

THESIS

MEASURING PERCEIVED ACCESSIBILITY OF STUDENTS WITH DISABILITIES AT A
PUBLIC UNIVERSITY

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ABSTRACT

MEASURING PERCEIVED ACCESSIBILITY OF STUDENTS WITH DISABILITIES AT A PUBLIC UNIVERSITY

The purpose of the research was to explore the perceptions that students with disabilities had towards facility accessibility and quality of education at a public university and to determine any relationships between their perceptions of accessibility and perceptions of quality of education. Students' perceptions were measured using an online survey instrument. The survey was a thirty-three question survey with questions exploring students' perceptions of accessibility of campus as a whole, accessibility of older buildings, accessibility of newer buildings, and quality of education. Students were found to perceive both accessibility and quality of education positively; however, there were numerous areas of statistically significant differences in students' opinions when they were grouped by demographic groups. The results also indicated that there was a positive relationship between perceived accessibility and perceived quality of education.

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Introduction

As a federally funded institution of higher education, Colorado State University has a responsibility to provide a quality education environment for all students that attend it as required by the Americans with Disabilities Act (ADA) (Resources for Disabled Students, 2011). As many of the buildings on the Fort Collins Campus of Colorado State University were built prior to the adoption of the ADA and the accessibility guidelines that went with it, this responsibility is often hard to meet. Moreover, there is a possibility that some of the buildings that have been renovated over the years may not have been fully brought up to the standards or may not fully meet the intent of the laws and standards while still meeting the letter of the law. In this respect, the question of accessibility of facilities really comes down to a question of the quality of the accessibility, not whether or not it meets the standard (Kreston, 2011). Also, though the guidelines of the standards that govern accessibility, such as wheel chair ramp heights and slopes, may have originally been found through research of the average performance of someone using a wheelchair, the performance of such standards is not often looked at once a building has been built or renovated (Kreston, 2011). While there are many newer buildings on the campus that are compliant with the requirements of the ADA, and many more that have been renovated to this standard, there may still be perceived difficulties among the disabled community concerning accessibility. This is important as it can create a very difficult environment for students with disabilities to get around the campus and various buildings. Although the minimum requirements do establish a base to build off of, there is a need to see if the minimum requirements perform well for the students with disabilities on the campus of Colorado State University and to see how those students perceive the quality of education they receive.

Review of Literature

To better understand the issues surrounding accessibility on a college campus one must first understand the laws, regulations, and issues that surround this subject. There are a number of laws relating to accessibility as outlined by Michael Prince's 2010 study on implementing a disability act in Canada (Prince, 2010). These include the Rehabilitation Act of 1973, the Civil Rights Restoration Act of 1988, the Fair Housing Act of 1988, and the Americans with Disabilities Act of 1990 (Prince, 2010). Of these laws, those pertaining specifically to public universities are Section 504 of the Rehabilitation Act of 1973 and Section II of the ADA of 1990. Both of these laws require that entities receiving federal funding maintain buildings that are accessible to people with disabilities (Prince, 2010).

With these two major laws in mind it is interesting to note that many public buildings are still not compliant. This is evident in Pike's 2007 study of public pool facilities in Northern Texas (Pike, 2007). In that study, Pike measured the heights and dimensions of various building features at fifty-two pools in the North Texas area to measure their compliance with the Architectural Guidelines set out in the ADA of 1990. Of the facilities surveyed, none were found to be 100% compliant (Pike, 2007). This is extremely important when considering that the accessibility of a facility can play a large role in whether or not a person with a disability decides to engage in a physical activity (Pike, 2007). In the case of Pike's (2007) study this was swimming at an aquatic facility; however, the same could be said for any activity.

The link between facility accessibility and the physical activity that can take place at the facility was also shown in study by Rimmer, Riley, Wang, Rauworth and Jurkowski (2006) that looked at which barriers affected physical activity among people with disabilities the most

(Rimmer, Riley, Wang, Rauworth, & Jurkowski, 2006). In their study, Rimmer et al. (2006) conducted focus groups of people with disabilities, architects, city planners, and park managers. Rimmer et al. (2006) found that people with disabilities thought the two biggest barriers to physical activity were barriers in the built environment and emotional or psychological barriers (Rimmer, Riley, Wang, Rauworth, & Jurkowski, 2006). This showed the importance of the perception of accessibility of people with physical disabilities and how it relates to their level of activity. Also of note from this study was the perspective of city planners and park managers who thought the biggest barrier to the activity level of people with disabilities was an economic one relating to the high expense of retrofitting (Rimmer, Riley, Wang, Rauworth, & Jurkowski, 2006). As one city planner put it, “the worst thing that can happen is to not do it right the first time” (Rimmer, Riley, Wang, Rauworth, & Jurkowski, 2006).

The barriers found in Rimmer et al.’s (2006) study were also found in a similar study by Meyers, Anderson, Miller, Shipp and Hoenig (2002) that looked at barriers, facilitators, and access for wheelchair users in Boston, MA and Durham, NC. Meyer et al.’s (2002) study conducted a month long survey with daily interviews of wheelchair users and found common barriers included narrow aisles, no ramps, or ramps to steep, heavy doors, no curb cuts, and obstructed wheel travel (Meyers, Anderson, Miller, Shipp, & Hoenig, 2002). The researchers also found that people with differing impairments had differing needs for environmental accommodations (Meyers, Anderson, Miller, Shipp, & Hoenig, 2002). This study and Rimmer et al.’s 2006 study fall short however, because both studies focused primarily on wheelchair users. While this is a large and visible group of people with disabilities, it does not represent the needs of all people with disabilities, specifically those people who are have visual, auditory or cognitive impairments.

A study by Church and Martson (2003) attempted to circumvent this lack of opinion from different groups of disabilities by looking at accessibility of the campus of the University of California, Santa Barbara through a mathematical model (Church & Marston, 2003). Church and Martson compared absolute and relative accessibility and found that while absolute access was often provided for a building, there had been little attention given to the value or quality of the access provided (Church & Marston, 2003). Through a mathematical model they developed, Church and Martson asserted that the absolute access of a building doesn't change if more accessible bathrooms were added, but the relative access gains would be considerable (Church & Marston, 2003). While this study would be of use to architects wanting to know how to improve the accessibility of a building, the mathematical model lacks the validation of students with disabilities because none were consulted.

It may seem strange that there are still so many challenges pertaining to accessibility so many years after the passage of the Rehabilitation Act and the ADA in 1990, but it is understandable when one looks at the perceptions and understanding of disabilities by architects. A 1998 study by Hall and Imrie did precisely this with a survey of architects on their understanding of disabilities and how they planned for them in their buildings (Hall & Imrie, 1998). Their study found that architects had little or no notion of what disability was, nor a concept of any exclusive set of impairments (Hall & Imrie, 1998). Hall and Imrie also found that most architects attempted to rigidly follow the architectural guidelines of the ADA in their designs and not do anything more than the requirements (Hall & Imrie, 1998). Finally, they found that most architects' focus was on people with mobility impairments, not people with visual, auditory, or learning/cognitive impairments (Hall & Imrie, 1998).

The findings of Hall and Imrie (1998) can also be compared the findings of Gray, Gould, and Bickenbach (2003), who conducted focus groups with built environment professionals, people with disabilities, and health care professionals to discern what items act as facilitators or barriers to accessibility (Gray, Gould, & Bickenbach, 2003). In their study, the researchers found that while the built environment professionals group ranked the built environment highly as a facilitator for accessibility, the groups of people with disabilities ranked the built environment as the biggest barrier to accessibility (Gray, Gould, & Bickenbach, 2003). This shows a distinct disconnect in the perceptions of architects and people with disabilities concerning accessibility. Gray, Gould, and Bickenbach (2003) recommended involving people with disabilities in the design process. This inclusion may eliminate that disconnect by using input from people with disabilities; however, no follow up study to the effectiveness of this suggestion was performed (Gray, Gould, & Bickenbach, 2003).

With the laws and issues of the previously discussed studies in mind it is possible to look into the research relating to accessibility and college campuses. The first of these studies to look at is a study by Delar Singh (2005) that surveyed directors of disability services offices at 137 college campuses across the country about their college campus' accessibility. In that study, Singh found that only 10% of institutions surveyed had completely accessible campuses (Singh, 2005). Of the other 90% of institutions, many had made strides in becoming more accessible; however, it was indicated that many of the directors surveyed felt their campuses still had much room for improvement (Singh, 2005). A primary issue with this study though, was the participants; all participants employed in the study were university employees. This left out the critical voice of the actual users of the buildings in question - students with disabilities.

One study that explores this critical voice is the 2001 study by Holloway that looked at the experiences of students with disabilities at universities in the United Kingdom. Holloway (2001) used interviews of 179 students at both the graduate and undergraduate level (Holloway, 2001). Holloway (2001) found issues with building entrances, the types of doors used, lack of working elevators, and poor ramp designs (Holloway, 2001). Holloway (2001) found that this made participants of the study feel differently because of the fact that they had to use other entrances and sit in areas where other students did not because of their disability (Holloway, 2001). This study found that students felt marginalized because the funding for wheelchair access was viewed as prohibitively expensive (Holloway, 2001). The issues that Holloway (2001) found were thought to be due, in part, to the fact that the disability laws of the United Kingdom, similar to the ADA, did not cover universities at the time of the study (Holloway, 2001).

The findings of Holloway (2010) can be corroborated with those of the 2010 study by Alanoud Alrashidi. Alrashidi (2010) explored the views of fifty-three students with disabilities on accessibility at Kuwait University in Kuwait City, Kuwait (Alrashidi, 2010). Alrashidi (2010) found the main problem areas for students were lack of elevators servicing all floors of buildings, lack of accessible parking, narrow doors, inaccessible auditoriums, and small bathroom spaces (Alrashidi, 2010).

