in their most recent online class, most interview participants told of the strategy of requiring twice weekly discussion board postings, a common requirement in online classes, and clarifying each other's queries via email responses.

Regarding interaction, when asked to describe the levels of I-S and S-S interaction, responses to both questions ranged from "none," "not good," and "very little" to "never a problem" and "high level;" some interview participants were pleased with the level of interaction, and some plainly were not. Recall, these interview question responses and opinions are necessarily a result of the interview participant's experience with their most recent online course. If the participant had a bad experience in that most recent online class, perhaps expecting interaction or support they didn't get, they are more likely to express a lower overall opinion of online classes. Despite self-reporting that she was "satisfied" with her most recent online class, the lack of interaction reported by an embittered Participant 8 surely lowered her overall perception of online classes.

When asked what types of interactions they had with instructors, most responses centered on the discussion board and email, although Elluminate was also mentioned. One interview participant answered "none." Interaction with the instructor is critical for students with

disabilities**.** This is a key point as some interview participants spoke specifically of a need for F2F interaction with the instructor (Participants 11, 12). Cited in chapter two interactions with instructors are important in all learning environments, but perhaps most critical online (Mazzolini and Maddison, 2003; Picciano, 1998; Sher, 2009; Swan, et al., 2000; Thurmond and Wambach, 2004; Weiner and Mehrabian, 1968).

When asked how beneficial they found interaction with other students in online courses, 10 of the 12 interview participants found it very beneficial. Participant 5, one of the two interview participants who believed S-S interaction to be not very beneficial, allowed that this was because in her Statistics II course "it was only important if we found mistakes in the material, we were trying to get clarification." When asked to describe typical S-S interactions, Participant 5 said they were limited to group projects and discussion board responses. "But interactions with other students were limited to the one group project, and maybe a couple discussions online where they ask a question and someone (else) is saying the same thing." Participant 12, the second of two interview participants who believed S-S interaction to be not very beneficial, said it was "because somebody has to initiate the contact, and most of the time these day we all … most people know how to read body language a little bit more. There's no reading of body language in online courses."

These data are consistent with those from a recent study titled "Comparison of levels of satisfaction with distance education and on-campus programs,"
which reported no significant difference between graduates of on-campus programs when compared with distance education delivery systems (Kim, Lee, and Skellenger, 2012). The students in the 2012 study reported lower levels of both I-S interaction and S-S interaction in the distance education environment, however, as did the participants in this research study.

Theme 4 is labeled "Instructors lack understanding of students with disabilities." This theme relates to RQ4, thus the resultant data speak to how students with disabilities perceive what instructors do to better facilitate their students' online learning.

Regarding instructor support, three interview participants bemoaned what they perceived to be a lack of understanding of students with disabilities by instructors. Participant 5 believes support from faculty to be lacking. When asked how the support provided could be improved, she said

> I don't know if SDS can ever do anything more without understanding by instructors, and I think most instructors are completely clueless, to be honest. I think they have a certain stereotype of what most learning disabilities are, and they don't go outside of that frame, that there couldn't be someone who doesn't fit a certain stereotype.

Participant 6 revealed her concern with what she believes are instructors providing accommodations to students with disabilities only out of necessity. "I kind of can tell how the teacher's going to react to me giving them my accommodations by what they have in the syllabus." Instructors must be aware of what accommodations, beyond more testing time, are available to students with disabilities.

Participant 11 also believes support from faculty to be lacking and recommended that the Office of Students with Disabilities Services seek mid-semester feedback from the students registered with their office, in order to initiate a dialog between the student, the instructor, and the Office of Students with Disabilities Services. This would help rectify another perceived problem raised by Participant 5; that instructors lack understanding of students with disabilities.

Theme 5 is labeled "SDS did not fully inform students with disabilities of accommodation options." This theme relates to RQ2, thus the resultant data speak to how students with disabilities describe quality in terms of support.

With regard to departmental support, three interview participants (Participants 3, 5, 9) bemoaned what they believed to be a lack of proactivity by the Office of Students with Disabilities Services, and seemed disappointed that they were offered only the accommodation of more time. Participant 5 mentioned

> They were very accommodating in terms of exam stuff, but other than that they didn't offer extra support, which I thought was odd. I would assume that some accommodations that people need, especially if you're working online and trying to chat … I would think it would depend on your accommodations. I felt OK, but I just don't know if every person with every sensibility would be OK in that (online) environment.

