

**Visual Impairment in a Visual Medium**  
**Perspectives of online learners with visual impairments**

Thesis

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Jacqueline P. Candido

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**Dedication**

*For my mom, Helen (Kaffana) Kissane  
1931 - 2001*

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**Abstract**

Visual Impairment in a Visual Medium:  
Perspectives of online learners with visual impairments  
Jacqueline P. Candido  
Elizabeth Haslam, Ph.D.

There is a lack of understanding about the experiences and perceptions of adults with visual impairments as they experience the visual medium of online learning. People with visual impairments experience the Internet differently from those with normal sight. As the Internet continues to grow as an educational approach, it is important to understand how this hidden population might use online learning to reach their educational goals. This phenomenological study explored the events and experiences that shaped the lives of three people with visual impairments in order to describe their perspectives of online learning.

Phenomenological methodology was selected as the most effective way to illuminate the individual experiences of the participants. The research methods included in-depth interviews, observation over time, internet communication, and a reflection journal. The study was conducted over many months in order to follow the steps and voices of the participants. Their experiences, challenges and achievements have been portrayed from the perspective of the participants. The findings are reported using verbatim quotes from the participants, textural descriptions and a matrix depicting themes that emerged from the study.

The implications from this study revealed that online learning is a viable option for people with visual impairments, but it can be constraining as well. Although the online strategy offers benefits such as convenience, flexibility and avoidance of

transportation hassles, there can be obstacles such as compatibility with assistive technology. Recommendations for improvements are offered for online learners with visual impairments as well as for institutions and professors. Postsecondary schools and faculty offering online programs must be committed to serving the online learner and the new responsibilities this entails, such as increased use of email, phone and off-peak hours. Use of new technologies for enhanced communication and interaction could enable more students to succeed in online classes. Institutions must make it a priority to ensure that their online classes are accessible. Proposals are made for partnerships that could foster additional success for students with visual impairment in online courses. Ideas for future research as well as a personal closing from the researcher with insider knowledge conclude the study.



## **Chapter 1: Introduction**

### *Overview*

Vibrant color, attractive detail, catchy images or phrases, and embedded hyperlinks characterize much of the online world. In considering the visual medium of the Internet for online learning, we often don't think about students with visual impairments. Yet, online classes could be a good way for people with visual impairments to achieve their educational goals. Susan Moisey (2004) studied students with disabilities in distance education and found that distance learning provided college opportunities beyond what local, traditional institutions could offer. Using the internet for online learning can also present special challenges for people with visual impairments. For example, people with visual impairments might have problems with accessibility, assistive technology or the need for special support services (Holloway, 2001). In fact, Moisey's studies (2004) indicated that students who requested fewer services and/or accommodations from the university had a slightly lower completion rate for their courses. It is important to delve deeper into the experiences of students with visual impairments to understand their specific experiences and perceptions about online learning.

### *Background*

Although there are many studies about people with disabilities, technology and disabilities and even student perspectives about disabilities in higher education, there is a lack of understanding about the benefits and challenges perceived by people with visual impairments as they learn in the visual environment of the postsecondary

online classroom. There is a gap in the research which recounts the perspectives of individuals with visual impairments as they study in the online environment. Schmidt (2002) conducted research on adult college students with visual impairments, but not specifically targeting the online environment. McConnell (1997) and Siew (2003) are among those who have researched students with blindness and visual impairments in a school setting, but not specifically postsecondary students in distance learning. Some studies have reviewed the accessibility of the Internet for people who are blind, as well as the feelings of college students with disabilities in comparison to peers (Shon 1998, Crain 2003). The phenomenological study proposed here is targeted to fill the gap in the literature so that the experiences of individuals with visual impairments using the visual medium of the Internet for online learning, will be described in detail for readers

Studies show that there are over 1.5 million visually impaired computer users in the USA (Abernathy, 2001). According to the National Center for Individuals with Disabilities (2001), six percent of students entering postsecondary institutions are disabled, with vision impairments being among the most common disability. So, it is important for educational organizations and institutions to consider the needs of people with vision impairments. People with visual impairments often deal with challenges *in* the classroom as well as *getting to* the classroom. For example, a student with low vision may not be able to read text on a board and they could miss the funny faces or expressions that often accompany a lively classroom discussion. So, the alternative of taking classes online could be an excellent direction for students with visual impairments to pursue their educational goals. The challenges in the

online classroom environment would be different from those in the traditional classroom. It is important to better understand how people with visual impairments use the visual medium of online distance learning to succeed in higher education. Students who have visual challenges may blend into the online classroom environment without revealing their problems or difficulties. Universities are probably not optimizing the best techniques to reach out to this nontraditional audience (or recognize the potential reach of online distance learning programs).

“The use of qualitative research techniques reflects the experiences of individuals with disabilities and illuminates the issues they face” (O’Day, B & Killeen, M, 2002). The qualitative study proposed in these pages will clarify the benefits and challenges surrounding the use of online distance learning by people with visual impairments. The voices in this study will be those of adult learners with visual impairments, who have experienced online learning. Through the choice of a qualitative study using a phenomenological approach, this researcher will uncover the perspectives and experiences of online postsecondary students who deal with visual impairments in their lives. Creswell (2003) defines phenomenology as an inquiry method that enables the researcher to identify “the essence of human experiences concerning a phenomenon, as described by participants.” It is possible that online distance learning programs attract adult students with visual impairments by enabling them to follow the route of online learning for their educational goals. Although there are benefits to staying at home in order to learn, the internet itself is a highly visual medium (US Dept of Health & Human Services, 2003). So, by engaging a

small number of subjects in a phenomenological study, readers will be able to understand how people with visual impairments experience online learning.

### *Personal Disclosure*

The topic of working and learning with a disability is one that interests this researcher because the researcher conducting the study has personal understanding in this area. The researcher conducting this study has a visual impairment. This researcher has first-hand experience with frustrations and situations, offering a unique opportunity for a person with a visual impairment to discuss things with participants, from a shared point of view. These adaptations and nuances have influenced the perspectives held today, by the researcher. The researcher's visual impairment is a permanent one that has shaped the life and outlook of this researcher. It is important to remember that in qualitative research, the personal experience of the researcher helps to form the outcomes and findings (Rossman & Rallis, 1998). It will be important for this researcher to reflect on this relationship. This insider's view into living with a permanent disability similar to those participating in the study offers a valuable insight to the problems and challenges experienced by participants. This added awareness will help the researcher to understand the reality that the online students experience. It offers potential for a deeper insight and added value to this phenomenological study (Marshall & Rossman, 1999).

This researcher believes that technology has made a significant impact in her own life and the processes used in learning. The combination of a disability and a broad background in technology has helped the researcher to develop new abilities in unique and effective ways. This researcher has reflected upon personal experiences

and those of others in similar situations, and realizes that there exists a potential to change things in these educational areas in order to better inform and educate others.

It is possible that the participants in the study could skip over important descriptions if they sense that the researcher already has “insider knowledge” so the researcher will need to take extra steps to ask for details and explanations (Edwards, 1989). The researcher must put aside any personal feelings about this topic in order to observe without bias and accurately detail the reality of each situation. Several techniques will be used during this research study to ensure that no bias enters into the results of this study. First, a reflective journal will be maintained. There is always some type of relationship between the researcher and those being studied (Rossman & Rallis, 1998). It will be important for this researcher to reflect on this relationship. The use of a reflection notebook will give a methodical and organized way for the researcher to accomplish this. The reflection notebook will consist of four levels of note-taking including a direct account, and expanded account with details added later the same day, a personal reflection about the session and a section for ongoing analysis and interpretation (See Appendix D).

#### *Statement of the Problem*

There is a lack of understanding about the benefits and challenges perceived by people with visual impairments as they learn in the postsecondary online environment.

### *Statement of the Purpose*

The purpose of this study is to explore and describe the ways that postsecondary students with visual impairments experience online learning. The researcher expects to show the benefits and difficulties that people with visual impairments experience in college-level online learning. This study will examine how adult learners with vision impairments accommodate the daily challenges they encounter in the online classroom.

### *Research Question*

This study has been designed to answer the following main research question:

1. What characterizes the experiences and responses of adults with visual impairments as they participate in the postsecondary visual medium of online classes?

While seeking meaningful details to the above research question, it is also expected that the following questions will be explored for supplemental content:

- a. In the postsecondary visual medium of an online learning environment, what strategies, experienced by students with visual impairment, are most effective?
- b. What specific challenges exist in the visual medium of online learning, for postsecondary individuals without perfect visual acuity? Under what circumstances do individuals disclose their disability and why?

### *Methods Summary*

In order to report on the perspectives and experiences of online learning as experienced by postsecondary individuals with visual impairments, a phenomenological study will be performed. This type of qualitative method provides an excellent strategy for gathering knowledge and information about human experiences. The participants in this study share the specific phenomenon of visual impairment while learning in an online environment. Using qualitative inquiry will enable the researcher to understand how students with visual impairments actually experience the online environment. Phenomenology allows us to understand the world of these individuals, not through investigating the structure, but through the description of the ways that the individuals explain and react to their situation and experiences (Davis, 2006).

Several data collection methods will be used during this study. The methods used in this phenomenological study will be observation, interviews, reflection journals, internet communications and review of artifacts. Details about these methods are described in chapter 3 of this proposal. The methods chosen are well-documented techniques used in qualitative research (Creswell 1998, Maxwell 2005, Marshall 1999). These techniques will uncover the experiences of postsecondary students with visual impairments as they learn in an online setting. Using these methods will result in a large amount of descriptive data. Detailed note-taking will be essential during interviews and observations. A structured reflection journal (detailed in chapter 3) will provide a mechanism for the researcher to reflect on the descriptive text and ask questions about the events that took place. A well organized system of

reflection will allow the researcher to evaluate notes and descriptions using a structured approach. Internet communication with the participants of the study will be important since the study involves the internet and online learning as a focus of the study. Internet communication along with other artifacts from the participants could provide insightful details about situations, events, learner's feelings and perspectives.

### *Significance of the Study*

The pool of literature about the internet and distance learning programs is growing (Meyer, 2002). As enrollment increases in colleges and post-secondary institutions, a wide diversity in population will be encountered by all students, administration and faculty (NCES 2004, UNC 2002, MTC 2002). Among the diverse population will be individuals that have disabilities, including visual impairments. Through extensive interviews and observation, this study will uniquely pair a researcher with a visual impairment to participants with visual impairments. The shared experiences will enhance the depth of the study and offer a new perspective from the viewpoint of learners with visual impairments. In addition, improving equality of access and accommodations for students with disabilities continues to make a difference in the lives of students and teachers everywhere. This research study will enable readers to recognize how people with visual impairments experience online learning. In this way, it will be possible to gain a better understanding of the benefits and the challenges that those with visual impairments encounter as they experience online learning.

This research study has the potential to offer insight about people who have visual impairments and the role that online learning might play in the future. The

results from this study will be useful in helping to advocate for awareness and change in social or educational circumstances of people with visual impairments. This study will focus on college-level students with visual impairments who are enrolled in online classes at postsecondary institutions.

The results of this qualitative study will have applicability to other situations. Qualitative research is not a quest for objective generalizations (Rossman & Rallis, 1998) but rather searching for understanding and meaning. This study does not claim to be generalizable in the statistical sense but can be useful in other situations. Students with visual impairments may encounter obstacles that other groups of people also experience. The descriptions will shed light on challenges that also face students with good visual acuity or who may have other disabilities. This study might also give insight and new ideas for students with visual impairments in age-groups or environments other than the specific experiences with the online learning setting that is described. Readers will form images from the detailed descriptions and then be able to compare specifics to their own settings. This study is significant because it will contribute to the ongoing literature and provide a deeper insight for future research in the area of online learning and postsecondary students with visual impairments.

#### *Delimitations of the Study*

The main delimitation of this study will be that the experiences of online learning will be strictly from the perspective of the students with visual impairments. The teachers, peers, staff or administration of the institutions will have no input into the descriptions within this study. Their viewpoint may indeed be important as far as services provided, time and organizational challenges, but they are not the focus of

this research. Time is also a delimitation. This research study proposes to observe and interview participants over the period of four months which puts a boundary on the immediate experiences and reactions of the participants as they encounter challenges in the online environment. Student selection will also delimit the study.

### *Definition of Terms*

*Accessible computer:* A computer which the student can access independently using speech, large print, Braille display, and/or with no assistive devices

*Assistive technology:* Assistive technology is technology used by individuals with disabilities in order to perform functions that might otherwise be difficult or impossible. Assistive technology can include mobility devices such as walkers and wheelchairs, as well as hardware, software, and peripherals that assist people with disabilities in accessing computers or other information technologies (AccessIT website).

*Low vision:* Vision loss (20/70 or worse) that cannot be corrected by ordinary glasses, contact lenses, medication or surgery (Lighthouse International)

*Legally blind:* Indicates that a person has less than 20/200 vision in the better eye or a very limited field of vision (20 degrees at its widest point) (NFB, NICHCY website)

*Totally blind* Students without vision who learn via Braille or other non-visual methods (NICHCY website).

*Visual impairment:* This refers to functional vision loss, not a specific eye disease. Visual impairment includes low vision as well as blindness (NICHCY website, Kellogg Eye Center).

### *Summary*

People with visual impairments experience the Internet differently from those with normal sight. The qualitative study proposed in these pages will use the methods of observation, interview, reflection, and review of artifacts to uncover the experiences and perspectives of postsecondary students with visual impairments in online education. Phenomenological research is well-suited for this study because people with visual impairments represent an observable group with specific experiences that occur when they are studying in the online learning environment. A phenomenological study is particularly effective for recounting circumstances, and describing the perspectives and challenges of the individuals participating in the study (Wilson, 2002). The study will be conducted over several months in order to give voice to those who have visual impairments and to raise the awareness of the challenges, benefits and insights into the future of online learning for this special group of individuals.

## Chapter 2: Review of Literature

### *Overview*

The purpose of this study is to better understand the ways that postsecondary students with visual impairments experience online learning. This study will examine how adult learners with vision impairments accommodate the daily challenges they encounter in the online environment. Over the past twenty years, there has been a shift to a new “disability paradigm” that characterizes people with disabilities not only according to their functional limitations but also by the way they act with their surroundings. Qualitative research methods help to unlock meaning in the world of people with disabilities (O’Day, B & Killeen, M, 2002). This proposed research study uses qualitative methods that will help document the interaction of people with visual impairments within the visual medium of the internet.

The review of literature focused on three main dimensions of previous research. The three key areas are (1) Online distance learning & technology, (2) Learners with disabilities, and (3) The use of the internet by students with visual impairments.

### *Online Distance Learning*

Technology is changing our lives in significant ways. Distance learning has existed in many forms since the early 1900s. Faculty used text material, telephone, audiotapes or videotapes in order to foster learning while not in the same physical location. Now, the worldwide web has had a staggering impact on the world of

education, including distance learning, intellectual property debates, technical abilities of faculty and online library access. The Internet has become so popular, that the technology has been embraced for distance learning (Bowman, 2002). Most of us now realize that indeed, the Internet has provided us with a whole new environment for learning and the speed with which we are changing grows faster each day (Scadden, 1998; Hardin, 2004). Using technology and online learning can actually help to enhance and promote the overall goals of any curriculum. John Sealy Brown (2001) tells us that the use and development of technology and particularly the Internet is growing at lightning speed, and using technology to inspire learning is a concept that will entice students to try new things.

According to a report published by the Alfred P. Sloan Foundation (Allen & Seaman, 2008), online enrollment at colleges and universities in the United States continues to climb. The report indicates that 22% of American college students took at least one web-based class in the fall 2007 semester. This means that there was an increase of 12.9% in participation in online courses from the fall 2005 semester. So instead of leveling off, the interest in web-based learning continues to rise.

The increase in opportunities for online education makes it easy for many students to access education. Many postsecondary institutions are starting to move from a strictly on-campus model of education to a more “consumer-centered model” using online technologies (Howell, Williams, & Lindsay, 2003). Researchers are definitely making excellent headway into studying online education and the students and teachers who use it. For example, in her recent literature review on the topic of quality in distance education, Katrina Meyer (2002) indicates that she was surprised

to find hundreds of quality studies that have begun to address issues in the area of distance education.

Researchers have also begun to characterize trends in online education. Halsne & Gratta (2002) reported that online learners at their institution had several characteristics in common. Specifically, they described that online learners were predominately visual learners and spent more time devoted to class work than students enrolled in a traditional class. In one study by Wojciechowski & Palmer (2005), several predictors of success in the online environment were uncovered. Results revealed that students with a higher GPA, previous online learning experience and those who had taken an orientation course were more likely to stay registered in the course and complete it successfully. Other studies indicate that although the Internet can serve as a powerful tool for education, students often require a certain level of computer literacy (Dutton et al., 2002; Halsne & Gratta, 2002).

Colleges often publish guidelines for students interested in online learning. There are several common traits that many colleges list as necessary to ensure success in online learning. Among those traits are time management skills, basic technology skills and self-motivation (Kirchner, 2001). One particular audience that is beginning to use online education for postsecondary programs is that of adults with disabilities. People with visual impairments do use the internet, yet we know little about individuals with visual disabilities that use distance learning in order to overcome their challenges and compensate for their difficulties.

John Bricout (2001) emphasizes that the new interfaces provided by emergent technology promise positive outcomes for student learning, including

students with disabilities. Bricout also warns that these new interactive techniques for coursework could also pose new challenges for students with disabilities. Educators will need to continue to remain sensitive to the unique needs of each student, as online learning becomes more popular. The growth and demand for online learning continues to increase rapidly for higher education. The enrollment at the nation's leading online university, The University of Phoenix, has grown to record totals of 185,000 (Fact Book 2004). This trend is expected to continue, with options ranging from all online to blending online and phone conferencing or combining online with face to face formats. Online learning has also spread to the K-12 field of education, such as cyber charter schools without any brick and mortar buildings at all (Rebora, 2004). Of the United States population, 68.1% of the people are currently connected to the Internet (Neilson Ratings, 2005), so it is clear that in developed nations, as young students rise to college, online learning will be a natural part of their educational experience.

Educational institutions in almost every state use a variety of strategies in order to engage students in the online environment (Epper & Garn, 2003). In fact, the National Center for Education Statistics (2003) reports that 56 percent of all 2- and 4-year institutions are now offering distance learning, and 90 percent of public institutions offered distance learning. So, it is not surprising to find out that 95 percent of these institutions used web sites for their distance courses. What is alarming is the low number (only 18 percent) of these same institutions actually followed guidelines for creating accessible websites for users with disabilities (Waits and Lewis, 2003). Accessible websites are those that have been created so that all

audiences are able to read them. Websites can be designed to provide alternate text for images and this type of universal design does not affect the functionality or navigation of the site (Spindler, 2002). It does take an awareness and willingness to take the time to create the extra code. Specific guidelines exist to direct web page designers in the steps toward building accessible designs. Students with visual impairments as well as other students with disabilities can benefit from Universal Design for Learning (UDL) (Neumann, 2003). UDL is a concept that makes education accessible to the widest possible audience. It includes guidelines for designing and selecting instructional materials, activities and assessment techniques that enable success for every student (ERIC/OSEP, 1998). But, designing, choosing and evaluating web pages and websites for accessibility or UDL is often overlooked. For example, students who are blind often use special text readers which require labels on images, rather than all visual pages without descriptive tags, but web page designers fail to regularly include these tags. Universal design guidelines are a good resource for instructors of any course, including online distance learning classes.

In one example of website inaccessibility, a legally blind librarian (Lewis, 2002) described her experiences and challenges of using screen-enlarging software that often met with incompatible web pages. This example shows how accessibility issues affect the ability of the librarian to perform her job functions, and the impact on library patrons as well. The internet is indeed assuming a more central role in society, and access to the virtual environment is becoming equally critical (Schmetzke, 2002). Accessibility of web resources continues to be an issue that must be explored and improved.

Technology can enhance distance learning by offering students choices such as audio streaming of lectures, illustrations and graphics in addition to text-based materials (Meyen, 1997). Sherer and Shea (2002) describe some additional best practices in online courses. Some of the techniques that they document are for instructors to grant sufficient time for students to interact among themselves and with their professors. In order to support the many different learning styles, online educators should use a variety of techniques and make many options available to students. Students should be encouraged to use these options to create their own individualized environment. All students will ultimately benefit from using the Internet for education. Students with disabilities will benefit from having equality in online collaboration and from being able to access information independently as well (Scadden, 1998).

Only about 43 percent of universities offering online classes ever reported receiving a request for accommodation from people with disabilities (Waits & Lewis, 2003). Learners with some visual disabilities may be able to even blend into the online classroom environment without revealing their challenges. For example one professor (Lance, 2001), with a visual disability teaches online and does not make disclosure until well into the fourth week of class. So, there is little doubt that at least some disabilities are currently being accommodated through online distance learning. This study will help to uncover perspectives of students with visual impairments and their experiences with online learning.

*Learners with Disabilities*

Since 1978, the number of people with disabilities who are entering post-secondary education has tripled (Battle, 2004). In fact, the National Center for Educational Statistics reports that in 2003-4, 11% of post-secondary students reported having a disability and the largest group reported having learning disabilities or depression issues, orthopedic impairments or health-related problems (NCES, 2006). People with disabilities often deal with significant barriers and obstacles as they enter school situations. One example is that a student with mobility impairments may be able to attend classes on campus, but she could have problems attending an off-site tour or practicum classes at another location. Another student with a learning disability may require extra time to write down responses and notes, which might require extra time or a personal note-taker (Battle, 2004). Another example provided by L. Netherton (1999) shows that:

Some students with visual impairments or reading difficulties may be unable to independently access information using a traditional book or encyclopedia in print format. Alternatively, providing the text in a digital format can enable these students to use a screen reader, allowing them to listen to the information as the computer "reads" it aloud. In this scenario, students with a broad range of learning needs are all able to use the same resource and have access to the same information

(L. Netherton, 1999)

“Blindness is often perceived by the sighted as an either/or condition” (Kuusisto, 1998). But in reality, blindness is experienced in different ways by those with vision loss. In the case of blind scholar and author Steven Kusisto (1998, 2006), his experience with sight is like a “series of veils” or broken glass. The definition of

*legal blindness* is that visual acuity is correctable only to 20/200. This means that the things a person with normal sight can see at 200 feet, a legally blind person sees at 20 feet. Many people with legal blindness have sensitivity to light or sun. Some wear corrective lenses while others do not. Some of these people appear to have eye problems while others look like they have no problems at all.

Rehabilitation providers have identified some barriers to employment of people with disabilities, such as negative attitudes, transportation issues, lack of access to print and lack of job skills (Crudden, Sansing, Butler, 2005). Similar barriers are present for students with visual impairments who may want to attend institutions of higher education. “There is a stigma about disability, including vision loss and people may even be afraid to admit it,” (Foderaro, 2008). Attitudes exist that prevent people with visual impairments from moving forward. In her article, Foderaro cites the rise of Lt. Governor David Patterson to the position of governor of the state of New York as a milestone for those with disabilities. This news should have a positive impact for those with visual impairments. “The eyes are the problem, not the brain and today there is much adaptive technology out there that can help” (James, as cited in Foderaro, 2008). People with disabilities often deal with challenges in the campus classroom or getting to the school and classroom and accessing the printed materials available. For example, steps can be a problem for people with visual problems. In the traditional classroom an individual with vision problems might miss the facial expressions around the room or key terms on the board. Facial expressions and far-away blackboards are not part of an online classroom, so these particular challenges are avoided in distance learning. A person

with a hearing impairment might miss parts of a discussion as peers interact with each other and the teacher. In the asynchronous online environment, these peer discussions are threaded for all to follow at their own pace. Clearly, some people with disabilities are being assisted by the concept of distance learning.