While the studies by Alrashidi (2010) and Holloway (2010) do provide valuable insight and the barriers that both of these studies identified are common in the United States, it is difficult to generalize the results to universities in the United States because of different background cultures and laws concerning accessibility. As previously mentioned the disability laws in the United Kingdom did not affect universities at the time of Holloway's (2010) study,

and no disability laws existed in Kuwait at the time of Alrashidi's (2010) study (Holloway, 2001); (Alrashidi, 2010).

To examine the attitudes of students with disabilities in the United States we must turn to the study by Dowrick, Anderson, Heyer, and Acosta (2005). Their study used focus groups of students with disabilities to look at the experiences of these students at ten different universities across the United States (Dowrick, Anderson, Heyer, & Acosta, 2005). They found that there was a perceived gap between policy and practice in disability policy at the universities sampled in that certain policies were not always carried out (Dowrick, Anderson, Heyer, & Acosta, 2005). They also found that many students had difficulties with accessing buildings with wheelchairs or for getting assistance for blind students (Dowrick, Anderson, Heyer, & Acosta, 2005). The findings of this study showed a strong perception among students with disabilities that they were still not being adequately provided for in terms of disability policy.

The results of the study by Dowrick, Anderson, Heyer, and Acosta (2005) have been more recently corroborated in Kane's 2009 study of students at a university in the northeastern United States. Kane (2009) interviewed participants via e-mail and sought to explore the experiences of students with physical disabilities and how it related to physical accessibility of the university's campus (Kane, 2009). Kane (2009) found several areas that the students with disabilities had difficulties with, including accessing buildings, bathrooms, bookstores, campus shops, dining halls, dorms, and classrooms (Kane, 2009). Kane (2009) also found that the students had trouble traversing their campus in general with problem areas being lack of curb cuts and difficulty getting to door-openers, as well as snow removal near curb cuts (Kane, 2009).

The results of the previous two studies are also supported by Willsher's (2009) study that looked at the experiences of physically disabled adults attending colleges in northwest Louisiana. Willsher (2009) interviewed six students with disabilities on subjects including accessibility, support services, and personal/social changes (Willsher, 2009). Willsher (2009) found that students had issues with lack of automatic doors and poor locations for handicapped entrances for buildings, as well as poor location of curb cuts that students thought caused significantly more time to get around campus (Willsher, 2009). Willsher (2009) also found that this caused students with disabilities to feel as though their college experiences were significantly affected by their disability on both an academic and a personal level (Willsher, 2009). Willsher's study is important because it established a firm link between perceived physical accessibility and students' perception of their academic performance.

While the previous three studies are invaluable for the information they brought forward concerning the perceptions of students with disabilities and the accessibility of their built environment, it is difficult to generalize the results of the studies to Colorado State University for several reasons. First, none of the studies took place in Colorado, and therefore the participants in the studies may not have had the same issues and experiences as students in Colorado, specifically at Colorado State University. Secondly, the age and condition of the buildings on the campuses of the universities involved in the studies are not known. This presents a critical issue in generalizing this type of information because of the varying building codes and regulations that may have been in place when the buildings of the campuses were constructed or renovated. Finally, the population of students with disabilities at the universities involved in the previous studies is not known, making generalization to Colorado State University difficult.

At this time there have been no studies found on the attitude of students with disabilities with regards to their experiences with accessibility on the campus of Colorado State University. The only two studies with regards to accessibility at Colorado State University found were records of pre-occupancy accessibility analysis performed by outside consultants for the university to verify the accessibility of the campus both as a whole and in regards to specific buildings, such as those performed at the Pingree Park Campus as part of the Campus Master Plan (Facilities Management Department, Colorado State University, 2004). The other was a study performed by Wernsman (2008) which looked at the process of designing an accessible residence hall for people with disabilities (Wensman, 2008).

While the aforementioned studies do provide a good idea of the current state of some buildings on campus in regards to their accessibility, they are deficient because they only look at a very small part of the issue of accessibility on the campus of Colorado State University. These studies were of the type that only looked at accessibility in terms of a code compliance issue. Questions asked in these studies investigated how many accessible bathrooms were available or if there were ramps for students with wheelchairs (United States Department of Justice, 1995). These questions were based on current code requirements for the buildings and were used to measure the accessibility of the buildings themselves (United States Department of Justice, 1995). There are two major issues with this format; first, the studies only looked at the raw data of the building, comparing what was present in the building to what was required as a minimum. Second, these studies did not take the perspective of the actual building users into account in regards to accessibility.

Due to the deficiency of studies performed at Colorado State University and the lack of generalized data from other studies, a study that looks at the attitudes and perceptions of students with disabilities towards the accessibility of the Fort Collins campus was needed.

Purpose

The purpose of this study was to contribute to a greater understanding of the accessibility issues faced on the campus of Colorado State University. To do that, this study attempted to explore the perceptions of students with disabilities at Colorado State University in regards to campus accessibility and quality of education. Furthermore, this study aimed to develop a better understanding of how the building codes and standards relating to accessibility have performed on the campus of Colorado State University with a goal of prioritizing what areas of campus need more work to become more accessible. This study looked only at currently enrolled students with disabilities on the campus of Colorado State University in Fort Collins, CO.

The primary audience for this study was the Facilities Management Department at Colorado State University as well as the architects and contractors employed by the university in that department. This study can benefit Facilities Management by taking an in-depth look at how building users with disabilities interact with the buildings that are managed by their department. A secondary audience of this study was the Resources for Disabled Students (RDS) Department at Colorado State University. That department is responsible for assisting students with disabilities in all aspects of their life at Colorado State University. The information gained by this study can help that department make better decisions on arranging classroom locations for students with disabilities. In addition, this study gave more detailed information on what areas of campus accessibility students with disabilities face the most problems in so that RDS can better

use the Committee for Disabled Student Accessibility funds, a portion of student fees, to help alleviate these problems. A final audience for this study was other universities that face similar accessibility issues brought on by the age of campus buildings similar to Colorado State University. The methodology of this study can be repeated at other universities to give better local understanding of the issues that arise when trying to make older buildings and campuses accessible to students.

Conceptual Framework

The underlying framework that guided this study was the social model of disability described by Oliver in his 1990 book *The Politics of Disablement*. Oliver described how the social model of disability emerged in the late 1980s as a critique of the medical definition of disability that views barriers as a result of physical dysfunction (Oliver, 1990). The social model of disability changed this viewpoint, arguing that people with impairments are disabled due to environmental barriers blocking their participation (Oliver, 1990). Proof of these environmental barriers can often be seen in universities and businesses whose buildings were designed and built before the needs of people with disabilities were a concern.

The social model of disability as defined by Oliver (1990) concerning the integration of people with disabilities was used as a guiding framework for the research performed in this study to see if students with disabilities have adequate access to the same quality of education as their peers. The research of this study looked directly at the interaction of students with disabilities and the built environment at Colorado State University. This research was designed to discover how the perception of accessibility at Colorado State University by students with disabilities compared to how those students perceive the quality of education they receive. Oliver's (1990)

social model of disability applied to this subject because one could not hope to fully integrate various student groups if the different student groups could not equally access all facilities.

Oliver's (1990) social model of disability acted as a guide for the research questions asked in this study and for the questions asked of those participating in the study.

Also guiding this study were the seven principles of universal design. Universal design, as defined by Story (1998) is a set of design principles used to maximize usability (Story, 1998). The seven principles of universal design are: a) equitable use, b) flexibility in use, c) simple and intuitive use, d) perceptible information, e) tolerance for error, f) low physical effort, g) size and space for approach and use (Story, 1998). When used properly these seven design principles create for an accessible environment from the outset of the design process that is less likely to be as noticeable as common accessibility tools like ramps to circumvent stairs (Story, 1998). While none of the buildings on the campus of Colorado State University were designed with universal design in mind, the principles of universal design did provide educated guidance in what areas of accessibility questions would be asked.

Research Questions

To meet the goals of the purpose of this study and to provide adequate benefit to the intended audiences previously mentioned this study attempted to answer the following question: How does the perceived accessibility of buildings on the Campus of Colorado State University in Fort Collins, CO compare to the perceived quality of education received by students with disabilities?

Based on Rimmer, Riley, Wang, Rauworth and Jurkowski's (2006) research regarding this subject it was believed that there would be a link between the perceived accessibility of buildings

and the perceived quality of education on the campus of Colorado State University. To better define this primary research question, several sub questions were asked:

- How do students with disabilities perceive the accessibility of facilities on the Fort Collins campus of Colorado State University?
- How do the minimum requirements set forth by the ADA perform for students with disabilities in older buildings at Colorado State University?
- How do the minimum requirements set forth by the ADA perform for students with disabilities in newer buildings at Colorado State University?
- How do students with disabilities perceive the quality of education they receive?

Methodology

To answer the research questions posed in this study a survey method was used. The purpose of this survey was to discover and describe how students with disabilities perceived accessibility of buildings on the campus of Colorado State University and how those students perceived their quality of education. The survey was available to the entire population of students served by RDS. It was performed early in the spring 2012 semester with the hope of attaining a higher response rate. The surveys were web-based self-administered questionnaires, 33 questions in length (Appendix A). Students were invited to participate in the survey via an informative introductory email from the RDS department. The survey was open for responses for a one month period. To help maximize the response rate two reminder emails were sent to the targeted students encouraging them to participate. Large print hard copy versions of the survey were available for participants if requested.

The population studied in this research included all of the students with disabilities that were registered with RDS, specifically students with vision, auditory, mobility, and cognitive impairments. According to Kreston (2011), director of RDS at Colorado State University, the number of students who fall into these categories is approximately 1400 students in a given academic year (Kreston, 2011). This population makes up approximately 5.5% of the approximately 27,000 students at Colorado State University. This compares to a national average of 10.8% of students in post-secondary education reporting some form of a disability (U.S. Department of Education, National Center for Education Statistics, 2009) . The survey was sent out to all 1370 students who utilized the services of RDS for the spring 2012 semester; of which there were 165 valid responses, resulting in a response rate of approximately 12%.