Participant 3 shared that

> They got the CART transcriptionist when they realized I was having a problem, and then they told me that they also do the CART via Skype, which I didn't know or I wouldn't have had her (the CART transcriptionist) in there. I don't know what's available until somebody tells me … and they do it for people with sign language, too. She would print out or email me the whole session.

Participant 9 observed

> "The Office of" is there to meet the letter of the law, other than the spirit. It's also there primarily for the undergraduate population, so it really is geared more towards testing and providing that kind of more structured support. Once you get into the

qualifying exam proposal, these are more areas where you work on your own and with a mentor.

Participant 9 then expressed a rather bleak view of the support offered by the Office of Students with Disabilities Services.

> It's not their fault entirely, I think they have a new person (director) and she's trying to do the right thing. The problem has to do with the university structure and how these offices are set up, and there were very few universities that I've heard of where that office is actually proactive. Again, it's there to prevent them (the university) from getting sued, so what I've heard over and over, because I've worked with them as a consultant on accessibility, is "nobody's complained, so we're not going to address that issue." And it's like "why don't you fix it now? It will save you headaches later." So anyway, that's my soapbox … (laughs).

Theme 6 is labeled "Online context affords students more time to process information to gain understanding." This theme relates to RQ3, thus the resultant data speak to what factors are reported by students with various disabilities that facilitate or inhibit their learning in an online environment.

Online classes offer all students more time to process information to gain understanding. As mentioned, Participant 3 mentioned how viewing prerecorded video lectures allowed her more time to process new information. The flexibility afforded by online learning may be an asset to students with disabilities, particularly those with hearing loss.

> I get lost because I have to process what I hear, and then I have to write. I can't listen and write at the same time because I have to spend a lot of focus on hearing. It's hard for me to keep up like that.

When asked to what extent online interaction allowed her to experiment with ideas, build knowledge or gain complex understanding, Participant 9, said "Somewhat. I think … when writing is your primary way of communicating, you take time to formulate your ideas a little bit better … and think things through." When asked the same interview question, Participant 5 said "I think it offers way more than the classroom." Participant 5 went on to say that classes in an online context helped her academically.

> I think, for me, it allows you to at least try things you're not comfortable with, like Stats. That's a high anxiety level class for most people, and you're able to process things the way you need to process things, you're not just bored in a lecture. A huge thing I noticed too is that compared to my friends who took it in-class, was I seem to be able to apply it better. Because (with) the class being online, you were self-teaching it, so you had to constantly do problems on your own versus somebody lecturing to you. I felt like I actually retained more from having it online, because I was forced to engage with it; I had no choice or I never would have passed it (laughs). I think just having time to think about the questions posed, or someone reacts to your paper online, you're able to take time to think about it.

Participant recruitment was limited to one university in the southeastern United States. Students attending a different institution may have a different experience with online coursework and, consequently, a different story to tell. The data from this study provide a descriptive

account of the experiences of students with disabilities with online courses in higher education and may inform faculty working with these students and the Office of Student Disability Services in providing support for them.

Implications

Difference between K-12 schools and universities

What K-12 schools and universities are required by law to do to support students with disabilities differ in that the Individuals with Disabilities Education Act (IDEA) is not applicable to postsecondary education. In short, students with disabilities at the postsecondary level are eligible for academic adjustments, program modifications, and/or auxiliary aids/services; they are not eligible for the specially tailored instruction offered under IDEA (Oregon State University, 2010). Rather, accommodations in postsecondary education are governed by Section 504 of the Rehabilitation Act of 1973, specifically subpart E, and the Americans with Disabilities Act of 1990, two laws which state what a postsecondary institution must do to support students with disabilities in an academic program or activity (Oregon State University, 2010).

Colleges and universities are not required to identify students with disabilities, only to inform applicants of the availability of auxiliary aids/services, academic adjustments, or program modifications. Students with disabilities must take it upon themselves to self-identify, provide any required documentation of their disability (-ies) and their need for academic adjustments, program modifications, and/or auxiliary aids/services they request. Also, the categories of disabilities recognized by a college or university, the types of documentation required, and who is qualified to conduct the assessment(s) may differ from K-12 (Oregon State University, 2010).