Computer technologies could make it easier to accommodate learners with some visual impairments. “Tens of millions of Americans with disabilities can benefit from widely available and affordable broadband services,” (Bowe, 2004). Internet service is an important step that can help people with disabilities in many aspects of life including education. It is true that for some severe disabilities, technology and online learning has not come along far enough to make a difference. For others, personal assistive technologies offer part of the solution. O’Day (1998) shows that for some people the cost of assistive technology is a barrier, as well as the fact that screen readers and Braille output technology have not kept up with the rapidly changing pace of computer systems.

In this researcher’s experience, in order to accommodate some people with specific vision challenges, online learning could be one key to unlocking possibilities for the future. One example where no course modifications would be required is in the example of a mainly text-based course, where the font size or color can be easily adjusted by the user with a visual impairment. For those with hearing impairments, online courses that offer high visual appeal work best. So, courses that offer a variety of options for students may be an ideal solution. Web design efforts are an important way to continue making the Internet and online education accessible to persons who must function with limitations (Buggey, 2000; Brown, 2002; Carnavale, 2003).

Past studies of students with disabilities had often failed to involve the students themselves (Hurst, 1996). More recent studies attempt to actively include students with disabilities (Fichten, 2001; O'Day, 2005). In one study, students with disabilities cited key advantages of using computers and computer technologies as access to information and autonomy (Fichten, 2001). Sarah Holloway (2001) conducted a study about higher education from the perspectives of disabled students. The students involved had a variety of disabilities including hearing loss, learning disabilities, blindness and mobility problems. Students reported a variety of barriers including access and transportation issues, departmental and service issues and they specifically noted that there were delays and extra time and stress involved in having a disability. "More knowledge is needed about the participation of students with disabilities in distance education, the services they access, and the success they experience in their studies" (Moisey, 2004). In her research, Moisey used a case study to explore the types of services used by students with disabilities, enrolled in distance learning classes. In the phenomenological study outlined in these pages, students with a specific disability of vision impairment will be studied in their environment, as they take online classes. Since distance learning students are able to study at a time and place that is convenient for them, the students can combine their personal lives with their individual study needs. This format can be a welcome opportunity for some people with disabilities. "Whether disabled or not, the main advantage of distance study lies in autonomous learning" (Ommerborn, 1998).

The Americans with Disabilities Act (ADA) is the US legislation that was passed in 1990 by the United States Congress. This Act tried to remedy the long

history of discrimination in America against people with mental and physical disabilities. People with disabilities can decide for themselves whether to self-identify and request accommodations under the ADA (ADA Handbook, 2005). Title II of the ADA applies to educational institutions receiving federal assistance and specifies that “individuals with disabilities are not excluded from services, programs, and activities because buildings are inaccessible,” (ADA Handbook, 2005). When the Americans with Disabilities Act was passed in 1990, it required colleges and universities to make their courses accessible to people with disabilities. But, in 1990, the Internet was only on the brink of what we know today as the World Wide Web (Schmetzke, 2001). So, as time has passed, changes and development of new technologies and strategies continue to affect people with disabilities in both positive and negative ways. It is difficult for programs to keep up with the ever-changing technologies to ensure equal access for people with disabilities. “For disabled college students, professors' increased use of the Web for instruction can create obstacles rather than clear them away” (Foster, 2001). When web pages and the information they reference are not accessible, this is where we begin to see the negative impact on people with disabilities and particularly the visually impaired.

### *Students with Visual Impairments and the Internet*

The internet has had a considerable impact on the world of education. As the internet has become more robust and easier to use, the virtual environment has become more visual. We are in an era of graphical user interfaces such as Internet Explorer and Navigator. Internet users encounter a friendly atmosphere of pictures, diagrams, blinking messages, and icons that link to resources. For people who are

blind or visually impaired, this new visual world brings challenges and obstacles. Tim Spindler (2002) indicates that “Students with visual disabilities probably face the greatest number of barriers to accessing Web pages simply because the medium uses graphical representations to convey information.” One legally blind individual reported that her screen reader was unable to recognize scrolling messages, drop down menus, columns, animation or pop-up messages (Lewis, 2002). Even though assistive technology and software has become increasingly sophisticated, the ever-changing design of websites has grown increasingly more visual, using pictures and formats that may not be accessible to those with visual impairments. Charles Oppenheim, in his research, found that barriers to access actually came from lack of knowledge and thought by the web page designers. Oppenheim’s study revealed that “accessible page don’t have to be dull.” He suggests that designers simply follow a few basic guidelines to give visually impaired users better access to information (Oppenheim, 1999).

Results from two studies of students with low vision indicate that students were not really using available computers in spite of assistive technology. Students were high school age. Also, when these students were using the computer, it was for word processing (Abner & Lewis, 2002; Edwards & Lewis, 1998), rather than for internet research, time or calendar programs or telecommunications. So, lack of knowledge or practice with computers could affect the rate at which we see students with visual impairments entering online distance learning classes for their college choice. In her research, K. Gray (2003) also revealed that even when computers were accessible, many of the nation’s students with visual impairments were using

computers only infrequently (less than once a week) and in a limited capacity. This is an important finding among students with visual impairments because computer skills can affect a student's success in post-secondary school as well as future employment (Gray, 2003). Technology is moving forward and many new things are becoming available to help those with visual impairments, such as talking cell phones, digital wireless accessibility and online textbooks (VisionConnect, 2006). With so much advancement in technology and accessibility of computers, there could be a positive impact on those individuals with visual impairment.

Little research has been done in the specific area of adult college students with visual impairments (Schmidt, 2002) from their own perspectives. Studies that have been done in the area of visual impairment have not necessarily focused on the visual medium of the internet for online learning. Two studies describe the experiences of students with blindness or visual impairments in a school setting (McConnell, 1997, Siew, 2003). These studies raise questions about accessibility of the Internet for school students. Other studies about people with visual impairments discuss career, vocation self-advocacy and assistive technologies (Kielly, 1998, Schmidt 2002, Shon, 1998). The studies are all interesting and give us a better understanding of what it might be like to live with a visual impairment. One study involving college students with visual impairments found that students with visual impairments feel different from their sighted peers based on academic challenges and obstacles in their environment (Crain, 2003). There are many articles about technology and computer assistance for people with visual impairments, but there is a

gap in the research where this phenomenological study is targeted to examine adults with visual impairments in the visual medium of the internet for online learning.

### *Conclusion*

This overview of the current research demonstrates that we have come a long way in using technology and particularly the Internet for education. As outlined above, online classes continue to grow in number and variety. It is also true that technology has enhanced the lives of people with disabilities in a variety of ways. We have discovered that people with a disability such as a visual impairment can be served in effective ways by enrolling in online classes, yet online classes are not all designed in a way that best suits this particular group of people. The audience of adult learners with disabilities, particularly people with visual impairments, could perhaps be an untapped audience for institutions of higher education. The study contained in the following pages will describe the ways that students with visual impairments are using online learning to accommodate their needs and clarify the benefits and challenges that they encounter as online learners.

## Chapter 3: Methodology

### *Overview*

This chapter sets forth the strategies and methods used for conducting this research study. The purpose of this study was to better understand the ways that postsecondary students with visual impairments experience online learning. This study examined how adult learners with vision impairments accommodate the daily challenges they encounter in online distance learning. The methodology used for this study was an inductive qualitative approach. Qualitative research requires a holistic approach to questioning. Boyd (2001) indicates that qualitative research takes a broad view of human realities, and focuses on understanding human experiences rather than quantifying them. The problem described here has been particularly well suited to the qualitative method of phenomenology.

A phenomenological study is centered upon the actual experiences of subjects in a study, as they interact with the world around them (Merriam, 2002). Hence, this methodology has enabled this researcher to become immersed in the world of the subjects, students that live with visual impairments. Overall, this methodology has been important in achieving complete comprehension or consideration for what postsecondary students with vision impairments actually think and how they feel about the online learning environment.

### *Phenomenology*

According to Creswell (2003) phenomenological study is as much a philosophy of meaning as a research method. Phenomenological researchers

endeavor to see the meaning of an experience, rather than to discover causes and correlations. The nature this type of qualitative inquiry requires broad study of a small sample, permitting the subjects to speak for themselves. This will ultimately disclose the sense surrounding their experiences (Dukes, 1984). The procedure involves studying a small number of subjects through extensive and prolonged engagement to develop patterns and relationships of meaning (Moustakas, 1994). In this process the researcher “brackets” his or her own experience in order to understand those of the participants in the study (p 15). The process is known as epoche.

Phenomenological research was particularly appropriate for this study because people with vision impairments are a specific audience whose assumptions and biases affect their perception, as well as how they are perceived. For this situation, a phenomenological study was most effective in describing situations, and highlighting problems and experiences from the perspective of the individuals who are in the study (Wilson, 2002). This phenomenological study allowed the experiences of individuals with visual impairments to be documented, from their own perspectives. This type of study has helped lead to valuable insights. The findings show new conclusions and challenge the existing attitudes or processes for people with vision impairments. Finally, the phenomenological approach has enabled the researcher to raise the awareness of deeper questions and allowed voices of learners with visual impairments to be heard.

In using phenomenology, this researcher sought to understand how students with visual impairments experience and learn through online classroom strategies. As

Rossman and Rallis (1998) explain, the qualitative researcher must “construct an understanding of the topic through the questions they ask, the contexts they study and their personal biographies.” Rossman and Rallis (1998) also explain that “reflexivity” is part of the qualitative process. During this research study, it was important to understand and explain the effects of reflexivity on any interactions. Reflexivity is a term that recognizes the reactions and reflective thoughts of the researcher as they conduct a research study. The details of site and sample collection are described below. The data collection plan consisted of four main sections identified as observation, interviews, internet communication and review of artifacts.

There were opportunities to use triangulation (described under Validity & Rigor) to support the conclusions that were drawn from the results of this study. An independent reviewer helped to confirm consistency of data with the findings. Key questions for students with vision impairments were open ended to allow participants to describe and expand upon the details of their experiences. Example questions are included in appendix A.

#### *Site and Sample Selection*

The purpose of this study enabled the researcher to describe the perspectives of students with visual impairment and how they experience the visual medium of online learning. This researcher tried to identify strategies in the online setting that posed particular challenges or enabled effective learning for students with vision loss. The Internet was a key factor in this research. It played an important role as a research site and in the participant selection process. Since all learners were enrolled in online classes, interviews, discussions and classroom observations were done

mainly via a telephone and computer. The special needs of each student were seriously considered in conducting the different stages of research.

Phenomenological research is usually conducted in a natural setting such as a home or classroom (Wiersma, 2000). For this study, the researcher conducted field work to interview and observe participants in their natural and most comfortable setting.

Students were not asked to travel to a special site in order to meet researchers. Key sites or techniques used were telephone interviews, online conversations and in-person observation of students as they participated in online learning.

Working with students that have visual impairments involved access to sensitive information. This is sometimes a problem since universities were not able to release specific information about individuals that make up this group of students. In addition, there are often students with disabilities that do not disclose this information to the administration. Therefore, the selection of subjects for this study was through nonprobability or purposeful techniques and chosen based upon an individual's experience with the phenomenon being studied. This means that the purposive selection of learners for this study was subjective and based on the experience and judgment of the researcher. The sampling techniques and size have been designed to meet the needs of this research study and to specifically answer the research questions. Welman and Kruger (as stated in Groenewald, 2004) indicated that purposive selection is one of the key sampling methods for this type of phenomenological study. As a result, there is no appropriate method for calculating a sampling error.

For this particular study involving students with vision impairments, the purposeful selection of subjects enabled the researcher to choose students that met the required criteria for the study. This was also considered an appropriate method because of the access and privacy issues and the need to respect personal student information. The criteria for choosing the subjects were:

1. Participants must be age 18 or older.
2. Participants must have a documented visual impairment.
3. Participants must be enrolled or have recently taken a postsecondary online course.

Locating participants and choosing subjects for this study took place in person at schools for the blind, over the Internet and through email to postsecondary disability directors. Distribution lists or “listservs” associated with reputable organizations for disabilities, blindness or visual impairments were useful for a broader search for participants. Finally, the snowball technique was employed. This means that an existing participant was asked to recommend others that they think would be interested in participating in the study.

It was important to remember that probability sampling or random sampling was not appropriate for this study. Wiersma (2000) reminds us that “sample sizes in qualitative research are typically small” and there is no general answer to the question of a specific number of individuals necessary. Most phenomenological research is more concerned with describing an explicit situation rather than generalizing results. In fact, Wiersma (2000) documented several examples from qualitative research and

the variation in sample sizes and selection techniques that have been used in the past. In one example, three young adolescents were selected for an in-depth qualitative study (p. 289), while in another example, 45 teachers were interviewed about gender politics and reform (p. 289). In another phenomenological study conducted by Belzburg (2006), three elderly participants were interviewed and observed in order to describe their experiences with the visual arts. For this particular study, the researcher targeted a maximum of ten to twelve individuals as participants.

Participants who met the criteria were accepted into the study on a first response basis. The researcher accepted responses until the required sample size is reached. The mix was expected to consist of both men and women with visual impairments. In spite of the small number of subjects, the information obtained from this research was expected to provide significant insight into the benefits and challenges of online learning for people who are visually impaired.

#### *Data Collection Plan*

In order to discover the experiences of postsecondary students with vision disabilities as they learn in an online situation, observation and comprehensive interviews were the key methods used for collecting data. The list below shows a brief overview of some of the techniques utilized during data collection and discussed in the following sections:

- Observation
- Interviews
- Reflection Notebook

- Internet communication
- Review of artifacts
- Participant Reflection Journal/Recording

Collecting data through interviews resulted in a vast number of descriptions including responses, observations, tone of voice, expression of feelings, feedback and ideas. Meticulous note-taking was required and audio recording was available during interviews. Online interviews were self transcribing so a written transcript was easily generated. In addition to in-depth interviews, observation of the online class was beneficial. In this way, the students were observed in their natural setting. This was able to show how the student interacted with their computer equipment, assistive technology and their environment. The researcher also wrote reflective journal entries on an ongoing basis. It was helpful to review artifacts from the class such as assignments and tests. Secondary methods included student narratives about their history with a disability, as well as course or medical documents and feedback files from coursework.

In order to integrate all of the methods used in collecting data for this study, a matrix was created to demonstrate how the various methods were used to answer the basic research questions proposed for this study. This matrix was designed to list the basic research questions as well as the broad topic areas that have directed the overall organization of data. Finally, the type of data that was needed and the methods used to collect the data have been identified in the chart below (Figure 1). The sections that follow describe how the researcher worked with participants, as well as the

details for each method used in this study, including observation, interviews, internet communication and review of artifacts/documents.

*Table 1: Data Collection Matrix*

<b>Research Questions</b>	<b>Topic Area</b>	<b>Type of Data Needed</b>	<b>Research Method</b>
1. What characterizes the experiences and responses of adults with visual impairments as they participate in the postsecondary visual medium of online classes?	General Feelings and Impressions	Behavior, attitude, Participant response	Observation, Interview, Participant Reflection Journal
	What is the overall experience with online distance learning	Participant response, Test scores, Final grades	Interview, Review of Artifacts
	Talk about how your experience with online learning differs from the traditional classroom.	Participant response, Medical records, School records	Review of Artifacts, Observation, Interviews
	What stands out?	Participant response	Interview
<b>Secondary Questions</b>	<b>Topic Area</b>	<b>Type of Data Needed</b>	<b>Research Method</b>
A. In the postsecondary visual medium of an online learning environment, what strategies, experienced by students with visual impairment, are most effective?	Strategies for online work and projects	Tests, project scores, communication records	Review of Artifacts, Observation, Interviews
	What projects, assignments, assessments have you enjoyed most? Why?	Participant response Action & Behavior Tests, projects	Interview, Observation, Review of Artifacts, Participant Reflection Journal
B. What specific challenges exist in the visual medium of online learning, for postsecondary individuals without perfect visual acuity? Under what circumstances do individuals disclose their disability and	Reasons for Online Learning (why were online classes chosen, what were expectations)	Participant response	Interview, Participant Reflection Journal

why?			
	Disclosure/Accommodation and Accessibility	Participant response	Observation, Interview
	Describe successes and challenges or problems encountered in the online environment and how you have dealt with them	Participant response and behavior	Observation, Interview Participant Reflection Journal

### *Working with Participants*

Initial contacts with the participants were used to build rapport with individuals. In qualitative research, this is important for establishing mutual respect and sharing information. This researcher paid careful attention to conducting conversations in a relaxed style, whether on the phone, in person or online. The relationship that developed helped to elicit more in-depth as well as informal conversation. The interaction with each person set the tone and helped to direct the research process. In order to articulate the meaning of experiences from the subject's point of view, it was important for the researcher to check any personal assumptions or judgments about the research question (Wiersma, 2000). The confidentiality of each participant was also protected in every way. Real names of people and institutions were substituted with other identifiers. All records of participation including recordings were destroyed upon completion of the study in order to protect the identity of participants.

Working with people that have a visual impairment required special attention to each participant's individual needs. This researcher, through personal experience, had a unique ability to relate to participants to determine any necessary adjustments.

Theories about insider knowledge (Edwards, 1999) were a concern since participants might have assumed that this researcher was already familiar with their needs. So it was important that the researcher specifically asked about any necessary accommodations during the study. Participants were always treated with respect and every attention was given to participant confidentiality so that no names of people or institutions would be revealed.

### *Observation*

Observation is described by Creswell (2005) as occurring when the researcher records field notes on the behavior and actions of individuals participating in the research study. Maxwell (2005) states that an unstructured approach actually allows the researcher to focus on the particular phenomena being studied. Maxwell also supports the value of observation as a research method:

“While interviewing is often an efficient and valid way of understanding someone’s perspective, observation can enable you to draw inferences about their perspective that you couldn’t obtain by relying exclusively on interview data.” Pg 94)

During this particular research study, the role of the researcher was that of an observer-participant, so the researcher was known to individuals in the study.

Marshall & Rossman (1999) suggest that participant observation is a vital part of all qualitative studies. This type of participant observation allowed the researcher to record information as it happened. The researcher spent time with participants in order to hear, see and experience life as the actual participants did. It was expected that the participants would understand the full purpose of the research study through

the letter of introduction and initial communications. This researcher was present for observations, while the participants demonstrated their involvement in their online courses. This enabled the researcher to witness how the participants acted and reacted during their online class work. Repeated observations and interviews helped to rule-out “misplaced associations or premature theories” (Maxwell, 2005).

Rossmann and Rallis (1998) emphasize that “observation is fundamental to all qualitative inquiry.” It was important to take in-depth notes about participants with visual impairments. This researcher painstakingly wrote down the individual’s reactions as well as actual words used by the participants. These observations ultimately helped to answer the research questions that focused on the reactions, challenges and techniques used by online learners with a visual impairment. Audio recordings of interview sessions were offered to the participants but not used during this study. Through detailed observation notes, the researcher was able to learn more about the actions and behaviors of the members in the study as they participate in online learning. Elliott Eisner (1998) encourages researchers to enter an observation session without a prescribed focus or list of things to observe, but rather to allow the situation to speak for itself (an “emergent focus”). Openness to a variety of qualities often reveals interesting outcomes. No predetermined checklists were used in this particular study, but rather “an enlightened eye” (Eisner, 1998) to enhance the quality of the inquiry process. Eisner (1998) also provides insight into qualitative inquiry by stressing that there are no limits to the qualitative world, and it is through experiencing these qualities, and writing about them that researchers will help others to experience them vicariously.

### *Interviews*

Marshall (1999) points out that in qualitative research, using in-depth interviews is like steering a conversation toward the right direction while allowing participants to structure their own responses. The method of conducting interviews allowed participants to remain in their natural setting, which is important for phenomenological research. A semi-structured and open-ended interview was used in gathering data for this study.

For this research study, introductory letters were prepared to introduce this researcher as a doctoral candidate at Drexel University. In this letter, an explanation was given for the purpose of the study as “to gain a better understanding the experiences of people with visual impairments as they study in the distance learning environment.” Several opportunities for communicating and questions were offered to participants including the Drexel professor and researcher name, phone number and email address. Also included with each letter was a summary of the specific research topic (Appendix A).

Interviewing was an important way to collect rich, detailed information about how participants view their worlds (Rossman & Rallis, 1998). The goal of interviewing for this particular study was to draw out the perspectives and views of individuals with visual impairments in face to face and phone interviews. Patton (2002) sets forth three basic interview types as informal conversational, the interview guide approach and the standardized open-ended method. For this particular phenomenological study, the interview guide approach was selected as an appropriate technique because it would best elicit the participant’s worldview. Using this

method, a few broad questions were identified by the researcher to help uncover the perspectives of the interviewee. The interviewer remained flexible and actively listened to the participant's narratives. Since interviewing is seen as a "conversation with meaning" between the participant and the researcher, Rossman & Rollis (1998) propose a technique called "dialogic interviewing" as an alternative for qualitative researchers." A dialogic interview can be described as a "true conversation in which researcher and participant together develop a more complex understanding of the topic" (Rossman & Rallis, 1998). The dialogic interview offered a better balance of talking between the researcher and participant.

So that the interview sessions conducted during this research study would remain flexible, but moving in a similar direction, this researcher identified several broad topic areas (interview guide approach) and used the dialogic technique. Dialogic interviews are characterized by friendly interaction, active listening and gentle probing to explore deeper responses. In addition to gathering basic demographic and disabilities information, the topic areas identified for this study (also in Appendix B) were:

- General feelings, impressions
- Accommodations and accessibility
- Comparison with traditional classrooms
- Online projects, work and teachers
- Ideas for improvement

Audio recordings are often used by researchers to review past events while reflecting upon their meaning. In fact, Patton (2002) indicates that "'As a good hammer is essential to fine carpentry, a good tape recorder is indispensable to fine fieldwork.'" Dr. Alan Stockdale (2002) from the Education Development Center in Boston, Massachusetts, proposed the advantages of using a digital recording system. Stockdale indicates in his 2002 update on the use of audio technology for the purposes of social research.

The recording process used to make analogue recordings using cassette tape introduces noise, particularly tape hiss. Noise can drown out softly spoken words and makes transcription of normal speech difficult and tiring. Digital recorders generally have a much higher signal to noise ratio. Less noise reduces the risk of lost data and results in faster, less expensive and more accurate transcription. (Stockdale, 2002)

A handheld digital audio recorder was purchased by this researcher for the purpose of recording interview sessions for this research. However, many of the conversations took place spontaneously over the internet or in response to phone calls. Although prepared to do so, the researcher did not have a chance to use the recording device during this study.

### *Internet Communication*

Internet communication was an important way of gathering data for research that targeted the online environment. Annette Markan (in Silverman, 2004) reported several examples of qualitative researchers who used the Internet as a communication medium in their studies. For example, in 2002, Anne Ryen utilized the Internet to conduct a long-term case study with a person across the globe. Ryen also examined

how the use of the web actually influenced her relationship with the participants of the study. (Ryen, 2002 in Silverman, 2004). Marham (2004) also stated that “The Internet provides new tools for conducting research, new venues for social research and new means for understanding the way social realities get conducted and reproduced.” Through the use of Internet communication via personal email, travel can be avoided and distances reduced. Distance was an important factor during this research study, since the participant locations were widely spread throughout the researcher’s region.