The questions asked in the survey came from a class discussion session of common issues in accessibility faced by students with disabilities in OT 355, a class offered by the Occupational Therapy department at Colorado State University that focuses on disabilities in society. The questions used in the survey were those that could be traced to the regulations of the ADA. The questions in the survey examined what perceptions the survey participants experienced with regards to accessibility of facilities on the campus of Colorado State University. Questions regarding the quality of education and basic demographic information were also asked. As suggested by Dillman, Smyth, and Christian (2009), ordering of the survey questions was taken into consideration (Dillman, Smyth, & Christian, 2009). Question groups were ordered to conceptually match how a participant would physically use a building; question groups regarding the campus as a whole were asked first, then the question groups focusing on the buildings themselves were asked, and finally questions regarding quality of education were asked. Also as suggested by Dillman, Smyth, and Christian (2009), potentially sensitive information, such as demographic information including age, gender, and impairment type, were asked at the end of the survey (Dillman, Smyth, & Christian, 2009). Also in accordance with suggestions by Dillman, Smyth and Christian (2009), consistent page formatting and layout of sections was utilized and participants were not required to answer any questions in the survey except for an initial question recognizing their informed consent (Dillman, Smyth, & Christian, 2009).

According to Dillman, Smyth, and Christian (2009) it is important to conduct pilot studies to help evaluate interconnections of questions in a survey, the survey questionnaire itself, and the implementation procedures of the survey (Dillman, Smyth, & Christian, 2009). As such, the survey was piloted in the same class where many of the survey questions came from, OT 355, at the end of the fall 2011 semester. The participants of the pilot study were all students in

the class. The students provided positive feedback on the pilot study and indicated the need for only minor changes in the format of the survey itself and wording of some questions. These included reformatting the headings of each section to make the separate sections and instructions more visible, rewording of two questions about the perceptions of quality of education to make more sense, and ensuring the survey instrument would support accessibility functions, such as screen reader programs. The comments of the pilot study participants were taken into consideration and incorporated into the final draft of the survey, the headings were reformatted, and the questions were re-worded. While pilot studies generally avoid using participants who may be a part of the actual study to avoid potential biases, many of the students in the OT 355 class who participated in the pilot study were also part of the theoretical population of the full survey as many students in the class had disabilities. In the case of this study, this was an important factor in verifying usability of the survey instrument with the potential participants due to the unique needs of the participants that were the sole focus of this study. By piloting the survey with these students, the researchers were able to minimize potential problems with the survey tool that could have led to more participants not completing the survey, thus potentially resulting in a higher rate of completion.

Regarding the survey tool, the survey was created using the Qualtrics program which checks the survey for 508 compliance for accessibility as the survey is created. Section 508 compliance is mandated by the 1998 amendment to the Rehabilitation Act of 1973, extending accessibility requirements to electronic technology (United State Government, 2011). The survey was verified by this check as accessible by the Qualtrics program by checking that all question types and user interfaces can be used by screen readers and text to speech programs. The highest concern in this case was for students who use screen readers, voice recognition and text to

speech programs to take the survey. All of these programs can interface with the Qualtrics program; however, the survey itself must be structured in a format that these programs can understand. Based on the number of students with various impairments including visual, and cognitive, impairments that completed the survey, it would indicate these students had few issues with the survey. Hard-copy, large print, versions of the survey were also available on request from the RDS office; however, no surveys were completed in this manner.

To ensure the anonymity of the participants of the study, all records of students who were contacted for the survey were kept in the confidential records of the RDS department. The student participants were also kept anonymous by not asking for any identifying information from them other than demographic information (age, gender, education level, and impairment type). The IP addresses of student participants were recorded by the Qualtrics, the survey software used for the survey; however, these records are kept secured on only three computers, those of the authors. To ensure full compliance with participants' rights, the study and survey were submitted to the Institutional Review Board at Colorado State University for a compliance check. The survey was not sent out until a compliance notice was received from that board.

The data gained through the survey was also analyzed using ANOVA. IBM's SPSS Version 20 was used to analyze the data. This was done to find if there were differences in the students' perceptions of the accessibility of facilities and the perceived quality of education offered on the campus of Colorado State University. The data was also used to see if there was a link between the perceived campus accessibility and perceived quality of education similar to the link found in research by Rimmer, Riley, Wang, Rauworth and Jurkowski (2006) that linked perceived facility accessibility and the activities that take place in that facility. To explore that link this study utilized a regression analysis of indexes created from the different survey question

groups that related to the four sub research questions. The independent variable in this study was the students' perception of the accessibility of facilities on Colorado State University, which was measured in the first three sections of the survey. This was measured by examining the participants' experiences in regards to various areas where there are often problem areas with accessibility. Responses were measured on a scale of 1 to 5; 1 being extremely satisfactory and 5 being extremely unsatisfactory. The dependent variable in this study was students' perceptions of their quality of education they received on the campus of Colorado State University, which was measured in the fourth section of the survey. This was measured on a scale of 1 to 5; 1 being extremely satisfactory, 5 being extremely unsatisfactory. To thoroughly evaluate any links between the perceived accessibility of facilities and the quality of education the indexes were checked for reliability. Multiple regression tests were also run; the first set of test compared the independent variable indexes independently of one another to the dependent variable, while the second compared all independent variables to the dependent variable to find if any of the independent variables were more significant than the others.

Results

Descriptive Statistics

Demographic descriptive statistics include impairment type, education level, age, and gender (Table 1)

Table 1

Descriptive Statistics

Impairment Type	Mobility 10.2% (n = 17)	Visual 10.2% (n = 17)	Auditory 4.8% (n = 8)	Cognitive 47.3% (n = 78)	Other 26.9% (n = 45)	
Age Group	18-22 63.5% (n = 106)	23-30 19.6% (n = 33)	30-40 11.4% (n = 19)	40-50 3.0% (n = 5)	50-60 1.2% (n = 2)	Over 60 1.2% (n = 2)
Education Level	High School Diploma or GED 67.7% (n = 113)	Associate's degree 12.6% (n = 21)	Bachelor's Degree 14.4% (n = 24)	Master's Degree 5.4% (n = 9)		
Gender	Male 33.3 % (n = 56)	Female 64.3% (n = 108)	Prefer Not To Answer 2.4% (n = 4)			

The demographic groups that students were divided into were based on impairment type, education level, age, and gender. The largest portion of students who participated in the survey listed their impairment type as cognitive 47.3% (n = 78), 26.9% (n = 45) listed their impairment as other, 10.2% (n = 17) listed their impairment as mobility, 10.2% (n = 17) listed their impairment as visual, and the remaining 4.8% (n = 8) listed their impairment as auditory.

Students were also categorized by their age, the majority of students who participated in the

survey listed their age in the 18-22 year old group (63.5%) ($n = 106$), 19.6% ($n = 33$) of students listed their age in the 23-30 year old group, 11.4% ($n = 19$) of students listed their age in the 30-40 year old age group, 3% ($n = 5$) of students listed their age in the 40-50 year old age group, 1.2% ($n = 2$) of students listed their age in the 50-60 year old age group, and the final 1.2% ($n = 2$) of students listed their age in the over 60 years old age group. The majority of students who participated in the survey were female (62.9%) ($n = 108$), 33.3% ($n = 56$) were male, and the remaining 2.4% ($n = 4$) preferred not to list their gender. It is possible that those students who preferred not to list their gender could have identified as in a transgender group, however this option was not offered in the original survey. The majority of students who participated in this survey had only attained a high school diploma or GED (67.7%) ($n = 113$), 14.4% ($n = 24$) of students had attained a bachelor's degree, 12.6% ($n = 21$) of students had attained an associate's degree, and the remaining 5.4% ($n = 9$) had attained a master's degree.

When the results of the data were explored, the means of the responses from all questions were between 1.99 and 2.81, (1 being strongly agree and 5 being strongly disagree) indicating that on the whole students with disabilities felt positive to neutral on how they served by minimum requirements set forth by the ADA that govern the campus of Colorado State University and felt positive to neutral on how the quality of education was compared to those students who do not have disabilities. There were, however, statistically significant differences between students' responses when the results were looked at based on different the demographic groups.

Validity

Regarding the validity of this research, the researchers looked to Gliner and Morgan's (2000) book on research methods, *Research Methods in Applied Settings: An Integrated*

Approach to Design and Analysis and Gliner, Morgan, and Leech's (2009) book on research methods, *Research Methods in Applied Settings, an Integrated Approach to Design and Analysis* 2nd edition (Gliner & Morgan, 2000), (Gliner, Morgan, & Leech, 2009). Pertaining to the internal validity of a research study, Gliner, and Morgan (2000) highlighted the fact that "internal validity depends on the strength or soundness of the design and influences whether one can conclude that the independent variable or intervention caused the dependent variable to change" (Gliner & Morgan, 2000). This pertains more to experimental research and as this study was utilized a survey method with no experimental groups the internal validity of this study is low. For external validity, Gliner, Morgan and Leech (2009) state that for a study to be externally valid it must meet three factors: (a) the accessible population must be representative of the theoretical population, (b) the selected sample must be representative of the accessible populations, and (c) the actual sample must be representative of the selected sample, i.e. the response rate must be acceptable (Gliner, Morgan, & Leech, 2009). In regards to the first factor presented by Gliner, Morgan, and Leech (2009), the theoretical sample of this research was all students with disabilities at Colorado State University while the accessible population was all students who had registered with the RDS office. As the majority of students with disabilities at Colorado State University are registered with the RDS office according to Kreston (2011), and all of these students were available to be contacted for this research the first factor is met (Kreston, 2011). The accessible population, all students with registered with RDS, became the selected sample population when all students registered with RDS were invited to participate in this research, meeting the requirements of the second factor. For the final factor of external validity the overall response rate of this research was low. However, when looking at the grouping of students who responded based upon the students' self-reported impairment type, the response

rate of all impairment types except for “cognitive” and “other” was very high. According to Kreston (2011), the total number of students registering with RDS each semester is around 1400, of that group approximately 20 – 25 have mobility impairments, 15 – 20 have visual impairments, and approximately 10 have auditory impairments, the remainder have cognitive and other impairments (Kreston, 2011). When this information is compared to the fact that of the students who participated in the study 17 reported mobility impairments, 17 reported visual impairments, 8 reported auditory impairments, and the remaining 123 reported cognitive or other impairments, the response rates among the students with mobility, visual, and auditory impairments was very high even using the highest estimated number of those students who normally are registered with RDS. Because the response rates were approximately 68% for students with mobility impairments, 85% for students with visual impairments, and 80% for students with auditory impairments this study does have external validity even though the response rate for students with cognitive and other impairments was approximately 9%.