I believe all schools have a moral obligation to serve all students equally. While it is inaccurate to say these 12 students with disabilities expected personalized instruction as if in a K-12 class, the simple fact is that they did need help that students without disabilities did not. Although three students with low vision called for captions on all audio/video recordings, which would benefit all students, the 12 participants in this research study seemed to desire few accommodations save extra time on assessments. Any refusal of accommodation, such as was experienced by Participant 3 whose instructor "refused to wear the amplifier, the personal receiver" seems unconscionable.

Faculty training

Interview responses from the 12 students with disabilities who consented to participate in this research pointed to a need for instructors to develop a better awareness of available resources for students with disabilities. This is important to those students with disabilities who enroll in their F2F courses, and especially those who enroll in their online courses. Participant 2 mentioned needing transcripts for recordings to be available in a more timely way, and was dismayed that the instructor was seemingly unaware they were available. With the many tasks to which university instructors must attend, it may be possible that accommodations for students with disabilities get overlooked, especially if the instructor has little or no experience with helping students with disabilities. Also, if the instructor has no students with disabilities in his/her class, awareness of resources may not necessarily become a priority.

Instructors have an obligation to help all students learn as best they can, they must become aware of all the resources they have at their disposal to help any students with disabilities that enroll in their courses. Therefore, I believe that instructors must be proactive in

learning what accommodations are available not only to students with disabilities as a whole, but also for what is available for each of the disabilities recognized by the Office of Students with Disabilities Services at their respective institution. It seems obvious that students with physical disabilities, such as blindness/low vision or deafness/hearing loss, would need different accommodation(s) than would students with learning disabilities or psychological disabilities.

Instructors must take care not to alienate a student with a disability who makes reasonable request, an experience reported by Participant 3, who had an instructor actually refuse her accommodation request. Privacy is also a key concern to students with disabilities; so important that some students like Participant 11 may choose not to disclose for fear of being stigmatized for self-reporting their disability. While this need for increased interaction is not necessarily specific to students with disabilities, instructors must be sensitive to the needs of students with disabilities. Thus, increased interaction seems crucial for establishing and maintaining a healthy rapport. As Participant 5 said, good support begins with "being able to communicate with (students with disabilities)." All students need to feel that they can communicate with their instructor whenever they need. Given the recent surge in popularity of smart phones, round-the-clock access to instructors is expected by today's students.

Instructional technology

According to the Association for Educational Communications and Technology (AECT), instructional technology is the theory and practice of design, development, utilization, management, and evaluation of processes and resources for learning (Garrison and Anderson, 2003). Instructional technology may be referred to as a part of educational technology, but the use of these terms has changed in recent years (Lowenthal and Wilson, 2010). Instructional

technology is an ever-changing field of study which uses technology as a means to solve educational challenges, both in the classroom and distance learning environments. As mentioned in chapter two, Moore (1989) suggested three kinds of interactions important to students: learner-content, learner-instructor, and learner-learner. Since Moore's 1989 article, several philosophical views have arisen relating instructional technology to these types of interaction. While most traditional researchers argue that learner-content is perhaps the most important function of instructional technology, some cognitivist researchers argue that Moore's social interactions (learner-instructor, learner-learner) are as useful as learner-content interaction (Maor and Volet, 2007; Mikulecky,1998; Persico, Pozzi and Sarti, 2010).

The responses that I received from the twelve interview participants that participated in this research support this notion. When asked to describe the levels of S-S interaction in their online courses, responses ranged from "none," "not good" and "very little" to "never a problem" and "high level;" some interview participants were pleased with the level of interaction, and some plainly were not. Just as troubling are some of the participant's characterizations of learner-instructor interaction. Five interview participants characterized the levels of I-S interaction in their online courses as "minimal," "not in this example," "lacking, especially with off-site professors," and "online lacks relationship with the instructor, it's harder to build a relationship remotely," respectively.

Interview questions concerning S-S and I-S interactions elicited the most striking interview responses. Participant 8, despite self-reporting being "satisfied" with her most recent online course, repeatedly returned to her theme of how little interaction she experienced in the online classes she had taken, characterizing the level of S-S interaction as "sadly low," and depicting I-S interactions as "adequate at best" to "less than adequate; you can't rate 'sucked?'"