David Silverman (2004) discussed the Internet as a tool that instantaneously connects people and offers many possibilities for collecting data. Many of us use this tool daily, to link to others regardless of their geographic location. The Internet was also used to increase the pool of participants, and provided an excellent method for participants and researcher to stay in communication during the length of the research project. Even though the Internet offers a variety of possible modes of communication (asynchronous, synchronous, graphical, text, sound and video), this researcher used only asynchronous communication, such as email, in large-print text format.

### *Review of Artifacts*

Analyzing documentation or reviewing artifacts was also a method that used during this study. In order to help support objectivity in reporting things the way they really are, this researcher collected tests, and project documentation that helped to define the experience of the participant. Marshall & Rossman (1999) indicates that researchers often supplement participant observation with documents “produced in

the course of everyday events or constructed specifically for the research at hand.” Reviewing artifacts helped to shed light on observations and interviews. The artifacts are an important addition that supported participant experiences. All artifacts were treated carefully and with respect to individual confidentiality.

Since many online classes are conducted asynchronously, it allows students to access class materials at all times of the day and night. This means that there were many opportunities for participants of this study to engage in the online environment without the presence of the researcher. At these times, participants sometimes experienced an obstacle, challenge or insight that they wanted to document. For this reason, the researcher provided a mechanism for participant communication. Participants were offered the choice of a notebook or email address, and encouraged to capture their experiences while participating in the online environment. The notebook or email collections from this study were known as the participant reflection journal. In addition to documenting events, the participants wrote about their thoughts and feelings. The researcher and participant had several opportunities to discuss all that had happened during the times that they were not together. The participant reflections became one of the artifacts reviewed by the researcher during the analysis of data.

In addition to the participant reflections, paper documents such as project descriptions and reports were collected by the researcher. These documents added valuable insight to perspectives of the students and the complexity of topics that they studied in their online environment. These documents were collected and used to analyze notes and data to determine if the documents and records supported the

conclusions. Extra care was taken to remove identifiers from any artifacts to protect individual confidentiality.

Content analysis was used in order to evaluate the data recorded and collected because it is a technique regarded as unobtrusive and nonreactive. Content analysis is a method of reviewing the substance of documents in a step by step, orderly fashion, in order to organize the data. So project work, tests and student-teacher communications, along with field notes from observations and interviews provided the rich data that has ultimately revealed information about the reality of the participants in the study. Maxwell (2005) emphasizes that determining the ways in which a researcher will analyze the data, such as using content analysis, is an important part of the research design.

### *Validity and Rigor*

Phenomenological research must be rigorous because the objectivity and credibility of the research is at stake (Silverman, 2004). Rossman & Rallis (1999) refer to the trustworthiness of qualitative research. They offer one specific strategy to establish the credibility of a study as collecting data over a period of time, instead of a one-shot manner. This study took place over a ten-month period while participants engaged in online learning. Another strategy that was used was an outside expert who reviewed interview notes and the themes and conclusions independently. Joseph Maxwell (2005) describes validity in qualitative research as “a goal rather than a product. It has to be assessed in relationship to the purposes and circumstances of the research.” Maxwell also suggests that validity must be a distinct component of qualitative design. For the purpose of this research study, there were specific threats

to validity that it was necessary to rule out. In the sections below, details are given to support the particular attention that was given to eliminating researcher bias, triangulation or using multiple sources of data, collecting rich detailed data, use of an outside observer, and respondent verification.

### *Insider Knowledge*

The researcher has been aware that sharing similar experiences with the research participants has the benefits and challenges of insider knowledge. Brian Edwards (1999) indicates that rapport and trust could be a significant advantage of insider knowledge as well as “an awareness of body language, semiotics and slogan systems operating within the cultural norms of the group.” Insider knowledge can also endanger perception. Shared knowledge can be a disadvantage in that it is possible to overlook commonplace material. (Glesne, 1989; Hammersley, 1995). Since this researcher disclosed personal information that may allow for some insider knowledge, it was important to systematically document data and methods.

### *Researcher Bias*

Rossmann & Rallis (1999) explain the importance of judicious writing about the researcher’s personal biography and perspectives. Researchers should write about their “potential biases, strengths and unique insights to help readers explore how and in what ways the researcher helps to shape the findings in the report” (p 45). For this purpose, a personal disclosure was included within this research proposal. This researcher will be particularly careful about drawing conclusions and interpreting meaning from the interviews that are most in-line with personal viewpoints. The

researcher examined the outcomes very carefully for possibilities that differ from personal expectations and beliefs. One step that helped to verify accuracy of interpretation of the notes is the review of an outside expert. A random selection of interview/observation notes was reviewed by an independent expert to ensure a direct link to the outcomes and results.

Another important step for this researcher was looking back and reviewing all writings to check for bias. This provided an opportunity to learn and expand thinking around the observations or interviews that took place. Researchers call this “reflection” (Schon, 1983). A tool such as a research reflection notebook enabled the researcher to step back and evaluate research sessions in a systematic way. The research reflection notebook allowed the researcher to ask questions and think critically about the observations and interviews. This researcher was aware that there was social interaction with participants and recognized the need to describe personal reflections and reactions to each situation (Rossman & Rallis, 1998). It was also important to communicate how the documentation or experiences differ from the researcher’s point of view, keeping the two perspectives separated. The reflection notebook that was used in this research study documented thoughts and reflections about the observations and interviews that are part of this study. It will enable the researcher to maintain organized records throughout the research study (Haslam, 1985). This reflection notebook was organized into four levels of detail and interpretation. The recommended format of the reflection notebook included the four levels outlined below (Haslam, 1985).

### *Outline of Reflection Notebook*

#### *Direct Account*

This section was used during each observation session in order to take notes about what was happening, and document any quotes from the participant. This section was written at the location of each observation and was condensed and written in a hurried style to describe surroundings and occurrences and to keep up with the dialog.

#### *Expanded Account*

The expanded version of each observation was prepared within 24 hours of each meeting. This allowed the researcher to clarify or spell out various terminologies and add detail and specifics about what took place during each session when there wasn't time to explain details.

#### *Reflections*

This level of the reflection notebook was used to write about thoughts and feelings of the researcher and the tone of the observation session. This section gave the researcher an opportunity to think critically about what went well, what was learned and differences between personal perspectives and those of the participants.

#### *Ongoing Analysis*

This section was used to link current observations to similarities and differences from other participant experiences. Connections were documented to show links to existing research, theories as well as links to other participant experiences. The researcher used this section of the reflection notebook to organize

the evidence which supported any findings or conclusions. A chart to show the 4-level structure for the reflection notebook has been included in appendix D.

The presence of a researcher might influence a participant with visual impairments, since the researcher's vision and experiences are different from the participants. Participants could have worried about the different ways they are perceived by the researcher during their online interactions. This might have influenced the attitude and feedback of the participant. This was another important factor to note and determine if the presence of an observer was affecting the participant in a way that influenced the conclusions that the researcher draws. The participant reflection emails helped participants to articulate concerns and make their questions known to the researcher.

### *Triangulation*

Drawing data from several sources (triangulation) and methods will strengthen the robustness of qualitative research (Rossman & Rallis, 1999). Cresswell (2003) supports the concept of triangulation and recommends that researchers examine data from different sources in order to "build coherent justification for themes." A variety of sources were used in this study in order to enhance its validity. This study was based upon in-depth interviews, participant-observation, internet communications and review of artifacts. This researcher used these methods in order to triangulate and verify that all of the sources are supporting the same conclusions. So, a review of documents, records, and communications actually support any inferences made during interviews and observations.

### *Collecting Rich Data*

This research study took place over a period of several months so that an accurate view of participant struggles, adjustments and attitudes were revealed. Catherine Marshall (1999) describes effectiveness of data collection and organization methods as a critical part of the truthfulness of qualitative research. In order to develop themes and retrieve data, this researcher maintained color-coded files for individual participants. For easy retrieval, MS Excel files were created to summarize names, dates, and key occurrences. To ensure reliability, and effectiveness, meticulous records of interviews and observations were maintained.

In order to protect the identity of all individuals, all notes, artifacts or recordings were destroyed upon completion of the study. Online sessions and Internet communications are self-transcribed for future review and interpretation. These files will be archived and kept for three months before being destroyed. This research study explored issues through several techniques, namely interviews, observation, internet conversations and review of artifacts. Wiersma (2000) suggests that multiple methods of collection actually enhance internal reliability of a study. Using methods that complement each other has helped to lend credibility to the findings. For example, written interview notes were matched with documents and communications from the participants to support observations and outcomes.

### *Truthfulness & Validity*

The validity of a study also refers to the accurate interpretation of interviews and observations (Silverman, 2004). Attention to issues of validity were made by the researcher during the research process to test that the information collected represented exactly what was being measured and reported in the study. To do this the data collected was detailed and “rich” so that it is contained many details and used a variety of techniques (Maxwell, 2005). In order to ensure validity, raw data from one of the participants was reviewed by a qualified independent individual who is very well informed about topics related to disability, as well as the strategies for qualitative research. See summary of experience for Nick Fina (2008) in Appendix C. This individual, Fina (2008) reviewed the raw data including email communication from the participant as well as the data and descriptive notes captured by the researcher during interviews and observations. The direct account was then compared to the researcher’s organization of quotes and the textural description of that participant. Fina (2008) found that there was consistency and between the raw data and the researcher’s writing. The findings of the study were shared with the participants in order to confirm that their perspectives had been reflected accurately. Participants were asked to try to identify themselves in the findings and send feedback or corrections. This also showed participants that their true identities and institutions were not revealed through this study to ensure privacy and confidentiality. Ultimately, the results and findings were written in a consistent, meaningful and credible way so that the trustworthiness of the study was reflected in the pages of the study.

### *Data Analysis*

Careful consideration was necessary to develop a plan for analyzing the information gathered from this research. The data from this research was descriptive in nature, including in-depth observation of what was happening, the circumstances and tone. For phenomenological research, it was important to remember that the goal was to seek underlying meaning or construction of the experience of individuals with visual impairments. So, the aim was not necessarily to find patterns or commonalities as in other qualitative methods (Eisner, 1998; Thorne, 2000). Instead, it was important to avoid comparisons and to direct the research toward complexity and insightfulness. The outcome required methodical and reflective study of the experiences as they had been lived. It was critical for the researcher to set aside any personal bias or preconceptions in order to work inductively to create compelling descriptions of the observed situations.

Analysis of the data (interviews, observation notes and documents) took place on an ongoing basis. That is the notes did not age for any substantial period, but were reviewed immediately following field visits. Maxwell (2005) argues that this approach is a design decision for qualitative researchers and it must be planned and addressed prior to data collection. This strategy has led to new data and information about the possible challenges and benefits those students with visual impairments experience, as they took postsecondary online classes.

Reading the field notes from any interview or observation is an essential part of qualitative research (Creswell, 2007; Maxwell, 2005). During the analysis, this researcher was able to reflect on the notes and write memos to indicate any ideas or

relationships noticed. Content analysis (Maxwell, 2005) is a technique that allowed the researcher to sift through large amounts of data in a systematic way.

Sorting data into topic areas or themes was also a strategy employed for this study.

The process of *Epoche* was also used to analyze the data. *Epoche* is “a way of genuine looking that precedes reflectiveness, the making of judgments or reaching conclusions” (Moustakas, 1994).

The next step involved locating key phrases from the data collected, or phenomenological reduction (Creswell, 2007). These key phrases are direct perceptions of the participants and the specific phenomenon under investigation. The phrases have been clustered into groupings with the same idea or subject. Each cluster was refined to eliminate overlapping ideas.

Maxwell (2005) describes coding for qualitative research as a way to organize data into categories that “facilitate development of theoretical concepts.” For this research study, broad topic areas, or themes, were identified as a way to organize the data in search of commonalities among participants. This method of organization, supported by Moustakas (1994) and Creswell (2007), helped to clarify the common problems and general enablers for success of individuals with visual impairments. The selected topic areas included: reasons for online learning, general feelings & impressions, accommodations and accessibility, comparison with traditional classrooms, reflections on projects, work and teachers, and the future.

Methods that traditionally seek to compare and contrast data are not normally the main analyzing techniques used in phenomenological research (Thorne, 2000). In fact, this research study was designed to focus on the depth and details of individuals

living with a visual impairment and their experiences of online learning. These realities were appreciated only through a thorough and reflective study of participant experiences as they were lived. The data collected through interviews and observation was analyzed through reflection on life experiences and reporting descriptions of the realities perceived by the participants. The perspectives of the participants and their worldview formed the basic structure of the report. In the final results and conclusions, the researcher pointed out any social significance of these experiences organized them around common themes.

#### *Timeline Summary*

The timing for this study began after IRB approval in October, 2007. Online courses vary in length and this researcher expected to observe participants over time, as they took part in their online classes. Finding people who were willing and available to participate in this research was expected to take three to six weeks. Data collection moved quickly depending on the length of classes attended by the participants. For example, a person registered in semester-long class with online participation only once each week resulted in limited the opportunities for observation. However, when a student registered for a 6-week class that met four or five times per week, it would have provided frequent opportunities for observation. Ideally for this study, there was a mix of several types/lengths of classes observed. The observation sessions and interviews lasted for many months as participants participated in their classes. For one participant, this meant observing several different six-week-long classes. Analysis of the data was ongoing. It took ten months of research and analysis in order to prepare the results from this study.

*Table 2: Timeline chart*

<b>Date</b>	<b>Expected Activities</b>
Upon IRB approval	Participant selection
Ten months	Data collection: Interviews and observations begin. Review artifacts. Independent evaluation. Journal writing and analysis. Final interviews.
Throughout the study	Data Analysis: Summarize and report on the findings from the study.
Ten months	Complete the research study.

## Chapter 4: Findings

### *Overview*

This chapter is organized into four main sections. The first section (Purpose and Methodology) will provide a brief overview of the research study, including the purpose, methods and structure of the study. The second section (Participant Selection and Data Collection) will explain the researcher's efforts to find and select participants for this study and the results of those efforts. The third section (Results) will have three parts. Each part will represent one participant in this study. For each participant, there are organized clusters of synthesized data from interviews and observations. These are actual words and gestures of the participants. Each cluster will be followed by a description of the detailed experiences and perspectives of the participants as well as researcher observations. The fourth section of this chapter (Themes) will summarize themes extracted from the data collected through the interviews and observations. In the final chapter following these findings, the researcher will identify the findings as they relate directly to the research questions. The implications will be uncovered and recommendations made through the analysis of the data and themes.

### *Purpose and Methodology*

This research study was conducted in order to explore the ways that postsecondary students with visual impairments have experienced the visual medium of online learning. This study was designed to address the original research questions and describe the perceptions, feelings, thoughts and reactions of the participants from

their own point of view. The researcher expected to show benefits and difficulties that people with visual impairments experience as they took online classes. The intention of this study was to examine how adult learners with vision impairments accommodate the daily challenges they encounter in the online environment.

Listed below are the research questions that this study was designed to answer:

1. What characterizes the experiences and responses of adults with visual impairments as they participate in the postsecondary visual medium of online classes?

While seeking the important particulars related to the above research question, it was also expected that the following topics or inquiries were also explored for supplemental content:

- a. In the postsecondary visual medium of an online learning environment, what strategies, experienced by students with visual impairment, are most effective?
- b. What specific challenges exist in the visual medium of online learning, for postsecondary individuals without perfect visual acuity? Under what circumstances do individuals disclose their disability and why?

### *Structure of the Study*

The framework for this study was designed to capture the heart and spirit of the lived experiences of a specific group of participants. In order to discover the understandings and feelings of adults with visual impairments, as they learn in an online setting, a variety of methods were used. Observation and comprehensive

interviews were the key methods employed to assemble data. The list below shows a brief overview of some of the techniques that were used and details can be found in Chapter Three of this study.

- Observation
- Interviews
- Reflection Notebook
- Internet communication
- Review of artifacts

Collecting data through interviews resulted in a vast amount of notes including descriptions, responses and observations. Online communications were used for ongoing updates between the participant and researcher. In addition to in-depth interviews, and observation, the researcher completed a reflective journal to record personal analysis and comments. One participant did share artifacts from her class including tests, syllabus and papers. Secondary methods included student narratives about their history with a disability, and initial goals for taking online classes.

#### *Participant Selection and Data Collection*

The researcher's purpose of describing the perspectives of students with visual impairment in the visual medium of online learning was the key in determining the requirements for participation. Because of the phenomenon under investigation, it was critical to find participants with a visual impairment. The researcher was prepared to address any special needs associated with each participant who agreed to

complete the study. The selection of subjects for this study took place through nonprobability techniques and chosen based upon an individual's qualifications of a documented visual impairment and experience with online classes. Welman and Kruger (as stated in Groenewald, 2004) indicate that purposive selection is one of the key sampling methods for this type of phenomenological study. One example of a study cited by Weirisma (2000) describes an ethnographic study conducted in New York City using three middle school students as participants. Selecting the sample size in qualitative research varies according to the informational needs of the study. In this information-rich study, three participants have provided a vast amount of intense descriptions that illustrate the phenomenon under investigation, the perspectives of learners with a visual impairment as they attend online classes. Listed below are the three key criteria that were used for choosing the subjects for the study.

1. Participants must be age 18 or older
2. Participants must have a documented visual impairment.
3. Participants must be enrolled in an online class or have taken an online class within the past two years.

Locating participants and choosing subjects for this study took place in person, as well as on the Internet and over email. Documents and flyers with a description of requirements were created and approved by the Drexel IRB committee. Copies of these documents were made available in Adobe Acrobat (pdf) format, which includes a read-aloud feature. A summary of the research topic was made available with all advertisements. Hard copies of this advertisement and summary were placed in the *Disabilities Services Offices* at several universities in Southeastern

Pennsylvania, Delaware and Maryland. These documents were also made available at a local school for the blind. The search expanded to the entire tri-state area of PA, NJ and DE and parts of NY and MD. Notices seeking participants were hung on bulletin boards and distributed directly to potential participants. E-mail contacts and lists were used to spread the word to recruit participants. Distribution lists and contacts associated with reputable organizations, or individuals associated with blindness and disabilities, were another source of advertisement. For example, the Pennsylvania Division for the Blind and Visually Impaired (PA DVI) maintains a distribution list for regional centers. The announcement seeking participants was distributed to every region in the state. The request spread through the National Federation for the Blind (NFB) in Delaware and The Delaware Division of Visually Impaired (DVI). DVI publishes a newsletter which included a short article requesting participants for the study.

The researcher also contacted key individuals who maintained their own list of people interested in visual impairment. One was in Southeastern Pennsylvania, another was in Western Pennsylvania. An online advertisement seeking participants was posted at the website Blind Planet at: [www.blind-planet.com](http://www.blind-planet.com). Finally, the snowball technique was employed. Each participant was asked to recommend friends, colleagues and those with visual impairments who may also have an interest in participating in this study. The participants agreed to encourage others.

The researcher was ready to accept qualified participants who met all of the criteria, on a first response basis. The requirements are outlined above in the

numbered bullets. The researcher expected that each participant would have special needs for all forms of communication. The researcher was prepared to address the specific requirements of each participant. All special conditions of each subject would be accepted and undertaken with flexibility, on an individual basis. For example, if a participant required documents in any special format, the researcher was prepared to purchase and learn new software packages. The details of the special needs of each participant will be discussed in the results section in this chapter. Three subjects were selected as participants for the study. Recruiting for additional participants continued well into the data gathering phase of the study and concluded in the final months of observation. The snowball technique was also used and did not yield additional participants for the study.

Although the participant level of three was indeed a smaller number of subjects than originally planned, Marshall & Rossman (2004) note that the ultimate purpose of phenomenological research is to “describe the meaning of a concept or phenomenon that several people share.” The in-depth interviews delve into the little-studied phenomenon of adults with visual impairments as they participate in online learning. Sharing these insights with others who share the phenomenon of a visual impairment or know/work with those who have visual impairments could impact their views or attitudes. John Creswell (2003) confirms that in phenomenology, the study involves only a small number of participants so the researcher can understand the “lived experiences” of subjects. As with most qualitative research studies, this study is designed as one of discovery and not to specifically test a hypothesis. The focus on

the quality of information obtained from this research provides insight through narrative analysis.

The timing for this study began in autumn, 2007 after IRB approval. The researcher began to make contacts in October, 2007 and connected with the third participant in February, 2008. The data collection phase began as soon as participants were accepted. Final data was collected in August 2008. One participant was followed over two semesters. A second participant was enrolled in two courses before finally graduating and a third participant took ongoing classes every six or eight weeks. The researcher followed the progress of the students in order to get detailed and in-depth perspectives over time. The interviews were conducted at times and places selected by the participants. One observation session took place at the home of a participant in Southeastern Pennsylvania, and another was located in northern Maryland. Analysis of the data has been ongoing.

The schedule of the study enabled this researcher to follow participants through several months of experiences with different subjects and teachers. In an effort to be sensitive to participant needs, the researcher offered a variety of interviewing and note taking strategies to each subject. The participants were offered options for communications such as a journal for writing down notes, or sending email or instant messaging, recording thoughts on an audio tape or talking on the phone. Each participant made choices that best met their own needs.

Collecting data was done by the researcher using several organized methods. The researcher prepared for each interview or observation session by scanning previous notes and general information about the subject. Keeping all notes and

journal information in one location always made it handy to access. Interviewing the participants was done by telephone and in-person, as well as through online communications. The researcher asked open-ended questions in order to elicit the views and opinions of the participants. During observation sessions, the researcher took notes in an unstructured way and watched participants work at their online classes. In addition to interviews and observations, documents were also collected to demonstrate examples and support opinions of the participants. Detailed notes were taken in a research notebook. In addition, a more structured research journal was kept in order to record personal reflections, notes and opinions. The journal helped move the research toward a deeper understanding and interpretation of the information.

### *Findings*

This study reflects a qualitative, naturalistic approach. As such, John Creswell (2007) suggests that the outcomes should be “reported in a descriptive, narrative form rather than as a scientific report. This will allow the readers to “view the subject’s world” (Creswell 2003). This section called “findings” is divided into three main sections that coincide with the detailed experiences of each participant. Each participant met the requirements of the study and was selected to participate. They are all adults with a documented visual impairment. They were all registered in an online class at the time this study was conducted. Each participant also gave thorough examples and personal thoughts about their experiences in the online environment. The participant experiences took place over a period of ten months. Participants were interviewed on the phone and in-person. Their email

communications also provided some of the examples and feelings that were shared. The information collected was organized and will be described as it relates to the purpose of the study.

The first segment for each participant will show data that has been documented directly from participant statements and observations. Creswell (2007) recommends highlighting the significant statements or quotes from participants. These clusters emerged naturally from the individual perceptions and experiences of each partisan, and the clusters vary for each participant to show their natural inclinations. This step involved locating key verbatim phrases from the data collected, or phenomenological reduction. These key phrases are direct perceptions of the participants and the specific phenomenon under investigation. The phrases have been clustered into groupings with the same idea or subject. Each cluster was refined to eliminate overlapping ideas.