ANOVA

Impairment Type

One Way Analysis of Variance (ANOVA) was run for all four question categories to determine whether there was a difference between students’ perceptions on campus accessibility and quality of education based on their impairment type. The four question categories were campus accessibility, accessibility of older buildings, accessibility of newer buildings, and quality of education. There were statistically significant differences between the groups on individual questions in each of the four question categories.

Concerning the category of campus accessibility, a statistically significant difference was found between the perceptions of different impairment groups on the adequacy of sidewalks on campus for a student's needs, $F(4, 160) = 2.672, p = .032$ (Table 2). The mean perceived adequacy of sidewalks on campus for students with mobility impairments ($n = 17$) was 2.82 (1 being strongly agree and 5 being strongly disagree), while it was 2.06 for students with cognitive impairments ($n = 78$) (Table 3). The data suggests that while most students with cognitive impairments felt that their needs were met by the sidewalks on campus a proportionally higher amount of students with mobility impairments were still affirmative but closer to as to whether or not their needs were met by sidewalks on campus compared to students with cognitive impairments. Post Hoc Tukey HSD tests indicate that students with mobility impairments differed significantly in their perception from students with cognitive impairments with a large effect size ($p < .05, d = .823$) (Table 2).

Table 2

One Way Analysis of Variance for Adequacy of Sidewalks for impairment groups

Source	<i>Df</i>	SS	MS	F	Sig
Between Groups	4	10.035	2.509	2.672	.032

* $p < .05$

Table 3

Means and Standard Deviations Comparing Adequacy of sidewalks on Campus

Impairment Type	<i>M</i>	<i>N</i>	<i>SD</i>
Mobility	2.82	17	1.074
Visual	2.18	17	1.074
Auditory	2.25	8	0.707
Cognitive	2.06	78	0.888
Other	2.44	45	1.056
Total	2.27	165	0.989

In regards to the category of older buildings, a statistically significant difference was found between the perceptions of different impairment groups on the adequacy of accessible bathrooms in older buildings for a student's needs, $F(4, 160) = 3.544, p = .008$ (Table 4). Table 5 shows that the mean perceived adequacy of accessible bathrooms in older buildings for students with mobility impairments ($n = 17$) was 3.24 (1 being strongly agree and 5 being strongly disagree), while it was 2.37 for students with cognitive impairments ($n = 78$). The evidence suggests that proportionally more students with mobility impairments were close to neutral but more negative as to whether or not they were adequately served by the accessible bathrooms in older buildings compared to students with cognitive impairments who were positive. Post Hoc Tukey HSD tests indicate that students with mobility impairments differed significantly in their perception from students with cognitive impairments with a large to very large effect size ($p < .05, d = .954$) (Table 4).

Table 4

One Way Analysis of Variance for Adequacy of Accessible Restrooms in Older Buildings for Impairment Groups

Source	Df	SS	MS	F	Sig
Between Groups	4	12.761	3.19	3.544	.008

*p < .05

Table 5

Means and Standard Deviations Comparing Adequacy of Restrooms for students needs in Older Buildings

Impairment Type	M	N	SD
Mobility	3.24	17	1.091
Visual	2.29	17	1.047
Auditory	2.50	8	.535
Cognitive	2.37	78	.870
Other	2.71	45	1.036
Total	2.55	165	.978

Concerning the category of newer buildings, a statistically significant difference was found between the perceptions of different impairment groups on the ease of identifying accessible bathrooms in newer buildings, $F(4, 160) = 2.740, p = .029$ (Table 6). Table 7 shows that the mean perceived ease of identifying accessible bathrooms in newer buildings for students with auditory impairments ($n = 8$) was 2.63(1 being strongly agree and 5 being strongly disagree), while it was 1.86 for students with cognitive impairments ($n = 78$). The evidence suggests that while students with cognitive impairments felt that it was easy for them to identify accessible restrooms in newer buildings, students with auditory impairments were also affirmative but closer to neutral as to whether or not that it was not easy to identify accessible restrooms in newer buildings. Post Hoc Tukey HSD tests indicate that students with auditory impairments differed significantly in their perception from students with cognitive impairments with a much larger effect size than typical ($p < .05, d = 1.261$) (Table 6).

Table 6

One Way Analysis of Variance for Ease of Identifying Accessible Restrooms in Newer Buildings for Impairment Groups

Source	<i>df</i>	SS	MS	F	Sig
Between Groups	4	5.320	1.33	2.740	.029

* $p < .05$

Table 7

Means and Standard Deviations Comparing Ease of Identifying Accessible Restrooms in Newer Buildings

Impairment Type	<i>M</i>	<i>N</i>	<i>SD</i>
Mobility	2.12	17	0.857
Visual	1.94	17	0.659
Auditory	2.63	8	0.744
Cognitive	1.86	78	0.597
Other	2.09	45	0.793
Total	1.99	165	0.711

In regards to the category Quality of Education, a statistically significant difference was found between the perceptions of different impairment groups on the similarity in the amount of work put into classes compared to students without disabilities, $F(4, 162) = 4.622, p < .001$ and $F(4, 162) = 4.622, p = .005$ (Table 8). Table 9 shows that the mean perceived similarity in the amount of work put into classes compared to students without disabilities for students with mobility impairments ($n = 17$) was 1.53 (1 being strongly agree and 5 being strongly disagree), while it was 3.01 for students with cognitive impairments ($n = 80$) and 2.84 for students with other impairments ($n = 45$). The evidence suggests that proportionally, more students with cognitive and other impairments neutral and affirmative but close to neutral, respectively, as to whether or not they put in a similar amount of work as students who do not have a disability compared to students with mobility impairments. Post Hoc Tukey HSD tests indicate that students with mobility impairments differed significantly in their perception from students with cognitive impairments with a very large effect size ($p < .05, d = 1.135$) (Table 8). Likewise, Post Hoc Tukey HSD test indicate that Students with mobility impairments differed significantly in their perceptions from students with other impairments with a very large effect size ($p < .05, d = 1.093$).

Table 8

One Way Analysis of Variance for the Amount of Work Students with Impairments Put Into Class Compared Similarly to Students Who Do Not Have Disabilities for Impairment Type

Source	<i>Df</i>	SS	MS	F	Sig
Between Groups – Mobility and Cognitive *p < .001	4	31.576	7.894	4.622	<.001
Between Groups – Mobility and Other *p < .05	4	31.576	7.894	4.622	.005

Table 9

Means and Standard Deviations Comparing Perceived Amount of Work Students with Impairments Put Into Class Compared Similarly to Students Who Do Not Have Disabilities

Impairment Type	<i>M</i>	<i>N</i>	<i>SD</i>
Mobility	1.53	17	0.624
Visual	2.71	17	1.359
Auditory	3.00	8	0.926
Cognitive	3.01	80	1.401
Other	2.84	45	1.348
Total	2.78	167	1.363

Education Level

One Way Analysis of Variance (ANOVA) was run for all four question categories to determine whether there was a difference between students' perceptions on campus accessibility and quality of education based on their education level. The four question categories were campus accessibility, accessibility of older buildings, accessibility of newer buildings, and quality of education. There were statistically significant differences between the groups on individual questions in each of the four question categories.

In regards to the category of campus accessibility, a statistically significant difference was found between the perceptions of different education level groups on the adequacy of warning provided by fire alarms in case of emergency, $F(3, 163) = 4.549, p = .004$ (Table 10). Table 11 shows that the mean perceived adequacy of warning provided by fire alarms in case of emergency for students with a High School Diploma or GED ($n = 113$) was 2.16(1 being strongly agree and 5 being strongly disagree), while it was 2.83 for students with a Bachelor's Degree ($n = 24$). The evidence suggests that while most students with a High School Diploma or GED agreed that they were adequately warned by the fire alarms on campus, students with Bachelor's Degrees were affirmative but close to neutral as to whether or not they were adequately warned by the fire alarms on campus. Post Hoc Tukey HSD tests indicate that students with Bachelor's Degrees differed significantly in their perception from students with High School Diplomas or GEDs with a medium to large effect size ($p < .05, d = .769$) (Table 10).