Also, Participant 12 told me he was "encouraged to take more classes on campus" in response to being asked in what ways online interaction allowed him to be more engaged with other students.

If online courses are to be meant to help students with disabilities maximize their postsecondary experience, social interactions such those described by Moore (1989) above must be more stressed more. Today's students expect more interaction than two weekly discussion board posts and e-mail responses, and I would argue that students with disabilities especially need more. As Participant 9 said "We need some education with professors on how to design their courses to make them successful. There's a lot of potential there that still remains unrealized."

Universal Design for Instruction

Universal Design for Instruction (UDI) is an approach to teaching that consists of proactive design and use of inclusive learning strategies that benefit a broad range of learners, including students with disabilities (Scott, McGuire, and Embry, 2002). The word "universal" refers to a flexible design that is specifically created to be used in diverse ways. UDI is comprised of nine principles for instructors to use in the designing or revising courses to be responsive to increasingly diverse students and to lessen the need for special accommodations and retrofitted changes to the learning environment. The nine principles include equitable use, flexibility in use, simpleness and intuitiveness, perceptible information, tolerance for error, low physical effort, size and space for approach and use, a community of learners, and a supportive institutional climate (Shaw, Scott, and McGuire, 2003). These principles may be useful with a range of teaching issues from assessing student learning to broadening learning experiences, to

considering how an inclusive classroom climate can be created (Scott, McGuire, and Embry, 2002).

To implement these principles as a distance learning course is being developed can be easier and less expensive than quickly developing accommodation strategies each time a student with a disability enrolls in a course (Burgstahler, 2012). Faculty would benefit by receiving positive reinforcement for responding to student diversity while maintaining their academic standards and autonomy as the designers of their courses. Such foresight would increase the accessibility of online courses for all students, and shift the focus from retrofitting accommodations each semester to proactively planning instruction that anticipates diversity in learners (McGuire and Scott, 2006). I believe it would be useful for all instructors, particularly junior faculty or graduate teaching assistants, to proactively incorporate universal design principles into their online classes as they are being developed, rather than reactively providing accommodations each semester for individual students with disabilities.

With regard to UDI, students with disabilities who participated in this research study requested captions on all audio/video recordings, transcripts for lecture video recording, descriptive computer programming tags for materials containing pictures and images for students with low vision. Also, as Participant 11 self-reported having difficulty managing her time, it should be noted that direct instruction or more structure may be beneficial for students with learning disabilities and/or psychological disabilities.

The Office of Students with Disabilities Services

I believe that both instructors and the Offices of Students with Disabilities Services have a moral obligation to help students maximize their potential in all of their classes. I also believe

the Office of Students with Disabilities Services could be more proactive in raising the awareness of not only the students with disabilities who register with the Office, and, just as importantly, their instructors as to their available accommodations. Some participants in this study were disappointed at having only the accommodation of extra time on assessments available. Participant 11 recommended that the Office of Students with Disabilities Services seek mid-semester feedback from the students registered with their office, in order to initiate a dialog between the student, the instructor, and the Office of Students with Disabilities Services. I heartily second her recommendation.

As mentioned, these interview data suggest that more training for instructors is needed on how to work with students with disabilities. Again, instructors have many tasks to which they must attend; more proactivity by the Office of Students with Disabilities Services in raising awareness of available accommodations would certainly benefit instructors too. If faculty were to adopt the Universal Design for Instruction principles outlined above, it could allow disabilities services providers to grow into more of a consulting role, and broaden awareness of available accommodations, instead of being recognized as the only person charged with making the campus and curriculum accessible. In my opinion, SDS and instructors must be encouraged to partner together, to develop a way to work in concert, rather than separately, in a proactive rather than reactive fashion, to better serve the needs of students with disabilities.

Future Research

There is still much to be done to support students with disabilities. In the online environment, students with disabilities tend to go unobserved and perhaps unacknowledged. For example, when group work is the primary pedagogical method employed, the technological

media must support students with disabilities in their collaborative work. Some disabilities make it difficult for students to use synchronous meeting software, for example, as there is "too much going on" with simultaneous aural and visual inputs. Lack of awareness among course instructors is also partly to blame for many of the barriers to accessibility found in many distance education courses. The importance of universal designed instructional resources for students with disabilities cannot be overstated (Schmetzke, 2001).