Following each verbatim cluster of phrases will be a textural description for each participant. As recommended by Moustakas (1994) and Creswell (2007), the researcher made determinations about the key statements in order to uncover the “essence” of meaning. Content analysis (Maxwell, 2005) allowed the researcher to sift through large amounts of data in a systematic way. The process of *Epoche* was also used to analyze the data that allowed the researcher to bracket her own perspectives. *Epoche* is “a way of genuine looking that precedes reflectiveness, the making of judgments or reaching conclusions” (Moustakas, 1994). When writing the stories of each participant,

Sorting data into topic areas or themes was also a strategy employed for this study. Maxwell (2005) describes coding for qualitative research as a way to organize

data into categories that “facilitate development of theoretical concepts.” For this research study, broad topic areas, or themes, were identified as a way to organize the data in search of commonalities among participants. Creswell (2007) emphasizes that the themes are developed from the “clusters of meaning” highlighted by the participants. The section following the participant segments will detail the organized themes.

### *Participant 1: Lydia*

#### *Clusters for Participant 1*

##### **Visual Impairment**

- *I've been blind for 11 years*
- *I can't see a thing*
- *There is some light perception in both eyes*
- *Type 1 diabetes at age 13*
- *Diabetic retinopathy*
- *Lots of surgeries*

##### **Technical Ability**

- *Screen reader – JAWS*
- *I know all the keyboard commands*
- *I use recording devices and note takers*
- *I have a laptop besides my main computer*
- *I am smart, but could not figure out where to attach the files in the course email system!*
- *I had to allow pop - ups or else attachments wouldn't open for me*
- *Friends helped me*

##### **Motivation**

- *I love to write*
- *I want a bachelor's degree in journalism*
- *There's lots of room for improvement*
- *I hope that I can help others*

##### **Personal Style**

- *I'm 24*
- *I like to interact with people*

- *I like it when the professors know who I am*
- *The people in the office all know my name (traditional class)*
- *I am definitely an advocate on campus*
- *They look to me for advice*
- *I make it a point to meet with my professors in advance*

#### Getting Around

- *Getting to school is a big time sink*
- *One time I waited two hours!*
- *I utilize a guide dog for travel*

#### Online Classes

- *I registered for the convenience*
- *More intensive, more work unburying things*
- *4 or 5 postings in addition to papers*
- *In a regular class, you get to participate or not – it's over in a day*
- *Online classes are great for writing reports*
- *I like the hybrid class – we did oral presentations.*

#### Assignments

- *I like multiple choice and fill-in-the-blank*
- *I love to write and online classes are great for that*
- *Don't send me any documents with columns!*
- *For me, matching tests were the worst!*
- *Oh, PowerPoint is a pain – screen readers don't read it well.*
- *I needed a reviewer to confirm images*

#### Professors

- *Each professor sets up the class differently*
- *Some professors created a Word doc*
- *It's important to meet face to face to work out details*
- *I know what I need*
- *This professor wouldn't meet with me! He avoided me!*
- *If the professor has another job, he can be hard to reach*
- *I like it when they mark up the paper and give it back (traditional class)*

#### Peers

- *Sometimes the teams work together really well*
- *Teams were fun*
- *I invited them to meet at my house*
- *We created a contract*
- *I enjoyed the team of 5 strong women!*
- *Not all teams communicate and work together well*

- *I missed meeting people*
- *No new relationships*

#### Time Management

- *I always set up time with the professors*
- *Online classes are a lot of work!*
- *I think online classes are more stressful*

#### The School

- *I always copy the disabilities office when I have a request*
- *I work closely with the people in the office*
- *They ask me for advice (Disabilities Services)*
- *Everyone knows me*

#### *Textural Description for Participant 1*

Participant 1, identified here as Lydia, is a blind young adult student. She was diagnosed with type 1 diabetes at age 13. Lydia has been blind for eleven years, from diabetic retinopathy. Diabetic retinopathy is the bleeding and extra growth of blood vessels in the back of the eyes. This causes irreversible scarring of the retina. Lydia can no longer see the eye charts at the doctor's office, but she does have some light perception in both eyes. Lydia has had several other surgeries including a knee replacement. She walks with the support of a cane and utilizes a guide dog for travel. Lydia is young and friendly with an outgoing style.

Lydia requires the use of assistive technology when she is performing her schoolwork and accessing the internet through her computer. Lydia uses a software package called JAWS (Job Application With Speech). JAWS (Freedom Scientific, 2008) is a powerful accessibility package for people who are blind or visually impaired. It is used with the Microsoft Windows operating system. JAWS reads information on the computer monitor using synthesized speech. The package allows a

person to hit keyboard commands in order to edit documents and read web pages. This package requires the user to learn keyboard combinations, without any necessary monitor or mouse. Speakers are required so the user can hear the output. Lydia also uses recording devices such as an analog and digital recorder. She also uses a note-taking device called PAC Mate which works like a portable computer and has the look and feel of JAWS.



Fig 1: JAWS<sup>®</sup> Software (Freedom Scientific) used by participant one as a screen reader attached to her computer.



Fig 2: PAC-Mate portable computer (Freedom Scientific), used by participant 1 as a portable note-taking device

Lydia has been attending her local community college for the past two and a half years as a full time student. Lydia is seeking an associate's degree and wishes to continue her studies in journalism toward a bachelor's degree. The community

college is fairly traditional, and has begun to offer online courses as well as blended-format courses. Lydia has taken seven online courses. Three of her courses were blended format which means they met face-to-face a few times during the course. Lydia was on the last leg of her journey toward an associate's degree when she agreed to participate in this research study. Lydia did accomplish her goals and graduated in May, 2008. In fact, Lydia was all set to transfer to another local university in order to continue her studies in journalism. Lydia expects to receive her bachelor's degree in journalism in another three years.

Lydia is very active within her school and feels that she is seen as an activist for people with visual impairments. Lydia is assertive. She is a student who is registered with her college's Office for Disabilities Services. She has taken the time to work with the people in the office and had kept in close contact with them throughout her classes at school. Lydia indicates that the members of the office staff were all acquainted with her, and knew her name when she entered the office. Lydia always discloses her disability to the instructors, classmates, and peers that she works with. Many of her courses have been face-to-face, where people who see Lydia in person can tell that she is blind. Her guide dog accompanies her and sometimes she has a person to help take notes. In a class that is completely online, Lydia does introduce herself, and blindness is part of who she is, so it is naturally part of her introduction. Lydia also likes to work with professors prior to the start of her classes so that faculty members are not taken by surprise when they encounter a blind student in their class. Lydia thinks that it is important to meet face to face to work out any potential problems. "I always copy the disabilities office when I have a request."

Lydia's overall impressions about online learning are mixed. For any type of class, traditional or online, Lydia likes to meet the professor face to face before the class starts. She wants to encourage a closer, personal relationship with the professor. One problem that she encountered in the online environment was with her health teacher. The professor was not receptive to meeting in advance. It took Lydia several attempts before the professor would agree to meet with her. After the meeting, things seemed to go very well.

As an experienced student, Lydia has encountered all types of evaluation and assessment techniques during her seven online courses. Test-taking was similar in the online class to the strategies used in a traditional classroom. Multiple-choice questions were easier for Lydia because each question could be read and answered individually, one at a time. "For me, matching tests were the worst!" Lydia's lifelong experience with assistive technology did not give her any advantage when it came to certain document formats. She very clearly stated that the screen reading package did not read column-format well. Instead, the synthesized voice just seemed to jump around the screen. It would be difficult to track longer lists of words and match them up to definitions without being able to review the entire list at once. Writing essays and papers was Lydia's strength. All of her courses required writing and reports. She was mainly able to submit papers and written assignments over email or through the course website.

A "discussion board" was something that the professors used in several of Lydia's online classes. It was built-in as part of the web-based platform used for online learning at this institution. The discussion area was a separate area inside the

class website where the normal back-and-forth of class participants took place. Students would post messages and peers could then respond. This was the place where class participants would interact with the other students in the class. They could ask each other questions, or post related information. Lydia felt comfortable posting messages and responding to them as well. Since these messages are all text, they were easy to read, and always accessible. If a posting required an attachment, Lydia often had problems with it. Even though Lydia was computer savvy and motivated to get things done, when she was required to submit an assignment, Lydia often ran into problems. She discovered that the issue was the way that her screen reader and computer system worked together. After much trial and error as well as some help from friends, she discovered the issue was an internet “pop-up blocking” feature in her navigation program. “I had to allow pop - ups or else attachments wouldn’t open for me.” Lydia was very frustrated over these ongoing issues attaching files and accessing attachments in the campus email forum.

During several of Lydia’s online classes, the professors assigned team projects. The professors most often assigned students to teams instead of asking the class attendees to self-group. The teams could use their own team discussion board, or private workspace on the class website, to work on projects. “Not all teams communicate and work together well.” The teams were mainly made-up of people from the local community. During one particular sociology/science class, Lydia worked on a team project. The team members all filled out a form to let others know their availability for meetings. After some negotiation, this particular team agreed to meet at Lydia’s house to work on a project. Lydia indicated that there were other

team experiences that required more work. Lydia indicated that during all of her team encounters, the students always made up a team contract at the start of a team project. This helped to guide them as problems arose within the team. From Lydia's point of view, she did enjoy most of the teamwork that took place in her online or blended-format classes.

In general, Lydia's experiences in the online classroom gave her a mixed opinion of online learning. Even though the classes all used the same basic platform, each professor arranged aspects of the class website differently. This sometimes made it hard to find the information or documents which might be buried under different categories. "Online classes are a lot of work!" Lydia expressed that the classes were more intense, and required more planning for deliberate interaction or participation. Lydia thought a traditional class was also less work in the area of class participation, "In a regular class you participate or not – it's over in a day." Much more writing (essays, papers) was also necessary in online classes as opposed to the fewer shorter writing assignments in a traditional classes.

Lydia also felt that the online class is more stressful than a traditional class. Lydia felt more stress with the increased work. Paying extra attention to time management also increased the amount of pressure she felt. Lydia also cited the lack of ongoing feedback as an additional stress factor. She wanted to know how her grades were progressing and whether she was participating enough. There was no way for her to gauge her success or failure in the online classes.

Since Lydia was majoring in journalism, writing papers really was the technique that she preferred for assessment and evaluation. She enjoys writing essays

and “online classes are great for that.” She noted that in a traditional class, the instructors mark up the paper and send it back with comments. But in her online classes, there were never any comments inserted into the document. Lydia was disappointed in that aspect of feedback. Sometimes, teachers used Microsoft PowerPoint for presentations, but Lydia was “not thrilled with that.” From her perspective, “PowerPoint is a pain” because of the visual nature of presentations. Lydia needed help from a reviewer to confirm images and graphics. Screen readers don’t read these documents very well. Navigation is difficult and then sometimes there are additional links to follow inside the presentation. It’s easy to lose your place. So the layers of organized information are sometimes difficult to track if you depend solely upon screen readers.

On a more positive note, the online class did save Lydia from many of the hassles associated with transportation to and from class. Transportation for Lydia was often an issue because she had to wait for rides that sometimes never came. On occasion, Lydia waited an extra two hours on transportation, and said “this is a big time sink.” It was a real advantage to be able to eliminate the obstacle of transportation issues from her life. Lydia emphasized the saving of time as well as reducing stress associated with making arrangements for rides and then waiting for rides, wondering if they would really come.

Lydia commented that she enjoyed the blended format of class where she was able to meet her classmates in a traditional classroom situation, and then move through the class materials together in the online environment. A class that is considered a blended format meets in person for a few sessions, while the majority of

ongoing communication is done online. Many institutions offer this type of hybrid class and it is becoming a popular offering. To attend a blended format class, the institution would need to have a local campus in the student's location. Lydia explained that she missed the interaction with her peers in a totally online environment. She has more interaction with the professor in the traditional classroom format. In the online environment, Lydia yearned for the camaraderie she felt from fellow classmates. She also wished for more immediate feedback that professors and classmates tended to give in a traditional face-to-face class. Lydia would not be opposed to taking future online classes, but was looking forward to her next traditional class.

Overall, the experiences of Lydia, as she took online classes, revealed some challenges as well as benefits. Her perception uncovered a desire to interact with others in person. She valued the learning that took place in the classroom, through teamwork and through the feedback from professors and peers. She really seemed to miss the back-and-forth discussions and natural, unstructured conversations that took place in a traditional classroom. These feelings and preferences outweighed the positive impact that online classes had on her time spent dealing with regular transportation issues. It is also surprising that Lydia, a young and intelligent woman of the technology generation, had some difficulty with navigating the online class environment through her screen reader. Similar obstacles toward success included the trouble maneuvering through PowerPoint files or finding buried documents, in spite of her many years of experience with assistive technologies. These seemed to combine in bringing about a somewhat negative reaction to online learning. The lack

of availability of the professors, along with fewer instances for feedback on papers or progress, added to Lydia's less than enthusiastic point of view. These experiences leave us with many possibilities for the future and the challenge to improve online learning for people with visual impairments in the online classroom.

*Participant 2: Jane*

*Clusters for Participant 2*

**Visual Impairment**

- *Congenital cataracts*
- *20/200 in the good eye*
- *Needed handouts in large print (traditional class)*
- *Don't need to read the board*
- *I did tell professors*
- *This does not affect my online environment*

**Technical Ability**

- *I have a Bachelor's degree in IT*
- *I am glad that I have ZoomText.*
- *I use the ZoomText toolbar to designate power*
- *Easy to move about!*
- *Web access using Outlook*
- *Some websites that were just absolutely awful to read without this program*

**Motivation**

- *MBA*
- *I enjoy it very much!*
- *I have a bit of experience*
- *I completed the first class and received an A*
- *I have a 3.89 GPA*

**Personal Style**

- *Definitely I had to take breaks.*
- *Like flexibility and convenience*
- *It takes me more time*
- *I'm manager*
- *I started in production*
- *Dress any way I want*

- *I get a better understanding of the theories and concepts that I am studying*

#### Assignments

- *No testing - it's great*
- *All written assignments*
- *Case scenarios*
- *6 discussion questions, must answer 4*
- *I had to do a 3,000 word report*
- *Wow, what a task!*
- *Doing the research online was a real challenge.*
- *Can be frustrating at times for sighted people as well as those with vision impairments*
- *Practicing ways that I can explain things*
- *It's hard to read the longer lists*

#### Getting Around

- *It's hard to go back and forth*
- *Used public transportation*
- *Rides from friends*
- *Shared ride, pay \$2.00!*
- *1 hour of time to get there*
- *Don't need to get rides*

#### Schedule

- *I sign into my classes pretty much on a daily basis*
- *These are six week classes*
- *Must keep up with posts*
- *It took a great many hours to complete the research*
- *Not only time consuming . . . but exhausting.*
- *Not being able to read materials as fast as I really want to.*
- *It just takes more time for studying*
- *Like flexibility and convenience*
- *Space out my time*
- *Any time of day or night*
- *Less stressful*

#### Online Classes

- *Great!*
- *More relaxed*
- *It's a lot of reading*
- *Online classes are great*
- *4 out of 7 days*
- *Class materials are right there*

- *I print them (textbooks)*
- *This format works really well for me*
- *It's great, but intense*
- *Challenging!*
- *There's a lot to read and respond to*
- *Must have determination and discipline.*
- *My experience over the past year makes things easier*
- *My comfort level has increased*
- *These things do not affect me at all in the online classroom (accommodations)*
- *Never any problem online*
- *It's perfect the way it is!"*
- *Those leadership classes are very interesting*
- *God knows I worked hard enough for it!*

#### Professors

- *Professors post mainly text*
- *Sometimes post attachments*
- *Yes, you can call them!*
- *I called to talk about a question and spent half an hour talking*
- *They can't draw on a board*
- *Do get verbal feedback*
- *I am waiting for the grade*
- *If I get stuck, I must wait for email*

#### Classmates

- *We had to respond to others*
- *There is no face to face interaction*
- *Some teams work together better than others*
- *The interaction is online*
- *Must work on team charter*

#### The School

- *It works out with my schedule*
- *Runs so smooth*
- *Sometimes right away – sometimes evening*
- *If a forum exists for students to chat, I am not aware of it*
- *No suggestions for improvements*
- *In debt with school*
- *Online environment doesn't make a lot of difference*

*Textural Description for Participant 2*

Participant 2 is identified as Jane, a middle-aged female student who works full time and attends classes totally online. The postsecondary institution that Jane attends is well known as an online university. Jane is seeking an MBA degree. She is legally blind with a corrected vision of 20/200 in her good eye and only counted fingers up close in the other eye. The numbers 20/200 indicate that Jane sees at 20 feet what a person with normal vision acuity sees at 200 feet. This equates to about the big “E” on the typical eye chart. Jane was born with congenital cataracts. A congenital cataract is clouding of the lens of the eye that is present at birth. Information from the National Institute of Health Library of Medicine indicates that the lens of the eye is normally clear, enabling light to be received by the retina (NLM, 2008). Jane lost even more sight in her other eye due to two failed cornea transplants.

Jane has had some previous experience with online learning during her schooling for her undergraduate degree. Now as she furthers her education, Jane takes intensive six-week long classes completely online. She speaks in a soft and friendly tone. She is quick to laugh and smile. Jane logs in every day. The flexibility of participating in class is convenient and Jane declares “this format works really well for me.” Jane expects to graduate with her MBA in 2009. Jane has a computer with a 21-inch monitor. She sits about a foot to one and a half feet from the screen. Jane leans in toward the monitor to read through her glasses. Her computer and accessories are set up in a corner of her den/dining area, which is very well lit with fluorescent lighting. Jane does not use a screen reader, but she does rely on a

software package called *ZoomText*. *ZoomText* (Ai Squared, 2008) is a screen magnifier that enlarges and enhances everything on a computer screen. It comes with screen reading capability. *ZoomText* enables users to read clear text that is at any magnification level desired by the user.



Fig 3: ZoomText by Ai Squared. Screen magnification product used by participant 2.

Jane had taken some online classes during her undergraduate work since 2005. She expects that it will take about a year and a half to finish her path toward an MBA. There are no face-to-face sessions or any specific pre-arranged meeting times for phone or chat sessions. The classes meet asynchronously. So, a professor does not require attendance for an online session at any stipulated time. Jane likes the flexibility this allows. “It’s great, but intense” and the students are required to participate in online discussions on 4 out of 7 days during each week of the class. The format used is the same for all classes. The online “classroom” is very text-oriented like accessing folders and sending email in a standard email package. Jane accesses her “classroom” using Microsoft Outlook<sup>®</sup>. Jane indicates that each folder is like moving into another “room!” The main folder contains the main discussion for

the classroom. Other folders or classrooms contain resource information, while other folders are set up as breakout rooms for teamwork. Jane enjoys the format and seems very comfortable with it.

Jane does not often deal with her university's Office for Disabilities Services. She finds that using the *ZoomText* product allows her to see or access the information she needs. All resources, including textbook, articles or recommended links are all available through the online classroom website. All students are required to submit a profile or short biography to the class as a way of introduction. Jane does include her visual impairment as part of her introduction to the class, thus giving full disclosure of her disability. She has not found it necessary to meet with professors prior to the start of class to explain her visual impairment or to request any special accommodations.

Although they can be read directly from the computer, Jane has a habit of printing many of her materials in the early part of each week, including textbook chapters. The class resources were always available online at the start of class. She prints them using a large font size. Then after she takes time to read, Jane begins to post her responses and questions during the second half of the week. The school has strict participation and attendance requirements in every class and these requirements are enforced by the instructors. The institution also has guidelines for students that include the minimum number of words that create a quality posting. Professors read and respond to the student postings, and students also respond to each other. The students receive participation points for their quality postings and responses to the

discussions and questions. Jane points out that “there’s a lot to read and respond to.” It takes a great deal of work to keep up with all of the posts.

One challenge expressed by Jane was just keeping up with all of the messages that students post into the online forum. Using *ZoomText* sometimes makes it difficult to read longer lists. When the text is very large on the screen, only part of the words or sentences can be displayed. The software allows the user to designate the magnification power easily from the toolbar. Since the class never met live, the professors could never draw something on a blackboard or call on specific students. One frustration for Jane “is not being able to read materials as fast as I really want to. It just takes me more time for studying than the average person.” On a positive note, Jane believes that her slower reading pace leads to better comprehension and a deeper appreciation of the topics. The one thing that Jane misses in the online class is face-to-face interaction with peers.

One recent experience took place last week. I had to do a 3,000 word report regarding HR staffing strategies in a foreign country. Wow, what a task! Doing the research online, and through the school library, and other sources I could find, was a real challenge. All I have to say is that I am glad that I have *ZoomText*. There were some websites that were just absolutely awful to read without this program. I got the report done and I am waiting for the grade. It took a great many hours to complete the research, which was not only time consuming, but spending that much time in front of the monitor can also be exhausting. Definitely I had to take breaks. But I really believe that this type of research can be frustrating at times for sighted people as well as those with vision impairments. (May, 2008)

The experience that Jane describes above shows that there is indeed additional stress for students with a visual impairments. Reading for many long hours can be a real strain on the eyes. So, it could take a student with visual impairments a bit longer to complete an assignment due to the breaks that need to be scheduled. This is an example of how time management can play an important role in the life of an online student with visual impairments. The student may need to schedule more breaks and allow more time to complete exercises.

The assessment techniques used in all of Jane's current online classes are very similar. There are no true-false tests and no matching tests. The students mainly submit essays, reports and papers. Jane enjoys this evaluation format. She has had the opportunity to improve her writing skills through "practicing ways that I can explain things." Jane doesn't like being put on the spot with memorization for tests. She also enjoys the problem-solving of case studies and business scenarios. The instructors do give feedback on the assignments as well as on participation. Jane knew her status in each class on a weekly basis. The professors are accessible and seem to be willing to talk to students on the phone. The instructors always seem to give alternate contact information and they specify best times to reach them. Jane explained that she called to speak to one professor about a question, and ended up spending half an hour talking on the phone.

Teamwork is an important aspect of the classes that Jane attends. Although the teams of students do not meet face to face, they are assigned to a separate discussion forum or folder. In that way, the team members can post ideas and messages to each other without disturbing the main class discussions. Jane enjoys the

teamwork, but indicates that “some teams work together better than others.” The teams discuss an agreement or contract to plan their working arrangements. As problems arise, the team can refer to their agreement. In this way, the teams are able to do their research and work on their projects in a successful way.

Jane is very pleased to tell us that for her, the online classes are much less stressful than a traditional class. She indicates that there is no schedule or specific day and time reserved for school. She was never required to attend a live session or meeting at a specific time. The requirements were still strict for participation, but students were able to fulfill their daily requirements any time of the day or night. Jane recalled that during her undergraduate classes at a local school, the students dressed in an upscale or business-casual style. She loves being able to dress any way she wants to “attend classes” or log into class through her computer. Jane also recalled that in a traditional classroom, she required more assistance from the professors. She would need to request handouts or tests in large-print. In a traditional class, Jane often had trouble reading the board. At these times, Jane had to raise her hand and ask the professor to read what she had written. She sometimes needed extra time for test-taking as well. Jane beamed when she declared “These things do not affect me at all in the online classroom.” Finally, Jane indicated that transportation issues were totally avoided when taking online classes. She remembered the troubles with bus schedules, shared ride vans as well as depending upon other people for rides. Not only is the cost of some of these methods avoided but the time it takes to work out the schedule or make the arrangements. Jane was more independent and in-

charge of her own schedule when she did not need to attend to those transportation challenges.