Table 10

One Way Analysis of Variance for Adequacy Warning of Fire Alarms in case of Emergency by Education Level

Source	<i>Df</i>	SS	MS	F	Sig
Between Groups	3	10.278	3.426	4.549	.004

* $p < .05$

Table 11

Means and Standard Deviations Comparing Adequacy Warning of Fire Alarms in Case of Emergency

Education Level	<i>M</i>	<i>N</i>	<i>SD</i>
High School Diploma or GED	2.16	113	.872
Associates Degree	2.29	21	.717
Bachelor's Degree	2.83	24	.868
Master's Degree	2.67	9	1.118
Total	2.30	167	.895

Concerning the category of older buildings, a statistically significant difference was found between the perceptions of different education level groups on the adequacy of classroom lighting for students' needs, $F(3, 163) = 3.361, p = .021$ (Table 12). Table 13 shows that the mean perceived adequacy of lighting in older buildings for students with Bachelor's Degree ($n = 24$) was 3.25 (1 being strongly agree and 5 being strongly disagree), while it was 2.53 for students with a High School Diploma or GED ($n = 113$). The evidence suggests that students with Bachelor's Degrees felt negatively, but close to neutral, on how adequately their needs were served by lighting in older buildings compared to students with a High School Diploma or GED who felt positively about the adequacy of lighting in older buildings. A higher percentage of students with Master's Degrees also did not feel that their needs were adequately met by the lighting in older buildings; however, this was not statistically significant. Post Hoc Tukey HSD tests indicate that students with Bachelor's Degrees differed significantly in their perception from students with High School Diplomas or GEDs with a slightly larger than medium effect size ($p < .05, d = .664$) (Table 12).

Table 12

One Way Analysis of Variance for Adequacy of Lighting in Older Buildings for Education Level Groups

Source	<i>Df</i>	SS	MS	F	Sig
Between Groups	3	12.085	4.028	3.361	.021

* $p < .05$

Table 13

Means and Standard Deviations Comparing Adequacy of Lighting for Students Needs in Older Buildings

Education Level	<i>M</i>	<i>N</i>	<i>SD</i>
High School Diploma or GED	2.53	113	1.070
Associates Degree	2.76	21	1.136
Bachelor's Degree	3.25	24	1.152
Master's Degree	3.11	9	1.167
Total	2.69	167	1.118

In regards to the category of newer buildings, a statistically significant difference was found between the perceptions of different education level groups on the adequacy of classroom space in newer buildings, $F(3, 163) = 5.670, p = .003$ (Table 14). Table 15 shows that the mean perceived adequacy of classroom space in newer buildings for students with High School Diplomas or GEDs ($n = 113$) was 1.86(1 being strongly agree and 5 being strongly disagree), while it was 2.48 for students with Associate's Degrees ($n = 21$). The evidence suggests that while students with a High School Diploma or GED felt that classroom space in newer buildings was adequate for their needs, students with Associate's Degrees were affirmative but closer to neutral as to whether their needs were met by that classroom space in newer buildings. Post Hoc Tukey HSD tests indicate that students with Associate's Degrees differed significantly in their perception from students with High School Diplomas or GEDs with a large effect size ($p < .05, d = .897$) (Table 14).

Table 14

One Way Analysis of Variance for Ease Adequacy of Classroom Space in Newer Buildings for Education Level Groups

Source	<i>Df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Sig</i>
Between Groups	3	9.448	3.149	5.670	.003

* $p < .05$

Table 15*Means and Standard Deviations Comparing Adequacy of Classroom Space in Newer Buildings*

Education Level	<i>M</i>	<i>N</i>	<i>SD</i>
High School Diploma or GED	1.86	113	.653
Associate's Degree	2.48	21	.873
Bachelor's Degree	2.17	24	.963
Master's Degree	2.44	9	.882
Total	2.01	167	.776

Concerning the category of Quality of Education, a statistically significant difference was found between the perceptions of different education level groups on the similarity in the amount of work put into classes compared to students without disabilities, $F(3, 165) = 4.317, p = .019$ (Table 16). Table 17 shows that the mean perceived similarity in the amount of work put into classes compared to students without disabilities for students with a High School Diploma or GED ($n = 113$) was 2.61 (1 being strongly agree and 5 being strongly disagree), while it was 3.46 for students with a Bachelor's Degree ($n = 26$). The evidence suggests that students with a Bachelor's Degree felt negatively, but close to neutral, about how similar the amount of work they put into classes was to students who do not have a disability compared to students with a High School Diploma or GED who felt positively, but close to neutral. Students with a Master's Degree felt negatively about the how similar the amount of work they put into classes was to students without disabilities, however, this was not found to be a statistically significant difference from any other group. Post Hoc Tukey HSD tests indicate that students with Bachelor's Degrees differed significantly in their perception from students with a High School Diploma or GED with a medium effect size ($p < .05, d = .643$).

Table 16

One Way Analysis of Variance for the Amount of Work Students with Impairments Put Into Class Compared Similarly to Students Who Do Not Have Disabilities for Education Level

Source	<i>Df</i>	SS	MS	F	Sig
Between Groups	3	22.667	7.556	4.317	.019

*p < .05

Table 17

Means and Standard Deviations Comparing Adequacy the Amount of Work Students with Impairments Put Into Class Compared Similarly to Students Who Do Not Have Disabilities

Education Level	<i>M</i>	<i>N</i>	<i>SD</i>
High School Diploma or GED	2.61	113	1.312
Associate's Degree	2.48	21	1.365
Bachelor's Degree	3.46	26	1.363
Master's Degree	3.56	8	1.236
Total	2.78	169	1.362

A statistically significant difference was also found between the perceptions of different education level groups on the similarity of quality of education compared to students without disabilities, $F(3, 165) = 3.612, p = .012$ and $F(3, 165) = 3.612, p = .038$ (Table 18). Table 19 shows that the mean perceived similarity in quality of education compared to students without disabilities for students with a High School Diploma or GED ($n = 113$) was 1.91(1 being strongly agree and 5 being strongly disagree), and 1.81 for students with an Associate's Degree ($n = 21$) while it was 2.50 for students with a Bachelor's Degree ($n = 26$). The results (or data) suggest that while with a High School Diploma or GED and students with an Associate's Degree felt positive about the similarity of their quality of education to students without disabilities, students with Bachelor's Degrees also felt positive, but closer to neutral on whether their quality of education was similar to students without disabilities. Post Hoc Tukey HSD tests indicate that students with Bachelor's Degrees differed significantly in their perception from students with

High School Diplomas or GEDs with a medium effect size ($p < .05$, $d = .678$). Likewise, Post Hoc Tukey HSD test indicates that students with bachelor's degrees differed significantly in their perceptions from students with an Associate's Degree with a large to medium effect size ($p < .05$, $d = .753$).

Table 18

One Way Analysis of Variance for the Similarity of Quality of Education Compared to Students Who Do Not Have Disabilities for Education Level

Source	<i>Df</i>	SS	MS	F	Sig
Between Groups – High School Diploma or GED and Bachelor's Degree *p < .05	3	8.258	2.753	3.612	.012
Between Groups – Associate's Degree and Bachelor's Degree *p < .05	3	8.258	2.735	3.612	.038

Table 19

Means and Standard Deviations Comparing Quality of Education Compared Similarly to Students Who Do Not Have Disabilities

Education Level	<i>M</i>	<i>N</i>	<i>SD</i>
High School Diploma or GED	1.91	113	.851
Associate's Degree	1.81	21	.873
Bachelor's Degree	2.50	26	.949
Master's Degree	2.11	9	.928
Total	2.00	169	.893

Age Groups

One Way Analysis of Variance (ANOVA) was run for all four question categories to determine whether there was a difference between students' perceptions on campus accessibility and quality of education based on their reported age group. The four question categories were campus accessibility, accessibility of older buildings, accessibility of newer buildings, and quality of education. There were statistically significant differences between the groups on individual questions in the categories for newer buildings and for quality of education.

In regards to the category of newer buildings, a statistically significant difference was found between the perceptions of different age groups on the adequacy of classroom space in newer buildings, $F(5, 160) = 3.961, p < .001$ (Table 20). Table 21 shows that the mean perceived adequacy of classroom space in newer buildings for students age 18 – 22 ($n = 106$) was 1.92(1 being strongly agree and 5 being strongly disagree), while it was 3.40 for students ages 40 – 50 ($n = 5$). The evidence suggests that a higher proportion of students age 40 – 50 did feel negatively, but close to neutral, on whether or not classroom space in newer buildings was adequate for their needs compared to students ages 18 – 22 who felt positively about the adequacy of classroom space in newer buildings. Post Hoc Tukey HSD tests indicate that students age 40 – 50 differed significantly in their perception from students age 18 – 22 with much larger than typical effect size ($p < .05, d = 2.263$) (Table 20).

Table 20

One Way Analysis of Variance for Adequacy of Classroom Space in Newer Buildings for Age Groups

Source	<i>Df</i>	SS	MS	F	Sig
Between Groups	5	10.903	2.181	3.961	.000

* $p < .05$

Table 21*Means and Standard Deviations Comparing Adequacy of Classroom Space in Newer Buildings*

Age Group	<i>M</i>	<i>N</i>	<i>SD</i>
18 – 22	1.92	106	.643
23 – 30	1.97	32	.861
30 – 40	2.16	19	1.015
40 – 50	3.40	5	.894
50 – 60	2.00	2	.000
Over 60	2.00	2	.000
Total	2.01	166	.775

Concerning the category of Quality of Education, a statistically significant difference was found between the perceptions of different age groups on the similarity of campus involvement compared to students without disabilities, $F(5, 161) = 2.730, p = .021$ (Table 22). Table 23 shows that the mean perceived similarity of campus involvement compared to students without disabilities for students age 18 – 22 ($n = 106$) was 2.26, while it was 3.60 for students age 40 – 50 ($n = 5$). The evidence suggests that a higher proportion of students age 40 – 50 felt negatively about how similar their involvement in campus activities was to students who do not have a disability compared to student’s age 18 – 22 who felt positively about their involvement in campus activities. Post Hoc Tukey HSD tests indicate that students age 40 – 50 differed significantly in their perception from students age 18 – 22 with a larger than typical effect size ($p < .05, d = 1.372$) (Table 22).