As the field of distance education has evolved, the need to compare it to classroom instruction lessens (Bernard, et al., 2009). Sadly, discussions of topics related to students with disabilities experiences are still rare in the distance education literature. Further research in this area may allow students with disabilities with online courses in higher education to become more vocal about their needs from their individual perspectives and in their own words, and pave the way for improving the quality of the online learning environment for them.

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APPENDIX A

AUTHORIZATION OF STUDY BY INSTITUTIONAL REVIEW BOARD

Date: Mon, Feb 20, 2012 at 5:48 PM
Subject: eIRB: Study Approved

IRB Study Approved

To:	Allen Heindel
RE:	Perceptions of Online Coursework by Higher Education Students with Disabilities
PI:	Allen Heindel
Link:	Pro00006294
	You are receiving this notification because the above listed study has received Approval by the IRB. For more information, and to access your Approval Letter, navigate to the project workspace by clicking the Link above.

---

*WARNING: DO NOT REPLY. To ensure a timely response, please do not reply to this email. Direct all correspondence to **Research Integrity & Compliance** either through your project's workspace or the contact information below.*

Template:_000 - IRB Study: Approved

APPENDIX B

STUDY PARTICIPANT SOLICITATION LETTER

Hello,

I wish to invite you to participate in a research study.
I am hoping to add to our knowledge of how to improve the learning of students with disabilities through courses taught online.

You will be asked to respond to a survey, and possibly participate in a brief interview.

Participation will take no more than fifteen minutes for the survey, and possibly up to sixty minutes of your time should you be selected to be interviewed.

Your responses will be confidential and the resulting data will be analyzed along with other study participants; nothing you say will be attributed directly to you.

Please respond to aheindel@hisEmailAddress by (date), by stating "Yes, I wish to be included," or "No, I do not wish to be included."

I would very much appreciate your willingness to participate.

Thank you,

Allen Heindel
(Ph.D. candidate)

APPENDIX C

LETTER REQUESTING PERMISSION TO USE COURSE INTERACTION, STRUCTURE, AND SUPPORT (CISS) INSTRUMENT, WITH LEAD AUTHOR'S SUBSEQUENT RESPONSE

Hello Dr. Johnson,

You will recall that I requested a sample copy of your CISS instrument near the end of August 2009. I am requesting permission to use the CISS in gathering data for my dissertation, "*A Study of the Success of Higher Education Students with Disabilities in Online Coursework using Asynchronous Tools.*" The study will be carried out at the (university where this research study was conducted), and I anticipate a sample 25 students with disabilities.

For my purposes, I would make only two minor changes to the verbiage of the CISS:

1) "The department," would change to "The Office of Students with Disabilities Services," and

2) "This course," would change to "during my most recent online course" or "during the most recent online course I've taken."

To verify, in reviewing the 31 survey items, I find 15 that address "Interaction," 8 addressing "Structure," and 8 addressing "Support." If you agreeable to my use of the instrument for my research, I will confirm with you which items measure each of these constructs.

I appreciate your kindness in sharing the sample of the CISS and look forward to hearing from you.

Allen J. Heindel
(Ph.D. candidate)

Allen,

I have no problem with the changes you are proposing. Good luck with your research and please send me a summary of your results when you have completed the study.
Scott

Scott D. Johnson | CIO

Associate Dean for Online Learning
College of Education
Professor, Human Resource Education

_____
University of Illinois at Urbana-Champaign
142 Education Building
1310 South Sixth Street
Champaign, IL 61820
Voice: (217) 244-7005
Fax: (217) 244-0390
E-mail: sjohnson@illinois.edu

APPENDIX D

COURSE INTERACTION, STRUCTURE, AND SUPPORT (CISS) INSTRUMENT - ORIGINAL

Authors: Johnson, S. D., Aragon, S. R. Shaik, N. and Palma-Rivas, N. (2000).

The Department of Human Resource Education, as part of its ongoing research, is interested in obtaining feedback from students and the faculty to help improve the process of teaching and learning at this university. This survey is designed to collect data on some of the issues relating to the learning environment. Your participation in this survey is voluntary, and will not influence your grade for this course. The information that you provide in this survey is also confidential. Thank you for your assistance.

GENDER Male Female **COURSE** _____

ETHNIC BACKGROUND White Black / African Hispanic / Latino Asian / Pacific Islander American Indian / Alaskan Native Multi-racial Other

ACADEMIC STATUS Freshman Sophomore Junior Senior Graduate Other

The following statements relate to your **perceptions** of the learning environment. For each statement, please show the extent to which you believe the learning environment has the features described by the statement. We are interested in your opinion that best describes your perceptions of the learning environment. Do this by rating each question on a *four-point scale* (*Strongly Disagree, Disagree, Agree, Strongly Agree*). **Please circle your choice to each statement.**

I was able to share learning experiences with other students in this course.

Strongly Disagree Agree Disagree Strongly Agree

The instructor helped me identify problem areas with my studies for this course.

Strongly Disagree Agree Disagree Strongly Agree

The organization of the course content made learning easier.

Strongly Disagree Agree Disagree Strongly Agree

I was NOT able to interact with the instructor during the class sessions.

Strongly Disagree Agree Disagree Strongly Agree

I was able to interact with the instructor outside of the regular class time.

Strongly Disagree Agree Disagree Strongly Agree

Increased contact with fellow students helped me get more out of this course.

Strongly Disagree Agree Disagree Strongly Agree

I was NOT able to communicate with other students in this course.

Strongly Disagree Agree Disagree Strongly Agree

The department inquired about my learning support needs.

Strongly Disagree Agree Disagree Strongly Agree

The instructor informed me about my progress periodically during the course.

Strongly Disagree Agree Disagree Strongly Agree

A sense of community existed with fellow students taking this course.

Strongly Disagree Agree Disagree Strongly Agree

This course encouraged me to work together in small groups/teams.

Strongly Disagree Agree Disagree Strongly Agree

The instructor gave tests and assignments based on what I learned in this course.

Strongly Disagree Agree Disagree Strongly Agree

The instructor provided me encouragement when needed in this course.

Strongly Disagree Agree Disagree Strongly Agree

The instructor made an effort to fit the teaching style to suit my learning needs.

Strongly Disagree Agree Disagree Strongly Agree

The department did NOT provide information about the support services.

Strongly Disagree Agree Disagree Strongly Agree

The instructor provided me feedback that is useful.

Strongly Disagree Agree Disagree Strongly Agree

The instructor followed the course syllabus.

Strongly Disagree Agree Disagree Strongly Agree

I was allowed to work at my own pace in this course.

Strongly Disagree Agree Disagree Strongly Agree

The department staff acted as facilitators between the student and the instructor.

Strongly Disagree Agree Disagree Strongly Agree

The instructor encouraged me to become actively involved in class discussions.

Strongly Disagree Agree Disagree Strongly Agree

The structure of class activities did NOT allow me to actively participate in the class.

Strongly Disagree Agree Disagree Strongly Agree

The instructor provided comprehensive feedback on my assignments.

Strongly Disagree Agree Disagree Strongly Agree

The department inquired about my satisfaction with the support provided.

Strongly Disagree Agree Disagree Strongly Agree

The instructor used a variety of teaching methods in this course.

Strongly Disagree Agree Disagree Strongly Agree

The instructor treated me as an individual.

Strongly Disagree Agree Disagree Strongly Agree

The instructor used real world examples in the course lectures.

Strongly Disagree Agree Disagree Strongly Agree

I was allowed to select topics that I wanted to learn in this course.

Strongly Disagree Agree Disagree Strongly Agree

I felt comfortable with the instructor as a person.

Strongly Disagree Agree Disagree Strongly Agree

My perceptions about the interpersonal closeness between me and the instructor:

Very Distant Distant Close Very Close

My perceptions about the interpersonal closeness between me and the department staff:

Very Distant Distant Close Very Close

My perceptions about the interpersonal closeness between me and fellow students in this course:

Very Distant Distant Close Very Close

COURSE & INSTRUCTOR RATINGS

Rate the instructor's overall teaching effectiveness.	Exceptionally Low	1	2	3	4	5	Exceptionally High
Rate the overall quality of this course.	Exceptionally Low	1	2	3	4	5	Exceptionally High

What were the major strengths of this course?

What were the major weaknesses of this course?

What suggestions do you have to improve this course?

Thanks once again for taking the time to complete the survey. If you have any comments / suggestions regarding this survey feel free to email: shaik@uiuc.edu OR sjohnson@uiuc.edu

APPENDIX E

COURSE INTERACTION, STRUCTURE, AND SUPPORT (CISSS-M) INSTRUMENT - MODIFIED

Adapted by Allen J. Heindel

COVER SHEET

Introduction: This survey is designed to obtain information about the quality of the most recent online course that you have taken and the learning environment for students with disabilities. You are asked to reflect on your experience in the most recent asynchronous (did not take place in real time with other students) online classes and respond to the questions in this survey based on these experiences.

Your participation in this survey is voluntary. The information that you provide in this survey is confidential and will be used only for research purposes to help us learn more about the online learning environment. Thank you for your participation in this important research study.

Part I

ONLINE COURSE NUMBER AND TITLE _____

YEAR TAKEN _____

GENDER Male Female **AGE**_____ (IN YEARS)

ETHNIC BACKGROUND	White	Black / African	Hispanic / Latino	Asian / Pacific Islander	American Indian / Alaskan Native	Multi-racial	Other

ACADEMIC STATUS Freshman Sophomore Junior Senior Graduate

A. Which of the following handicapping conditions apply to you?

Hearing Loss — Physical or medical disability
Blindness or low vision — Learning Disabilities
Psychological disabilities — ADHD/ADD

B. How much general experience did you have with computers prior to taking the online course?

None Very Little Some Extensive

C. How much general experience did you have with ListServs prior to taking the online course?

None Very Little Some Extensive

D. How much general experience did you have with e-mail prior to taking the online course?

None Very Little Some Extensive

E. How much general experience did you have with Discussion Boards prior to taking the online course?

None Very Little Some Extensive

F. How many online courses have you taken?

0 1-2 3-5 5 or more

G. What kinds of assistive technology do you require to engage in online learning?

H. Were you provided this assistive technology for this course? To what extent did you use it?

If you would be willing to participate in a face-to-face or telephone/Skype interview, please provide the information below, so the researcher may contact you to make the necessary arrangements.

NAME _____ E-MAIL ADDRESS _____

Part II

Directions: The following statements relate to your **perceptions** of the online learning environment. Please think about the most recent asynchronous online course you have taken. Then for each statement below, please indicate your extent of agreement or disagreement with that situation using the response scale *Strongly Disagree, Disagree, Agree, Strongly Agree*.

1. **I was able to share with other students as part of the learning experiences in this course.**
   Strongly Disagree Agree Disagree Strongly Disagree

2. **The instructor provided me with accommodations based on my unique needs in this course.**
   Strongly Disagree Agree Disagree Strongly Disagree

3. **The organization of the course content made learning easier for me in this course.**
   Strongly Disagree Agree Disagree Strongly Agree

4. **The instructor provided feedback to me in a timely way in this course.**
   Strongly Disagree Agree Disagree Strongly Agree

5. **I was able to interact with the instructor as I needed in this course.**
   Strongly Disagree Agree Disagree Strongly Agree

6. **I believe the online environment promoted interactions with other students in this course.**
   Strongly Disagree Agree Disagree Strongly Agree

7. **Virtual interaction with fellow students helped me get more out of this course.**
   Strongly Disagree Agree Disagree Strongly Agree

8. **The Office of Students with Disabilities Services inquired about my learning support needs in this course.**
   Strongly Disagree Agree Disagree Strongly Agree

9. **The instructor informed me about my progress periodically in this course.**
   Strongly Disagree Agree Disagree Strongly Agree

10. **A sense of community developed with other students when taking this course.**
    Strongly Disagree Agree Disagree Strongly Agree

11. In this course, I felt encouraged to work together with fellow students in small groups or teams.

Strongly Disagree Agree Disagree Strongly Agree

12. The instructor gave tests and assignments on what the course syllabus indicated were the expectations for my learning.

Strongly Disagree Agree Disagree Strongly Agree

13. The instructor provided me encouragement when needed in this course.

Strongly Disagree Agree Disagree Strongly Agree

14. The instructor made an effort to fit the teaching style to suit my learning needs.

Strongly Disagree Agree Disagree Strongly Agree

15. The Office of Students with Disabilities Services provided information about the support services available to me.

Strongly Disagree Agree Disagree Strongly Agree

16. The instructor provided me feedback that was useful given my specific learning needs.

Strongly Disagree Agree Disagree Strongly Agree

17. The course syllabus clearly explained expectations for my learning in this course.

Strongly Disagree Agree Disagree Strongly Agree

18. I felt that I could work at my own pace in this course.

Strongly Disagree Agree Disagree Strongly Agree

19. The Office of Students with Disabilities Services staff acted as facilitators between me and the instructor.

Strongly Disagree Agree Disagree Strongly Agree

20. I was encouraged to become actively involved in communicating with other students in this course.

Strongly Disagree Agree Disagree Strongly Agree

21. The structure of class activities provided me with opportunities to deepen my understanding of the content in this course.

Strongly Disagree Agree Disagree Strongly Agree

22. The instructor helped me understand how to improve my performance in this course.

Strongly Disagree Agree Disagree Strongly Agree

23. The Office of Students with Disabilities Services inquired about my satisfaction with the support provided.

Strongly Disagree Agree Disagree Strongly Agree

24. The instructor used a variety of teaching methods in this course.

Strongly Disagree Agree Disagree Strongly Agree

25. The instructor recognized my unique needs and treated me as an individual.

Strongly Disagree Agree Disagree Strongly Agree

26. The instructor enhanced the course content using real-world examples in this course.

Strongly Disagree Agree Disagree Strongly Agree

27. My perspective was honored when I was allowed to have input in this course.

Strongly Disagree Agree Disagree Strongly Agree

28. I felt personally comfortable communicating with the instructor.

Strongly Disagree Agree Disagree Strongly Agree

29. My perception about the interpersonal closeness between the instructor and me:

Very Distant Distant Close Very Close

30. My perception about the interpersonal closeness between me and the staff of the Office of Students with Disabilities:

Very Distant Distant Close Very Close

31. My perception about the interpersonal closeness between me and my fellow students in this course:

Very Distant Distant Close Very Close

32. Overall how satisfied were you with the course:

Not Satisfied Somewhat Satisfied Satisfied Very Satisfied

33. What did you like most about the course?

34. What did you like least about the course? In what specific ways, if any, could this course have been improved to better meet your needs as a student with a disability?

35. What percentage of the course was asynchronous (did not take place in real time with other students)?

36. **What percentage of the course was synchronous (did take place in real time with other students)?**

Thank you for taking the time to complete the survey!

If you have any comments / suggestions regarding this survey feel free to email:

aheindel@hisEmailAddress

APPENDIX F

INTERVIEW PROTOCOL

Table 4. Interview Protocol

Category		Question
accessibility		In what ways did the assistive technology provided to you aid you in your online coursework?
interaction		How would you describe the level of interaction you have with the instructor in online courses? How would you describe the level of interaction you have with other students in online courses? What types of interactions do you have with the instructor? What types of interactions do you have with other students? How beneficial do you find the interaction you have with other students in your online coursework? Please describe a typical interaction you have had with other students in your online coursework. To what extent does online interaction allow you to: - experiment with ideas? - build knowledge? - gain complex understandings?
presence		In what ways does online interaction offer you more opportunities to contribute in class discussions? In what ways does the online environment encourage you to be more engaged with other students? In what ways does the online environment encourage you to be more engaged with your instructors?

Table 4. (Continued)

Category		Question
satisfaction		How much previous experience did you have with computers and technology prior to taking online courses? Please describe your experience with using computers as part of online learning. What did you find helpful? What problems did you encounter? Given your learning needs, do you feel that computers were useful in helping you to your learning experience? In what ways? In what ways has the availability of online courses influenced your willingness to continue your education? Have you ever felt it necessary to drop an online course in which you were enrolled? What were your reasons?
structure		What kinds of opportunities does online instruction provide you to collaborate with other students? What online tools (for example, blogs, discussion boards, e-mails, etc.) have you used to collaborate with other students? How has the online environment provided you with opportunities to work at your own pace?
support		How has the quality of your online learning experiences been influenced by: - flexibility of schedule - expectations being clearly stated by instructor - how learning is assessed How can the support provided to you be improved? What might the Office of Students with Disabilities Services do differently? What might the course instructors do differently?