To summarize Jane's experiences, she most definitely prefers online classes to the traditional style classroom. Jane does not have mixed feeling about her experiences in the online environment. She is completely thrilled with the format and her grade - A progress. Jane indicated "I enjoy it very much!" She is very enthusiastic about continuing her online studies until ultimate success. Jane continues to take her classes online because it allows for flexibility and fits into her schedule easily. Jane is pleased that she can work at her own pace. Over time, her comfort level increased. "My experience over the past year makes things easier." Jane said that she would recommend these online classes to others and absolutely to others with visual impairments. Jane does warn that you "must have determination and discipline." Overall, Jane believes the classes run very smoothly and she could not think of a recommendation to improve her experiences. "It's perfect the way it is!"

### *Participant 3: Moira*

#### *Cluster for Participant 3*

##### **Visual Impairment**

- *Born with a problem*
- *It's stable now*
- *Very little vision*
- *Macular degeneration in left eye*
- *6-inches from my face*
- *I always told them, first thing*

##### **Technical Ability**

- *I'm a computer instructor*
- *Once you learn a system, the setup looks the same*

- *We used Yahoo instant messenger*
- *NLS Talking Books*
- *Books on CD or a stream*
- *Victor Reader software*
- *ZoomText didn't work well for some of my Word documents*
- *I had problems*
- *I just could not see where to attach the file*

#### Assignments

- *We had 4 papers and did student editing*
- *We did have teams and it was good*
- *Yahoo Instant Messenger we talked in Spanish!*
- *If I had problems, assignments were late!*
- *We took quizzes*

#### An Exam

- *Had to go to my local community college*
- *They were mad*
- *They have their own students and didn't want to spend time proctoring my exam*
- *I felt like I was intruding*
- *Their attitude made me angry*

#### Motivation

- *Finished my associate's at community college*
- *Now I want a bachelor's*
- *Convenient because of work and schedule*
- *Varied work schedule*

#### Schedule

- *My schedule is very packed*
- *I commute 3-hours to work!*
- *I like the convenience of online classes*
- *Each week was a defined period and things were due*

#### Personal Style

- *Don't foresee problems*
- *I like to give the professor a heads-up every time*
- *I'm extraverted*
- *I was a peer advisor*
- *Everyone "knew me" before*
- *They'd say "Hi" (old school)*
- *I take care of things myself!*

- *I had friends (traditional class experience)*
- *I need the support*
- *I don't have the discipline*

#### Getting Around

- *I take the bus and paratransit*
- *Scheduled rides*
- *I liked being home during bad weather*

#### Classes

- *Mainly text*
- *Logged in three times a week*
- *We introduce ourselves*
- *If people asked us questions, we needed to respond*
- *Also, we chat online with the prof and the others*
- *Independent work –you must be more disciplined*

#### Professors

- *Not enough feedback online*
- *Teacher wrote questions but she wouldn't respond to anyone!*
- *She didn't respond even to a direct email.*
- *Emailed the professor but felt like a number*
- *I called for help*
- *She told me to read the directions*
- *Keep trying! It is in the portfolio section*
- *She said it was part of the assignment*
- *You have to find a way to complete the assignment*
- *This teacher gave feedback*
- *Classroom teachers stay on top of us more, reminding us about assignments*
- *It took the teacher a while to realize the issue*
- *She compromised in the end*
- *Didn't want the file over email!*
- *Teacher couldn't help.*
- *Left me hanging*

#### Classmates

- *I miss getting to know the other students*
- *I had friends*
- *Other students knew me (past traditional class)*
- *I heard their voices*
- *I need interaction of classmates to bounce ideas off*

### The School

- *I'm just a number at my current school, but everyone knew me at the old school*
- *Disabilities office did not recognize my name*
- *I had to explain things every time I called*
- *Electronic books were six weeks late!*
- *We were combined with veterans*
- *IT tech-help couldn't help!*

### Stress

- *It was hard because it was stressful*
- *Self discipline is more stressful*
- *Less stress over work schedule*
- *It was easier when they knew me*
- *I felt stressed and totally overwhelmed.*

### *Textural Description for Participant 3*

Participant 3, identified here as Moira, is a young female adult student who attended her local community college and recently received an associate's degree. Moira is legally blind and very near-sighted. She holds materials about six inches from her face in order to read. Moira was born with ocular myopathy where the muscles are stretched in the back of her eye. Her problem is stable at this point in her life. She also has macular degeneration in the left eye. Macular degeneration is a disease that destroys the sharp central vision of the eye. It also affects the macula which allows a person to see fine detail (NLM, 2008). Treatment slows vision loss but cannot restore it. Moira has very little vision in her left eye. She wears glasses.

Moira is currently enrolled at a traditional-style university program. The institution is located outside her region, but is on the east coast. Moira is pursuing a bachelor's degree in psychology. Moira uses *ZoomText*, a screen magnifier, to enlarge the display on her computer monitor. She also uses *System Access* (Serotek

Corp, 2008). *System Access* is a screen reader that provides access to Windows, as well as applications such as Microsoft Word, Outlook, Internet Explorer, and more. Moira must have electronic versions of the books and materials for class. She normally receives books on CD or through streaming downloads on her computer. She also uses a digital talking book player called *Victor Reader* (Humanware, 2008). Moira is able to use *Victor Reader* with the “talking books” series from the National Library for the Blind. The player conveniently allows the user to play CDs or MP3 files and offers easy navigation and speed control (Humanware, 2008).



Fig 4: Victor Reader by Humanware. Digital talking book player used by participant 3.

Moira attended her local community college and recently graduated with an associate’s degree in liberal arts. She had experienced some online classes at the community college. Moira decided to pursue her bachelor’s degree in computer science. Moira works part time as a computer instructor for the visually impaired. Moira is assertive and technically competent. She decided to take online classes for the convenience and time savings she hoped to gain. It takes Moira three hours of travel time just to get to work, and she said “My schedule is very packed!” Moira did

not expect any problems with the online classes and would save time by not having to arrange transportation to school. Moira registered for three classes at a regional traditional-style university that offered online courses. She took classes in Spanish, anthropology and computer science.

The classes all used a similar web-based format that included different sections such as a message board and notes section. The materials in each section were mainly text resources. Moira required books in electronic format. One exception to the written resources was found in her Spanish class. The Spanish class had an audio and speech component that would be done online. Moira indicated that “Once you learn the setup, the system looks the basically the same in each class.” General requirements included logging into class three times a week and submission of a self introduction. “If people asked us questions, we needed to respond.” Also, we sometimes had live chat sessions with the professor and other classmates, using an instant-message program. Moira always included her visual impairment as part of her introduction. She also liked giving the professor a heads-up every time she took a class. She sent email introductions and tried to set up a phone introduction. Moira’s experience in dealing with professors at the community college had taught her that it is best to explain her special needs prior to the start of class. In some cases the professors for her online classes were very slow to respond to her.

Much of the work for the online classes required written papers. Moira seemed comfortable with this assessment technique. She was also required to participate in an online chat session for a role-play. Moira noted that her *System Access* screen reader worked well for these sessions. Moira also participated in an

online instant message session with her classmates, to prepare for a particular Spanish class. She recalled that for one class, the students had to take an exam that was proctored. The location of the regional school where Moira was registered was located too far away for her to attend a live exam session. Instead, Moira made her way to the local community college to take the online exam under supervision. Her experience with this exam was not good. The staff was not welcoming. They seemed “mad” at having to help her out. Moira felt like she was intruding and she felt angry at the attitude of the staff. “They have their own students and didn’t want to spend time proctoring my exam!”

One of her online classes did have a team project. The team worked together to come up with a description of their ideal classmate. The teams worked together well and respected each other’s description for an ideal classmate. The teacher wrote questions for the class but did not respond to anyone. She did not even respond to a direct email. Moira felt that she did not get enough feedback in her online classes. There was never any spontaneous discussion. “Classroom teachers stay on top of us more, reminding us about assignments.” The online professors were difficult to reach and they did not respond promptly if at all.

As her online classes progressed, Moira began to feel dissatisfied. She began to miss the interaction of peers and the way that students bounce ideas off each other. “I’m an extravert. I miss getting to know the other students.” The electronic textbooks were late, making it hard to keep up with the class. When Moira tried to call professors to explain the situation, they never responded. In one example, Moira called a professor for help with a particular Spanish recording assignment. The

professor told her to “Just read the directions.” The Technical Help Desk at the university was not able to assist with this particular issue because of Moira’s assistive technology. Moira is knowledgeable with computers and assistive technology so this situation was quite disheartening. The teacher’s email responses indicated that Moira would “have to find a way to complete the assignment.” It took the teacher over a month to actually understand Moira’s special needs and the particular issues with her equipment. Finally the professor did agree to conduct the audio requirement through a phone conference with Moira.

During her computer science class, Moira experienced difficulty attaching a file to her portfolio. “I just could not see where to attach the file!” It is possible that the “attach” button was hidden by a graphic or not detectable by her screen-reader for some other reason. The teacher recommended that Moira “Keep trying! It is in the portfolio section.” Moira emailed the file to the teacher, but this was not acceptable since the requirement was to place the file inside the portfolio.

When I explained about my difficulties to the professors, I felt like a number. Each week was a defined period where things were due. If I had problems, assignments were late!  
(Moira, July, 2008)

During her traditional face to face classes at the community college, Moira recalled that she often used note-takers or tape recorders while in class. Moira was involved at the school, and many students and teachers would recognize her. Moira noted that the staff in the community colleges Disabilities Services Office knew her by name. Moira had even been a peer advisor. Moira was obviously frustrated by her current situation and alleged “I’m just a number at my current school, but everyone

knew me at the old school.” She mentioned that her professors at community college were all aware of her special needs because she was able to meet them before, during and after the semester. This made life easier. At the online school, Moira tried to use this strategy to talk to professors but to no avail.

When asked about how she dealt with the Office for Disabilities Services at the institution where Moira took online courses, Moira was again aggravated. She was somewhat annoyed that the Disabilities Services folks “Lumped us together with veterans.” The people in the Disabilities Services Office did not recognize her name when she called. Moira had to re-introduce herself, repeat her explanations, recap her situation and reiterate requests. There seemed to be no attention made specifically to individuals with disabilities or to the special needs of an online learner.

In the end, Moira dropped all three of her classes. For such serious consequences to take place, it is clear that Moira’s frustration and exasperation over her experiences came to the forefront. “I felt stressed and totally overwhelmed.” To Moira, “The online classes take a lot of self discipline and it feels more stressful than a traditional class.” The resistance that Moira encountered from professors and support staff made life difficult for Moira and added to the pressure she felt. The textbook CDs were very late, not arriving until six weeks into class, making it a real hardship for Moira to catch-up on the readings. For Moira, the technologies that have helped her to achieve an associate’s degree and become a successful professional, turned out to be vexing in this particular situation. Even though there was some convenience noted, due to time and transportation, the overall experience did not meet Moira’s expectations. Moira’s examples and her clear feelings about being “just

a number” was certainly evidence that she had very little support from the institution and its representatives. Moira felt strongly that she needed to get back into a traditional classroom and move completely away from online learning.

Overall, Moira’s experiences with online learning revealed some real challenges for the visually impaired student. Her perception uncovered genuine motivation and drive to move ahead quickly in her online college courses. Moira did not hesitate to enroll in three courses, and she looked forward to her participation. The difficulties that Moira experienced were indeed unexpected. Moira is a knowledgeable and technically astute individual, so it would seem that the root of her online experience was much more than technical. The problems that Moira encountered seem to stem from the lack of support that she received from professors and the institutional support services. Moira expressed a desire to interact with others in person and to receive additional feedback from professors. These feelings added to her overall feeling of isolation in her online learning experience. This interesting view point could prove to be significant and enlightening for institutions, professors and future online students.

### *Themes*

This qualitative study has documented the in-depth experiences of three people with visual impairments and their perception of online learning. The next step of data analysis was to review and code information in order to pull out themes from the clusters and descriptions that show the common threads among all the participants. Sorting data into topic areas or themes was also a strategy employed for

this study. Coding and thematic analysis as well as charts or graphs (Creswell, 2003; Maxwell, 2006) are often used to organize data into categories that help to represent the findings. The individual experiences are all varied, yet there are some definite similarities among them. The differences surrounding each participant's experiences are also valuable insights into the world of online learning. The common themes, both positive and negative, can be pulled from these experiences to further our understanding of the lived experiences of people with visual impairments as they experience the visual medium of online learning.

The clusters of participant statements have been organized into a chart that shows side by side statements of the participants. They represent the world view of the participants and have enabled the researcher to pull out themes from the clusters and descriptions. These themes represent the central concerns or factors that seem to affect all participants. Following the organized chart of statements, there is a written description of each theme.

The participant data indicates that learners with visual impairments have expressed interest in taking online classes and indeed have enrolled in such classes. All of these students entered their studies with hope and enthusiasm. All of them mentioned convenience as one key reason for taking online classes. People who are visually impaired have full schedules just as individuals with normal eyesight, and they must manage their time appropriately. A common thread among the participants was their perception that online classes seem intense, caused some stress and demanded much self discipline. For all three participants, there was a real benefit in

taking online classes to avoid a commute and transportation issues. This section will identify the recurring themes and summarize the key points within each topic.

*Table 3: Themes by Participant*

Participant 1	Participant 2	Participant 3
<p>Visual Impairment</p> <ul style="list-style-type: none"> <li>- <i>I've been blind for 11 years</i></li> <li>- <i>I can't see a thing</i></li> <li>- <i>There is some light perception in both eyes</i></li> <li>- <i>Type 1 diabetes at age 13</i></li> <li>- <i>Diabetic retinopathy</i></li> <li>- <i>Lots of surgeries</i></li> </ul>	<p>Visual Impairment</p> <ul style="list-style-type: none"> <li>- <i>Congenital cataracts</i></li> <li>- <i>20/200 in the good eye</i></li> <li>- <i>Needed handouts in large print (traditional class)</i></li> <li>- <i>Don't need to read the board</i></li> <li>- <i>I did tell professors</i></li> <li>- <i>These things do not affect me in the online classroom (accommodations)</i></li> </ul>	<p>Visual Impairment</p> <ul style="list-style-type: none"> <li>- <i>Born with a problem</i></li> <li>- <i>It's stable now</i></li> <li>- <i>Very little vision</i></li> <li>- <i>Macular degeneration in left eye</i></li> <li>- <i>6-inches from my face</i></li> <li>- <i>I always told them, first thing</i></li> </ul>
<p>Assistive Technology</p> <ul style="list-style-type: none"> <li>- <i>Screen reader – JAWS</i></li> <li>- <i>I know all the keyboard commands</i></li> <li>- <i>I use recording devices and note takers</i></li> <li>- <i>I have a laptop besides my main computer</i></li> <li>- <i>I am smart, but could not figure out where to attach the files in the course email system!</i></li> <li>- <i>I had to allow "pop – ups" or else attachments wouldn't open for me</i></li> <li>- <i>Friends helped me</i></li> </ul>	<p>Assistive Technology</p> <ul style="list-style-type: none"> <li>- <i>I have a Bachelor's degree in IT</i></li> <li>- <i>I am glad that I have ZoomText.</i></li> <li>- <i>I use the ZoomText toolbar to designate power</i></li> <li>- <i>Easy to move about!</i></li> <li>- <i>Web access using Outlook</i></li> <li>- <i>Some websites that were just absolutely awful to read without this program</i></li> <li>- <i>It's hard to read the longer lists</i></li> </ul>	<p>Assistive Technology</p> <ul style="list-style-type: none"> <li>- <i>I'm a computer instructor</i></li> <li>- <i>Once you learn a system, the setup looks the same</i></li> <li>- <i>We used Yahoo instant messenger</i></li> <li>- <i>NLS Talking Books</i></li> <li>- <i>Books on CD or a stream</i></li> <li>- <i>Victor Reader software</i></li> <li>- <i>ZoomText didn't work well for some of my Word documents</i></li> <li>- <i>I had problems</i></li> <li>- <i>I just could not see where to attach the file</i></li> <li>- <i>Didn't foresee problems</i></li> </ul>

<p>Transportation</p> <ul style="list-style-type: none"> <li>- <i>Getting to school is a big time sink</i></li> <li>- <i>One time I waited two hours!</i></li> <li>- <i>I utilize a guide dog for travel</i></li> </ul>	<p>Transportation</p> <ul style="list-style-type: none"> <li>- <i>It's hard to go back and forth</i></li> <li>- <i>Used public transportation</i></li> <li>- <i>Rides from friends</i></li> <li>- <i>Shared ride, pay \$2.00!</i></li> <li>- <i>1 hour of time to get there</i></li> </ul>	<p>Transportation</p> <ul style="list-style-type: none"> <li>- <i>I commute 3-hours to work!</i></li> <li>- <i>I take the bus and paratransit</i></li> <li>- <i>Scheduled rides</i></li> <li>- <i>I liked being home during bad weather</i></li> </ul>
<p>Convenience</p> <ul style="list-style-type: none"> <li>- <i>I registered for the convenience</i></li> <li>- <i>Online classes are great for writing papers</i></li> </ul>	<p>Convenience</p> <ul style="list-style-type: none"> <li>- <i>Like flexibility and convenience</i></li> <li>- <i>Space out my time</i></li> <li>- <i>Any time of day or night</i></li> <li>- <i>Online classes are great!</i></li> <li>- <i>The format works really well for me</i></li> <li>- <i>Class materials are right there</i></li> <li>- <i>My experience over the past year makes things easier</i></li> </ul>	<p>Convenience</p> <ul style="list-style-type: none"> <li>- <i>I like the convenience of online classes</i></li> <li>- <i>Convenient because of work and schedule</i></li> </ul>
<p>Online Interaction</p> <ul style="list-style-type: none"> <li>- <i>I like to interact with people</i></li> <li>- <i>Each professor sets up the class differently</i></li> <li>- <i>Sometimes the teams work together really well</i></li> <li>- <i>Teams were fun</i></li> <li>- <i>I invited them to meet at my house</i></li> <li>- <i>I enjoyed the team of 5 strong women!</i></li> <li>- <i>Not all teams communicate and work together well</i></li> <li>- <i>I missed meeting people</i></li> <li>- <i>No new relationships</i></li> </ul>	<p>Online Interaction</p> <ul style="list-style-type: none"> <li>- <i>We had to respond to others</i></li> <li>- <i>There is not face to face interaction</i></li> <li>- <i>Some teams work together better than others</i></li> <li>- <i>The interaction is online</i></li> <li>- <i>Must work on team charter</i></li> <li>- <i>No testing - it's great</i></li> <li>- <i>All written assignments</i></li> <li>- <i>Must keep up with posts</i></li> <li>- <i>Practicing ways that I can explain things</i></li> </ul>	<p>Online Interaction</p> <ul style="list-style-type: none"> <li>- <i>It took the teacher a while to realize the issue</i></li> <li>- <i>I miss getting to know the other students</i></li> <li>- <i>We did have teams and it was good</i></li> <li>- <i>I'm extraverted</i></li> <li>- <i>We introduce ourselves</i></li> <li>- <i>If people asked us questions, we needed to respond</i></li> <li>- <i>Other students knew me (past traditional class)</i></li> <li>- <i>I need interaction of classmates to bounce ideas off</i></li> <li>- <i>Also, we chat online with the prof and the</i></li> </ul>

		<i>others</i>
<p>Feedback from Professors</p> <ul style="list-style-type: none"> <li>- <i>Some professors created a Word doc</i></li> <li>- <i>I always set up time with the professors</i></li> <li>- <i>This professor wouldn't meet with me! He avoided me!</i></li> <li>- <i>If the professor has another job, he can be hard to reach</i></li> <li>- <i>I like it when they mark up the paper and give it back (traditional class)</i></li> </ul>	<p>Feedback from Professors</p> <ul style="list-style-type: none"> <li>- <i>Professors post mainly text</i></li> <li>- <i>Sometimes post attachments</i></li> <li>- <i>Yes, you can call them!</i></li> <li>- <i>I called to talk about a question and spent half an hour talking</i></li> <li>- <i>Do get verbal feedback</i></li> <li>- <i>I am waiting for the grade</i></li> <li>- <i>If I get stuck, I must wait for email</i></li> <li>- <i>Case scenarios</i></li> </ul>	<p>Feedback from Professors</p> <ul style="list-style-type: none"> <li>- <i>Yahoo Instant Messenger – we talked in Spanish</i></li> <li>- <i>If I had problems, assignments were late</i></li> <li>- <i>Had to go to my local community college (exam)</i></li> <li>- <i>Not enough feedback online</i></li> <li>- <i>Teacher wrote questions but she wouldn't respond to anyone!</i></li> <li>- <i>Emailed the professor but felt like a number</i></li> <li>- <i>She told me to read the directions</i></li> <li>- <i>Keep trying! It is in the portfolio section</i></li> <li>- <i>You have to find a way to complete the assignment</i></li> <li>- <i>This teacher gave feedback</i></li> <li>- <i>Left me hanging</i></li> <li>- <i>She didn't respond even to a direct email.</i></li> </ul>
<p>Institutional Support</p> <ul style="list-style-type: none"> <li>- <i>I always copy the disabilities office when I have a request</i></li> <li>- <i>I work closely with the people in the office</i></li> <li>- <i>They ask me for advice (Disabilities Services)</i></li> </ul>	<p>Institutional Support</p> <ul style="list-style-type: none"> <li>- <i>It works out with my schedule</i></li> <li>- <i>Runs so smooth</i></li> <li>- <i>Sometimes right away – sometimes evening</i></li> <li>- <i>If a forum exists for students to chat, I am not aware of it</i></li> <li>- <i>No suggestions for improvements</i></li> <li>- <i>In debt with school</i></li> </ul>	<p>Institutional Support</p> <ul style="list-style-type: none"> <li>- <i>I'm just a number at my current school, but everyone knew me at the old school</i></li> <li>- <i>Disabilities office did not recognize my name</i></li> <li>- <i>I had to explain things every time I called</i></li> <li>- <i>Electronic books were six weeks late!</i></li> <li>- <i>We were combined with veterans</i></li> <li>- <i>IT tech-help couldn't help!</i></li> </ul>

<p>Time Management</p> <ul style="list-style-type: none"> <li>- <i>I always set up time with the professors</i></li> <li>- <i>Online classes are a lot of work!</i></li> <li>- <i>4 or 5 postings in addition to papers</i></li> <li>- <i>There's lots of room for improvement</i></li> </ul>	<p>Time Management</p> <ul style="list-style-type: none"> <li>- <i>6 discussion questions, must answer 4</i></li> <li>- <i>I had to do a 3,000 word report</i></li> <li>- <i>Wow, what a task!</i></li> <li>- <i>Doing the research online was a real challenge.</i></li> <li>- <i>I sign into my classes pretty much on a daily basis</i></li> <li>- <i>These are six week classes</i></li> <li>- <i>It took a great many hours to complete the research</i></li> <li>- <i>Not only time consuming . . . but exhausting.</i></li> <li>- <i>Not being able to read materials as fast as I really want to.</i></li> <li>- <i>It just takes more time for studying</i></li> <li>- <i>God knows I worked hard enough for it</i></li> </ul>	<p>Time Management</p> <ul style="list-style-type: none"> <li>- <i>Logged in three times a week</i></li> <li>- <i>Classroom teachers stay on top of us more, reminding us about assignments</i></li> <li>- <i>Varied work schedule</i></li> <li>- <i>Independent work – you must be more disciplined</i></li> <li>- <i>My schedule is very packed</i></li> <li>- <i>Each week was a defined period and things were due</i></li> <li>- <i>I don't have the discipline</i></li> </ul>
<p>Stress</p> <ul style="list-style-type: none"> <li>- <i>I think online classes are more stressful</i></li> <li>- <i>More intensive, more work unburying things</i></li> </ul>	<p>Stress</p> <ul style="list-style-type: none"> <li>- <i>More relaxed</i></li> <li>- <i>Less stressful</i></li> <li>- <i>Don't need to get rides</i></li> <li>- <i>My comfort level has increased</i></li> <li>- <i>Online environment doesn't make a lot of difference</i></li> <li>- <i>Can be frustrating at times for sighted people as well as those with vision impairments</i></li> </ul>	<p>Stress</p> <ul style="list-style-type: none"> <li>- <i>I like being home during bad weather</i></li> <li>- <i>It was hard because it was stressful</i></li> <li>- <i>Self discipline is more stressful</i></li> <li>- <i>Less stress over work schedule</i></li> <li>- <i>It was easier when they knew me</i></li> <li>- <i>I felt stressed and totally overwhelmed.</i></li> </ul>
<p>Learner Expectations</p> <ul style="list-style-type: none"> <li>- <i>I'm 24</i></li> <li>- <i>It's important to meet face to face to work out</i></li> </ul>	<p>Learner Expectations</p> <ul style="list-style-type: none"> <li>- <i>MBA</i></li> <li>- <i>I enjoy it very much!</i></li> <li>- <i>I have a bit of</i></li> </ul>	<p>Learner Expectations</p> <ul style="list-style-type: none"> <li>- <i>I take care of things myself</i></li> <li>- <i>Don't foresee problems</i></li> </ul>

<p><i>details</i></p> <ul style="list-style-type: none"> <li>- <i>I like it when professors know who I am</i></li> <li>- <i>I am definitely an advocate on campus</i></li> <li>- <i>I want a bachelor's degree in journalism</i></li> <li>- <i>I hope that I can help others</i></li> <li>- <i>Everyone knows me (traditional classes)</i></li> </ul>	<p><i>experience</i></p> <ul style="list-style-type: none"> <li>- <i>I completed the first class and received an A &amp; a 3.89 GPA</i></li> <li>- <i>I need interaction of classmates to bounce ideas off</i></li> <li>- <i>Challenging!</i></li> <li>- <i>Must have determination and discipline</i></li> <li>- <i>Never any problems online</i></li> <li>- <i>There's a lot to read and respond to</i></li> </ul>	<ul style="list-style-type: none"> <li>- <i>I like to give the professor a heads-up every time</i></li> <li>- <i>Finished my associate's at community college</i></li> <li>- <i>Now I want a bachelor's</i></li> <li>- <i>I'm just a number at my current school, but everyone knew me at the old school</i></li> <li>- <i>I need the support</i></li> <li>- <i>Not enough feedback online</i></li> </ul>

### *Description of Themes*

#### *Assistive Technology*

Assistive technology is any technology used by individuals with disabilities, including visual impairments, in order to perform functions that might otherwise be difficult or impossible (AccessIT, 2008). The participants in this study had visual impairments. One participant was blind and the two others were considered legally blind with very low visual acuity. Each participant in this study used some type of assistive technology with their computers that enabled them to access the internet and their online classes. Two participants required screen readers, while the third learner used a screen magnifier. This equipment or software packages were very familiar to each of the participants. They all had many years of experience using their technologies. So this was not a new factor as each participant embarked on their

online education. The technologies did receive mainly positive comments and the individuals seemed to understand the weaknesses of their own systems. For one person, column-format was a particular problem and for another longer lists were something she tried to avoid. These individuals had the knowledge and ability to recognize these challenges, and to work around them. For example, in one case, the participant requested that documents not be in column format and in another situation, the participant had to work hard and take breaks when she dealt with longer lists.

Two participants gave examples of technical problems. Even after years of using her screen reader, one participant was not able to open attachments. After much aggravation, the problem turned out to be an internet setting. The second participant had trouble attaching files to a portfolio project during a computer class. This issue could indicate that the course website accessed by this user, was not completely compatible with the user's screen reader. Neither the faculty member nor the technical help-desk could or would assist this participant which led to utter frustration.

Technology enabled these participants to log into classes, perform research and submit postings to their discussion forums. None of the participants were new to the assistive technologies they utilized, such as a screen reader or screen magnifier. The obstacles that were encountered may show that without the institution or faculty support, the technology itself may not be enough to have complete success in some online classes. The participants in this study had to maintain their computer equipment, as well as manage their time carefully to prevent exhaustion or eye strain.

### *Transportation*

For a person with a visual impairment, driving a car is not an option. The participants in this study were blind or legally blind which prevented them from driving. Commuting to class, maneuvering around a campus and figuring out public transportation options can be a definite burden. Transportation was a theme that emerged as a topic from each participant. All three participants raised this issue and indicated that transportation was a hardship for them. All participants agreed that by taking online classes, they avoided the hassles associated with arranging transportation. The online classes enabled them to save tremendous time and stress thinking about travel concerns. For example in one case, a student commuted three hours by train and bus in order to arrive at her work destination. The three hours of time spent commuting is time that she would not be able to attend traditional classes. The possibility of taking online classes and scheduling them around her normal daily activities was an important aspect of her decision. Both of the other individuals in this research study agreed that waiting for scheduled pick-ups, or depending on others for a ride, was completely circumvented by choosing online classes. A real advantage of online classes for visually impaired students was that they escaped all difficulties associated with planning, worrying and waiting for transportation.

### *Convenience*

Convenience is a positive feeling that enables a person to experience less trouble accomplishing a task, or possibly a lighter schedule or workload.

Convenience and flexibility of scheduling was a common theme and desire among the participants. All participants expected that their online classes would give them more time and flexibility. This was certainly true in the area of transportation. All participants agreed that it was a real benefit to avoid transportation and travel issues. Online learning made their lives easier because there were no travel plans to make or commuting hassles to manage. Although the participants agreed that they felt some aspects of life were more convenient due to online learning, they also agreed that keeping up with the classes took an abundance of time and effort. One person noted that class materials were not immediately available electronically. Such a delay in accessing the textbooks was so inconvenient that it was difficult to catch up to others in the class. This situation put this participant at a true disadvantage. Another participant agreed that the general requirement of logging into the class website three times a week did allow for flexibility in timing. The participant that experienced the most satisfaction in convenience and flexibility attended an institution devoted to online learning. The materials were readily available online at the start of every class. The university support system was always helpful. In the more traditional college settings, where two participants took online classes, there seemed to be less flexibility. For example, one participant was required to attend scheduled chat sessions with the class and professor. Another obstacle arose when the participant had to take a proctored exam. This requirement caused inconvenience for the student as well as the staff at the local community college who supervised the exam. It left both parties with negative feelings.

### *Interaction*

Interaction can be described as the informal communication that takes place in a classroom setting. This was a common theme raised by each participant. In general, there was disappointment in the lack of peer to peer communication. All three participants said that they missed having the camaraderie of fellow-students that is often achieved by sitting in a classroom together. In their online classes, all of the participants experienced team projects. This was one example where students worked with each other directly. The participants seemed to enjoy the team projects, even though some teams did not communicate as well as others. The participants also indicated that there were opportunities to chat with other students, but they all felt that something was still lacking about online interactions. One participant felt that she experienced much more interaction with the professor directly, when she took a traditional face-to-face class. In the online environment, there was no immediate feedback from fellow students about the ideas that you posted. Participants had to wait for someone else to post a response or follow-up question. There were no spontaneous discussions that took place since every discussion topic was so clearly focused. Nobody ever went off track on an interesting discussion point. There was no way to turn to the person beside you, in order to confirm that you understood an assignment. Although the lack of interaction with fellow students was a concern, two out of three participants thought that this would not prevent them from taking another online class.

### *Feedback*

Feedback is an important aspect of education. It provides information about specific ways a student might improve. Feedback can be given over time, or it can even be immediate. Adult learners are motivated students and they are particularly interested in monitoring their progress and improving their performance. So feedback is very important to most adult learners, and the participants in this study saw feedback as an important part of their educational experience. The participants were all very interested in receiving feedback on their written papers and essays as well as on their participation in class. For example, one participant, attending online classes at a traditional-style university, indicated that the professors were difficult to reach and slow to respond. She told us that there were no comments on the papers that she submitted. The teachers seemed less than helpful, “When I explained about my difficulties to the professors, I felt like a number.” A different participant, attending an online institution, was happy with the feedback of the professor. She indicated that she often received specific comments and also knew her progress on a weekly basis. From these varying experiences, it would seem that the instructors at the online university were committed to serving students by giving feedback, comments and progress reports on a regular basis. It may be possible that the professors in the traditional-style university were less committed to the online students. Even in a traditional college setting, where the typical student is the on-campus type, faculty and university support may need to develop more sensitivity to the online-only students. In the world of online learning, phone calls and emails must be respected and promptly addressed, since it is the only means of communication.

*Institutional support*

The participants in this research study all responded to questions about the support they received from the college or university they attended. The direct involvement of an office or department may be able to assist with problems or challenges that students experience as they attend classes. One participant, attending the online institution, was eager to tell us that she only registered with the Office of Disabilities Services, but never actually needed them to provide assistance. She was glad to report that materials were always available and that together with her computer and screen magnifier, there were no setbacks. Another participant recalled her earlier days at a local community college, where the people in the Office of Disabilities Services knew her by name and were always eager to help. She remembered this fondly because her experience at her current university was a stark contrast to these memories. When she did need help, the people in the office did not recognize her name and she ended up repeating her situation and requests multiple times. Dealings with the campus technical help-desk ended with similar awkward responses. This participant felt dissatisfaction at her treatment and problems continued beyond a tolerable length of time. Professors and students alike should be able to turn to their institution's service offices in order to facilitate problems that arise with students who are visually impaired. Institutional resources should be ready to help not only the student in class but provide support to the professor who may not be familiar with specific disabilities and the best strategies to help such a student. Since this study focused on gathering perspectives from students, the viewpoints of institutional service providers were not collected. It would be very interesting to

conduct further research in the area of disabilities services to elicit their perspectives on assisting online learners with disabilities.

### *Time Management*

Time management is often seen as a person's ability to prioritize and schedule one's time efficiently in order to be most productive. Time management skills are often cited as an important characteristic for those interested in taking online classes. The participants in this study definitely agree that developing time management skills would help improve the online learning experience. Participants often articulated this need to schedule their time in ways that showed how much work must be done. One participant exclaimed, "My schedule is very packed!" Another participant was quick to point out that "there's a lot to read and respond to." In her experience, it took a great deal of work and time in order to keep up with all of the messages posted to the online class. One participant had to pay special attention to managing her time in front of the computer, and performing internet research, in order to avoid eye strain and exhaustion. She also warned us that you "must have determination and discipline." Related to time management, the participants also listed self-discipline as important characteristic necessary to succeed in the online environment. Another participant reminded us that in a traditional classroom, the professors often reminded you about assignments and discussed preparations for projects. In her experience, this did not happen in the online environment. She had to keep track of projects, assignments and due dates on her own.

*Stress*

Stress is the term that we give to our feelings in response to strain or pressure. So, if a person feels like there are too many things going on and worrying about tests or projects in addition to work, that person may experience stress. Two out of three participants thought that online classes were more stressful for them than the traditional face-to-face class. “The online classes take a lot of self discipline and it feels more stressful than a traditional class.” As participants experienced problems, including access to materials, waiting for teacher responses and lack of connection to their classmates, feelings of stress increased. Although all of the participants agreed that the online classes were a lot of work, one student thought that the online classes were less stressful than a traditional class. Taking online classes saved time and worry over transportation hassles and planning what to wear. She no longer needed traditional accommodations such as extra test time or asking for help reading things from a chalkboard. This same participant also recognized that she had taken many online classes and was familiar with the format and requirements, which reduced the pressure she felt. “My experience over the past year makes things easier.” The two other participants were not taking their first online course, but for one person, she had enrolled at a new university after she graduated from a community college. The other participant still had feelings of stress even though she had had several online classes and was nearing her graduation date.

### *Learner Expectations*

The expectations for online learning of the three participants were similar in some ways and very different in others. The table of comments makes it easy to see some of these similarities and differences. The themes actually help to show how some learners had different expectations from others. The individual needs of the learner can be seen from the things that they expected or did not expect from the class, the professors and their peers.

One factor to point out about this particular study is that the age of the participants did not seem to be a significant factor in the participant experiences in the online learning environment. It is possible to expect that an older individual may have a more difficult time learning about computers or technology and accessing online class websites and materials. Two individuals were young and had the generational advantage of growing up in a computerized era. The third participant was middle-aged and could have had challenges with online learning. This did not prove to be the case.

All of the participants seemed to have technology fluency. The participants were very comfortable with computers, assistive technology and the internet. In fact, the most positive response toward online learning came from the oldest of the participants. The least enthusiasm for online classes came from the participant who worked as a computer instructor. So neither a youthful age, nor familiarity with technology ensured a particular response or perspective from the participants. This interesting factor could help to elucidate the overall implications from analysis of the participant experiences. So, it is possible that the expectations for the learning

experience that differentiates the participants, rather than their age or technical experience. Some learners expect to meet the professor, even on the phone, and to have a personal relationship. Other learners are satisfied to be just a hard-working member of the class. The response of the professors and institutions did not always match the learner's expectations.

### *Summary*

Chapter 4 of this qualitative research study has documented the experiences of three people with visual impairments and their experiences within the visual medium of online learning. The participant experiences were varied and passionate. Each participant had a different perspective and overall feeling about online learning. In fact, one participant was thrilled and ready to continue online studies, another participant had mixed feelings and although she preferred traditional classes, she would not be opposed to taking online classes in the future. Finally a third participant was disturbed, annoyed and discouraged by her experiences. This participant did not look forward to ever taking online classes again, and was looking forward to getting back into a traditional classroom.

In spite of the very different experiences of each participant, there were common threads and themes that emerged. The results from this study were analyzed carefully and organized around nine common themes. This study has enabled us to deepen our understanding of the lived experiences of people with visual impairments who take online classes. The results and themes identified have given us clear information about obstacles as well as advantages perceived by learners with visual

impairments. In summary, this study has revealed a complex relationship between students with visual impairments and their professors, university support organizations, computer technology and the internet. The results of this study shed light on many of the challenges that online learners with visual impairments face. These results have also helped to uncover realistic improvements and recommendations, as well as foundations for future research. These conclusions and future recommendations are detailed in the final chapter which follows.

## Chapter 5: Implications and Discussion

### *Introduction*

This final chapter of the research study is organized into six sections that are recommended by John Creswell (2007). The first section (Summary of the Study) will recap the research problems and the methods used to conduct this study. This section contains responses to the research questions. The second section (Delimitations & Limitations) will itemize limits of the study. The third section (How this Study Differs from the Literature Review) will highlight the significance of the study and the contribution that it makes to education.

The fourth section (Implications) will describe the inferences drawn from this in-depth study, along with supporting evidence and insights that help to condense the findings. This section will also include educational considerations for readers. The fifth section (Recommendations for Future Research) will suggest recommendations for researchers in this field. Finally, a sixth section (Closing) will describe the personal viewpoint of the researcher. John Creswell (2007) suggests using this type of creative closing “which speaks to the essence of the study and inspiration of the researcher.”

### *Summary of the Study*

#### *Purpose & Methods*

This study is entitled “*Visual Impairment in a Visual Medium: Perspectives of online learners with visual impairments.*” As outlined in Chapters 1 & 2, there is a lack of understanding about the experiences and perceptions of adults with visual

impairments as they experience the online medium of distance learning. People with visual impairments perceive the Internet differently from those with normal sight. Many are unable to see the visual graphics and images, and they hear the text that is displayed by using screen readers. This qualitative study revealed the events and understandings of postsecondary students with visual impairments in the visual medium of online learning.

The research methods used in this phenomenological study are thoroughly documented in Chapter Three. The study depended mainly on in-depth interviews, internet communication, observation and a reflection journal. Qualitative inquiry was a valuable way that helped the researcher to understand how students with visual impairments actually experienced the online environment. Phenomenological methodology differs from traditional methodologies in purpose as well as in procedure. Using phenomenology is most effective for describing conditions, and relating the viewpoint of the persons taking part in the study (Wilson, 2002, Greonewald, 2004). The aim of the researcher has been to describe, as accurately as possible, the phenomenon being studied, and to remain true to the facts. A researcher applying phenomenology is concerned with the lived experiences of the people involved (Dukes, 1984, Wiersma, 2000: Maxwell, 2005; Creswell, 2007). This study was conducted over several months in order to follow the steps and voices of the participants. Over time, the challenges, advantages and recommendations for the future of visually impaired learners in the online environment, have been uncovered and reported from the viewpoint of the participants.

The purpose of this research study was expected to unearth the perceptions of students with visual impairments as they attended online college classes. In general, online distance education often provides college opportunities beyond what traditional institutions could offer. Using the visual medium of internet for online learning also presented special challenges for people with visual impairments. This study was conducted in order to answer the questions below and report on the viewpoint of online learning as experienced by adults with visual impairments.

1. What characterizes the experiences and responses of adults with visual impairments as they participate in the postsecondary visual medium of online classes?

Secondary questions that support the main research question are:

- a. In the postsecondary visual medium of an online learning environment, what strategies, experienced by students with visual impairment, are most effective?
- b. What specific challenges exist in the visual medium of online learning, for postsecondary individuals without perfect visual acuity? Under what circumstances do individuals disclose their disability and why?

### *Responses for Research Questions*

The term legally blind is sometimes confusing. It actually means that one “can see fractionally, but not enough to truly see” (Kuusisto, 1998). In fact, many people with visual impairments often develop strength in other senses or awareness, and it can sometimes seem that they can see far better than they are really able

(Kuusisto, 1998). People with visual impairments often want many of the same things as those with normal sight, such as work, advanced degrees or peer and teacher interaction and feedback when learning. Each person with visual impairments, in this study, expressed different views and perspectives about their experiences, but there were some definite categories or themes that have emerged. Through these themes, it is possible to understand some of the practices, joys and challenges experienced by individuals with visual impairments in the online learning environment.

The findings presented in Chapter 4 clearly show that online studies engendered a variety of responses from adults with visual impairments. In response to the main research question, the results show that nine themes exemplify the experiences of adults with visual impairments as they participate in the visual medium of online learning. The nine focus areas show a complex relationship among students with visual impairments and online class format, institutional support, technology and personal preferences. Within the personal preferences category, interaction and feedback, along with time management and convenience stood out among other indicators. Nine specific themes surfaced from this study and characterize the overall experiences of the participants.

*Assistive technology* was an important thread for this study. Technology enabled these participants to log into classes, perform research and submit postings to their discussion forums, in spite of an inability to see the world around them. Each participant in this study used assistive technology to enable them to access the internet and read information on their computers. All of the participants were experienced technology users and they were not new to computers or their assistive

hardware and software. The participants were comfortable with their technologies and mainly positive about using the approaches they had chosen. There were a couple of instances where participants did experience trouble. One participant specifically requested no long lists or column format which made a document nearly impossible to read. Another challenge came for one participant while she was trying to attach a file into a web-based portfolio. After many failed attempts and without assistance from the professor or institutional support departments, this participant felt frustrated. Now, an experienced computer user attaches files regularly, so it is important to note that this situation must have been very unusual for this individual. So, this occurrence could indicate a problem with the user's assistive technology or with the website design. The participant was unaware whether the university website was designed with any particular attention paid to accessibility or universal design. Obstacles that were encountered could indicate a flaw in the assistive technology or in the web design. The student's perspective indicates that the faculty member or the institution help-desk could have been more responsive and worked through issues collaboratively in order to create a more gratifying experience for this student.

A second theme that emerged was in the area of *transportation*. For a person with a visual impairment, driving to school is not an option. Even walking around a campus, managing the way around pathways, buildings and stairs could be a trying experience for those with visual impairments. It would be common for those with visual impairments to rely on public transportation, specialized transit for the disabled or even depend upon family and friends for transportation needs. Online classes were unanimously successful in eliminating this challenge for all of the participants. This

decreased the level of stress associated with planning, waiting and depending on others for transportation. This helpful fact could indicate a feature that should be promoted by institutions who wish to encourage people with visual impairments to attend their online courses.

*Convenience* was one of the strongest factors that contributed to the participants' decision to enroll in online classes. All participants agreed that online learning was flexible and convenient with regard to transportation issues as well as the scheduling and timing of participation. The flexibility of participating in class was cited by one participant as convenient and she said "this format works really well for me" (Chapter 4). But there were some aspects of the class that the participants reported as not convenient, including the delay in resource availability and the vast amount of postings to review. It makes sense that for online classes to be convenient, the class materials and resources need to be ready and available electronically for all students just in time. The course professors and university support system should expect that online students are not on-campus and avoid scheduling conflicts. This type of flexibility will strengthen the experience and more closely match the expectations of online learners.

*Feedback* about progress and *Interaction* with peers were two focus areas for the participants in the study. All three participants said that they missed the informal interaction of a traditional classroom. They were mostly willing to give it up for the added flexibility and convenience of scheduling. They all valued ongoing feedback from the course facilitators, but the frequency of this feedback was inconsistent among the professors or colleges. The participants enjoyed the team projects, but this

did not seem to make up for the lack of an informal way of meeting classmates. Perhaps informal interaction for students is something that could be planned and encouraged by the course instructors. Because the online environment is so structured, unless a course area is set aside for informal chats, there may be nowhere for this interaction to take place and grow. One participant in the study was happy with her weekly feedback, but the two other participants did not get instructor feedback at regular intervals. Scheduling regular feedback sessions or updates could also add to the perceived satisfaction of students.

There seemed to be *inconsistent support from the institution*. Participants reported a variety of interactions with college faculty, technical support services, and disabilities services. For one visually impaired participant, there was no recognition or prior registration noted with the disabilities offices. In one instance, the participant in this study had to repeat her name, disability details and request for help on multiple occasions. Technical support employees were not able to solve problems for two participants. In order for students to have an enthusiastic response to online learning, the support office must recognize online students as an important part of their student population. Professors and students alike should be able to turn to their institution's services in order to facilitate problem solving for online learners. Institutional resources should be ready to help not only the student in class but provide support to the professor who may not be familiar with specific disabilities or the best strategies to help such a student.

*Time management* skills and self-discipline are often cited as important characteristics for those interested in taking online classes. The participants in this

study support that viewpoint. All three participants emphasized the need to schedule their time and force themselves to follow a plan. Keeping up with the postings was difficult for these participants. One indicated that she “likes the flexibility and that “it’s great, but intense” (Chapter 4). In the online environment, course instructors could help students to be more successful by publishing timelines or calendars that help students to create a plan. Professors could be sensitive to the needs of students by sending email reminders (or recorded phone messages) about due dates in addition to the normal online class contacts. Institutions could provide a study course in time management in order to better prepare students for online learning.

The participants in this study had a variety of reactions when discussing the idea of *stress*. Two out of three participants thought that online classes were more work, harder to manage and in general more stressful than a traditional face-to-face class. For one student, the disheartening experiences would be difficult to overcome in order for her to try online classes in the future. For the others, this level of stress was something they were willing to manage. It is likely that the negative experiences discussed above, such as technical issues or lack of feedback, contributed to this overall impression. When students are wondering about their progress, waiting for feedback, unable to connect with others informally and struggling to manage time and keep up with class work, then feelings of stress increase. For one participant, online classes were distinctly less stressful than a traditional class, due to the conveniences associated with transportation, time scheduling and elimination of assistance or accommodations. For that learner, the resources were available at the start of each class, and no technical problems left her feeling annoyed. Professors and institutions

can help make online class experiences less stressful through their attention to many of the other characteristics noted above. Professors could enhance the student experience by being sympathetic to the need for feedback and more contact. It could also help the students to encourage interaction among peers and to make a personal commitment to become involved in the special needs of students with disabilities.

A final theme uncovered in this study was the learner expectations. The researcher noted that the participants expected a variety of things from their online experiences. The chronological age of the participants did not seem to be a significant factor in determining technical fluency. The older individual did not encounter any more difficulty dealing with technology issues than her younger counterparts. All of the learners in this study had motivation and the expectation of success. In fact, rather than focusing on the chronological age or technical abilities of the student, the findings suggest that prior experience or a student's educational needs for companionship and support are more important considerations.

To summarize this information, the key research question posed in this study was to characterize the experiences and responses of adults with visual impairments as they participate in the postsecondary visual medium of online classes. Those characteristics have been identified as learner expectations for online learning, technological fluency and assistive technology, convenience, interaction, feedback, time management and stress as well as transportation and institutional support. All of these factors influenced the perception of the participants in this study. Reactions of the participants varied within each of the categories, but all participants felt strongly about each theme. For example, the theme of stress was considered important to all

participants even though their specific perspectives varied on this topic. In fact, one participant felt that online classes were much less stressful than traditional face to face classes, while two participants felt strongly that online classes were more stressful. The themes help to organize the complicated connections that have been uncovered during this study.

### *Challenges and Benefits*

While summarizing the findings for the main research question, information satisfying the two supporting questions was also revealed. It was discovered that all participants disclosed their disability to the class and to the teacher. They did this as part of their introduction by submitting a brief profile to the class. In two situations, students made a special effort to connect more directly to the professor in order to explain the circumstances and requirements of their visual impairment. Both students had prior experience in an online class environment. Both students also had past success working directly with professors to discuss their special needs. However, for one student, the professor was very difficult to reach and very slow to respond. This caused stress and delays for the student. There seemed to be no alternate contact information such as a department secretary or other assistant. There also seemed to be no standard for response to student inquiries. At this particular school, expectations of the student far exceeded the actual response time or involvement of the faculty members.

A synopsis of the findings also shows that the students preferred the educational strategies of reading, research and discussion. This was done through

message posting and discussion threads in the online environment. The participants enjoyed writing assignments such as report writing, essays, case studies and team projects. Although the task of performing research was tedious and sometimes even exhausting, the participants all felt comfortable with their writing skills and style. One participant expected that additional writing assignments would help to improve her ability to explain and describe things. The participants did not favor the use of MS PowerPoint. The images were sometimes difficult to identify for the screen readers. For the visually impaired user, matching tests or long lists were nearly impossible to finish, while multiple-choice or true-false testing were more easily completed. The participants did not have a choice of activities or assignments, although they seemed enthusiastic about this idea. The participants all seemed to miss the casual discussions that take place in a traditional environment. It was noted that any requirement to go to campus could be inconvenient for the students. One participant was required to take a supervised test and her reaction was negative in several ways. Not only was it inconvenient to make her way to a local school to request assistance, but she felt that the professor from the class and the staff that supervised her exam were not supportive or encouraging. This obligation should be avoided unless it has been indicated in advance as a prerequisite for completing the course.

For this study, participants with visual impairments encountered specific challenges in the visual medium of online learning, including technical, institutional and personal issues. While taking online classes, technical challenges arose that were problematic to resolve. It is likely that the cause of these issues was due to the

accessibility of the course platform and website or the compatibility of the screen reader. User experience with computers and technology seem to indicate that the basis for the technical issues could have been the design of the website. The participants all had many years of computer experience but were unable to identify fixes to the problems or list ways to avoid the problems in the future. This was frustrating for the two participants who experienced these technical glitches. In addition to the technical problems, the same two participants felt neglected or isolated when dealing with the institution or the faculty members. The lack of support from professors and institutional support organizations was daunting. The participants tried to work directly with the professors as well as technical support organizations, but they felt disheartened by the responses they received. In the future, the participants would prefer to be able to reach faculty members or for them to return phone calls promptly, as was experienced by one participant in this study. The technical support staff should also be familiar with a variety of assistive technology so that they might be able to lend more specific support for visually impaired students taking online classes. Institutions of higher learning should encourage their technical staff to become familiar with assistive technology so that people with visual impairments or other disabilities will be able to receive the technical assistance they need when taking classes. Institutions should also give support to faculty who work with offices of disabilities services when addressing the specific needs of students. The staff in the disabilities support organizations should also be encouraged to reach out to students with special needs. Perhaps an individual advisor could be assigned to

each disabled student so that the students do not feel isolated and they have a contact within the institution to advocate for them.

The final challenge identified by the participants was a more personal issue. This is the idea that the participants needed to pay meticulous attention to their schedule and manage their time carefully. This type of organization required an abundance of time and a real change in outlook. The participants were all self-motivated and dedicated to pursuing their degree in spite of many obstacles. It took extra amounts of self-regulation in order to stay on top of the class postings, the readings, the research, and the assignments. The participants who were most affected by time management skills were also dispirited by the tremendous lack of interaction among peers and irregular amounts of feedback from the instructor. These perceptions combined together and contributed to the somewhat negative reaction of the participants.

The personal challenge of developing time management skills was already undertaken by the participants with some success. A visually impaired student takes a longer time to read and there is additional administration time when dealing with assistive technology. Perhaps their viewpoint reflected the stress associated with juggling multiple responsibilities at once. It is possible that the institution could offer an introductory class that helped students to prepare for online learning, including time management skills and basics of the web-based environment. Institutions might also encourage faculty who teach online classes to be more attentive to the needs of their long-distance students.

### *Summary of Research Questions*

Online classes can be a good way for people with visual impairments to achieve their educational goals, but there are challenges to overcome. There are definite benefits realized such as convenience and avoiding transportation issues as well as some challenges such as access to materials and faculty. This research study has helped shed light on this particular phenomenon so that we may better understand how people with visual impairments experience the visual medium of online learning. This explanation of the perceptions of participants with visual impairments has helped us to understand how this group approached online learning and the details of their experiences. Specific advantages and disadvantages of the online environment for this group have been discussed. Nine threads have been pulled from the data to show the central factors that seemed to affect all participant in this study. The data and themes have helped to characterizes the experiences and describe the responses of adults with visual impairments in online learning. These threads illustrate a multifaceted link of students with visual impairments to technology, the institution and faculty. The nine themes described above have helped organize the descriptive data in order to form basic conclusions and generate recommendations for the future.

### *How Findings Differ from Literature Review*

This study provides a unique contribution to education by describing the lived experiences of people with visual impairments as they study in the visual medium of online learning. This study builds upon research conducted in the topic areas of disabilities and online learning. The significance of the qualitative research

conducted in this study demonstrates the complex and diverse perspective of people with a visual impairment in the visual medium of online learning. This study clearly expresses that qualitative research can disclose much about the lived experiences of those with visual impairments. This phenomenological study has been able to expose results that could lead to new discoveries or improvements in products or services.

Prior studies indicated that there was great potential for quality in online learning (Meyer, 2002). The experiences of some participants were excellent overall, while others seemed to indicate that quality was lacking for the audience of students with visual impairments. The participants indicated dissatisfaction in quality with regard to the level of feedback and support given to students. Other studies reported that the characteristics most helpful for students in online learning were time management, computer literacy and self discipline (Kirchner, 2001). More studies (Dutton et al., 2002; Halsne & Gratta, 2002) indeed confirmed that a certain level of computer literacy was necessary for success in online learning. Each participant specifically mentioned time management and self-discipline during their interviews. They were all technically astute and had been using technology for a number of years. This qualitative study not only supports those findings for the three participants with visual impairments, but identifies their specific words verbatim and describes their actual experiences.

In a separate study by Wojciechowski & Palmer (2005), success in completing online courses was predicted for students with higher GPAs and previous online learning experiences. Although the participants in this study had good scores and prior online experience, it seems that additional support was needed for one of the

three participants to be able to complete her courses successfully. The study reported in these pages shows more than a correlation of success to scores and experience. It describes the details of lived experiences and documents the challenges of people with visual impairments even though they have high scores and prior online experiences.

Issues facing people with disabilities, such as accessibility of websites and the lack of universal design (Spindler, 2002; Neumann, 2003), still seem to be an issue with the visually impaired participants in this study. In fact, some of the same barriers listed by people with disabilities in earlier studies (Crudden, Sansing, Butler, 2005), including negative attitudes, transportation issues, and a lack of access to print, still caused problems for some of the participants in this study. Screen readers were still not able to accommodate all formats (Lewis, 2002) which caused problems for the people in this study.

Chapter 2 outlined several studies that were conducted to explore the perspectives of people with a variety of different disabilities. Some studies emphasized challenges and struggles in the online environment that have been overcome in order to reach educational goals (Holloway, 2001, Biscout, 2001). The study described in these pages enhances those prior results and adds new perspectives of achievement as well as defeat. One study (Moisey, 2004) detailed a case that explored the experiences and services used by disabled students of all types. The current research study narrows the focus to individuals with visual impairment in the online environment. As such, this study contributes new perspectives to the educational knowledge base, and describes a specific point of view of this group as

they encountered service organizations within the institutions they attended. This study describes actual joy and suffering as well as the gains from taking online courses.

This phenomenological research study confirms and supports much of the previous research, and the present findings enhance and strengthen previous research. The in-depth descriptions contained in Chapter 4 provide insight into actual experiences of visually impaired people who participated in online learning. This study has also revealed several themes and implications that may be useful for faculty and institutions of higher learning as well as future product manufacturers. Inferences and suggestions can be gleaned from these experiences. The descriptions of challenges and benefits also provide useful information for people with visual impairments contemplating online learning as an option for education.

#### *Delimitations and Limitations of the Study*

A delimitation associated with this study has been that the study was designed to describe experiences of online learning strictly from the perspective of the students with visual impairments. The only source for this information is the participants involved in the study. The teachers, peers, staff or administration of the institutions have had no input into the depictions within this study. Their viewpoint may indeed be important as far as services provided, time and organizational challenges, but they are not the focus of this research study. As a qualitative study, the findings from this research study are specific to the experiences of the individual participants. Although the outcomes from this study cannot be generalized to other audiences, these

perspectives have provided great insight for students with visual impairments as well as the institutions and faculty that work with them.

### *Implications*

Based on the descriptions that uncovered the perspectives of people with visual impairments in the online learning environment, several implications have been formed by the researcher. As suggested by Creswell (2007), phenomenological researchers. The implications proposed in this section are based on the findings indicated in Chapter 4.

### *Online Learners with Visual Impairments*

There are many complex factors at work that determine the experiences of people with visual impairments in online learning. In some ways, online classes are a good option with clear benefits for the group of learners with visual impairments. In other ways, the choice of online learning is constraining for these users. The research study revealed that online learning can be a viable option for people with visual impairments with the right combination of characteristics and circumstances. Participants reported several advantages that may be very attractive to other people with visual impairments.

One specific advantage was identified as the convenience of scheduling. Convenience and flexibility were central factors in the decision to take online courses. The participants were able to do class work including logging into course websites at any time of day. So these participants were able to fit their schoolwork into their personal schedules. However, there were some factors that affected this

perception of convenience for individuals with visual impairments. One specific problem was the delay of textbook materials for one participant. For another participant, the textbooks and other resources necessary for the course were available online at the start of each class.

Although they can be read directly from the computer, Jane has a habit of printing many of her materials in the early part of each week, including textbook chapters. The class resources were always available online at the start of class. She prints them using a large font size. (Chapter 4)

Another advantage was the elimination of transportation problems. For the participants in this study, transportation was a big challenge. Commuting to class, crossing streets, finding the right bus or train and walking around campus can be a real problem for those with visual impairments. These folks might not realize that an entrance has a “closed” sign posted until they try the door and realize it is locked. So getting to a campus and walking around a campus pose definite hurdles to the participants in this study. It is no wonder that transportation was a major theme that was discussed by each participant. Transportation was a common hardship that all participants faced. All participants agreed that by taking online classes, they were able to evade the aggravation, stress and wasted time that they associated with transportation. The participants in this study established that waiting for scheduled pick-ups from friends, family or buses was completely avoided by choosing online classes.

It took Moira three hours of travel time just to get to work, and she said “My schedule is very packed!” Moira did not expect any problems with the online classes and would save time by not having to arrange transportation to school. (Chapter 4)

Every participant in this study indicated that convenience and flexibility was a priority and key consideration in their decision to take online classes. The flexibility of the class participation and avoiding the commute and in-person attendance on-campus proved to be a big advantage for these participants. One participant experienced these factors in the following way:

Transportation for Lydia was often an issue because she had to wait for rides that sometimes never came. On occasion, Lydia waited an extra two hours on transportation, and said “this is a big time sink.” It was a real advantage to be able to eliminate the obstacle of transportation issues from her life. Lydia emphasized the saving of time as well as reducing stress associated with making arrangements for rides and then waiting for rides, wondering if they would really come. (Chapter 4)

So, it is no doubt that the online classes were able to help all participants to balance their lives to some extent.

In addition to the advantages listed above such as transportation, flexibility and convenience, there are implications from this study that force us to recognize the ongoing hurdles that also arise in the online environment. One obstacle that seemed to be of particular importance to the participants with visual impairments was the compatibility of the online course websites with the screen readers they utilized. In two situations, the students were unable to finish an assignment and had to find ways to work around the technical problems. College technical support teams were unable to help the students and they were unfamiliar with the assistive technology. Future online participants with a visual impairment should expect to encounter some issues and work through problems as they arise. A suggestion for people with visual

impairments considering online learning would be to investigate website compatibility aspects of distance learning, and balance the potential problems with the conveniences and other advantages.

Along with inquiries about course platform and web accessibility, it is important to set personal expectations for faculty and peer interaction in the online environment. All participants in this study raised this point and indicated that additional interaction, and in some cases feedback, would be a welcome addition to their classes. The participants all gave a lot of effort, completed on their own time, as opposed to sitting in a classroom on a regular basis. One participant emphasized this point in the following way:

“Online classes are a lot of work!” Lydia expressed that the classes were more intense, and required more planning for deliberate interaction or participation. (Chapter 4)

Participants with visual impairments can be successful in the online environment. Two out of the three participants completed their classes with top notch grades. It is important to be aware that although success is possible, it is not guaranteed. Online classes take an abundance of hard work and determination. The descriptions of the various experiences by the participants show that it is important to investigate the school and program thoroughly and to set expectations properly.

“I enjoy it very much!” She [Jane] is very enthusiastic about continuing her online studies until ultimate success. Jane continues to take her classes online because it allows for flexibility and fits into her schedule easily. Jane is pleased that she can work at her own pace. Over time, her comfort level increased. “My experience over the past year makes things easier.” Jane said that she would recommend these online classes to others and absolutely to others with visual impairments. (Chapter 4)

This study also implies that age alone is not an ideal predictor of online success, but more emphasis should probably be placed on learner needs or preferences. Learners should consider their own disposition toward online learning. It is logical to assume that a younger person who grew up in the age of technology would be more comfortable with computers and therefore more successful in the online learning environment. An older person may not be as computer savvy as a young person who grew up in the generation of computers and technology. In this study, all of the participants were very comfortable with computers and with their assistive technology. In fact, the younger, technology-oriented individual had a much more discouraging experience in the online courses than the older, established individual.

The findings from this study suggest that a basic level of computer knowledge is important for online learners and all of the participants were well beyond that basic level of technical ability. In fact, all of the participants had personal experience with online classes in the past. In the final analysis, it is imperative to examine the personal factors beyond age, computer ability or prior online course attendance, in order to uncover all of the contributors to the overall experiences of these participants. The young undergraduate participant reported that she “felt stressed and totally overwhelmed,” and that “the online classes take a lot of self discipline and it feels more stressful than a traditional class.” But, the older graduate student was “very pleased to tell us that for her, the online classes are much less stressful than a traditional class” (Chapter 4).

Moving the focus from age, or familiarity with technology and online environment, we must look to other personal factors that have influence the participant perspectives. The personal expectations or learning needs of the student could be considered an important factor in the overall experience. Not all online classes are the same and perhaps specific learning needs or desires set the tone and expectations for success. One participant even stated that she registered for three classes and did not expect to encounter any problems with her studies, but in reality she had to drop her classes. There was a real mismatch between the participant expectations and the outcome from the online courses. It is possible that some students expect more hand-holding or assistance from the professors and if these expectations are not met, their reaction is negative.

Even if expectations by future online learners with visual impairments are not for mentorship, personal relationships or informal reminders, there may be other obstacles that prevent success. One participant in this study had a number of challenges that built up over the duration of her courses and it was impracticable for her to flourish in that environment. In addition to the lack of communication from the professor and the technical help-desk, the availability of electronic textbooks were so delayed that it was nearly impossible for this participant to keep up with classes. When this experience is multiplied by the number of courses she expected to complete (three), it seems clear that this was on a track where it was not feasible for her to thrive.

*Educational Considerations for Learners with Visual Impairments*

People with visual impairments should consider that it is very possible to be successful in the online learning environment. Online learning is an option that is worth considering when seeking further education. This study shows that people with visual impairments have had all kinds of experiences ranging from disastrous to highly successful. For example, in one case, a student had to drop her classes, but in another case, the participant is more than three quarters down the road to her graduate degree. People with visual impairments who are interested in pursuing such an option should be ready to investigate a variety of programs and institutions. It will be important to explore options and study the details of each program. This study showed that in some ways, online learners with visual impairments did benefit from the convenience and flexibility of an online schedule.

All participants stressed that the classes were a lot of work and that it was important to manage time effectively in order to be successful. Keeping up with the many messages or postings was tough. Slow reading habits and the additional layer of assistive technology is something specific that people with visual impairments must consider and for which they must make adjustments to their time commitments. The participants in this study also agreed that online learning eliminated the obstacles associated with commuting and transportation. The students with visual impairments were able to reduce the stress and time associated with making arrangements for and waiting for rides to or from school. Because there was no travel time, there was also no need to learn a new campus layout or become familiar with walkways, buildings and access routes.

Questions should be asked about the technology and online platform that are used at each institution. Inspection of website compatibility with any assistive technology must be evaluated. If an institution has a technology support organization that is committed to universal accessibility, then it could indicate a familiarity and dedication to addressing the special needs of people with disabilities. Requests could be made for a demonstration or trial connection period to test the platform. Evaluation could be done by an individual and determined based on their own experience with the system.

It will be important for people with visual impairments exploring online options to inquire about resources available for online learners. For example, one participant in this study had to wait for six weeks in order to get electronic copies of her textbook, while the resources and textbooks for another participant were readily available online prior to the start of class. It will be important to ask how the institution handles materials and resources for all online students, and particularly those with special needs. The six-week delay in electronic materials made a big difference in the ability of the participant to participate successfully in class. If all online learners are expected to buy textbooks from the campus bookstore, it will be important to know if the bookstore offers online ordering and shipping. If online students require assistance from the Office of Disability Services at the institution, it will also be important to find out the staff familiarity with the online curriculum and platforms. The staff in those support offices could be extremely helpful if they have already worked with others in the online environment.

People with visual impairments who are interested in online classes may consider interviewing faculty involved with online classes within each university program. Do they seem enthusiastic about working in the online environment? Are they aware of any past problems that online students have encountered during their online classes? In what ways have the faculty members adjusted their traditional procedures or techniques in order to support online learners? Are they committed to working with students who do not live on or near the campus?

In this study, the participants experienced a mixed level of support from the faculty who were teaching online classes. In one case, a participant was unable to connect with professors who did not return calls or emails. In another case, the participant received prompt return calls and spoke at length with the class instructor. So finding out about the habits of faculty members could reveal important information about the program. For example, if a faculty member posts office hours for students to drop-in, how can this be translated for the online environment? If there are no additional ways offered to accommodate online students, then it is possible that this professor is focused on the on-campus student and may not be aware or willing to support the online learners. It would also be important to find out if this faculty member an exception or representative of the academic department. Interviewing current students of an online program would also be an excellent way to determine recurring problems or levels of faculty support. Do the students feel that the professors respond to them in a timely manner? If current students emphasize that faculty members are quite willing to speak on the phone and return phone calls promptly, then it could be an indication of their commitment to online students.

It will be helpful to examine the level of independence of a learner. An undergraduate who is unhappy in the online environment may have needed more personal attention than the participant enrolled in a graduate course. Perhaps the lack of attention and feedback was more than the undergrad could bear, compared to a more mature person with many more prior learning experiences. It is possible that graduate students might not be seeking the social aspects of education, due to jobs, families, or full schedules. In this study, all of the participants indicated that they missed the one-on-one interaction with peers in a traditional class. In a related way, an older more mature individual may prefer online learning because it fits in well with their work experience and busy schedule. Potential online students must examine their own expectations and learning needs before making the choice for online learning.

People with visual impairments should also consider that there are common experiences among all online learners. As indicated by many college websites, online learners are most successful when they are adept at managing their own time and have a strong sense of self-discipline. Taking the time to fully investigate programs will take time and energy. The advantage of embarking on such a project would be to avoid the pitfalls experienced by previous students. In the end, investing time to review several programs could save time and add to satisfaction levels and achievement in the future.

*Implications for Institutions & Faculty*

For learners with visual impairments to succeed in the online educational environment, institutions and faculty must be committed to support the special needs of all online learners and particularly those with a documented disability. It is possible that in the setting of a traditional university, the professors and the support staff may not be committed to online learners. Perhaps the university offers online courses as an option to respond to student demand, but has not established guidelines or services to assist online learners and fully compete in the market. It is also possible that the disabilities service individuals at a traditional university are not committed to assisting online learners to the extent that they work with their on-campus students in person. This lack of commitment affected the success and positive feelings of the participant in this study who chose to take online classes at a traditional-style university.

In the online environment, email is the standard way of communicating and professors must be available to respond to questions and requests for help within an acceptable timeframe. This could mean checking email during nontraditional hours. It is possible in a traditional-style university that the faculty members do not really understand the support needed for online learners. Online students must be able to reach the professors since there are no virtual office hours and no other means of stopping by to chat. More traditional attitudes of professors won't work in the online environment. The success of the participant who attended the online-only university stands in contrast to the participant experiences at the traditional university. When

the institution is dedicated to supporting online students, then the result could be much more positive, as indicated below.

Attending an Online University, Jane most definitely prefers online classes to the traditional style classroom. Jane does not have mixed feeling about her experiences in the online environment. She is completely thrilled with the format and her grade- A progress. Jane indicated “I enjoy it very much!” She is very enthusiastic about continuing her online studies until ultimate success. Jane continues to take her classes online because it allows for flexibility and fits into her schedule easily. (Chapter 4)

Institutions need to be committed to online learning and not enter into such a program half-heartedly. All programs and resources must be available and ready to support online learners. It seems that having the platform and an instructor is not enough to ensure that learning takes place and that students have a successful experience. One participant tried repeatedly to contact her professor and waited for days to receive a response. When email and phone calls are the only connection between student and teacher, it is important to establish acceptable response times. Perhaps online teaching is not ideal for every faculty member. If professors have competing priorities such as research, writing and presenting papers, committee responsibilities and other performance concerns, then it is possible that students will fall to the bottom of their priority list. When students are isolated, as in an online environment, it seems most important to have responsive faculty who are dedicated to student achievement. In addition to selecting the right faculty members to teach in the online courses, it is important to have support services available to faculty and to students as soon as the class begins.

Institutions offering online education must be organized and geared up to support and assist online students when technical problems arise. Special attention should be paid to this new set of students who will be calling for help at all times of the day or night. Online students work from their houses at a variety of times. For example, one participant worked at her job during the day and did her class work in the evenings. Institutional help-desks must be available for students to call during the evening and for an expanded part of the day. The help desk at the institution of the most satisfied participant is available all hours of the day or night. Two participants experienced technical problems even though they were extremely familiar with their own computers and had many years of experience working with their assistive technology. Since the participant, the professor and the institution's help-desk were unable to resolve the problem, it seems to indicate a compatibility issue with the online classroom and the assistive technology used by the student.

Maira called a professor for help with a particular Spanish recording assignment. The professor told her to "Just read the directions." The Technical Help Desk at the university was not able to assist with this particular issue because of Maira's assistive technology. Maira is knowledgeable with computers and assistive technology so this situation was quite disheartening. The teacher's email responses indicated that Maira would "have to find a way to complete the assignment." (Chapter 4)

Students using assistive technology do have an extra layer of complexity than a student who does not require this technology. Screen readers and screen magnifiers are common technologies for those who are visually impaired. A committed institution should ensure that websites use universal design and that the platforms used for online learning are

completely compatible with assistive technology products. An extra step could even be taken with the staff of institutional support organizations so that they become familiar with these technologies and the special needs of people with visual impairments. The technical-help-staff could be invited to an assistive technology fair. This would allow the support technicians to see demonstrations of various assistive technology equipment. This would enable the technical support organization to be much more responsive to specific needs of online students who use assistive technology.

A final point about institutional and faculty support is the lack of attention to students with disabilities who are working in the online environment. There seems to be a sharp contrast between the K-12 world where special education is an integral part of the school system and the faculty teams. It is possible that in the university culture, special education is really just a 'service on the side.' Some institutions may call for faculty to fulfill special-education requirements through required training courses or reading and signing an agreement. It is likely that in some higher education institutions, the Office of Disabilities Services is not a critical part of the academic team. Unless a professor takes a personal interest, specific advice or advocacy for the special needs student does not seem to be key part of faculty roles or responsibilities. This picture may reveal that in the autonomous world of university faculty, their interactions and familiarity with disabilities or special student needs may be lacking. This could be due in part to their limited exposure to students with disabilities, although it is an enrollment number that is on an upward trend. It should be a priority for institutions to encourage faculty response and involvement so that

online students do not feel abandoned. The disabilities support organization could also take the lead to meet with professors of students who have registered with their office.

### *Educational Considerations for Institutions & Faculty*

Institutions who offer online courses and degree programs must be committed to the online environment for all students to be successful. This means that the support offices such as technical support, disabilities support, financial support and others must be ready and willing to work with online students. Specifically, these service organizations should be available to answer questions over email or perhaps even schedule evening and off-peak hours to accommodate the needs of online learners. The people working in all the school's support organizations should be exposed to an online class either through a demonstration or by participating personally in an introductory course. This will allow the support people to relate better to the students they must serve.

In this study, one participant indicated that she "felt like a number" when she tried to reach out to the disabilities services staff. Perhaps people with disabilities could be assigned an individual advocate or advisor upon enrollment. This person could then get to know the student's special needs and circumstances. Another idea would be for institutions to encourage the individuals working in disability support organizations to become a more integrated part of academic departments. This way, individuals familiar with the challenges faced by students with visual impairments can work side by side with a faculty member that has such a student and make it

easier for everyone to feel successful. Once the disability service professionals have attended an online class or demonstration, they will become much more valuable and helpful to the community they serve.

Technical services are a critical need for universities offering online programs. Institutions must hold their technical organizations accountable for creating accessible websites. It is important for institutions to prioritize accessibility of their website and use universal design. Testing and ensuring that online classes can be accessed by people with visual impairments successfully could mean equal access for all. Online learners with disabilities should have an equal chance for success at every college and university.

The technical help-desk is a critical point of contact for online students. Since a multitude of issues can arise when dealing with technology, even the most knowledgeable students will probably need to ask questions, forget access codes or gain assistance during an online degree program. Technical support responsibilities should undoubtedly be expanded to include extra hours in order to respond to online students who work on their classes during evening and night time hours. In order to better respond to the special needs of students with visual impairments, technical staff could be introduced and trained on assistive technology. The technical support operations may be able to connect with local offices of vocational rehabilitation, in order to see and try a variety of assistive hardware and software packages. Full commitment to technical support is expected by every online learner. A final idea for college technical support organizations would be to begin to work with manufacturers or product developers at organizations that create assistive technology.

Perhaps partnerships can be arranged so that institutions can verify compatibility as well as provide feedback to these product development teams regarding their assistive technology.

Institutions should develop an enthusiastic communications program for their online students. Communicating to students about the services and commitment of the university will help put students, teachers and support staff all on the same page. Perhaps offering a short introductory course would help students to become familiar with the specific platforms used and set expectations for future online courses that are taken at the institution. This could help to set the learner's expectations while they test compatibility. If a traditional-style college decides to offer some online courses, and only offers limited services to online students, the institution should make this difference clear to potential students. A distinctive effort must be made to communicate and enroll only the students who understand the limited services that might be available to them.

Online students expect the same level of commitment from their professors as those who stand on-campus and meet in the offices of faculty members. College faculty must be encouraged to communicate with online students using the technologies expected in that environment such as email and telephone. Distance learners are not able to wait for office hours and must resort to these other techniques when trying to ask questions and resolve issues. Online learners want the same level of interaction as on-campus students, but the techniques need to be different or adjusted. As new technologies are developed, professors may be able to use innovative strategies for interaction and gain competitive advantages over other

institutions. Using video, text alerts or pod casts and other new strategies could go a long way toward reaching all types of learners. By publishing timelines or calendars that help students to create a plan, professors could show sensitivity to the needs of online students. Another technique could be for professors to send an email reminder or recorded phone message, like political candidates use, to students with regard to an upcoming due date. These students are enrolled, paying tuition and deserve the same commitment as the traditional student.

The commitment and level of work associated with online learners is not necessarily greater than traditional classes, but the modes of operation are different. Institutions may need to limit the facilitation of online courses to faculty that agree to adapt to these requirements and commitments. Institutions could begin to value the role of the online faculty member so that these professors feel encouraged and supported to continue developing online curriculum. Institutions may need to offer faculty development programs that encourage professors to better understand the details required for a successful online course. Institutions could offer tools and guidelines that better champion online faculty. This could go a long way toward eliminating the negative reactions from students, such as the participants in this study, who waited for several days to receive a response. One participant even received unhelpful suggestions from their teachers, such as “keep trying,” which shows the professor’s lack of interest in facilitating student success. Institutions would also need to update their performance measures to include the role of online instructor as a responsibility that is highly valued and when successful has great benefit to the college.

*Summary of Implications and Considerations*

As indicated in these final chapters, there are many complex factors that contributed to the experiences of the participants. In spite of living with a visual impairment, the participants in this study all had some of the most fundamental ingredients for success in online learning, including technical knowledge, self-motivation, and prior online class experience. The participants all saw big advantages with regard to elimination of transportation hassles. They also enjoyed the class assessment techniques in that the more tedious formats of matching tests columns or long lists of terms were avoided. They all were comfortable with research, reports and essays.

It is apparent that their perspectives about online learning were significantly influenced by the experiences described in this study. For example, based on her experiences, one participant never wanted to take online classes again! For another participant, the experiences were so good that she continued to receive excellent grades and expected to complete her program next spring. The third participant had some technology issues and missed the interaction of peers, but was open to trying online classes again in the future. Since the experiences detailed in this study had such a profound impact on the participants decision for future education, it makes sense that the institutional support services and individual faculty responses combined with the student expectations and preferences to form their overall reactions. The implications proposed in this study provide the groundwork for suggestions that might assist future students, faculty and researchers interested in the topic of online learners with visual impairments.

### *Recommendations for Future Research*

This study “*Visual Impairment in a Visual Medium*” has uncovered the perspectives and experiences of students with visual impairments as they study in the online environment. Many helpful insights and suggestions have been drawn from these descriptions. At the same time, many questions still remain that could extend this research and provide supplementary awareness for students, faculty and institutions. Since this study focused on gathering perspectives from students, other viewpoints were not collected. The positions and beliefs of institutional service providers were not gathered for this study. It would be very appealing to conduct further research in the area of disabilities services to elicit their perspectives on assisting online learners with visual impairments or perhaps other disabilities. Perceptions of university staff in the support organizations could reveal data about the current situation of recommending or assisting students with visual impairments in online learning. This could be a natural fit for a broad case study showing not only the perceptions of a student with visual impairment, but additional feedback of all service organizations, peers and faculty.

It would be very interesting to determine the ways that support services for disabilities are currently integrated into the daily activities of faculty and the organizational structures that are most effective. It would be interesting to document programs that have been effective for online learners and particularly those with disabilities. For example, it would be informative to understand the opportunities available through the institution such as transition programs, time management workshops or self-advocacy sessions. A separate area of inquiry could be followed in

order to give a quantitative picture of various aspects of online learning for students with visual impairments. Surveys could be created to capture reactions at the end of online courses across a variety of postsecondary institutions.

A third area of attention could be to follow students with visual impairments from high school to college in order to better understand the challenges faced in that transition. This type of study could help to illustrate how high schools encourage students with visual impairments to attend post-secondary education and whether online learning is encouraged. How do high school guidance counselors find out about the advantages or obstacles of online learning for this particular group of students? Another topic of interest would be to determine whether universities recruit students with visual impairments and how they retain these individuals in their programs. The ideas set forth are offered in the interest of furthering the current understanding of visual impairment in visual mediums.

### *Closing*

The focus of this study has been the perceptions of three people with visual impairments and their perspectives of the online learning environment. This final section of the study will describe the experiences of the researcher, her motivations and inspirations. During the actual observations, interviews and writing, the researcher set aside personal experiences. Creswell (2007), suggests that this type of creative conclusion will show the “reflexivity” of the phenomenologist which can sharpen the value of the study.

During this study the researcher was a participant-observer, as well as an insider with her own visual impairment and personal experiences as an online educator and learner. This added awareness enabled this researcher to have deeper insights into the life challenges and attitudes of the participant experiences (Marshall & Rossman, 1999). The researcher bracketed her own perspectives and attitudes in order to specifically report the findings of the participants. This autobiographical section will conclude the study with perspectives from the researcher's viewpoint.

The researcher's visual impairment is a permanent one that has shaped her life and outlook since the age of six. She is legally blind from an inflammatory eye disease called *uveitis*. *Uveitis* is a persistent inflammation of the central part of the eye, which caused damage to other ocular structures such as the retina and optic nerve. The disease also triggered cataracts and glaucoma. For the researcher the result, in both eyes, is limited central vision and no peripheral vision. As an online teacher and learner, the researcher's positive experiences with the medium prompted her to engage in this study. Ultimately this researcher found that her assumptions were challenged. Her hopes for progress were well founded, but things are not progressing as quickly as an educator in this field would hope or as someone with a visual impairment would need.

The researcher was inspired by the motivation and perseverance of the three participants. Their trials were significant and the way they overcame challenges on a regular basis was uplifting. It was interesting to learn about the variety of visual impairments and causes of vision loss. It was enlightening to also learn about challenges that others face in dealing with their disability and with assistive

technology. It was disheartening to hear that for some, advances in technology have not enabled them to keep up with the speed of change that is a hallmark of the Internet. The attitudes of the participants are admirable, as they continued to persist, even during the most demanding phases of their experiences. The strength of these participants is moving.

The work of these participants and others with visual impairments, as they move toward their educational goals, is helping to plow a path for the future. Through these experiences, seeds of suggestion and ideas for improvement have been planted. Readers may be fascinated by the variety of opinions and experiences, but the hope is that commonalities are realized that can help to shape the future of online education and perhaps even education in general.

In some ways, this researcher shares an appreciation for online learning with the participants because of the convenience, scheduling flexibility and transportation factors. Since taking the right train, crossing streets, finding a specific building or door, and making your way to room 403, are all sources of sure stress, avoiding those challenges is a real benefit. In another way, it was also startling to understand the different outlook of these participants. None of the participants ever stated that they wanted to fit-in or blend into classrooms as if they had no disability at all. Yet this researcher has strived for such normality for a lifetime. This anonymity is so easily achieved in an online environment where nobody can see the students or teacher, and no one will know about a disability, unless it is specifically stated. The participants in the study always revealed their vision problems and even attempted to connect with professors prior to the start of class to discuss the issues that might arise.

Throughout this researcher's education and career, individuals with disabilities were often treated differently once that disability was made obvious. Perhaps changes in societal perceptions or legal requirements for educational institutions have made it easier for students to acknowledge their disability and request accommodations. Hiding a disability has its own challenges, since problems may arise that will later cause anxiety to students and their teachers or employers who were unaware. Perhaps openly acknowledging an impairment can help to make every day things simpler. It will be difficult to produce such a personal change in attitude rapidly.

There is hope that perhaps a change can be brought about in the way that people with visual impairments are perceived by others. As great as the desire to "fit in" and be "treated the same" exists, it can only happen if the world is set up to operate that way from all angles. This study has shown us that there are so many complex relationships that work together to form every experience for online learners with a visual impairment. The continued innovation in technology combined with intellectuals from many support organizations will undoubtedly continue to play an important role in the lives of online learners with visual impairments. Advances in technology alone cannot abolish the attitudes and perceptions of society toward people with visual impairments. We have a long way to go before people will be able to completely look past disabilities and focus only on abilities. Outcomes from this study may help to illuminate the accomplishments, strength, tenacity and persistence of individuals with visual impairments and their great potential for additional success in the future.

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**Appendix A: Documents in the Study***Documents Used in this Study*

Letter to find voluntary participants

Letter of introduction to participants

Summary of research topic to be included with letters

All documents will be available electronically in adobe acrobat format for its easy Read Aloud option

Elizabeth Haslam, PhD.  
Drexel University  
Philadelphia, PA  
September, 2007

Dear Principal:

I am writing to you to ask for your assistance in a much-needed research study. I am a faculty member in the Department of Education at Drexel University in Philadelphia. The area of research which will be conducted by doctoral candidate, Jacqueline Candido, involves reporting on the perspectives of post-secondary students with visual impairments and their experiences with online learning.

I am requesting your help in finding participants for this study. Your faculty and alumni may be excellent candidates themselves or have the ability to recommend possible participants. Participant involvement is expected to last over a period of two to four months and all rights to confidentiality will be rigidly protected. Voluntary participation by individuals includes a willingness to be interviewed about their experiences with online classes, as well as consent to be observed while participating in online classes. Participants will also be asked to share records and documents associated with their online class that can lend insight into their experiences. Possible artifacts include course syllabus, tests, projects and student-teacher communications. Participants who complete the study will receive a \$25 Borders gift card as a token of thanks.

My research shows that online learning is an increasingly popular alternative for many students, yet the voices of students with visual impairments and their experiences with the visual medium of the internet have not been well-recorded.

If you are interested and available to assist me with finding participants for this research endeavor, please contact me by phone or email. We will follow-up in the next two weeks in case you are unable to make contact. It would be a pleasure to speak with you by phone or in-person, at your convenience. Several documents have been attached for you to review. Please let me know if you require any further information.

Sincerely,  
Elizabeth Haslam, PhD  
Principal Investigator  
215-895-1277

Jacqueline Candido  
Co-Investigator  
[visualmediumstudy@gmail.com](mailto:visualmediumstudy@gmail.com)

Elizabeth Haslam, PhD.  
Drexel University  
Philadelphia, PA  
September, 2007

Dear Participant:

I am responding to your request for more information regarding voluntary participation in an important research study. I am a faculty member at Drexel University in Philadelphia, in the Department of Education. My current area of research involves reporting on the perspectives of post-secondary students with visual impairments and their experiences with online learning.

If you are a person with a documented visual impairment and registered or enrolled in an online class at a college or university, then I am interested in your participation for this study. Please consider whether you would be willing to consent to the following list of items in order to participate. I would enjoy hearing from you if you have interest in becoming part of this much-needed research.

- ◆ All rights to confidentiality will be rigidly protected and no real names or institutions will be used in the reports of this study
- ◆ Participant involvement is expected to last over a period of several months
- ◆ Voluntary participation by individuals includes a willingness to be interviewed about their experiences with online classes, as well as consent to be observed while participating in online classes.
- ◆ Participants will also be willing to share records and documents associated with this topic that can lend insight into their experiences. Possible artifacts include course syllabus, tests, projects and student-teacher communications.
- ◆ Participants who complete the study will receive a \$25 Borders gift card

My research shows that online learning is an increasingly popular alternative for many students, yet the voices of students with visual impairments and their experiences with the visual medium of the internet have not been well-recorded. Your help in explaining your experiences with online learning would make a significant contribution to this research.

If you are interested and available to participate in this research, please contact me by phone or email. I am certainly available to speak with you by phone or in-person at your convenience. Several documents containing additional detail, have been attached for you to review. Please let me know if you require any further information.

Sincerely,

Elizabeth Haslam, PhD  
Principal Investigator

Jacqueline Candido

## Summary of Research Topic

### *Visual Impairment in a Visual Medium*

Perspectives of online learners with visual impairments

#### Problem

When we consider the visual medium of the Internet for online learning, we often don't think about students with visual impairments. Online classes can be a good way for people with visual impairments to achieve their educational goals. But there are also many challenges to overcome. We need to better understand how people with visual impairments use the visual medium of online distance learning to succeed in higher education:

- ◆ Describe the experiences and responses that students with visual impairments encounter in the online environment?
- ◆ What specific successes and challenges exist in the visual medium of online learning, for those learners with a visual impairment?
- ◆ How and why are students with visual impairments able to use visual media such as online distance learning to accommodate their educational needs?
- ◆ In the online environment, what instructional techniques are most comfortable for students with visual impairments

#### Purpose of Research

This phenomenological study will describe the ways that students with visual impairments are using the visual media of online learning to accommodate their needs and explore the benefits and difficulties encountered in the online classroom.

- ◆ To describe the successes and challenges that people with visual impairments face as they enter the visual medium of online learning.
- ◆ To show the detailed perspective of students with visual impairments and the extraordinary ways that they handle visual media.
- ◆ List examples and recommendations for universities and faculty offering online classes, so that they might optimize courses and use the best techniques to reach out to all audiences (or recognize the potential application of distance learning programs for people with visual impairments)

## **Appendix B: Interview Guide**

### **GENERAL INFORMATION**

Name (Optional):

Best method/info for contact (phone, email, etc):

Describe your disability: (type, length of time)

Describe your online classes (How many, Type, Any face to face sessions, Subject, Place, Level of classes):

### **INTERVIEW TOPIC AREAS**

#### **Reasons for Online Learning**

Why are you taking online classes? What made you first start an ONLINE class?

#### **General Feelings and Impressions**

Please tell me about your overall experience with online distance learning

In your experience with online learning, what stands out for you?

What else would you like to share?

#### **Accommodations and disclosure**

Regarding your disability: In a traditional classroom (face to face), what specific challenges do you have? What accommodations do you usually make or request, in order to be successful in the face to face conventional environment? Please describe any differences that you experience in the online environment.

In the online environment, do you tell your professor/instructor about your disabilities and any special requirements you might need? Please describe your experiences.

In comparison to a traditional classroom, would you say that an online class is usually MORE or LESS stressful (or the same) for you? Why?

### **Online work and projects**

What projects, assignments, assessments or other aspects of online learning have you enjoyed the most (or have worked best for you)? Why?

Please describe any challenges or problems that you encountered in the online environment and how you have dealt with them:

### **Ideas for Improvement**

Will you take online classes in the future? Would you recommend online classes to others with a similar disability? Why or why not? What ideas do you have for improving your online learning experience?

*Key questions for interview sessions:*

1. How and why are you using online learning? Describe circumstances around how you first began as an online student.
2. How is the online environment different from the traditional environment? What accommodations would you need in a traditional environment and how is this different online?
3. What particular challenges or difficulties are avoided by attending your classes online? How would you pursue your academic goals, if online classes were not available to you?
4. Do you usually make your disabilities known to universities, teachers, and/or classmates? -When or how often? -Under what circumstances?
5. From your own point of view, describe the pros and cons of the online experience.
6. Describe projects, assignments or instructional techniques that seem to be most effective or beneficial to you in the online environment and why?
7. Demonstrate some of the challenges that you have experienced in the online classroom.
8. How have your experiences changed since you began taking online courses?
9. What suggestions or recommendations do you have for improving your experience in the online classroom?

## Appendix C: Summary of Reviewer Experience

### Curriculum Vitae

Nicholas J. Fina

[nickfina@udel.edu](mailto:nickfina@udel.edu)

302-633-8440

### Interests and expertise

- Issues related to disability in educational and workplace settings
- Educational technology
- Accessible web design methodology

### Education

- The University of Delaware, Ed.D. (expected May 2009)
- The University of Virginia, MBA (September 1976 – May 1978)
- Brown University, Sc.M. (September 1969 – December 1971)
- John Carroll University, B.S. Chemistry (September 1965 – May 1969)

### Employment

- Agilent Technologies, Inc. (formerly Hewlett-Packard Company) (January 1979 – present)
- University of Delaware (July 2004 – August 2006)

### Public Service

- Hearing Loss Association of Delaware
- Delaware State Council for Persons with Disabilities (February 2000 – August 2001)
- Delaware State Rehabilitation Council (February 1996 – August 2001)
- National Alliance for the Mentally Ill (1995 – present)

## Appendix D: Reflection Notebook

Format of Reflection Notebook  
From Haslam, 1987

### *Four-level structured notebook*

<b>Date</b>	<b>Date, time and location of each event</b>
Direct Account	Notes taken during the observation of participants.
Expanded Account	Expanded detailed account of the session, completed later the same day
Reflection	Reflection about the session and what went well or what could be improved upon
Ongoing Analysis	Interpretation and analysis of the session and how the participant experiences relate to others and the overall research expectations

## Vita

### **Jacqueline P. Candido, Ph.D.**

Education Manager  
Lean Advancement Initiative  
Massachusetts Institute of Technology

Dr. Jacqueline Candido is an MIT Research Affiliate who leads the educational programs for the Lean Advancement Initiative, including EdNet and the LAI Lean Academy<sup>®</sup> Course.

Dr. Candido spent more than sixteen years with Hewlett Packard Company (1983-1999) in various positions such as systems engineer, technical consultant, learning technology specialist and education program manager. Jackie has managed complex global programs including instructional design and delivery in the US, Europe and Asia. She has created educational curriculum for industry, government and academic settings, using a variety of technology including online distance education. Dr. Candido has extensive experience facilitating dozens of courses on a variety of topics. In addition to many consulting projects, Jackie also worked for Gartner (CT) as a Director of Sales Training Programs and at Millersville University (PA) as Assistant Director of Distance Learning.

Dr. Candido received her Ph.D. from Drexel University in Philadelphia, in the program of *Educational Leadership and Learning Technology*. Jackie also holds a BS degree in Information Systems and an MS degree in Education, both from St. Joseph's University in Philadelphia.

### **Contact Information:**

Jacqueline P. Candido  
(302) 377-5177  
[jpcandido@comcast.net](mailto:jpcandido@comcast.net)