Table 22*One Way Analysis of Variance for the Amount of Campus Activities Students with Disabilities Are Involved In Compared Similarly to Students Who Do Not Have Disabilities for Age Group*

Source	<i>Df</i>	SS	MS	F	Sig
Between Groups	5	13.608	2.722	2.73	.021

* $p < .05$

Table 23

Means and Standard Deviations Comparing the Amount of Campus Activities Students with Disabilities Are Involved In Compared Similarly to Students Who Do Not Have Disabilities

Age Group	<i>M</i>	<i>N</i>	<i>SD</i>
18 – 22	2.26	106	.989
23 – 30	2.45	33	1.121
30 – 40	2.84	19	.958
40 – 50	3.60	5	.548
50 – 60	2.00	2	.000
Over 60	2.00	2	.000
Total	2.40	167	1.024

Gender

One Way Analysis of Variance (ANOVA) was run for all four question categories to determine whether there was a difference between students' perceptions on campus accessibility and quality of education based on their reported gender. The four question categories were campus accessibility, accessibility of older buildings, accessibility of newer buildings, and quality of education. There were statistically significant differences between the groups on an individual question only in the category for older buildings.

In regards to the category of older buildings, a statistically significant difference was found between the perceptions of different gender groups on the adequacy of interior doors for students' needs, $F(2, 165) = 3.438, p = .041$ (Table 24). Table 25 shows that the mean perceived adequacy and accessibility of interior doors in older buildings for students who preferred not to specify their gender ($n = 4$) was 3.25. It was 2.18 for students who identified as male ($n = 56$). The evidence suggests that a high proportion of students who did not specify their gender felt negatively, but close to neutral on whether or not their needs were adequately served by interior doors in older buildings compared to male students who felt positively about the adequacy of interior doors in older buildings. Post Hoc Tukey HSD tests indicate that students who did not

identify their gender differed significantly in their perception from students who identified as male with a larger than typical effect size ($p < .05$, $d = 1.189$) (Table 24).

Table 24

One Way Analysis of Variance for Adequacy and Accessibility of Interior Doors in Older Buildings for Gender Groups

Source	<i>Df</i>	SS	MS	F	Sig
Between Groups	2	4.934	2.467	3.438	.041

*p < .05

Table 25

Means and Standard Deviations Comparing Adequacy and Accessibility of Interior Doors for Students Needs in Older Buildings

Gender	<i>M</i>	<i>N</i>	<i>SD</i>
Male	2.18	56	.855
Female	2.38	108	.817
Prefer Not to Answer	3.25	4	1.500
Total	2.33	168	.859

Regression Analysis

Regression analyses were performed to determine whether there was a significant relationship between any of the sub research question categories concerning accessibility and the quality of education students perceived. To accomplish this, students' responses were grouped into three indexes, one for each question categories: perception of accessibility of campus as a whole, perception of accessibility of older buildings, and perception of accessibility in newer buildings. The indexes were compiled from the survey questions in each question category and were on a 5-point Likert scale, (1 = strongly agree, and 5 = strongly disagree) The indexes were checked for reliability using Cronbach's Alpha, all were found to be in the acceptable to good range for internal consistency. For campus as a whole $\alpha = .820$, for older buildings $\alpha = .786$, and

for newer buildings $\alpha = .829$, indicating each index was suitable for regression analysis. For the quality of education, only one question that looked specifically at how similar the students perceived their quality of education to be compared to students without disabilities (question 25 of the survey) was used for the regression analyses. This was done because of the low α value ($\alpha = .535$) for the index that was created for the quality of education category.

A simple linear regression with alpha level of .05 was conducted to determine whether there was a significant relationship between the perception of campus accessibility as a whole ($M = 2.41$, $SD = 0.616$) and the perception of quality of education ($M = 2.00$, $SD = 0.893$) (Table 26). There was a significant correlation of $R^2 = 0.169$, $F(1,168) = 34.252$, $p < .001$ between the two measures, indicating that the perception of campus accessibility accounted for 16.9% of the variance in perception of quality of education. Further, the regression equation indicated an overall positive relationship between the two with a slope of $b_1 = 0.554$, $t = 5.853$, $p < .001$, meaning that every 1 unit increase in the perception of accessibility of campus as a whole is associated with a predicted increase in the perception of quality of education of 0.554. The intercept was $b_1 = 1.965$ ($SD = 0.061$), $t = 32.340$, $p < .05$, which represents the predicted perception of quality of education for an individual with a perception of the accessibility of the whole campus equal to the mean. See Table 27 for intercepts and slope.

Table 26

Descriptive statistics for perception of accessibility of campus as a whole and perception of quality of education

Variable	M	SD	n
Perception of Accessibility of Campus as a Whole	2.410	0.616	196
Perception of Quality of education	2.000	0.893	168

Table 27

Estimates, standard errors, t-values, and slope for perception of accessibility of campus as a whole and perception of quality of education

	B	SE	β	<i>t</i>
Intercept (original)	1.965	0.061		32.240*
Slope	0.554	0.095	0.412	5.852*

*Significant at .001 alpha value.

A simple linear regression with alpha level of .05 was conducted to determine whether there was a significant relationship between the perception of the accessibility of older buildings ($M = 2.642$, $SD = 0.709$) and perception of quality of education ($M = 2.00$, $SD = 0.893$) (Table 28). There was a significant correlation of $R^2 = 0.077$, $F(1,168) = 13.972$, $p < .001$ between the two measures, indicating that the perception of accessibility of older buildings accounted for 7.7% of the variance in the perception of quality of education. Further, the regression equation indicated an overall positive relationship between the two with a slope of $b_1 = 0.333$, $t = 3.738$, $p < .001$, meaning that every 1 unit increase in the perception of accessibility of older buildings is associated with a predicted increase in the perception of quality of education of 0.333. The intercept was $b_1 = 1.970$ ($SD = .064$), $t = 30.766$, $p < .001$, which represents the predicted perception of quality of education for an individual with a perception of accessibility of older building equal to the mean. See Table 29 for intercepts and slope.

Table 28

Descriptive statistics perception of accessibility of older buildings and perceptions of quality of education

Variable	M	SD	n
Perception of Accessibility of Older Buildings	2.642	0.709	180
Perception of Quality of education	2.000	.893	168

Table 29*Estimates, standard errors, t-values, and slope for Older Buildings*

	B	SE	B	t
Intercept (original)	1.970	0.064		30.766*
Slope	.333	0.089	0.277	3.738*

*Significant at .001 alpha value.

A simple linear regression with alpha level of .05 was conducted to determine whether there was a significant relationship between the perception of accessibility of newer buildings ($M = 2.027$, $SD = 0.576$) and the perception of quality of education ($M = 2.00$, $SD = 0.893$) (Table 30). There was a significant correlation of $R^2 = 0.102$, $F(1,168) = 19.008$, $p < .001$ between the two measures, indicating that the perception of accessibility of newer buildings accounted for 10.2% of the variance in the perception of quality of education. Further, the regression equation indicated an overall positive relationship between the two with a slope of $b_1 = 0.472$, $t = 4.360$, $p < .001$, meaning that every 1 unit increase in the perception of accessibility of newer buildings is associated with a predicted increase in the perception of quality of education of 0.472. The intercept was $b_1 = 1.972$ ($SD = .063$), $t = 31.214$, $p < .001$, which represents the predicted perception of quality of education for an individual with a perception of accessibility of newer buildings equal to the mean. See Table 31 for intercepts and slope.

Table 30*Descriptive statistics for perception of accessibility of newer buildings and perception of quality of education*

Variable	M	SD	n
Perception of Accessibility of Newer Buildings	2.027	0.576	176
Perception of Quality of education	2.000	0.893	168

Table 31*Estimates, standard errors, t-values, and slope for perception of newer buildings*

	B	SE	β	<i>t</i>
Intercept (original)	1.972	0.063		31.214*
Slope	0.472	0.108	0.319	4.360*

*Significant at .001 alpha value.

Finally, a multiple linear regression with alpha level of .05 was conducted to determine whether there was a more significant relationship between the perception of accessibility of newer buildings ($M = 2.027$, $SD = 0.576$) and the perception of quality of education ($M = 2.00$, $SD = 0.893$) or between the perception of accessibility of older building ($M = 2.642$, $SD = 0.709$) and the perception of quality of education ($M = 2.00$, $SD = 0.893$) (Table 32). There was a significant correlation of $R^2 = 0.128$, $F(2,167) = 12.296$, $p < .001$ between the measures, indicating that the combined perception of accessibility in older buildings and newer buildings accounted for 12.8% of the variance in the perception of quality of education. Further, the regression equation indicated an overall positive relationship between the perception of accessibility of newer buildings with a slope of $b_1 = 0.367$, $t = 3.143$, $p < .005$, meaning that every 1 unit increase in the perception of accessibility of newer buildings is associated with a predicted increase in the perception of quality of education of 0.367. The regression equation also indicated an overall positive relationship between the perceptions of accessibility of older buildings with a slope of $b_1 = 0.214$, $t = 2.262$, $p < .05$, meaning that every 1 unit increase in the perception of accessibility of older buildings is associated with a predicted increase in the perception of quality of education of 0.214. This indicates that the perception of accessibility of newer buildings has a more significant role than the perception of the accessibility of older buildings in the perceptions of quality of education. The intercept was $b_1 = 1.971$ ($SD = .062$), $t = 31.585$, $p < .001$, which represents the predicted perception of quality of education for an

individual with perception of accessibility newer buildings and perception of accessibility of older buildings equal to the mean. See Table 33 for intercepts and slope.

Table 32

Descriptive statistics for perceptions of accessibility of newer and older buildings and perceptions of quality of education

Variable	M	SD	N
Perception of Accessibility of Newer Buildings	2.027	0.576	176
Perception of Accessibility of Older Buildings	2.642	0.709	180
Perception of Quality of education	2.000	0.893	168

Table 33

Estimates, standard errors, t-values, and slope for Perceptions of accessibility in newer and older buildings

	B	SE	β	t
Intercept (original)	1.971	0.602		31.585*
Slope Newer Buildings	0.367	0.117	0.248	3.143*
Slope Older Buildings	0.214	0.095	0.178	2.262*

*Significant at .005 alpha value.

For the purposes of this analysis the assumptions for simple linear regression and multiple linear regressions were tested. There were no extreme values on accessibility scores and quality of education scores and the relationship between accessibility scores and quality of education scores were linear.

Conclusions

As the results of the survey indicate, in general, students with disabilities perceived the campus of Colorado State University to be an accessible one. This shows that the minimum standards set forth by the ADA that govern the accessibility features on the campus of Colorado State University do serve students' needs when compared to facilities where no such standards exist, such as those found in studies by Holloway (2001) and Alrashidi (2010). There are, however, still areas that need additional work to better meet the needs of students in regards to the campus as a whole, older buildings on campus, and newer buildings on campus.

The perceptions of students with disabilities at Colorado State University typically viewed ADA compliance of campus as a whole favorably. However, when looking at the perceptions of the demographic groups in the study, differences of opinion arise in two cases. In many cases there were large to very large effect sizes found between the groups. This shows that the participants of this study were of very strong opinions, as larger effect sizes are very difficult to attain when there are smaller sample sizes, such as those that were encountered with the various demographic groups of this study. This fact makes the results of this study more valuable, as it shows how strongly the opinions of students with disabilities are on the subject of accessibility.

Participants had statistically significant different opinions in two areas based on two different demographic groupings. The first of these was between different student impairment types. For this demographic grouping, students with mobility impairments differed significantly in their opinion from students with cognitive impairments on their perception of the adequacy of sidewalks on campus. While the majority of students with mobility impairments either agreed, neither agreed, or disagreed that sidewalks were adequate for their needs, 2 students with

mobility impairments disagreed that sidewalks were adequate and 2 strongly disagreed. The large effect size in this case shows that students with mobility impairments will be more likely to find the sidewalks on campus are not adequate for their needs. Two different students commented on the difficult conditions presented in winter as well as the overall size of the sidewalks. One student remarked: “sidewalks are not cleared very well in the earlier hours of the day (snow); they are uneven and can be narrow in areas with heavy traffic.” These concerns were echoed in previous research by Kane (2009) showing that problems with sidewalks are common at universities in the United States.

There was also a statistically significant difference in the perceptions of students, based on education level, on the adequacy of warning provided by fire alarms. Students with bachelor’s degrees differed significantly in their perception of the adequacy of warning provided by fire alarms from students with only a high school diploma or GED. While the majority of students with a high school diploma or GED agreed that fire alarms provided enough warning, the majority of students with a bachelor’s degree did not agree or disagree with that statement. Six of the twenty-four students with bachelor’s degree did not agree that fire alarms provided enough warning. The larger than medium effect size in this case shows that most students with a bachelor’s degree will neither agree nor disagree that a fire alarm provides adequate warning. While more research is needed in this area to better define the perceptions of students, it should be done soon due to the potential life safety threat of this issue as two separate participants commented that “Fire alarms need more visual warning for hearing impaired.”

Many students also complained about signage and the number of accessible restrooms on campus. Of particular concern to participants who commented on this subject was the number and orientation of signs for buildings on campus, additional research should be performed to

better define this issue. Many students also complained about the number of accessible bathrooms on campus in general, the majority of which were directed at the Clark building. Built prior to the adoption of ADA, Clark falls into the category of older buildings, as such all accessible restrooms were built in renovations after initial final completion. As this building hosts many classrooms and large lecture halls it may be in the best interest of Facilities Management to renovate additional bathrooms in Clark to increase the number of accessible restrooms in the building.

The performance of older buildings retrofitted to meet ADA requirements were perceived positively by students with disabilities on the campus of Colorado State University; however, statistically significant differences in perceptions present themselves when the students are divided up by demographic groups.

As presented in the data analysis, statistically significant differences of students' perceptions arose in three different areas among three different demographic group types. The first of these was between different impairment types. As presented in the data analysis, students with mobility impairments differed significantly in their perception of the adequacy of accessible restrooms in older buildings from the perceptions of students with cognitive impairments. While the majority of students with cognitive impairments agreed that accessible restrooms in older buildings were adequate for their needs, a plurality of students with mobility impairments either disagreed or strongly disagreed that accessible bathrooms were adequate for their needs. The very large effect size in this case shows that students with mobility impairments are more likely to disagree that accessible restrooms were adequate for their needs compared to students with cognitive impairments. On this subject students commented on the size of the restrooms "The older [buildings] have extremely narrow bathrooms that are severely hard to navigate in", as well

as the locations of the restrooms “Bathrooms in Clark. I had a class on the second floor last semester and would have to go down to the first to use an accessible stall, ANNOYING!” These issues were also found research by Kane (2009), showing that problems with accessible restrooms in older buildings are common in the United States (Kane, 2009). Special care should be taken in the renovation of older restrooms to provide more area in accessible restrooms for students.

There was also a statistically significant difference in perceptions among students on the adequacy of classroom lighting when they were grouped by education level. As presented in the data analysis, the majority of students with a bachelor’s degree disagreed or strongly disagreed that lighting in the classrooms of older buildings was adequate for their needs, compared to a majority of students with a high school diploma or GED who agreed that lighting in classrooms of older buildings was adequate for their needs. The large effect size of this case indicates that students with bachelor’s degrees were more likely to disagree that classroom lighting is adequate for their needs. The most common complaint from students was about the fluorescent lighting in classrooms of older buildings such as one student who noted “the lighting in the majority of the classrooms are fluorescent and they give me bad headaches because I am light sensitive. Incandescent lights are better in my case”. This is likely due to the older age of fluorescent bulbs in older buildings having metal ballast types. To alleviate this problem the Facilities Management department should explore replacing the fluorescent lights with metal ballasts on campus with other low energy options, such as LED lights. In any case replacing metal ballast fluorescent lights with electronic ballast fluorescent lights would be an improvement and could save energy.

The final statistically significant difference in the perceptions of students was found on the perception of the adequacy of interior doors in older buildings between gender groups. As presented in the data analysis section a number of students who did not give their gender did not agree that interior doors in older buildings were adequate for their needs compared to a majority of male students who did agree that interior doors in older buildings were adequate for their needs. The much larger than typical effect size in this case indicates that students who did not identify their gender were much more likely to disagree that the interior doors of older buildings were adequate for their needs. Additional research is needed to find the cause of this issue as no participants commented on this issue and no differences of perception were found between other student groups on this issue.

While no statistically significant differences in perceptions were found in other questions asked about older buildings, many students also commented on issues they had with classroom space in older and newer buildings. Particular complaints included problems with the furniture arrangements in the rooms; one student said that “It can be hard to find a wheelchair accessible desk in a lot of the older classrooms; “while another commented “space is too tight in lecture halls to get down the rows, worse than an airplane”. These issues were similar to the findings of Alrashidi (2001) which shows that even with the standards of the ADA, there are still some areas that need improvement.

Concerning research question 3, the perceptions of students with disabilities as to the performance of ADA in newer buildings on the campus of Colorado State University, the majority of students viewed the accessibility of campus positively. However, when one looks at the perceptions of the demographic groups of the study, statistically significant differences of opinion arise in three cases.

As presented in the data analysis, statistically significant differences of students' perceptions arose in three different areas among three different demographic group types. The first of these was between different impairment types. As presented in the data, a statistically significant difference in the perceptions of the ease of identifying accessible bathrooms was found between students with auditory impairments compared to students with mobility impairments. While a majority of students with mobility impairments agreed that accessible restrooms in newer buildings were easily identifiable, half of the students with auditory impairments either disagreed or neither agreed nor disagreed that accessible bathrooms in newer buildings were easy to identify. Due to the very large effect size in this case, students with auditory impairments are much more likely to be indifferent that accessible restrooms in newer buildings are easy to identify. More research on this issue is needed to better define the issues students with auditory impairments may have in identifying accessible restrooms in newer buildings.

The next statistically significant difference in the perceptions of students was found on the perceptions of the adequacy of classroom space in newer buildings when students were divided into groups based on education level. As presented in the data analysis, more students with an associate's degree disagreed that classroom space in newer buildings was adequate for their needs when compared to students with a high school diploma or GED. In this case the large effect size shows that students with an associate's degree are more likely than students with a high school diploma or GED to disagree that classroom space was adequate for their needs. While the majority of students surveyed found classroom space in newer buildings to be adequate for their needs, some still complained about the size of aisles and desks in classrooms, "The newer the building is on campus, the smaller the desks are, and the thinner the auditorium

aisles are in classrooms.” More options on larger desk space and aisle width should be explored to alleviate this issue.

A statistically significant difference in perception was also found on the adequacy of classroom space in newer buildings when students were grouped by their age group. As shown in the data analysis, a majority of students age 40 – 50 disagreed that classroom space in older buildings was adequate for their needs compared to students ages 18 – 22 who agreed that classroom space in older buildings was adequate for their needs. In this case the much larger than typical effect size shows that students ages 40 – 50 were much more likely to disagree that classroom space was adequate for their needs compared to students ages 18 – 22. While it can be assumed that the issues students ages 40 – 50 had were similar to students with associate’s degrees, more research is needed to find the possible causes of this issue as no students in the 40 – 50 age group left comments in regards to their perceptions of classroom space in newer buildings.

In regards to question 4 of the research questions for this thesis, the perceptions of students with disabilities as to the quality of education they receive on the campus of Colorado State University, the majority of students viewed the quality of education on campus positively. However, when one looks at the perceptions of the demographic groups of the study, statistically significant differences of opinion arise in three cases.

As presented in the data analysis, statistically significant differences of students’ perceptions arose in three different areas among three different demographic group types. The first of these was between different impairment types. As presented in the data analysis, a statistically significant difference in the perceptions of students towards the amount of work they

felt they put into class compared to students without disabilities when the students were grouped by impairment type. As shown in the data analysis, a much higher proportion of students with cognitive or other impairments disagreed or strongly disagreed that they put in a similar amount of work for classes as students without disabilities compared to students with mobility impairments. In this case the very large effect to size shows that students with cognitive or other impairments were very likely to disagree that the amount of work they put into their classes was similar to students without impairments compared to students with mobility impairments. A statistically significant difference in the perceptions of students was also found in the perceptions of students towards the amount of work they felt they put into their classes compared to students without disabilities when students were grouped by education level. As presented in the data analysis, in this case a difference was found between students with a bachelor's degree and students with a high school diploma or GED in regards to the amount of work they felt they put into classes compared to students without disabilities. In that case, a majority of students with a bachelor's degree disagreed that they put in a similar amount of work into classes as students without a disability compared to a majority of students with a high school diploma or GED who agreed with that statement. In this case a medium effect size indicates that students with a bachelor's degree would likely disagree that they put in a similar amount of work into their classes as students without disabilities compared to students with a high school diploma or GED. While more research is needed to explore this perception, it is obvious that many students do not feel they put a similar amount of work into their classes as students without disabilities. Many students commented that they felt they had to put in much more time reading and working on homework assignments compared to students with disabilities.

The next statistically significant difference in students' perceptions was found in students' perception of the quality of education they felt they received compared to students without disabilities. As shown in the data analysis while most students with bachelor's degrees felt their quality of education was the same as students without disabilities, a larger proportion of students with bachelor's degrees disagreed that they received a similar quality of education as students without disabilities compared to students with a high school diploma or GED and students with an associate's degree. In this case a medium to large effect size indicates that students with bachelor's degrees were more likely to much more likely differ in their perceptions of how similar the quality of their education was to students without disabilities when compared to students with a high school diploma or GED or students with an associate's degree. More research is needed to explore the causes of this difference in perceptions among students.

As shown in the data analysis, the final statistically significant difference in opinion was found between students perceptions of how similar their level of involvement in campus activities was to students without disabilities when students were grouped by age. As shown in the data analysis a higher proportion of students ages 30 – 40 disagreed that they participated in a similar amount of activities as students without disabilities when compared to students ages 18 – 22. In this case a much larger than typical effect size shows that students ages 30 – 40 are much more likely to not agree that they participate in a similar amount of campus activities as students without disabilities when compared to students ages 18 – 22. Additional research is needed to explore this relationship as no other demographic groupings showed differences of opinion in this area and no students in either age group commented as to their level of involvement in campus activities.

Another area this study was concerned with was investigating the relationship between perceptions of campus accessibility and perceptions of quality of education in college students. The results showed a significant relationship between the measures, with the perceptions of accessibility of campus as a whole, perceptions of accessibility of newer buildings, perceptions of accessibility of older buildings, and perceptions of accessibility of both newer and older buildings explaining between 7.7% and 16.9% of the variance in perceptions of quality of education. As the results indicated the regression formulas for each simple linear regression and the multiple linear regression were positive, showing that an increase in the means of the perceptions of accessibility were directly linked to an increase of the means of perceptions of quality of education. This shows that among students with disabilities a lower perception of accessibility of a college campus correlates to a lower perception of the quality of education received on that campus. Also indicated in the results was the greater significance in the relationship of perceptions of accessibility in newer buildings and the perceptions of quality of education than the relationship of perceptions of accessibility in older buildings and the perceptions of quality of education. In addition, the equation representing the relationship of perceptions of accessibility of newer buildings and perceptions of quality of education had a greater slope than the equation representing the relationship of perceptions of accessibility of older buildings and the perception of quality of education. These two facts show that among students with disabilities the perceptions of accessibility of newer buildings play a greater role in their perceptions of quality of education than their perceptions of older buildings. This shows that while increasing the accessibility of older buildings is important, ensuring greater accessibility in newer buildings plays a stronger role in the perceptions of quality of education among students with disabilities. Possible explanations for this are the fact that many students

spend more time in newer buildings on the campus of Colorado State University where a large number of classrooms and lecture halls are located. The importance of the accessibility of newer buildings will only increase in the future as more academic buildings are constructed to meet the needs of the increasing student population at Colorado State University.

As discussed, many of the issues students listed can be alleviated by simple changes to the buildings on campus, such as switching to non-fluorescent lights or different fluorescent light ballasts, providing more room in classrooms and bathrooms and providing better signage of bathrooms. However, for some of the issues that students had, particularly in the newer buildings which are built to meet the standards of the ADA, additional research is needed to identify the root cause of the problem areas perceived by the students. Additional research is also needed in terms of the students' perceptions of their quality of education. In this study students were only asked about how they perceived their quality of education compared to students without disabilities, not how they perceived their own education. While this omission does not limit the ability to compare students' perceptions of the accessibility of the campus of Colorado State University and students perceptions of the quality of education received on that campus, more data on students' perceptions of the quality of their education would be valuable. While the participation of the CSU Resources for Disabled Students office was essential in the execution of this study, their input was not utilized to the fullest potential. Future research should include more input from the Resources for Disabled Students offices of the universities the studies are taking place at so that questions in the survey are more specific and meaningful to the location of the study. Also, future research should attempt to contact students with disabilities who do not utilize the services of the Resources for Disabled Students offices as there are often some students with disabilities who do not utilize their services.

The results of this study are important because they contribute to a greater understanding of the accessibility issues faced on the campus of Colorado State University. This study was the first to look at the perceptions of actual building users on the campus of Colorado State University, as well as one of the few to explore the perceptions of students with disabilities on accessibility on a college campus in the United States on a large scale. The results of this study can be generalized to other populations of institutions with similar building stock and student populations to provide valuable information in regards to the perceptions of students with disabilities in regards to the accessibility of the buildings at that institution. The framework of this research is also valuable as the methodology of this research can be repeated at other institutions to gain an invaluable understanding of the perceptions of students with disabilities at the institutions the studies take place at. The results of this research are also valuable to the Facilities Management department at Colorado State University as the data can be used to better understand how the students of Colorado State University view the buildings that it manages. Finally, the results of this research are valuable to the Resources for Disabled Students department at Colorado State University as the data provides valuable insight into the perceptions and needs of the students that use that department's services. The information gained in this study can also be used by the Resources for Disabled Students office to make more informed decisions on using the Committee for Disabled Student Accessibility (CDSA) funds to make inexpensive, yet effective, upgrades of the facilities of campus such as upgrading fluorescent lighting ballasts as suggested in the conclusions of this paper.

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Appendix – Survey Tool

MEASURING PERCEIVED ACCESSIBILITY OF STUDENTS WITH DISABILITIES AT A PUBLIC UNIVERSITY

Please participate in this confidential survey. Your perspective as a student is important to research on this topic.

Please read each statement and indicate your level of agreement/disagreement as it relates to your experiences on campus. You are provided a space to describe any statements you strongly disagree with. As a final step please provide some background demographic information about yourself. Thank you for your participation in this research.

<i>Campus Accessibility:</i>	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
1. Accessible parking on campus is adequate for my needs.	1	2	3	4	5
2. Sidewalks on campus are adequate for my needs.	1	2	3	4	5
3. Campus signs are easy to read and understand.	1	2	3	4	5
4. Curb cuts on campus are adequate for my needs.	1	2	3	4	5
5. Curb cuts are located where they are needed.	1	2	3	4	5
6. Accessible building entrances are easy to identify.	1	2	3	4	5
7. Accessible building entrances are adequate for my needs.	1	2	3	4	5
8. There are enough accessible bathrooms for the buildings I use.	1	2	3	4	5
9. Fire alarms provide adequate warning for me in case of emergency.	1	2	3	4	5
Please Comment on any question that you answered “strongly disagree” in the space below:					
<i>Accessibility of Older Buildings – This includes buildings such as Clark, Engineering, TILT, Johnson, Weber, Gibbons, Pathology, Plant Sciences, Etc.</i>	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
10. It easy to find my way in corridors and hallways of older buildings.	1	2	3	4	5
11. Interior doors in older buildings are adequate for my needs and accessible.	1	2	3	4	5
12. Accessible bathrooms in older buildings are easily identifiable.	1	2	3	4	5

13. Accessible bathrooms in older buildings are adequate for my needs.	1	2	3	4	5
14. Classroom lighting in older buildings is adequate for my needs.	1	2	3	4	5
15. Classroom space in older buildings is adequate for my needs.	1	2	3	4	5
Please Comment on any question that you answered “strongly disagree” in the space below:					
<i>Accessibility of Newer Buildings – This includes buildings such as Computer Sciences, BSB, Yates, Rockwell West, Natural And Environmental Sciences, etc.</i>	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
16. It easy for me to find my way in corridors and hallways of newer buildings.	1	2	3	4	5
17. Interior doors in newer buildings are adequate for my needs and accessible.	1	2	3	4	5
18. Accessible bathrooms in newer buildings are easily identifiable.	1	2	3	4	5
19. Accessible bathrooms in newer buildings are adequate for my needs.	1	2	3	4	5
20. Classroom lighting in newer buildings is adequate for my needs.	1	2	3	4	5
21. Classroom space in newer buildings is adequate for my needs.	1	2	3	4	5
Please Comment on any question that you answered “strongly disagree” in the space below:					
<i>Quality of Education</i>	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
22. Adequate means are available for me to access course content.	1	2	3	4	5
23. I am as involved with campus activities as much as students who do not have disabilities.	1	2	3	4	5
24. The amount of work I put into my classes is similar to students who do not have disabilities.	1	2	3	4	5
25. The quality of education I receive is the same as students who do not have disabilities.	1	2	3	4	5

Please Comment on any question that you answered “strongly disagree” in the space below:

Please provide some demographic information about yourself:

My age is:

My gender is:

Last degree earned (circle one):

High school

Associates Degree

Bachelors Degree

Masters Degree

PhD

Other:

Please list your impairment type:

Mobility

Visual

Auditory

Cognitive

Other: