

December 2017

Wording Matters: the Impact of Disability Identification in Post-Secondary Education

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WORDING MATTERS: THE IMPACT OF DISABILITY IDENTIFICATION IN
POST-SECONDARY EDUCATION

by

Jacqueline M. Love

A Thesis Submitted in
Partial Fulfillment of the
Requirements for the Degree of

Master of Science
in Occupational Therapy

at

The University of Wisconsin-Milwaukee

December 2017

ABSTRACT

WORDING MATTERS: THE IMPACT OF DISABILITY IDENTIFICATION IN POST-SECONDARY EDUCATION

by

Jacqueline M. Love

The University of Wisconsin-Milwaukee, 2017
Under the Supervision of Professor Roger O. Smith

Background. The prevalence of students with disabilities (SWD) in postsecondary education has increased over the last 30 years. Moreover, the literature suggests that prevalence statistics may be gross underestimations since large percentages of students have not disclosed their disability to the university they attend. This underestimation could have significant negative outcomes. When students do not disclose their disability, the university is less able to accommodate their individual academic needs, resulting in poor academic achievement and even failure to obtaining a degree. Inaccurate identification of SWD also impacts the accuracy of demographic information used to interpret educational research, inform educational policy and can erode the planning of educational programming and interventions that may work best for SWD.

Objective. This study examined the prevalence of disability in post-secondary education and evaluated how the terminology that solicits disability demographic data affects the level of disability disclosure to inform possible improvements in demographic data collection methods and consider implications related to the success of SWD.

Methods. Nine hundred and nine students enrolled in a large Midwestern public university in fall 2016 participated in an anonymous survey. Purposeful sampling was

used to optimize responses and target students within the first two years of enrollment at the university. Data were collected using both in-class and online methods. The questionnaire consisted of 16 multiple choice questions concerning disability identification, disability disclosure, and awareness of disability student services.

Results. Students from sixteen courses completed this survey. Participation was significantly higher when courses were administered traditionally (98.7%) as opposed to online (20%). Disability identification varied from 6% to 20% depending on the terminology used to ask about disability. When all terms of disability were examined additively, 303 students (33%) positively identified as having at least one disability, impairment, or diagnosis. Among students who reported a disability, only 26.2% had disclosed their disability to the university. Only 48% of all students reported hearing of the office of disability student services and only 3% had actually used these services. Although the relationship between positive disability identification and awareness of disability student services was significant ($p=0.004$), 34% of students with disabilities were still unaware of disability student services.

Discussion. The prevalence of students in post-secondary education who may benefit from educational accommodation is substantially higher than previously reported. Large portions of students who identify with a disability do not disclose this to the university resulting in missed opportunities for educational assistance. Moreover, the low disclosure of disability misinforms student demographic statistics that can easily mislead educational research and policy decisions.

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LIST OF ABBREVIATIONS

ADA: Americans with Disabilities Act

AOTA: American Occupational Therapy Association

ARC: Accessibility Resource Center

AT: Assistive Technology

DETA: National Distance Education and Technological Advancement

DSS: Disability Student Services

ESL: English as a Second Language

EqTD: Equivalent Text Description

IDEA: Individuals with Disabilities Act

IRB: Institutional Review Board

SWD: Students With Disabilities

R₂D₂ Center: Rehabilitation Research Design and Disability

UD: Universal Design

UDI: Universal Design Instruction

UWM: University of Wisconsin-Milwaukee

WHO: World Health Organization

ACKNOWLEDGEMENTS

Although fun and exciting at times, the thesis writing process can also be arduous. I am acutely aware that I would not be where I am today without the support of the people around me. Although this seems like an inadequate way to show the abundance of my appreciation for these people, I would like to use this opportunity to thank a few people here.

To my thesis advisor, **Dr. Roger O. Smith**. Thank you for recognizing my potential to make a strong contribution to the field of occupational therapy and educational research. I never would have even considered writing a thesis without your suggestion, persistence, and never ending support. You have always pushed me to be my best and I have done things that I never thought possible as a result.

To thesis committee member, **Dr. Mark Johnston**. Since the day we met, your passion and drive to teach has inspired me. I would have been lost without your help and constant support with the data analysis. Thank you for spending your first couple of months of retirement helping me with my thesis!

To thesis committee member, **Dr. Ray Fleming**. Your unique perspectives and thoughtful questions have helped me to look at myself and my work in new lights. Your passion for teaching, exploration, and learning has both inspired and challenged me in a way that has made my thesis and this experience better. Thank you for your time and support.

To the **professors in the department of occupational therapy at UWM and the staff at the R₂D₂ Center**. I would not be here today without you. Thank you for your guidance and encouragement to become a client-centered, evidence-informed practitioner.

To my **friends and family**. Thank you for the countless hours you have put in listening to me excitedly (and sometimes less excitedly) ramble on about my research and my thesis. You have filled many roles throughout this process as my editors, my audience, my critics, and my cheerleaders. I am so grateful to have such wonderful people in my life to support me.

To **the love of my life**. Thank you for your patience and encouragement. Your confidence in my abilities fueled my own tenacity for this project, and pushed me to keep going, even when stress and exhaustion felt as though they may get the better of me. Thank you for being the person who held me up when I was feeling overwhelmed and celebrated with me when I felt empowered and inspired. All of this was possible because of your unwavering love and support.

PART I: THESIS OVERVIEW

OVERVIEW

This thesis consists of 3 parts: 1) the thesis overview, 2) the research manuscript, and 3) the appendices. Part I introduces a brief description of the thesis, the purposes of each section, the significance of this topic to occupational science and therapy, and the chronology of the study from literature review to data analysis. This section provides a general understanding of the conceptualization and execution of this thesis. Part II is written as a research manuscript to prepare for a future submission to a scholarly journal in the area of post-secondary education. Finally, Part III consists of the appendices which provide more detailed information about the study survey tool, the IRB protocol, detail from the data set, and the equivalent text descriptions (EqTDs) for the thesis Figures.

Significance to the field of Occupational Science and Therapy

As defined by the American Occupational Therapy Association (AOTA), occupational therapy is the therapeutic use of everyday life activities with individuals or groups for the purpose of enhancing or enabling participation in roles, habits, and routines in home, school, workplace, community, and other settings. The American Occupational Therapy Practice Framework informs occupational therapists on ways to examine the relationship between the person, their engagement in valuable occupations, and the environment (Occupational Therapy Practice Framework, 2014). When a student is unable to successfully engage in the educational setting due to environment or lack of support, it is concerning to an occupational therapist. Barriers to

participation could result in a withdrawal from education all together which could impact occupational balance and the ability to engage in future desired occupations.

This thesis examined the occurrence of disability self-reporting in an educational setting and considered how the rate of disability identification might impact educational success, the use of educational supports, and educational policy driven by educational research. It was theorized that understanding more about the ways that people identify or do not identify with disability would positively impact the ability of educators to meet the needs of their students. More specifically, identifying what questions to ask to solicit accurate demographic information would also help educational researchers and policy makers achieve better results with their research, provide a more accurate picture of the population, and hopefully influence the creation of more inclusive educational policy. This could allow for successful occupational engagement in academics for all students. Lastly, this thesis examines why many students do not identify their disability to their university or seek accommodations, even when needed. The knowledge that students who need academic supports don't always disclose provides further evidence supporting the need for universal design throughout education to guarantee that all students have the opportunity to successfully participate in educational occupations.

Chronology of the Study

The following thesis chronology provides the overall context and timeline for how the thesis was developed, evolved, and was completed. This study was modeled after a survey that was repeatedly administered and revised by Rehabilitation Research Design and Disability Center (R₂D₂) team members in the early 2000s, but results from these

studies were never published as careful review revealed significant missing data, incomplete analyses and reporting. These earlier studies were introduced to the primary researcher in April 2016. It was at this time that the primary researcher saw a need for a similar study to be completed and started work on a new study, modeled, in part, from the earlier work. A literature review on the topic was completed and a modified survey and research design method were completed. This version of the survey was created in Qualtrics to allow for dissemination both online and via paper and specific research questions were generated. The revised and updated survey that was used for this study is located in Appendix C.

In June 2016, the researcher had submitted an IRB for a separate validation study using survey tools in online post-secondary education. In August 2016, the researcher contacted the IRB to explain that a new survey had been developed to examine educational research. It was advised to add the new survey to the existing IRB due to the similarity of topics and research design. In September 2016, the amendment was submitted to the original IRB, adding the new survey for the thesis to the original IRB. The amendment was accepted on September 21st, 2016. Appendix A contains all submitted documents and approval letters.

Recruitment for this study began in August 2016 in order to encourage participation from instructors early in the Fall semester. Recruitment material can be found in Appendix B. Survey administration occurred immediately following IRB approval and continued through October. Data from paper surveys was first imported in a Qualtrics spreadsheet to simplify data analysis.

At this time, the literature review was revised and the rest of the proposal was drafted. The proposal was presented to the committee on June 23rd, 2016 and was accepted at this time. The proposal is included as Appendix H.

The intensity of data analysis ramped up at this time. Some modifications to the originally defined data analysis plan were implemented to allow for decreased complexity and increased accuracy of data interpretation. More details on these decisions have been embedded within the statistical analysis section in Part II of the thesis.

PART II: RESEARCH MANUSCRIPT

ABSTRACT

Objective. This study aims to take a closer look at the prevalence of disability in post-secondary education, evaluate how the terminology we use to elicit demographic data affects the level of disability disclosure, and provide recommendations for future data collection procedures and implications related to needed interventions for SWD.

Methods. Purposeful and convenient sampling was used to target students from UWM that were enrolled as a freshman or sophomore since attrition from college tends to occur within the first two years of enrollment. Data were collected using both in-class and online methods with a 16 multiple choice questionnaire, concerning disability identification, disability disclosure, and awareness of disability student services.

Results. This study was completed by 909 students from 16 courses. Analysis of class participation revealed that participation was significantly higher when courses were administered traditionally (98.7%) as opposed to online (20%). Disability identification varied with students from 6% to 33% per question depending on the terminology used to ask about disability. Only 26.2% of SWD stated that they had disclosed their disability to the university and 34% of SWD were unaware of disability student services.

Discussion. The prevalence of students in post-secondary education who may benefit from educational accommodation is significantly higher than previously reported. Many SWD do not disclose to the university, resulting in missed opportunities for educational assistance. This lack of disclosure also paints an inaccurate picture of student demographics which impacts educational research and policy. It is vital to consider that all SWD may not identify as disabled. Using universal design in education whenever possible is the best way to make sure that all students have the support they need.

BACKGROUND

The diversity of the student population, including minorities, students over the age of 25, and students with disabilities (SWD) in postsecondary education, has grown substantially over the last two decades (Roberts et al, 2011; Fuller et al, 2004; Stodden and Conway, 2003). In 1978, studies reported that full-time students with disabilities at the postsecondary education level was only 2.6%. In 2011, literature cites this number between 10.8-11.3% and other studies suggest that as much as 50% of students with disabilities do not disclose their disabilities to their universities or professors (Smith, Hirschman, Rust, 2010; Siegler, 2007; Kastner 2009). This suggests that the percentage of the student population that may require deliberate educational planning or services different from that of mainstream students could be as high as 18-20% (Roberts, 2011). These and other relevant statistics, however, are elusive and have not been well documented.

Accurately identifying students with disabilities provides a unique challenge to educational researchers and academicians. Disability identity is a complex social issue which stems from the terminology that we use to talk about disability and the connotations these words and phrases possess. The word “disability” itself has many commonly used definitions making it difficult for anyone to really know what is trying to be said without further investigation. Furthermore, negative connotations often associated with “disability” can cause individuals to shy away from disability identification, resulting in an inaccurate depiction of the make-up of students with disabilities in post-secondary education (Gronvik, 2007).

At the post-secondary educational level, students are required to advocate for their own services, requiring them to identify their disability to the university before they can start receiving any kind of academic accommodation. This model of educational assistance, makes it almost impossible for the university to provide assistance if the students do not identify their disability and advocate for their needs. Currently, universities are collecting disability identification demographic data on a very basic level, if at all, which is resulting in student demographic information that underrepresents the SWD in postsecondary education. This inaccurate demographic information can result in policy that is created without disability in mind, making it even more likely that SWD will struggle to successfully complete a college degree.

The A3 Model

According to the A3 model, a theoretical model which examines the relationship that exists between individual accommodation and universal design, disability needs are met in one of three stages. In the advocacy stage, no accommodations or plans for individuals with disabilities are made ahead of time. The individual with the disability must advocate for assistance. The accommodation phase occurs when individual accommodations are made to inaccessible design. In this phase, organizations are aware of the need for change and have systems in place to provide assistance when needed. In phases one and two of this model, accommodation is reactionary and relies heavily on the individual to request assistance. Because of this, these phases do not facilitate complete independence in task completion. Phase two is largely where post-secondary education currently resides. In phase three, the Accessibility phase, the needs of people with disabilities are predominantly met through accessible design. This

phase is proactive rather than reactive and facilitates the most independence and task success for the individual (Siegler, 2007; Fernandes, 2010).

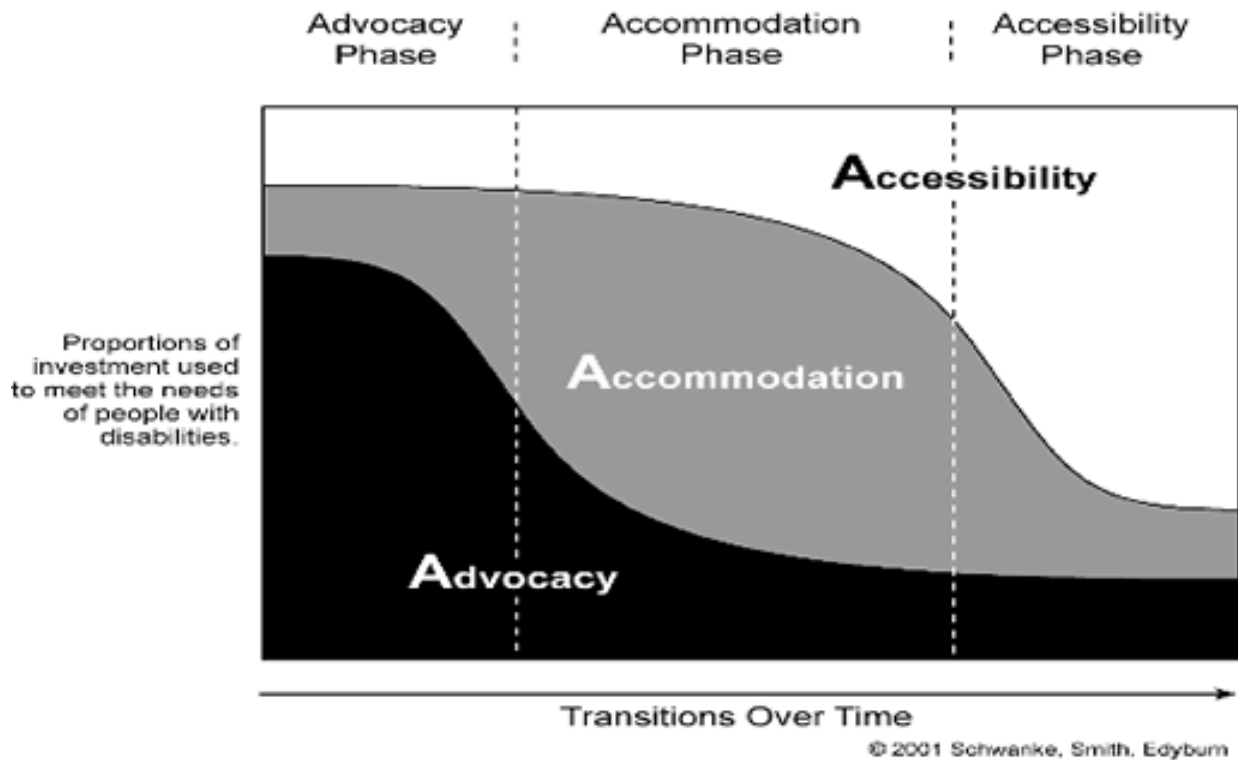


Figure 1: Advocacy, Accommodation, Accessibility Model

Educational Supports and the Transition to College

Federal legislation, such as the Americans with Disabilities Act (ADA) of 1990 and the Individuals with Disabilities Act (IDEA) of 1997, have made education more accessible to individuals with disabilities (Aron and Loprest, 2012; Stodden, Jones and Chang, 2002).

Throughout the educational system, supports for SWD are given through individual accommodation which requires individuals to request assistance (Siegler, 2007; Fernandes, 2010). The accommodation process in elementary and high school is vastly different from the accommodation process at the postsecondary level. Before

college, students with disabilities reside in a protective environment where the school and its personnel are legally responsible for identifying and providing services to support education under IDEA. The student is not responsible for orchestrating their own care (Stodden and Conway, 2003).

At the postsecondary educational level, the student is suddenly expected to initiate and pursue their own educational supports. In order to receive accommodations, students have to be willing and able to report their disabilities to school officials, teachers and classmates, provide documentation to prove their officially diagnosed disability has been identified through the proper channels, and seek viable accommodations for their unique needs to ensure their educational success. These needs, prior to this point, have been handled by parents, teachers, and administrators. In short, the need for the student to be able to identify their disability and related needs, seek help through the proper channels, and self-advocate becomes incredibly vital to their educational success in postsecondary education. If they do not learn this skill before coming to college, they are at a significant disadvantage.

Using an accommodation-centered model for accessibility creates an individualized approach to meet educational needs which can often be segregating, resulting in feelings of separation and humiliation (Parette and Scherer, 2004; Eckes and Ochoa, 2005). Because of this, many students choose not to disclose their disabilities which impacts their ability to access the resources that they need to succeed in postsecondary education.

Identifying with a Disability

Disability identity is a complex social issue which stems from the terminology that we use to talk about disability and the connotations these words and phrases possess. The word “disability” itself has many commonly used definitions making it difficult for anyone to really know what is trying to be said without further investigation (Reiser, 2006; Goode, 2006). Furthermore, the word “disability” paints a picture which highlights shortcomings and ignores capabilities, painting a picture of the person which depicts them as less than. This, and other negative connotations can cause individuals to shy away from disability identification, resulting in an inaccurate depiction of the make-up of students with disabilities in post-secondary education (Shakespeare, 2006; Gronvik, 2007; Alexandrin, 2008; Fernandes, 2010; Barnes and Mercer, 2011). This discrepancy in identification is most commonly seen among those with “hidden disabilities.” Hidden disabilities are conditions that are less obvious to the eye such as learning disabilities, mental health conditions, and systemic conditions. Their less-visible nature makes it easier for students with these types of disabilities to refrain from disclosing their disability to the university but this does not mean that they are any less in need of accommodation and support (Smith, Hirschman, Rust, 2010).

Educational Successes for SWD

There have been a variety of previous studies which have examined the relationship that exists between SWD and educational success. Research suggests that SWD are more at risk to drop out of school than their non-disabled classmates (Thurlow, 2002). According to the National Center for Educational Statistics, 14% of all youth 18 and older did not complete high school. Of those who did not complete high

school, 36% were students with learning disabilities and 59% were students with emotional/behavioral disabilities (Thurlow, 2002).

Retention becomes an even more prevalent issue at the college level. Only 12% of students with disabilities graduate from college as opposed to 23% of their non-disabled student peers (National Organization on Disabilities, 2000). To top it off, students with less apparent disabilities such as learning disorders or mental health conditions are even less likely to succeed in postsecondary education. Students with non-apparent disabilities are 8% less likely to graduate than their peers with apparent disabilities (Wessel et al, 2009). Retention is also important from a financial perspective for a university. Every student who drops out must be replaced, making enrollment management much more difficult and complicated. Studies have shown that educational supports, such as those provided by disability student services, help to decrease attrition rates amongst students with disabilities (Wessel, 2009; Brownell, 1992).

Universal Design in Education

One of the most significant challenges of a post-secondary educator is to recognize and accommodate learning differences among their students. The notion that all students learn the same or have the same needs to achieve academic success, regardless of their disability status, demonstrates inexperience and ignorance of individual learning differences. Each student and their learning is impacted by a myriad of factors including: 1) social relationships, values and characteristics, 2) information processing and orientation skills, 3) communication patterns, 4) learning styles and strategies, 5) motivational styles, and 6) psychological characteristics (Anderson, 1992).

With a student body which is increasingly becoming more diverse in age, gender, ethnicity, race, sexual orientation, experience, and ability level, implementing inclusive educational design has never been so necessary (Siegler, 2007; Anderson, 1992; Burgstahler, 2008).

Universal design (UD) is the design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design. It promotes inclusion, fosters independence, and saves time and money on future individualized adaptations. (Story, 1998; Conell, 1997; Mace, 1990; Kastner, 2009). Concepts of universal design as applied to education are referred to as universal design instruction (UDI). UDI has been cited by many as the answer to effectively teaching a growingly diverse student population, especially in non-traditional educational settings such as in online courses (Rose and Meyer, 2002; Scott et al, 2003; Burgstahler, 2015; Street et al, 2012; Roberts et al., 2011). This proactive approach to educational design helps to make postsecondary education accessible to the largest group of people and minimizes the needs for individual accommodations.

UDI provides the ability for educators to more efficiently and effectively interact with a more diverse student body. Studies have shown that UDI strategies improved learning for both struggling and non-struggling students, making the implementation of these strategies beneficial for all students (Roberts, 2011; Siegler, 2007; Rickerson and Deitz, 2002; Shaw, Scott, and McGuire, 2001).

Informing Work

Considerable work in educational accessibility assessment has been performed at the Rehabilitation Research Design and Disability (R₂D₂) Center at the University of Wisconsin-Milwaukee over the years. Since 1998, R₂D₂ has published 9 research studies and created numerous evaluative tools in the field of education and disability. Each UDI and Disability research project completed by R₂D₂ created a taxonomy which built on the information learned from past studies while incorporating new research. Educational research at the R₂D₂ Center has examined the student and teacher perspectives and most recently, in conjunction with DETA, the target audience shifted to future researchers. The National Distance Education and Technological Advancement (DETA) Center at the University of Wisconsin-Milwaukee was created in 2013 to promote student access and success through evidence-based distance education, especially for underrepresented populations, such as SWD. The R₂D₂ Center works in conjunction with the DETA Center to create tools to help prompt educators and researchers examine the relationships that exist between UDI and Disability and determine not only what is effective for students with disabilities but what is not.

In 2007, research was conducted as a part of the ACCESS-ed and UD-ITEACH Projects, funded through the U.S. Department of Education as Federal Demonstration Projects to Ensure a Quality Higher Education for Students with Disabilities. The primary purpose of these studies was to understand the difference between the rate at which students with declared disabilities completed courses and the rate at which other students with non-declared disabilities completed the same courses. Through the use of anonymous paper survey, researchers at the R₂D₂ Center attempted to gain further

insight into this issue. This survey included a total of 7 questions and was administered to students at UWM in a total of 4 rounds: Spring 2007, fall 2007, spring 2008 and spring 2009. The surveys inquired whether the students spoke English as their first language and if they had any disabilities or impairments. Results from this study revealed that 8% of students surveyed reported a disability, an additional 11% reported a functional impairment, and an additional 5% did not speak English as a first language. Although this study was only reported in presentations and never formally published, it demonstrated a need to understand more about the relationship between disability identification in post-secondary education (Smith and Hirschman, 2009; Hirschman, Lemke, and Smith 2010).

The Need for Research

Policies and practices concerning people with disabilities, both in education and otherwise, are expected to be grounded in the best available evidence. However, there are a lot of challenges that exist regarding disability research. First, a scarcity of disability-focused research makes it difficult to base intervention or policy in research (Johnston et al, 2009). Second, due to a lack of accurate disability identification, even the disability-focused research may not even accurately identify disability in their research and policy development.

Underestimating the number of students with disabilities (SWD) prevents institutional resource planning and investment. This can result in the allocation of insufficient funds to serve students with disabilities and limits the institution's ability to

provide the monetary support necessary to facilitate academic success and successful occupational engagement in education.

Understanding the true number of SWD is essential to providing educational assistance to all students because it influences the overarching educational strategies currently in use. If there really are so many SWD who do not disclose their disabilities and seek accommodations, an educational system built on an individual accommodation strategy becomes ineffective and results in the majority of students needing intervention at a loss for assistance. This could result in the student failing in higher education or prevent them from reaching their full potential.

Purpose

The purpose of this study is to obtain a more accurate representation of the disability population in postsecondary education and to more closely examine the relationship that exists between disability terminology and the rate of disability disclosure. By identifying wording and phrasing that students identify with and are comfortable with, we can obtain a more clear and accurate picture of the demographics of a university's student body. This knowledge puts Universities in a better position to determine the appropriate funding for Disability Student Services, provide appropriate outreach to those who might actually benefit from accommodations, better assist teachers in preparing for the instruction of a diverse student body through universal design, and inform educational research as a whole. Knowing the number of students who could benefit from accommodations also helps to solidify the argument for universal design in education as a way to anticipate barriers to education. This can

result in increased educational success and decreased student drop outs for all students, not just those with disabilities.

Research Questions

Although the literature demonstrates a large breadth of knowledge in the field of disability and disability identification, there is surprisingly little information that exists examining the relationship between disability identification and post-secondary educational success. This lack of knowledge has generated four overarching research questions and sub-questions that are detailed below.

1. What is the real **prevalence of disability** in post-secondary education?
 - a. How many students identify as having a disability, diagnosis or functional impairment which affects their education?
 - b. Do students identify with more than one diagnosis? Do different diagnoses commonly occur together?
 - c. What is the relationship between the disability questions? Do people identify with multiple disability questions?
 - d. What is the relationship between diagnoses and functional impairments? Do students who identify with a diagnosis also identify with the corresponding functional impairment category and vice versa?
 - e. How many students identified with at least one of the disability questions?
 - f. Were there students who identified with a sensory diagnosis or impairment who also stated that they use glasses/contacts to fully correct for their impairment?

2. What is the **methodology** that should be used in order to elicit the most accurate demographic information concerning SWD?
 - a. Were recruitment efforts for this study effective in obtaining the targeted sample (age, year in school, diverse majors)
 - b. Were the recruitment methods effective (75% or better) in gaining participation of all students in traditional and online courses?
3. Does the prevalence of students with disabilities change in **online** education vs traditional face-to-face education?
 - a. What percentage of students with disabilities use online education?
 - b. Is the percentage of SWD in online courses different than in traditional classrooms?
4. What does the prevalence of students with disabilities say about **intervention** strategies that should be present in post-secondary education?
 - a. How many students with disabilities have reported their disability to the university?
 - b. How many students have heard of or used Disability Student Services?
 - c. How many students with disabilities have used Disability Student Services?

METHODS

Research Design

This study was founded and based in survey research methodology as defined in the literature (Risso, 1983; Abramson, 2011; Portney and Watkins, 2015). The anonymous questionnaire utilized in this study included mostly nominal, dichotomous questions with write in options available for some questions. Several strategies were used in this research design to try and answer questions surrounding disability prevalence in post-secondary education that have never accurately been answered before.

The questionnaire used in this study was based on previously created, tested, and validated surveys and research concerning disability and education from the R₂D₂ Center (Smith and Hirschman, 2009; Hirschman, Lemke, and Smith, 2010). Basing this survey off previously validated material helps to add validity to this study. This survey was subjected to beta testing and was presented at numerous conferences to elicit expert opinions before the survey was finalized (Smith and Love, 2016; Smith, Love, and Golden, 2016)

The methodologies used for sampling and recruitment were also quite specific to this study. When recruiting, stratified sampling was used to reduce sampling error and increase probability capturing a diverse sample of students in years, mode of instruction, and major (Patten, 2016). Whole classes were targeted to provide a more accurate look into class composition as a whole. Although there is no standard for minimum acceptable response rate with survey research, a response rate of 75% in academia has been stated to be the average (Fowler, 1993). Therefore, in order to

exceed this average, group administration was targeted to increase efficiency and participation, whenever possible (Orcher, 2016).

The approved IRB #16.385 detailing the methodology for this study can be found in full in Appendix A. One amendment was submitted to the IRB because more participants were obtained than originally assumed possible and a request to recruit more participants was needed. This amendment can also be found in Appendix A.

Data analysis included frequency calculations of all binary variable questions and cross tabulations to look at relationships between questions as is common data analysis methodology in survey research with binary questions (Rossi, 1983; Patten, 2016). Chi square statistics and Pearson correlation coefficients were run as indicated by the data.

Sampling Strategy

Strategic sampling was necessary to recruit the students that would be the best representation of the student body as a whole. In order to accomplish this, it was critical to obtain high levels of class participation to depict an accurate representation of individual course composition. Although previous studies have focused on just obtaining as many participants as possible, this study noted the importance of obtaining data from an entire class so that it was less likely to be skewed based on who volunteered to participate from each class.

It was also important to obtain a sample that served as a representation of the whole university. This requires recruitment across disciplines and instructional modes (face-to-face and online). Although research could not be found to support or negate this theory, it is entirely possible that SWD are drawn to a certain type of degree and are

more prevalently found in that college. By casting a wide net, it ensures that a discipline bias is less likely.

Lastly, attrition from undergraduate education occurs most frequently during the first 2 years of school (Stinebrickner, 2012; Tinto, 1987, Ishitani, 2003). Therefore, this study sought to recruit students within these first two years in an attempt to obtain a complete picture of college students before dropouts occurred, also biasing the sample and prevalence of SWD who started in post-secondary education.

Recruitment

All participants were recruited from the University of Wisconsin-Milwaukee (UWM) in the fall 2016 semester. At the time of recruitment, UWM had 21,398 students enrolled in their undergraduate programs, 4,639 students enrolled in graduate programs, and 1,503 international students. There were 3,289 new freshmen in the fall 2016 semester (UWM Office of Assessment and Institutional Research, 2016). There were no restrictions for participation based on age, gender, race, or ethnicity. Participants with and without disabilities were included in this sample.

Study recruitment occurred from August to the first 3 weeks of the fall semester in order to capture new incoming freshman. The UWM Fall 2016 course list was analyzed and 50 courses that serve as entry level requirements for degree programs were selected. These courses generally have larger proportions of freshman and sophomores enrolled and thus make it more likely that the preferable age demographic would be achieved. The courses selected varied across disciplines and colleges in order to depict a more comprehensive view of the campus and its students. Courses

also varied by mode of instruction, with 22 courses being online and the remaining 28 using traditional face-to-face instructional methods. The professors of these 50 courses were contacted through their campus email address and asked to allow their students to participate in this study. Two waves of emails were sent out in order to generate interest from multiple disciplines. Of the 50 professors contacted, 16 responded and agreed to have the survey administered to their classes (see Appendix B).

Instrumentation

This study utilized a survey instrument for data collection which is available in its full form in Appendix C. The survey was constructed through Qualtrics, an online research suite survey platform. The Qualtrics platform allowed for the creation of an online survey, the exportation of that survey for a paper version with the same formatting, data collection, and preliminary data analysis to allow for the identification of early trends. The survey was available in both a paper and online form to increase methods of dissemination and allow flexibility with participation and survey completion.

The survey consisted of 16 questions, divided into 4 categories: demographics, disability, disclosure, and disability services. The first 4 questions established some demographic information about the student and their course including: what course they were in, how the course was administered, what year the student was in school, and what their intended field of study was. The next question asked whether the student speaks English as a first language or not, as this could impact not only their success completing this survey independently, but also their ability to succeed in a course with

English as the language of delivery. This demographics section was restricted to questions relevant to the topic being studied (Patten, 2016).

The questionnaire then asked a series of 5 questions which all targeted disability identification with differing diction and syntax. These included questions that are commonly asked at the university level and in educational research to discern demographic information such as, “Do you have a disability? Yes or no?” This question is followed by a question asking the participant to rate their disability on a four-point scale: none, mild, moderate, and severe. The next two questions asked whether the student had a diagnosis or a noted functional impairment that impacted educational success. For these two self-report questions, categories and examples of conditions are provided and participants are able to check as many boxes as they want or write in their own conditions. These four disability-related questions are specifically ordered from most common phrasing to least common phrasing to ensure that one question will not impact the answer for the next. Asking first about the disability and severity of disability models the current norms when trying to elicit disability demographics. Since it is the most common phrasing, it also makes sense that these two questions appear first, followed by the diagnosis question. Although having a diagnosis is not synonymous with having a disability, accommodation-based education systems require that students have a formal medical diagnosis in order to receive services, making this term relevant for disability identification in an educational setting. Functional impairments were prompted last since this concept, although arguably the most relevant, is the least used and least familiar in disability demographic elicitation. Following the four disability questions, one question asked the student if they used any assistive technology that they felt fully

corrected for their disability or impairment. The students had the option to write in and identify any assistive devices used. This question served to help tease out those who, although may have a disability or impairment, may not benefit from educational accommodations.

Next, a pair of questions addressed disclosure and the self-advocacy of the students. Questions asked whether students have disclosed any mentioned disabilities to the university. If students had not disclosed, the next question prompted the student with possible reasons as to why they had not disclosed. A write-in option also existed for students to use as needed.

Finally, a pair of questions addressed the impact of DSS on campus. Questions asked if the students have heard of DSS and if so, if they had used these services on campus. These questions were developed to provide insight into the accessibility and availability of academic accommodations for SWD and how effectively those accommodations are provided.

At the end of the questionnaire, a question asked if the participant has completed this survey previously in another class in order to identify and eliminate the possibility of counting duplicate responses. The last question asked if participants received extra credit for their participation in the research to document any incentives provided independently by a professor. An extra credit option was built into the survey just in case some professors offered extra credit to their students so that students did not feel as though they had to participate in research to obtain extra credit.

Data Collection & Administration Procedure

Once professors agreed to allow their class to participate in the research, the professor was presented with the option to have the survey administered to students during class in a paper format or disseminated electronically via a survey link. The overall approach and strategy was to collect as much data in person as possible to improve return rates and ensure full class participation. Although this methodology biases the in-person courses slightly, data collection was expected to be more complete and easier to ascertain when done in person as opposed to when done via email where the link can be easily deleted or pushed to the back of the inbox. Ten professors elected for in-class data collection.

For those who selected an in-class dissemination method, a time was scheduled for a researcher to come into the classroom to administer the survey in person. Before the surveys were passed out, the survey administrator read from a script (Appendix D) to introduce the survey and ensure that every participant heard the same information before deciding whether or not to participate in the survey. Administrators explained that the survey questions may seem repetitive at times and that this was intentional. Students were instructed to fill out all questions in order and answer based on how they read the question the first time. Students were told to take as much time as they needed to complete the survey and to raise their hand if they needed assistance with reading the survey, understanding the questions, or selecting their answers. Students were provided with more detailed information about the research study (Appendix E) which they could choose to keep or turn back in with their surveys if they didn't want it. All students were reassured that participation was voluntary and that there were no

repercussions in their course or through the university if they chose not to participate. In order to prevent feelings of peer pressure to participate, surveys were handed out to every student in the class. Students were instructed that if they didn't want to participate, they should just turn the survey in blank ensuring that no one would know who filled out a survey and who turned it in blank. Once completed, students placed surveys into a large brown envelope located at the front of the classroom. Once all surveys were handed in, the survey administrator thanked the class and departed.

Answers from the paper surveys were then entered into Qualtrics in order to keep all of the data stored in one place and allow for preliminary analyzation of data. The importing of data to an online platform was completed by the head researcher in quiet environments to eliminate distractions and potential transposition errors. Answers were briefly checked after import to ensure accuracy.

Professors were given the option to have their students complete the surveys online if they were not amenable to using class time for data collection. In this case, the same speech administered in person was sent as an email to all of the students of the class with a link to an online version of the survey in Qualtrics. This option was most frequently used by professors who taught online courses where in person survey distribution was not a viable option.

External incentives for participation in this study were not provided by the primary researcher; however, some professors did offer extra credit to students. In order to accommodate this desire by the professor to provide extra credit, an extra credit option was built into the study. At the beginning of the survey, students were asked if they were completing this research for extra credit. If they responded yes, they were given

the option to participate in the survey or complete a different reading assignment if they were not comfortable participating in the research but still wanted extra credit. This helped to make sure that no student felt pressured to participate, regardless of incentives that may have been offered by the professor independent of this study. This extra credit option involved reading a short article on universal design in education (Tobin, 2013) and listing 3 reasons why universal design was important in education. No student took advantage of this extra credit option. All who were recruited either completed the survey or elected not to participate at all.

Data Analysis

Collected data was compiled in SPSS, a software for statistical analysis, and cleaned up prior to data analysis. This basic data correction consisted of minor edits such as correcting the spelling of course names and listed assistive technology. The mode of instruction also had to be corrected for 7 students. This correction was known to be accurate based on the information provided by the professors and the university's course registration website.

To analyze results, SPSS version 24.0 was used to calculate frequencies of responses and cross tabs to determine relationships between questions. Some questions allowed for students to check all that apply, making data analysis more intricate than originally expected. Some decisions concerning how to categorize and identify data had to be made to simplify data analysis. Details about how these decisions were made can be found below. The research questions and the general survey structure divided the results into four sections: disability prevalence,

methodology for recruitment, mode of instruction, and intervention strategies. Results were graphed to provide a visual representation of the data in order to note any relationships that were not statistically significant.

Disability Prevalence

The questions in the disability section proved to be the most complicated to analyze. The diagnosis and functional impairment questions allowed for multiple responses, adding complexity when comparing between these variables. First, it felt imperative to look at the descriptive statistics for each question. These statistics do not show overlap between the questions and therefore are not additive but still provide insight into the number of people that identify with each question.

It was also important to look at the relationships that exist among these disability questions. Cross tabulations were performed to examine the differences between the first two disability questions which both used the word disability. It was expected that these would yield similar results since they use the same terminology but this needed to be examined closer. Next, the diagnosis and functional impairment questions were compared to see if people who reported an impairment also had a diagnosis and vice versa. With these questions, there were many people with multiple responses. In order to learn more about those who identified with multiple categories, cross tabulations were performed to examine frequencies. This analysis discovered that cognitive and behavioral impairment categories were commonly linked so a category was created for these two impairments. Sensory and learning diagnoses were also frequently selected together so a category was made for these two. Lastly, a category was made for both diagnosis and impairment for anyone who selected 2 or more diagnoses that were

different for the 2 categories just described. This allowed for easier comparison between diagnosis and impairment.

Lastly, a branching method was created which allowed for the numbers from each category to be additive. The questions progressed from most commonly asked to least commonly asked, as they were presented in the survey. With each new question, students who responded positively to that question but not previous questions, were added to the total number of SWD. English as a second language (ESL) students were saved for last so that numbers could be examined with and without this group since its inclusion in disability terminology is less common.

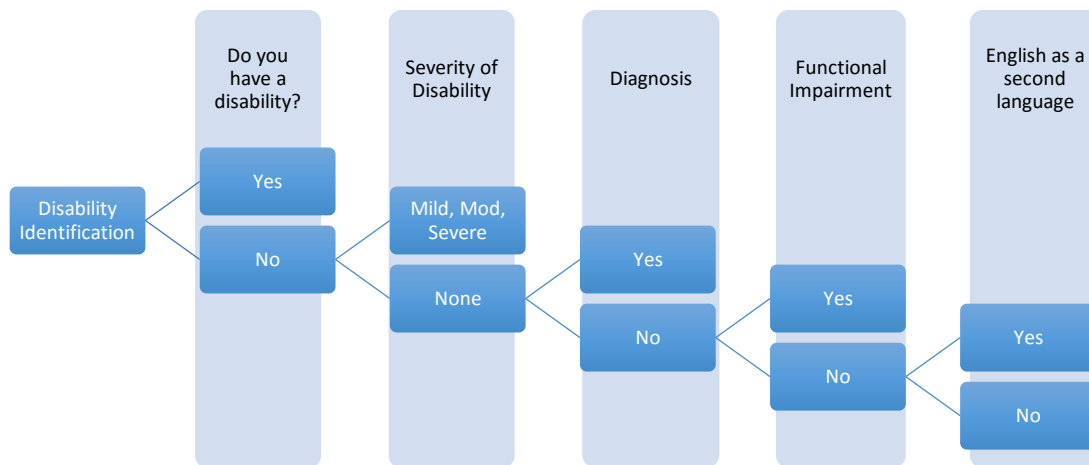


Figure 2: Disability Identification throughout survey

Methodology for Recruitment

Since recruitment and sampling strategy was such a focus of this study, it was important to examine the demographics for the survey respondents to see how well this strategy worked. Generally, these statistics were descriptive. A few minor decisions and modifications had to be made when considering data analysis of demographics. When

looking at year in school, it was noted that all of the students who checked more than one year in school, did so because they were in their second degree (specified in comment section). As a result, a new category was added for second degree students. Four students wrote in that they were non-degree seeking, so a category was added for that as well. For field of study, an “undecided” category was added since 20 students indicated that they had not declared a major in the write-in option. Creating these new variables helped to simplify the demographics data so that every student only selected one answer.

Mode of Instruction

One of the original goals of this study was to be able to examine the differences that exist between disability prevalence and disclosure rates between online and traditional courses. Unfortunately, the number of online students who participated in this study was small and only small percentages of the total online classes were recruited, making statistically significant analysis difficult. As a result, a decision was made to focus more time for the analysis portion of this section on the differences between recruitment in online and traditional courses.

Intervention Strategies

For this section, it was important to look at disclosure rate among all students who participated in the study but also specifically among students with disabilities since it is really them who would be disclosing. For the purpose of this section, disability was defined as students who said that they had a disability or rated their disability as mild,

moderate, or severe. It was decided to define disability this way because these are the questions that universities are asking to identify SWD now, and the continuity between university disclosure and university questions seemed appropriate. Additionally, this definition of disability would likely underestimate the number of SWD who disclose, so if the relationship is found to be significant, it can be assumed that there are likely many more who do not disclose. This was decidedly a better route than defining disability much more broadly and counting people who are not in need of educational accommodation.

The question concerning reasons for non-disclosure allowed for multiple answers to be selected. In order to simplify this data, an additional category was created which combined two responses, “do not want accommodations” and “do not need accommodations” which seem to overlap quite a bit.

Intervention

As done with the section surrounding disclosure, disability was defined as students who said that they had a disability or rated their disability as mild, moderate, or severe.

RESULTS

Results are organized into four categories corresponding with the four main research questions: disability prevalence, methodology for recruitment, mode of instruction, and intervention strategies. The graphs and tables presented in this section are representative samples from a full set of graphs in order to highlight results.

Disability Prevalence

In order to answer research question number one, concerning disability prevalence in post-secondary education, a series of sub-questions was used to guide data analysis and speak more directly to the overarching question, “What is the real prevalence of disability in post-secondary education?” First, frequencies of response rates were examined in more detail. When asked if students had a disability, 6% (54 students) reported a disability. When asked about the severity about their disability, 58 people reported having a mild, moderate, or severe disability. Only one person in this study reported having a severe disability.

When asked if they had a diagnosis, 185 students (20.4%) self-reported at least one diagnosis in the suggested areas, and 30 of these students reported 2 or more diagnoses. As shown in Figure 3, learning, behavioral, and cognitive diagnoses were the most prevalent diagnoses in this sample (n=82, 37%).

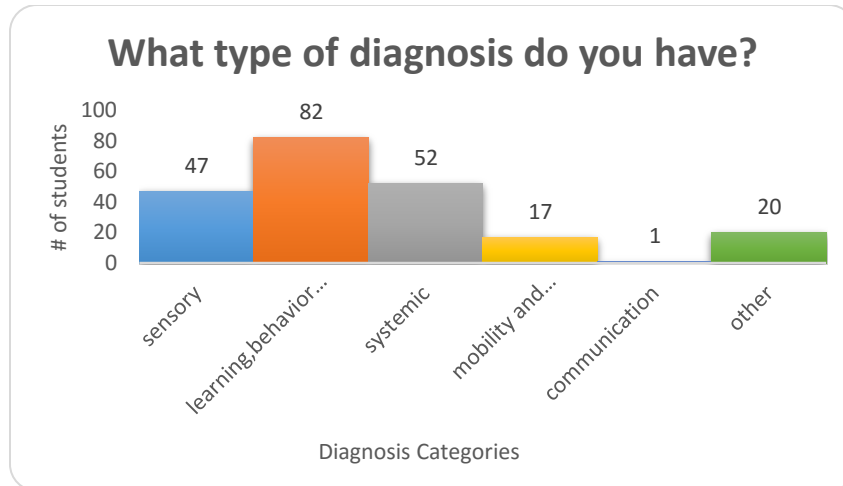


Figure 3: Frequencies of Reported Diagnoses

When asked if they had a functional impairment that impacted their education, 157 students (17.3%) reported at least one functional impairment, with 29 students reporting more than one impairment. Fifty-nine percent of students who reported an impairment listed either a behavioral or cognitive impairment. Of those who listed more than one impairment, 66% reported a behavioral and cognitive impairment combination, making it the most frequently listed combination of impairments. Figure 4 depicts the frequencies in which all impairments were selected. Figure 5 below shows the frequencies in which students responded to each question type and Table 1 shows how many students reported multiple diagnoses or impairments.

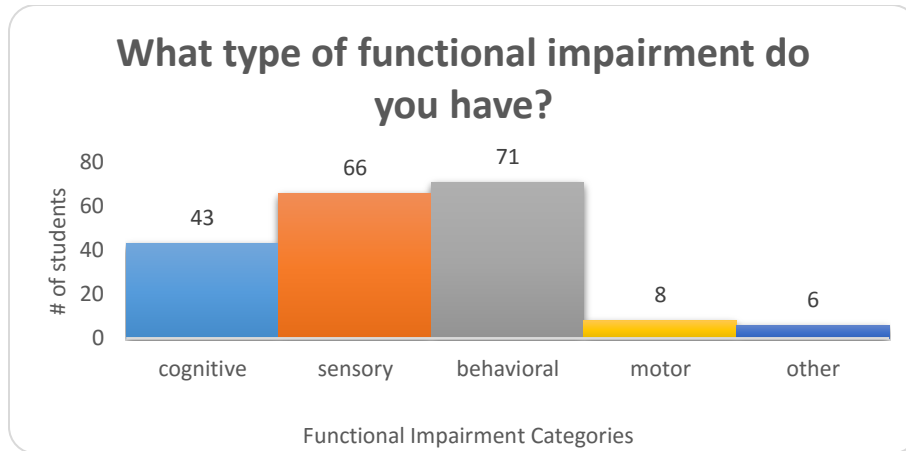


Figure 4: Frequencies of Reported Functional Impairments

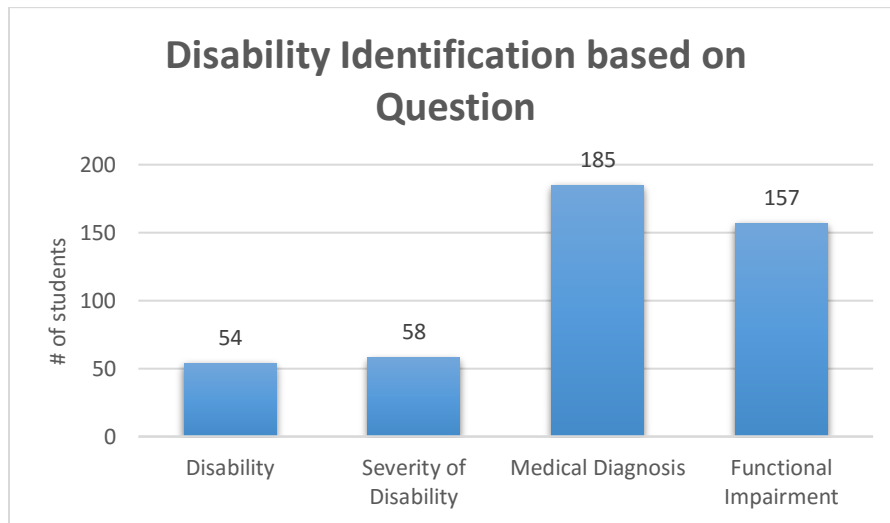


Figure 5: Comparison of Disability Identification Question Responses

Table 1: Multiple Response Frequencies

# of categories selected	Frequency	
	diagnosis	functional impairment
1	185	157
2	27	22
3	2	6
4	1	1

After frequencies were determined, cross tabulations were performed to examine the relationship that exists between these four disability questions. When asked whether or not they had a disability, 54 students responded with “yes”. When the same group of students were asked to rate the severity of their disability from no disability to severe disability, 58 people identified as having a disability from mild to severe. Interestingly, 3 people who said they had a disability did not reported no severity of disability and 7 people who said they did not have a disability reported a mild, moderate, or severe disability. Of those who marked no disability but marked a severity level of disability, 5 also identified behavioral impairments or learning disabilities. One student who marked their survey this way also reported that they spoke English as a second language. A complete list of these cases can be found in Appendix G.

A cross tabulation with a chi square analysis between diagnosis and functional impairment provided insight as well. Overall, this analysis showed a strong relationship between impairment and diagnosis with $p \leq 0.00$. However, analysis also showed that not everyone who identified as having a diagnosis also identified as having an impairment and vice versa. While 157 students identified as having an impairment and 187 students identified as having a diagnosis, 230 students identified as having either a diagnosis or an impairment. There was a noted overlap between the learning and behavioral diagnosis and the cognitive and behavioral impairments, with 39 students who selected learning disorder also selecting cognitive impairment, behavioral impairment, or both. Of those who did not identify with any diagnosis, 18 identified with a sensory impairment and 17 identified with a behavioral impairment. A full depiction of the relationship between disability questions is depicted in Table 2 below.

Table 2: Relationship between disability questions

	Disability (54)	Severity of Disability (58)	Medical Diagnosis (185)	Functional Impairment (157)	Disclosure (26)	Use ARC (24)	ESL (78)
Disability (54)	54						
Severity of Disability (51)	51	58					
Medical Diagnosis (185)	46	51	185				
Functional Impairment (157)	45	51	113	157			
Disclosure (26)	15	16	21	20	26		
Use ARC (24)	13	14	18	17	15	24	
ESL (78)	4	6	9	12	4	1	78

When examining the response rates between questions, it was discovered that even more students identified with at least one of the four disability-related questions. When compared, 239 students identified as having a disability, rated their disability as mild-severe, identified as having a diagnosis, or identified as having an impairment. This results 26.3% of students from this survey identifying with at least one of the four disability questions. Students who otherwise identified as not having a disability but not speaking English as their primary language made up another 63 students. As previously discussed, having a primary language that differs from the language of academic instruction can also create academic barriers that require accommodation. If these students are included in the overall calculation, there are 302 students or 33% of students in this study who identified with at least one question in this study related to academic disability. This progression is shown below in Figure 6.

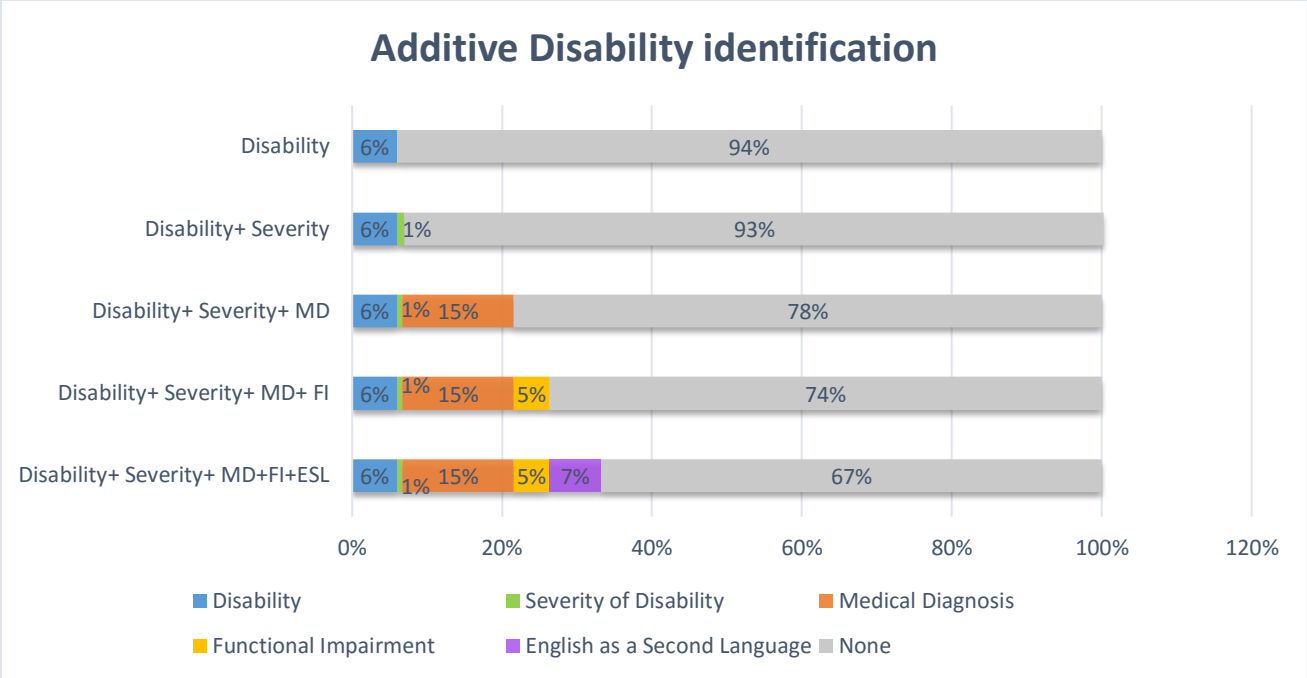


Figure 6: Depiction of Disability Identification (additive)

When analyzing assistive technology that was reported, 131 students reported using assistive technology that they felt fully corrected for their impairment and an additional 11 reported using technology that did not fully correct for their impairment. A list of the technologies identified through the write in option in this survey can be found in Table 3 below. Of these 131 students, 110 students wrote in contacts or glasses as an assistive technology (AT) that fully corrected for their vision. Of these 110 students, only 44 had previously identified as having a disability, diagnosis, or impairment in this survey and only 41 had identified as having a vision impairment. These 41 responses were not thrown out of the disability count because many identified more than just a vision impairment but it is important to note that these 41 students who identified with an impairment, may not actually require accommodation.

Table 3: Assistive technology identified

ankle brace	1	0.77%
contacts/glasses	110	84.6%
computer/phone	2	1.5%
medication	9	6.9%
hearing aid	1	0.77%
knee brace	1	0.77%
shoe lift	1	0.77%
metal bar in sternum	1	0.77%
Omni pod	1	0.77%
recorder for lectures	1	0.77%
VISA	1	0.77%
many things	1	0.77%
total	130	

Methodology of Recruitment

As outlined in the methodology for this study, the recruitment goal for this study was to recruit participants from a wide breath of majors who were in their first two years of school in order to obtain a representative sample of the university. Nine hundred and nine students from the University of Wisconsin-Milwaukee voluntarily participated in this study. Of those who participated, 72% were in their freshman or sophomore year of their first degree and 87% identified as a junior or younger. Colleges represented include: architecture and urban planning, art and humanities, education, engineering, health sciences, informational sciences, letters and sciences, nursing, public health, and social welfare. English was the primary language for 91.4% of all participants and a secondary language for the remaining 8.6%. Details of demographics are shown in Table 4 below.

Table 4: Demographics of Sample

Demographics		Frequency	Percentage
Year in School			
	Freshman	473	52.0%
	Sophomore	179	19.7%
	Junior	143	15.7%
	Senior	42	4.6%
	5th year	21	2.3%
	Graduate/PhD	33	3.6%
	2nd degree	14	1.5%
	non-degree	4	0.4%
Field of Study			
	Architecture and Urban planning	6	0.7%
	Art and Humanities	21	2.3%
	Business	314	34.5%
	Education	41	4.5%
	Engineering	19	2.1%
	Health Science	130	14.3%
	Information Studies	11	1.2%
	Letters and Science	108	11.9%
	Nursing	205	22.6%
	Public Health	5	0.6%
	Social Welfare	29	3.2%
	Undecided	20	2.2%
English as a Primary Language			
	Yes	831	91.4%
	No	78	8.6%

During recruitment, 50 classes were contacted to participate in this study. Of the 16 courses which agreed to participate in this study, 12 were administered in a traditional face-to-face format while the remaining 4 were administered online. For this study, two traditional courses (psychology 101 and BMS 301) elected to participate in this study via the online survey format to avoid using class time for survey completion. A list of courses and course descriptions can be found in Appendix F.

Courses where the survey was administered during class time resulted in 696 participants and an average of 98.7% participation from students who were present that day of class. Courses where the survey was administered online, resulted in 213 students and an average of 20% class participation. A breakdown of course participation, both in traditional and online is below in Table 5. More detail on recruitment and participants can be found in Appendix H.

Table 5: Recruitment of Traditional and Online Students

	# of participants	Sample Size	% of possible participants
Traditional	696	704	98.65%
Traditional course with online survey participation	195	301	64.78%
Online	18	274	6.57%

Although this study did not provide external rewards for participation, one professor did decide to provide extra credit to his students for study participation (psych 101). Students had the option of completing an extra credit assignment on educational accessibility or completing the survey in order to receive extra credit. Only 175 of the 190 students in psych 101 reported that they were participating in this study for extra credit. No other participant or instructor indicated that extra credit was offered for their course. Even when extra credit was offered as an incentive, only 70.9% of students participated in comparison to the 98-100% participation rates in traditional classrooms where the survey was administered in person.

Mode of Instruction

The sample size of students from online courses in this study was small (n=18) which made it difficult to compare the two modes of instruction. When performing a cross tabulation and chi square analysis of reported disability and mode of instruction, two online students reported having a disability. This is 11% of the total online sample population, however, due to the small sample size, the relationship is not statistically significant with $p \leq 0.451$. Of these two students, student A reported having a mild disability, a motor diagnosis and a motor impairment. Student B reported having a moderate disability, a psychiatric diagnosis, and both cognitive and behavioral impairments. Neither student had disclosed these disabilities to the university or was receiving accommodations. A side-by-side comparison of disability statistics for online vs traditional classrooms can be found below in Table 6.

Table 6: Online vs Traditional Classroom Disability Prevalence

	Online	Traditional
Disability	11%	6%
Severity of Disability	11%	6%
Medical Diagnosis	11%	21%
Functional Impairment	11%	17%

Intervention Strategies

When students in this study were asked if they had reported a disability to the university, 26 (2.9%) said that they had and another 32 students (3.4%) said that they were unsure whether or not they had reported a disability to the university. When

looking specifically at students who had identified as having a disability, a total of 61 students, only 26.2% had disclosed their impairment to the university. Surprisingly, three of the students who identified with mobility disabilities also reported that they had not disclosed their disability to the university. Students who reported both a disability and a behavioral impairment had the highest disclosure rate at 46.2% (n=6). The relationship between students with a disability and disclosure was not found to be significant, with $p \leq 0.747$.

When asked why they chose not to disclose their disability to the university, there were many options provided, as well as a place to write in a reason. Students were allowed to check all of the answers that applied. Twenty-eight students did not answer this question. This made n=881 for this question but even so, there were 970 responses due to students selection multiple answers. This frequency in which people checked one answer or more than one answer is illustrated in more detail in Table 7.

Table 7: Frequencies of multiple responses

Multiple Response Rates	
#	frequency
0	28
1	823
2	37
3	14
4	4
5	3

When asked for reasons why students chose not to disclose, the answers varied. Among all students, the top two answers after “I do not have a disability” were “I don’t need help” at 9.8% and “I did not think it would help (to disclose)” at 6.4%.

Students also had the option to write in responses if they felt that the provided options did not represent their reasons for non-disclosure. Received write in responses included:

- “It does not matter”
- “I haven’t gotten around to telling someone but I probably will at some point.”
- “I didn’t think it was important enough.”
- “My disability made the accommodation application process too difficult to complete”
- “I was unsure what accommodations were reasonable and fair to ask for.”

Among students with disabilities, 16 students did not complete this question and four selected that they did not have a disability in this question. The most frequent response was a combined response of “I do not want/need accommodations” at 36.1%. SWD who responded “I did not know I could disclose” or “I did not know how to disclose” made up 19.7% of this group. A visual representation of reasons for non-disclosure amongst all students and SWD can be found in Figure 7.

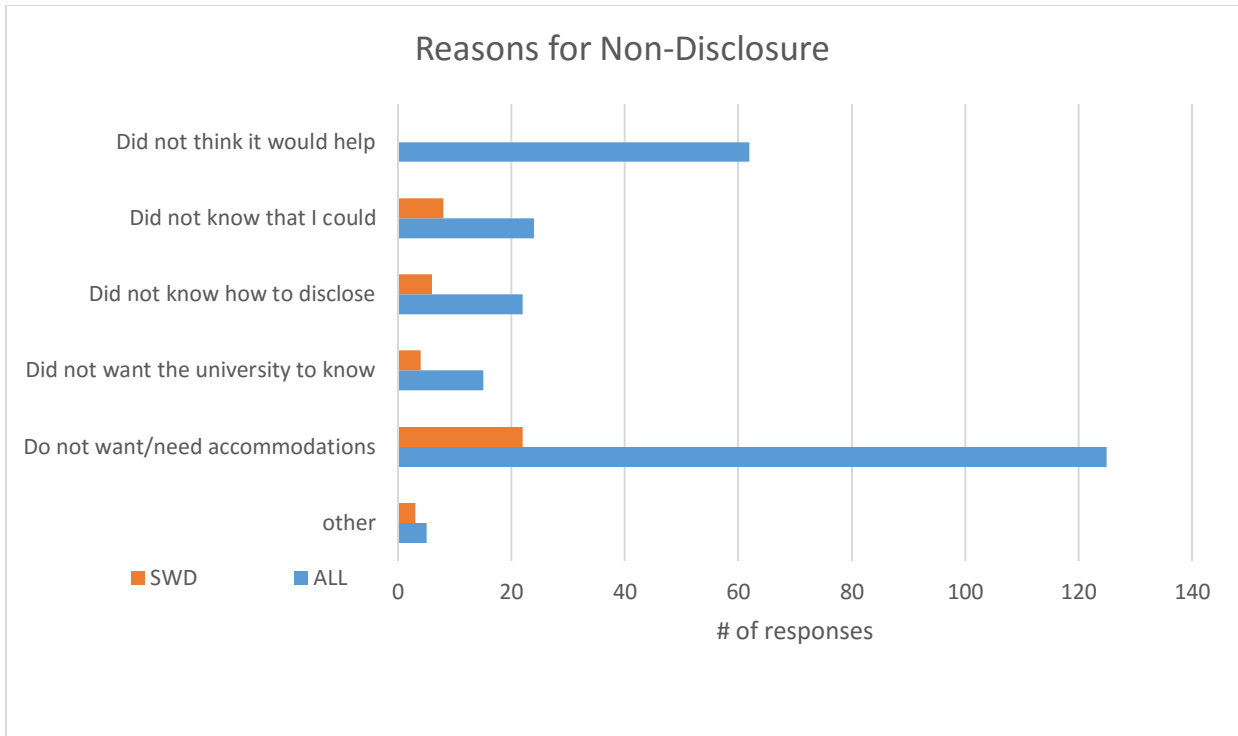


Figure 7: Reasons for Non-Disclosure among all recipients and SWD

When students were asked whether they had heard of DSS, only 47.7% of students said yes, and only 2.6% of students said they had used those services before. Among students who identified as having a disability, only 65.6% were aware of DSS and the services available at disability student services and only 35% of these students had used these services before. Although the p value between these two variables indicates a significant relationship between positive disability identification and awareness of DSS ($p \leq 0.004$), there are still 34% of SWD who are unaware of DSS and the services that they provide.

DISCUSSION

To keep consistency with the data analysis and results sections, commentary on disability prevalence, methodology for recruitment, mode of instruction, and intervention strategies will be discussed in order. Limitations to this study and directions for future research will also be explored in this section.

Disability Prevalence

Analysis surrounding disability identification highlighted the many discrepancies between how disability questions were answered. The number of students who identified as having a disability differed from the number of students who identified as having a mild, moderate, or severe disability. This was unexpected since the questions occurred one after another and they still used the term disability. It was interesting that a large number of these students also reported having learning or behavioral diagnosis/impairments. It is possible that the less restrictive wording of the severity question allowed them to identify with this question more than the first. It was also interesting that one student was an ESL student. This data record listed: no disability, a moderate impairment, no diagnosis, no impairment, the use of assistive technology which does not correct for their disability, and have no knowledge of disability student services. This response set was somewhat contradictory. It is possible that the student just did not understand all of the questions highlighting why it might be important to consider ESL as a potential educational disability in English speaking universities. When courses are administered in a language other than the individual's primary language, it can become more difficult to succeed. Speaking a first language other than

English may not be a disadvantage to most, but if you have to listen to lectures on differential equations or Shakespeare in a language that is not your own, you may struggle even more. Minor accommodations such as transcripts of audio or getting lecture material ahead of time, might be enough of an accommodation to really improve academic success.

Asking whether the individual had a diagnosis or functional impairment also elicited different response rates. These differences ultimately return to the concepts of disability identity and definitions. The term 'disability' can have a negative connotation, resulting in less people who want to identify with that label. As it seems, asking about a diagnosis seemed to resonate with the largest number of people, likely because it is the least open to interpretation. Students either have a formal diagnosis or they do not, and most know which they have. However, this terminology tends not to capture all of the students with behavioral or cognitive impairments which often go without a formal diagnosis (Demyttenaere et al, 2004). It is also important to note that just because a student has a formal diagnosis, does not mean that they have a disability which requires accommodation. However, since having a formal diagnosis is currently required in order to qualify for educational accommodations and services, examining the number of students with a diagnosis is relevant to the identification of students who may be in need of education accommodation.

Hyperopia, myopia or astigmatism are conditions that would have been considered huge disabilities at one point in history. Glasses and contacts are now so readily available to correct for vision loss and so commonly used that this type of sensory impairment is really not looked at as a disability anymore. The AT question was

put into the study in order to tease out anyone who identified with a disability because they wear glasses or contacts to correct for their vision. Of those who felt like their AT corrected for their impairment, 110 students listed use of glasses or contacts. However, it is important to note that 44 students who reported use of glasses or contacts did not otherwise identify as having a disability and only 41 of those students also identified as having a sensory diagnosis or impairment. This could indicate that 41+ people interpreted the disability questions to include corrected vision loss, a disability that is so common and so correctable, it is often not looked at as a disability at all. Without a way to follow up with these students and see if this was their intention, it is difficult to say for sure whether these 41 students actually qualify as having a sensory disability or not. As a result, these individuals and their responses were not removed from the study.

With all of these questions providing a different prevalence of disability which seems to resonate with some but not others, how are we to choose the best questions to ask? How do we elicit the most accurate disability data? In order to obtain one number of all students who identified with a disability or impairment, all four questions were analyzed and compiled additively. When completed, 239 students reported having a disability, diagnosis, or impairment. When considering how disabling it can be to not speak the same primary language as the instructor, it is wise to consider ESL in an English instructed school an educational disadvantage or disability as well. When adding these students to the mix, 302 students in the sample identified positively to one of the questions concerning disability. This is over 1/3 of the students who participated.

Although this study was able to demonstrate that people do identify differently with changes to question terminology and phrasing, this study did not really look at

whether or not these identified disabilities are truly impacting education. The truth is, disability is dependent on the person, the task at hand, and the environment that they are in. If a person is an amputee in a wheelchair, a condition that most of us would agree is a type of motor disability, but they are on a campus that is fully accessible, they may not feel disabled or impaired. In this setting, their condition does not impact their educational success. The most that can be said about these 302 students is that there is a higher probability amongst this group that they could benefit from some form of educational accommodation.

Methodology for Recruitment

When exploring methodology for participant recruitment, a couple of discoveries came to light. First, it was fairly easy to get full class participation when the surveys were administered in person. Although the reason for this high participation rate is not known, it is likely that it is because students felt as though they had time. While the survey was being administered, they had nothing else that they had to do. That time was committed to the survey and nothing else. It was not buried in a pile of things to do, a link lost in a chain of emails, or something that they had to make time out of there day to go and do. The survey was sitting in front of them and very accessible.

Although recruited almost equally, only 5 courses that participated were administered online. Furthermore, classes which were instructed online (and therefore the survey was completed online) had a significantly lower participation rate than classes where recruitment happened in person. Although inquiry into difference in recruitment methods needed for online vs traditional classrooms was initially identified

as one to be explored by this study, it produced interesting results. Traditional educational research recruitment strategies were significantly less effective in online classes than in traditional classrooms. Even when extra credit was offered as an incentive for online participation, only 70.9% of students participated in comparison to the 98-100% participation rates in traditional classrooms where the survey was administered in person. As more and more classes and degree programs move to an online setting, this finding becomes more relevant. It will become imperative that a new way of recruitment is discovered for online courses if educational research is going to continue to be effective.

Mode of Instruction

Although the sample size of students in online classes which participated in this study was small, it was interesting to note that a larger percentage of students identified with a disability in the online setting. These students also identified with all disability questions, resulting in each question achieving the same accuracy with disability identification. This begs the question: do students with disabilities in online education have to identify more due to their changed educational platform or is it just that the online students who chose to answer this survey were inspired to participate since they have a disability? This becomes difficult to answer definitively since full class data was not obtained for any of the online classes. With the data from this study, it cannot be said whether online classes contain a larger percentage of students with disabilities who have disclosed their disabilities or whether certain types of disabilities are more drawn to the online educational platform.

Intervention Strategies

Finally, the results from this study really have implications for educational policy development and data collection for future educational research. This study really speaks to the fact that not all students identify with the same phrasing or disability questions and that students with disabilities do not always seek accommodations, even when they might benefit. When completing research in education or developing new policy based on student demographic data, it is important to make sure that all SWD are being accounted for and being considered, and not just the ones who have identified themselves to the university. Asking a couple of disability identification questions to establish demographic information may be the best way to do this right, in hopes that students will identify with at least one question being asked, even if they do not with another.

There are many minor accommodations that can be done in the classroom which all students can benefit from, not just students with disabilities. Having access to the PowerPoint early may help someone who speaks English as a second language but it may also help students to prepare for lecture and come up with more thoughtful questions. Having video captions assists students who are deaf but can also assist students who are listening to the video in a quiet library or a loud coffee shop. Universal design in education is really the most encompassing way to ensure that all students have the best chance for academic success, regardless of disability levels or disclosure.

While UDI is the most preferable option, many schools are still in an accommodation based system. With 33% of the students in this study identifying in some way or another, it would be pertinent in these systems to make sure that all

students are aware of where to go to acquire help if they need it. Unfortunately, when asked, only 48% of students had even heard of the DSS on campus. This number does not speak to whether students have an accurate perception of the services provided or if the students have used the services. It just looks at the center's visibility. This number is shockingly low. With so many students on campus with potential undisclosed disabilities, it is important that the university makes sure that all students know where to get help if they need it and how the services provided can help them. This could involve things as simple as introducing DSS to all new students during orientation or having DSS send out emails to each student at the beginning of the semester/year with a brief overview of their services, hours, and location.

LIMITATIONS

This study had a few limitations which were noted by this researcher including participation of students, sample size, and the wording of the disclosure questions. While these still impact the results, efforts were made to minimize the effects of these limitations in order to maintain a strong study.

Sample Participation

This study asked students with disabilities to disclose their disabilities to a study run through the university. It is possible that students did not feel comfortable or safe disclosing to the university or answering all questions concerning such personal information. In order to prevent this, all students were assured that honest participation in this survey would not have implications with the university and that all surveys were anonymous. All students were handed a survey so that they could turn in a blank one if they decided they did not feel comfortable participating and no one would know whether they participated or not.

Sample Size

This study had a sample size of 909 students. This is a small sample compared to the number of students at UWM and the number of students enrolled in post-secondary education nationwide. However, this sample was well diversified in majors and areas of interest in order to create a sample that was representative of the university as a whole. Achieving close to 100% participation in classes administered

traditionally also helps to ensure a sample which is truly representative of the university, making the sample size not as much of a limitation as it might be in other studies.

Disclosure questions

The wording and phrasing of the provided questions in this survey do not encompass the only ways to discuss disability. It is possible that other wording and phrasing outside of what was used in this study would actually elicit the most accurate and beneficial disability identification. However, this study did choose to use four questions that are very common when discussing disability, all which focus on a slightly different aspect of disability in order to appeal to a broad population. These four questions, although not all encompassing, provide a good snapshot of the differences that terminology can have on disability identification.

FUTURE RESEARCH

Continued research concerning how terminology use and question phrasing effects disability identification and the willingness to seek educational accommodations would be beneficial. This study demonstrates that the same student will identify with some disability words and not others but it does not give us definitive information on what wording or phrasing elicits the most optimal response for education.

This study also highlights that the knowledge surrounding student services for SWD is surprisingly limited. Future research on how to best make the Disability Student Services on campuses known to all students in order to make sure that the students

who need educational accommodation know where to go and how to acquire the help that they need.

Although this study focused mostly on self-reporting of disability and knowledge of services available, it would also be vital to further research the different levels of advocacy and explore how students advocate for themselves. With a transition from high school to college which provides such a stark contrast in self-advocacy requirements for the student, where do they learn the skills necessary to become their own advocate? Do they learn these skills? Whose job is it to make sure that students are equipped with the skills necessary for them to succeed in college?

Lastly, the recruitment information gathered in this study led to an interesting and unintended discovery. Recruitment for educational research is quite different between online courses and traditional face-to-face courses. As the educational platform adapts to become more centered on online programs and technology, our research recruitment methodologies must also change to become more effective in this medium. Future research should examine different recruitment strategies for online research to facilitate increased participation.

CONCLUSIONS

The three primary results from this study provide better insight into disability identification in post-secondary education and can be used to better inform disability services and accommodations in higher education. First, this study suggests that the prevalence of disability in post-secondary education is much larger than previously estimated. Hidden disabilities such as mental illness are most often missed but these

disabilities can still have a profound impact on educational success. Second this study indicates that many students do not disclose their disabilities to the university. Lastly, many students with disabilities are unaware of how the university and DSS can assist them in their educational success. As a result, it is important to actively promote DSS year-round and to implement principles of UDI into coursework whenever possible in order to accommodate as many students as possible right from the start. These interventions will help to foster academic success amongst all students and decrease the rates of drop outs among all students, but especially students with disabilities.

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PART III: APPENDICES

Appendix A: IRB Applications and Amendments



View xForm – New Study Form

Use this form when submitting a new study to the IRB.

New Study data entry
- Submitted 6/7/2016 5:53:10 PM ET by Love, Jacqueline

A. Study Title

Submitted by:	Love, Jacqueline		
Email:	lovej@uwm.edu	Phone:	

A. SECTION NOTES:

- To give another user access to this form for reviewing, editing or submitting, select the "**Collaborators**" option at the top of any page. If appropriate, please add any collaborators as PI, SPI and/or other contact in Section B because this will not be done automatically. For more detailed instructions about collaboration, please [click here](#).
- Each Section must be completed unless directed otherwise. Incomplete forms will delay the IRB review process.

A1. Full Study Title:

Validation of distance education accessibility research tools	<ul style="list-style-type: none"> • Study title must be the same on all study documents (e.g., consents, advertisements, grants, etc.). If not, a reason must be given. Click on the "Add Note" above and explain (e.g., deception study, simplified title). • Mismatched titles between what the IRB approves and what is on the grant application may delay funding.
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B. PI and SPI and Other Contact

B. SECTION NOTES:

- To give another user access to this form for reviewing, editing or submitting, select the "**Collaborators**" option at the top of any page. If appropriate, please add any collaborators as PI, SPI and/or other contact in Section B because this will not be done automatically. For more detailed instructions about collaboration, please [click here](#).
- IRB correspondence (e.g., Approval Letters, IRB revisions, etc.) will be sent to the email addresses listed under the PI and contact person (B1 and B3).
- Only UWM faculty and staff may be listed as PI in B1. Students may be listed as a Student PI in B3.
- The PI and SPI are required to complete Human Subjects Research training. Please visit the UWM IRB website for more details: <http://www4.uwm.edu/usa/irb/researchers/training.cfm>

B1. Principal Investigator (P.I.) (UWM faculty and staff only. Students may NOT serve as the PI.):

Smith, Roger Email: smithro@uwm.edu Phone:	<ul style="list-style-type: none"> • You must enter the full UWM email address including the @uwm.edu. If the person is not found, they must be added to IRBManager as a new user. The individual may automatically create a new user account by logging into IRBManager with his/her UWM Panther ID and password or by registering for a new account on the UWM IRB website: http://www4.uwm.edu/usa/irb/researchers/irbmanageruseraccount.cfm#uwmaccount • If you are not the PI, you may give the PI access to this form for reviewing, editing or submitting by selecting the "Collaborators" option at the top of any page. For more detailed instructions about collaboration, please click here.
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B2. Department, School, or College	
University of WI-Milwaukee	

B3. Student Principal Investigator (S.P.I.) and/or Other Contact than PI. These individuals will be notified on all IRB notifications. Be sure to list the submitter of the form.	
--	--

Love, Jacqueline Email: lovej@uwm.edu Phone:	<ul style="list-style-type: none"> You must enter the full UWM email address including the @uwm.edu. If the person is not found, they must be added to IRBManager as a new user. The individual may automatically create a new user account by logging into IRBManager with his/her UWM Panther ID and password or by registering for a new account on the UWM IRB website: http://www4.uwm.edu/usa/irb/researchers/irbmanageruseraccount.cfm#uwmaccount If you are not the Student PI or other contact, you may give the SPI or other contacts access to this form for reviewing, editing or submitting by selecting the "Collaborators" option at the top of any page. For more detailed instructions about collaboration, please click here.
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B4. Enter the names of Co-Investigators and research personnel not listed in B3 and their role in the project. If study personnel are not affiliated with UWM, identify their institutional affiliation and their role in the project	
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. No answer provided.	<ul style="list-style-type: none"> These individuals will not receive IRB notifications or have access to this study's information in IRBManager.
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B5. Is this project being conducted as part of a student project, dissertation, or thesis? (If the student should have access to this study in IRBManager, please list in Section B3.)	
---	--

No	
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C1. Review Type and Minimal Risk

C1.1 Select the type of research this project best falls under:	
--	--

b. Educational	<p>Social & Behavioral: Research that deals with human attitudes, beliefs, and behaviors. Studying the neurology, anatomy, and physiology that underlies perception, learning, instinctual behavior, and emotional responses. Includes behavioral and psychological interventions.</p> <p>Educational: Research in educational settings involving educational practices. For example: research on regular and special education instructional strategies; effectiveness or comparison among instructional techniques, curricula, or classroom management methods.</p> <p>Biomedical: Research designed to evaluate the safety, effectiveness, or usefulness of a medical intervention; diagnostic procedures; preventive measures; specific disease processes; human functioning and development; and human genome and genetic markers.</p> <p>Health Services: Research on how social, financial, and organizational factors, affect access and/or delivery of health care.</p>
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C1.2. Please select the risk level of the study.	
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Minimal Risk	<ul style="list-style-type: none"> "Minimal Risk" is when the probability and magnitude of harm or discomfort anticipated in the proposed research are not greater, in and of themselves, than the harm and discomfort ordinarily encountered in daily life or during the performance of routine physical or psychological examinations or tests.
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	<ul style="list-style-type: none"> • For example, the risk of drawing a small amount of blood from a healthy individual for research purposes is no greater than the risk of doing so as part of routine physical examination, so this activity would be minimal risk. • Most survey, interview, oral history, focus group, and program evaluations are considered no greater than minimal risk. However, in some circumstances asking questions about illegal activities (such as drug use) or private and sensitive activities (such as sexual behavior) may involve more than minimal risk and require full board review. • Studies involving x-ray emitting equipment or devices without FDA approval are considered more than minimal risk and require full board review. • Activities that may be considered minimal risk for healthy adults may involve more than minimal risk for some populations (such as children, pregnant women, prisoners, cognitively impaired adults, or elderly).
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C2. Exempt or Expedited

<p>C2. SECTION NOTES:</p> <ul style="list-style-type: none"> • Select the review type and category (more than 1 category may be selected) you believe the study falls into. Upon review, the IRB office may change the requested type of review. • The most common Exempt Categories for social science studies are 1 (educational settings) and 2 (surveys, interviews, and observations). Studies involving surveys and/or interviews with minors WILL NOT qualify for exempt review. To help determine if your study qualifies for Exempt Status, see the checklist the IRB Reviewer uses. • The most common Expedited Categories for social science studies are 5 (secondary data analysis) and 7 (interviews and surveys). To help determine if your study qualifies for Expedited Status, see the checklist the IRB Reviewer uses.
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<p>C2.1. Exempt Review. For a project to qualify for Exempt Review, all of the project's activities must fall under one or more of the following categories and cannot be more than "minimal risk." Select all that apply.</p> <p><i>No answer provided.</i></p>

<p>C2.2. Expedited Review. For a project to qualify for Expedited Review, all of the project's activities must fall under one or more of the following categories and cannot be more than "minimal risk." Select all that apply.</p> <p>Category 7 - Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.</p>

D. funding details

<p>D. SECTION NOTES:</p> <ul style="list-style-type: none"> • Federally funded studies (e.g., NIH, CDC, NSF, etc.) require IRBs to review the grant application for consistency in human subject interaction/intervention and protections. You will be prompted to attach the grant application in Section Y5 of this form.

<p>D1. This study's funding source is or will be: (Select all that apply.)</p> <p>b. FEDERAL: OTHER (NSF, DOJ, DE, DOD, DOE, etc.)</p>

<p>D2. Provide the funding agency's name and address. Enter N/A if the study is not funded.</p> <p>U.S. Department Of Education Office of Postsecondary Education Lyndon Baines Johnson (LBJ) Building 400 Maryland Avenue, S.W. Washington, DC 20202 Main Telephone: 202-453-6914</p>
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D3. UWM Proposal/ grant # (if applicable):
P116Q140006

E. study locations data entry

E1. Describe the location(s) where study activities will take place.
All participants will be able to complete this online survey at their convenience in whatever location they see fit. Data analysis will take place at the R2D2 Center at the University of WI-Milwaukee.

SECTION NOTES:

- **IMPORTANT:** Projects involving non-UWM investigators, facilities, and/or patients, students, employees (for example, MCW, Aurora, Marquette University, etc.) may require that institution's IRB review. Please contact the collaborating performance site **BEFORE** submitting to UWM to determine whether the site requires any additional review/approval. If this is not done, delays in reviewing the study may occur. If another site requests to have a single IRB of Record (also called a deferral), please contact the UWM IRB office for guidance.
- If the project has received IRB approval from another institution, attach a copy of the IRB approval letter in Section Y7.
- Projects taking place at Milwaukee Public Schools require additional review/approval. Visit [MPS site](#).

E2. Please describe any other institutional reviews that are needed for this study. If none, state N/A. If you have any documentation from other institutions, please attach in Section Y.
N/A

F. study involvement

F1. This study involves the following activities/articles (select all that apply):

C. Questionnaires/Surveys	<ul style="list-style-type: none">• Internet Research is subject to additional guidelines. See IRB website.• Ionizing radioactive materials or radiation producing devices located here on campus requires the review and approval from the Radiation Safety Program. See Radiation Safety website.
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F1a. Specify Other
No answer provided.

G. Informed Consent

SECTION NOTES:

Obtaining and documenting subject's signed (can be written or electronic) informed consent is required. Consent forms must include elements such as the purpose of the study, study procedures, risks, benefits, alternatives, confidentiality, researcher and IRB contact information and the voluntary rights of the participant. The UWM IRB has [several consent templates available on the UWM IRB website](#) that researchers may use for guidance. Please attach consent form(s) in Section Y3.

A request to waive obtaining, altering or documenting consent may be granted if justified. The different types of consent waivers are explained below. To request a Waiver, please complete the [Waiver to Obtain/Document/Alter Consent Request Form](#) and attach it in section Y3.

I. A **waiver to obtain informed consent** can be requested for studies with no direct contact or involvement with human subjects. Examples:

- secondary analysis of identifiable dataset;
- reviewing a large number of patient charts; and
- research on identifiable specimens

II. A **waiver to alter the required elements of the informed consent** means that consent is still obtained. However, the consent does not contain all the required elements (<http://www.hhs.gov/ohrp/humansubjects/guidance/45cfr46.htm#46.111>). Examples:

- Not disclosing the true purpose (a required element) of the study in the consent document because it may bias what is being tested.

III. A **waiver to document informed consent** can be requested for studies where the subject’s signature is not obtained. Waiving documentation still requires that a written consent document be presented to the subject. However, the subject’s signature is not obtained. Most often, the subject is presented with a consent letter (on computer screen or on paper) explaining that by clicking the “continue button” or completing and returning the survey they are consenting to participate. Examples:

- anonymous survey conducted on paper and pencil;
- confidential online survey; and
- studies where privacy and confidentiality would be compromised by having a signed document linking the subject to the study. E.g., interviews on illegal activities or HIV status

IV. A request to **obtain verbal consent** for **Exempt** research will require the IRB to approve a summary/script of what is to be said to the subject. Example:

- cases where subjects are not able to receive a written consent ahead of time, such as a random digit dialing for telephone surveys where subjects are read a brief consent script

V. A request to **obtain verbal consent** for **Expedited and Full Board** research will require: (1) the IRB to approve a summary/script containing the required elements of consent that is to be verbally presented to the subject, (2) a witness to the verbal presentation of this information, (3) the subject signs a brief document giving consent for participation, (4) the witness signs both the brief document and the summary/script, (5) the researcher obtaining consent signs the summary/script, (6) the researcher keeps all signed documents (summary/script signed by witness and researchers, and brief document signed by witness and subject), and (7) the subject keeps copies (either signed or unsigned) of the brief document. Examples:

- subject populations where many are illiterate;
- it is against one’s culture to sign one’s name to a document

G1. How will the consenting of subjects take place? Please attach the consent form(s) and/or the Waiver to Obtain/Document/Alter Informed Consent Request Form in Section Y3.

d. Waiver to document informed consent can be requested for studies where the subject’s signature is not collected but all the other required elements must be presented to the subject. For example, informed consent process is done verbally, anonymous survey conducted on paper and pencil, confidential online survey, etc. Complete Waiver to Obtain/Document/Alter Informed Consent Request Form and a consent form and attach in Section Y3.

Click here to access:
[IRB consent templates](#)

[Waiver to obtain/document/alter informed consent Request Form](#)

SECTION H: HIPAA and Conflicts of Interest

H: Health Information Privacy & Accountability Act (HIPAA) and Protected Health Information (PHI)

What is it?

The Health Information Portability and Accountability Act (HIPAA) Privacy Rule is Federal legislation which regulates the way certain health care groups, organizations, or businesses, handle the individually identifiable health information known as protected health information (PHI). The Privacy Rule establishes the conditions under which covered entities can use or disclose PHI for many purposes, including for research. Researchers seeking to use PHI from a UWM Covered Department or an external covered entity as part of their research study must comply with HIPAA. Compliance typically requires either obtaining a HIPAA Authorization during the informed consent process or obtaining a Waiver of such Authorization from the IRB.

What is PHI?

Protected health information (PHI) includes information relating to an individual’s past, present or future physical or mental health or condition, the provision of health care services or the past, present or future payment for such services. It only covers information that is individually identifiable. There are 18 identifiers under the Privacy Rule, some of which include: names, dates, geographic locations, telephone numbers, medical record numbers, account numbers, biometric identifiers, and other unique identifying number or code.

If you are asking a participant to self-report his medical history outside a UWM covered department or a clinical/hospital setting and do not wish to see his/her medical record, the information is not considered PHI under HIPAA.

What are UWM's Covered Departments?

UWM is considered a "hybrid entity" under HIPAA because it has some departments and units that are covered by HIPAA and some that are not. All employees and volunteers in UWM's Covered Departments must comply with the Privacy and Security Rules, including in connection with research.

UWM's Covered Departments are currently comprised of the following entities:

A. Provider Units:

- 1. Community Audiology Services (College of Health Science)
- 2. Institute for Urban Health Partnerships (College of Nursing)

B. Administrative Units:

- a. Privacy Officers for Covered Departments (See current List of UWM's Privacy Officers.)
- b. UITS Selected Support Staff (Division of Finance & Administrative Affairs)
- c. Other (Non-UITS) IT personnel serving Covered Departments
- d. Internal Audit (Division of Finance & Administrative Affairs)
- e. Office of Legal Affairs (Division of Finance & Administrative Affairs)
- f. Risk Management (Division of Finance & Administrative Affairs)

Who do I contact to for more information on this?

Contact the UWM Office of Legal Affairs (<https://www4.uwm.edu/legal/hipaa/>)

H1. Based on the information above, are you conducting this research as part of a UWM HIPAA covered department AND using Protected Health Information (PHI)?

No

H2. Based on the information above, are you conducting this research outside of a UWM HIPAA covered department but using Protected Health Information (PHI) from a HIPAA covered entity (either at UWM or another institution)?

No

If you answered YES to H1 or H2, you must:

- 1. Obtain authorization from Research Participants using an "Authorization Form for Research For the Use and Disclosure of Patient Health Information" OR Combine the authorization language in the consent form OR The IRB must approve a request to waive authorization by completing the "Application for IRB Waiver of Authorization or Altered Authorization under the HIPAA Privacy Rule." Please attach in section Y3.
- 2. Complete online HIPAA training at <https://www4.uwm.edu/legal/hipaa/training/login/>.
- 3. If you are collecting PHI from a non-UWM HIPAA covered entity, you should verify from that institution if any additional approvals or forms are needed.

H. Conflicts of Interest

When researchers are involved with commercial ventures, there is the potential for diverting from their primary mission of research and education. Conflicts of interest can arise when the interests of the commercial venture differ from the interests and primary obligations of the researcher, or when the commercial venture consumes an undue share of employee time. Please visit the UWM Graduate School website for more details regarding the Conflict of Interest Policy and procedures: <http://www.graduateschool.uwm.edu/research/data-policy/phs-conflicts-of-interest/>

H3. Please describe any potential conflict of interest key personnel involved in the proposed research activity may have that requires disclosure? (If none, please state N/A.)

N/A

Y: Attachments

Y1. Attach IRBManager Protocol Form.

IRB Protocol Form 2016.6.3

Protocol Form

Download and save the IRBManager Protocol Form. Complete and attach in Section Y1.

Y2. Recruitment Materials - Including flyers, advertisements, recruitment scripts, emails, etc.
 Recruitment info DETA 2016.6.7.docx Recruitment Material #1

Y3. Complete and attach Consent/Assent form(s) and/or Waiver to Obtain/Document/Alter Informed Consent.

Consent form and Waiver to Alter Consent 2016.6.3 Consent form and Waiver to Alter Consent 2016.6.3	Consent Form #1 Consent Form #1	Download and save Consent/Assent Forms. Complete and attach in Y3.
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Y4. Data Collection Instruments - Survey/Interview questions, chart review data collection forms, etc.

Accessibility Intervention Survey COURSE Survey Demographics Diagnosis Survey Demographics Functional Impairments Survey Demographics Technology Usage Survey	Survey #1 Survey #2 Survey #3 Survey #4 Survey #5
---	---

Y5. Grant Application if Federally funded
 No answer provided.

Y6. Institutional Permission or other IRB Approval. If multiple IRBs are involved and an IRB Agreement has been requested/approved, attach correspondence (e.g., email from IRB).
 No answer provided.

Y7. Other Documents that may be important for IRB review.
 No answer provided.

Z. Assurances

Z.1 As Principal Investigator or Student Principal Investigator, I certify the following:

<p>a. I have reviewed this protocol submission and acknowledge my responsibilities as Principal Investigator.</p> <p>b. The information in this submission accurately reflects the proposed research.</p> <p>c. I will not initiate this study until I receive written approval from the IRB.</p> <p>d. I will promptly report to the IRB any unanticipated problems and adverse events, as well as any findings during the course of the study that may affect the risks and benefits to the subjects.</p> <p>e. I will obtain prior written approval for modifications (amendments) to this protocol including, but not limited to, changes in procedures.</p> <p>f. I have completed the UWM Human Subjects Training Module.</p> <p>g. I have determined whether or not I am accessing protected health information as part of my proposed research, and if so, I accept responsibility for assuring adherence to HIPAA.</p> <p>h. If I am using PHI in my research, I have visited the UWM HIPAA Training website (www.hipaa.uwm.edu) and have completed all required training, and I am complying with HIPAA's requirements for researchers.</p> <p>i. I accept responsibility for assuring adherence to applicable Federal and State research regulations and UWM policies relative to the protection of the rights and welfare of the subjects enrolled in this study.</p> <p>j. I understand that the UWM IRB operates under a Federal Wide Assurance (FWA) from the Department of Health and Human Services.</p> <p>k. Unless given Exempt Status, I understand that this study is subject to continuing review and approval by the IRB.</p>	<p><i>All must be checked.</i></p>
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IMPORTANT Information about submitting this form:

• If you are the author of this form and would like to share it with co-investigators for editing/reviewing BEFORE submitting, please use the “Collaborators” option at the top of this page. The “collaborators” will receive an email with a link to this form and will then have the ability to review and/or edit the submission.

• To submit the form, select the “Sign” box below. You will then be requested to enter your user name and/or password to indicate that you have read and understood the above assurances. After you enter your password, you will need to select the “Submit” box on the next page to complete your part of the submission process. When you receive a message that the form has been submitted, you have properly submitted the form.

• If you receive an error message when signing off on this form, please try changing your web browser. If you still receive an error message, please contact the IRB Office (irbinfo@uwm.edu or 414-229-3173 or 414-229-3182) and provide us with the date/time of the error, the browser you are using, your name, and the study title.

• If you are not the PI of this study, after you submit the form the PI will receive an email notification requiring him/her to review the submission. The PI has the ability to either approve and submit the form to the IRB or reject the form back to you for revisions. The PI will receive weekly reminders about this form, until the PI submits or rejects the form. The IRB recommends you also communicate the PI’s role in the submission process to ensure the process is completed.

Signed Tuesday, June 07, 2016 5:52:59 PM ET by Love, Jacqueline

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Transformers on PRODWEB1 at 2016-06-07 21:53:42Z

IRBManager Protocol Form

NOTE: If you are unsure if your study requires IRB approval, please review the UWM IRB Determination Form.

Instructions: Each Section must be completed unless directed otherwise. Incomplete forms will delay the IRB review process and may be returned to you. Enter your information in the **colored boxes** or place an **“X”** in front of the appropriate response(s). If the question does not apply, write **“N/A.”**

SECTION A: Title

A1. Full Study Title:

Validation of distance education accessibility research tools

SECTION B: Study Duration

B1. What is the expected start date? *Data collection, screening, recruitment, enrollment, or consenting activities may not begin until IRB approval has been granted. Format: 07/05/2011*

06/01/2016

B2. What is the expected end date? *Expected end date should take into account data analysis, queries, and paper write-up. Format: 07/05/2014*

10/31/2016

SECTION C: Summary

C1. Write a brief descriptive summary of this study in Layman Terms (non-technical language):

As more and more coursework is moved to an online platform (or has online components) it is vital to ensure that this material is still accessible by all students. This research focuses on the proper identification and evaluation of the universal design features of distance education courses, especially as they pertain to students with disabilities. We have created a series of surveys that need to be validated and evaluated for usability. In order to do this, we will be completing this research in two parts.

Part A: Beta Phase

For Beta testing, we will be utilizing occupational therapy students (students of the PI) and staff members of the research center who have volunteered to help us test these surveys. The students will have one week to take all surveys online and can take them at any time during that week. A total of 4 surveys exist (disability identification, COURSE, Accessibility Interventions, and Demographics) but the Demographics Survey has 3 parts which results in 6. For the survey that evaluates COURSE and Accessibility Interventions, the students will be asked to evaluate a neuroscience course that they just took so that all responses are similar. Grades for this course have already been assigned so this survey can have no impact on their grade and all survey responses will be anonymous. Since the three demographics surveys are based on students who have impairments, all students will be assigned an impairment that is commonly found in post-secondary education (according to literature below). The occupational therapy students will use their knowledge of these disabilities to fill out the survey according to the condition they have been assigned. Overlap with impairment assignments will allow us to establish consistency with responses of similar conditions. Due to the fact that these conditions are assigned, we will be able to identify who took the demographics surveys. However, these responses reflect the condition they were assigned and do not reflect the true responses of those students so it will not compromise personal or medical information about the participant. After each survey, students will evaluate the survey and comment on its efficiency, the clarity

of the wording, and the flow of the questions. After Beta is complete, responses and feedback will be analyzed and any appropriate changes to wording of phrasing will be made.

Part B: Main Study

For this phase of the study, the improved surveys will be sent out to our beta testing list or teachers and researchers to further evaluate reliability and usability of all three surveys. These participants will take the revised versions of the surveys and will comment on efficiency, completeness, and usability of the surveys. Results for this phase will be completely anonymous. Analysis of responses will be completed once all feedback has been given.

C2. Describe the purpose/objective and the significance of the research:

The purpose of this study is to establish reliability and validity of the created survey tools (Demographics, Accessibility Interventions, and COURSE evaluations) in order to learn how they can best be used in education. Upon validation, these survey tools could be used by distance education instructors and students to evaluate the universal design features in the coursework and identify areas for improvement. These survey tools could also be used by researchers who are inquiring into the field of distance education to ensure that students of all abilities are being considered with any research or new course feature implementation.

C3. Cite the most relevant literature pertaining to the proposed research:

Anson, D., Kim, J., & Smith, R. O. (2008). *P3 (Presenter Presenting Presentation) AUDIT*. Developed by the Rehabilitation Research Design and Disability (R₂D₂) Center at the University of Wisconsin Milwaukee.

Anson, D. & Smith, R. O. (2008). *Classroom AUDIT*. Developed by the Rehabilitation Research Design and Disability (R₂D₂) Center at the University of Wisconsin Milwaukee.

Anson, D., Smith, R. O., & Rust, K. L. (200). *Syllabus AUDIT*. Developed by the Rehabilitation Research Design and Disability (R₂D₂) Center at the University of Wisconsin Milwaukee.

Burgstahler, S., & Cory, R. (2008). *Universal design in higher education: From principles to practice*. Harvard Educational Pub Group.

O'Connor, T., Christiaansen, R., Anson, D., Rust, K. L., & Smith, R. O. (2008). *Test and test item AUDIT*. Developed by the Rehabilitation Research Design and Disability (R₂D₂) Center at the University of Wisconsin Milwaukee.

Siegler, S. (2006). *Taxonomy: Categories of Student Tasks for Needs Assessment for Universal Access in Post-Secondary Education*.

SECTION D: Subject Population

Section Notes...

- D1. If this study involves analysis of de-identified data only (i.e., no human subject interaction), IRB submission/review may not be necessary. **Please review the [UWM IRB Determination Form](#) for more details.**

D1. Identify any population(s) that you will be specifically targeting for the study. Check **all that apply: (Place an "X" in the column next to the name of the special population.)**

X	Existing Dataset(s)	Institutionalized/ Nursing home residents recruited in the nursing home
X	UWM Students of PI or study staff	Diagnosable Psychological Disorder/Psychiatrically impaired
X	UWM Students (but not of PI or study staff)	Decisionally/Cognitively Impaired
X	Non-UWM students to be recruited in their educational setting, i.e. in class or at school	Economically/Educationally Disadvantaged
X	UWM Staff or Faculty	Prisoners
	Pregnant Women/Neonates	International Subjects (residing outside of the US)
	Minors under 18 and ARE NOT wards of the State	Non-English Speaking
	Minors under 18 and ARE wards of the State	Terminally ill
	Other (Please identify):	

D2. Describe the subject group and enter the total number to be enrolled for each group. For example: teachers-50, students-200, parents-25, student control-30, student experimental-30, medical charts-500, dataset of 1500, etc. Then enter the total number of subjects below. Be sure to account for expected drop outs. For example, if you need 100 subjects to complete the entire study, but you expect 5 people will enroll but “drop out” of the study, please enter 105 (not 100).

Describe subject group:	Number:
UWM Students of PI/staff (beta group)	23
R2D2 Research Center Staff Members (beta group)	15
UWM Faculty and Students	1800
Existing Beta Signups (teachers and researchers)	27
TOTAL # OF SUBJECTS:	165
TOTAL # OF SUBJECTS (If UWM is a collaborating site for a multi institutional project):	1865

D3. For each subject group, list any major inclusion and exclusion criteria (e.g., age, gender, health status/condition, ethnicity, location, English speaking, etc.) and state the justification for the inclusion and exclusion criteria:

Part A: Only R2D2 staff and UWM OT Dec 2017 cohorts
Part B: Students in distance education and in-person courses within the UW system

SECTION E: Study Activities: Recruitment, Informed Consent, and Data Collection

Section Notes...

- Reminder, all recruitment materials, consent forms, data collection instruments, etc. should be attached for IRB review.
- The IRB welcomes the use of flowcharts and tables in the consent form for complex/ multiple study activities.

In the table below, chronologically describe all study activities where human subjects are involved.

- In **column A**, give the activity a short name. Please note that Recruitment, Screening, and consenting will be activities for almost all studies. Other activities may include: Obtaining Dataset, Records Review, Interview, Online Survey, Lab Visit 1, 4 Week Follow-Up, Debriefing, etc.
- In **column B**, describe who will be conducting the study activity and his/her training and/or qualifications to complete the activity. You may use a title (i.e. Research Assistant) rather than a specific name, but training/qualifications must still be described.
- In **column C**, describe in greater detail the activities (recruitment, screening, consent, surveys, audiotaped interviews, tasks, etc.) research participants will be engaged in. Address **where, how long,** and **when** each activity takes place.
- In **column D**, describe any possible risks (e.g., physical, psychological, social, economic, legal, etc.) the subject may *reasonably* encounter. Describe the **safeguards** that will be put into place to minimize possible risks (e.g., interviews are in a private location, data is anonymous, assigning pseudonyms, where data is stored, coded data, etc.) and what happens if the participant gets hurt or upset (e.g., referred to Norris Health Center, PI will stop the interview and assess, given referral, etc.).

A. Activity Name:	B. Person(s) Conducting Activity	C. Activity Description (Please describe any forms used):	D. Activity Risks and Safeguards:
Recruitment	Jackie Love and Roger Smith	Recruitment of participants through emails and face to face contact	Negligible
Screening	Jackie Love	Based on who survey is sent to	Negligible
Obtaining Consent	Jackie Love	Consent will be included at the beginning of the surveys	Negligible
Data Collection	Jackie Love	Collected on Qualtrics	Negligible
Data Analysis	Jackie Love		Negligible
Writing	Jackie Love and Roger Smith		Negligible

E2. Explain how the data will be analyzed or studied (i.e. quantitatively or qualitatively) and how the data will be reported (i.e. aggregated, anonymously, pseudonyms for participants, etc.):

Descriptive analysis will be used to study the data.

SECTION F: Data Security and Confidentiality

Section Notes...

- Please read the [IRB Guidance Document on Data Confidentiality](#) for more details and recommendations about data security and confidentiality.

F1. Explain how study data/responses will be stored in relation to any identifying information (name, birthdate, address, IP address, etc.)? Check all that apply.

Identifiable - Identifiers are collected and stored with study data.

Coded - Identifiers are collected and stored separately from study data, but a key exists to link data to identifiable information.

De-identified - Identifiers are collected and stored separately from study data without the possibility of linking to data.

Anonymous - No identifying information is collected.

If more than one method is used, explain which method is used for which data.

N/A

F2. Will any recordings (audio/video/photos) be done as part of the study?

Yes

No [SKIP THIS SECTION]

If yes, explain what activities will be recorded and what recording method(s) will be used. Will the recordings be used in publications or presentations?

N/A

F3. In the table below, describe the data storage and security measures in place to prevent a breach of confidentiality.

- In **column A**, clarify the type of data. Examples may include screening data, paper questionnaires, online survey responses, EMG data, audio recordings, interview transcripts, subject contact information, key linking Study ID to subject identifiers, etc.

<ul style="list-style-type: none"> • In column B, describe the storage location. Examples may include an office in Enderis 750, file cabinet in ENG 270, a laptop computer, desktop computer in GAR 420, Qualtrics servers, etc. • In column C, describe the security measures in place for each storage location to protect against a breach of confidentiality. Examples may include a locked office, encrypted devices, coded data, non-networked computer with password protection, etc. • In column D, clarify who will have access to the data. • In column E, explain when or if data will be discarded. 				
A. Type of Data	B. Storage Location	C. Security Measures	D. Who will have access	E. Estimated date of disposal
Online survey responses-part A	Qualtrics servers	All surveys but demographic surveys are anonymous. Demographic surveys will be coded based on assigned condition (none of the information provided in demographic surveys in this phase actually provides accurate health information for the participant)	R2D2 staff	Results will be kept on qualtrics servers to be accessed by R2D2 staff. No disposal date planned.
Online survey responses-Part B	Qualtrics servers	Surveys are anonymous and confidential. Qualtrics is password protected. Anything pertaining to this or other R2D2 studies that is not online is locked behind 2 doors in the R2D2 research lab	R2D2 Staff	Results will be kept on qualtrics servers to be accessed by R2D2 staff. No disposal date planned.
Paper questionnaire (same as qualtrics questionnaires and provided only upon request)	R2D2 office in a locked filing cabinet	Surveys are anonymous and confidential. All survey results not online will be locked behind 2 doors in the R2D2 research lab	R2D2 Staff	Results will be kept on qualtrics servers to be accessed by R2D2 staff. No disposal date planned.

F4. Will data be retained for uses beyond this study? If so, please explain and notify participants in the consent form.

N/A

SECTION G: Benefits and Risk/Benefit Analysis
Section Notes... <ul style="list-style-type: none"> • Do not include Incentives/ Compensations in this section.

G1. Describe any benefits to the individual participants. If there are no anticipated benefits to the subject directly, state so. Describe potential benefits to society (i.e., further knowledge to the area of study) or a specific group of individuals (i.e., teachers, foster children).

Teachers who choose to encourage student participation for their courses will learn more about the accessibility of their courses and the diversity of the students who take their course. This information can be useful for teachers who are looking to improve their courses and enhance their teaching by making the course design more universal.

G2. Risks to research participants should be justified by the anticipated benefits to the participants or society. Provide your assessment of how the anticipated risks to participants and steps taken to minimize these risks (as described in Section E), balance against anticipated benefits to the individual or to society.

There are no risks to the participants. The anonymity and confidentiality of all participants is maintained to prevent repercussions in the course based on answers. All participants can choose not to participate and if they feel as though they do not want their data to be recorded at any time while taking a survey, they do not have to submit it. All surveys are administered online so the participants can complete them in a location and at a time of their choosing.

SECTION H: Subject Incentives/ Compensations
Section Notes... <ul style="list-style-type: none">• H2 & H3. The IRB recognizes the potential for undue influence and coercion when extra credit is offered. The UWM IRB, as also recommended by OHRP and APA Code of Ethics, agrees when extra credit is offered or required, prospective subjects must be given the choice of an equitable, non-research alternative. The extra credit value and the non-research alternative must be described in the recruitment material and the consent form.• H4. If you intend to submit to Accounts Payable for reimbursement purposes make sure you understand the UWM “Payments to Research Subjects” Procedure 2.4.6 and what each level of payment confidentiality means (click here for additional information).

H1. Does this study involve incentives or compensation to the subjects? For example cash, class extra credit, gift cards, or items.

- Yes
- No [SKIP THIS SECTION]

H2. Explain what (a) the item is, (b) the amount or approximate value of the item, and (c) when it will be given. For extra credit, state the number of credit hours and/or points. (e.g., \$5 after completing each survey, subject will receive [item] even if they do not complete the procedure, extra credit will be award at the end of the semester):

The research team will offer incentives for the participants of the Beta test group in part A in the form of doughnuts if 80% or more of the group completes the survey. This incentive encourages the group to complete the surveys and encourage each other to do so as well. We will only be offering doughnuts to the participants in Part A because they are going to have to do more work in helping us to get the final version of the survey ready and streamlined for the Part B participants.

H3. If extra credit is offered as compensation/incentive, please describe the specific alternative activity which will be offered. The alternative activity should be similar in the amount of time involved to complete and worth the same number of extra credit points/hours. Other research studies can be offered as additional alternatives, but a non-research alternative is required.

No extra credit will be offered by the research team. However, if professors want their students to participate in the research, they are free to offer extra credit for their individual courses as they choose. A question exists on the surveys that asks students if they are completing the survey for extra credit. If they select “yes” they are directed to email Jackie at lovej@uwm.edu with their name, their professor’s name, and their course name/number. Jackie will compile a list for the professors and email them at the end with the names of the students who completed the survey. For those who do not want to participate in the survey but still want to get extra credit for their course, an alternate form of extra credit is available. This

alternative extra credit involves reading an article on universal design and post-secondary education and writing a short answer about why universal design in education is important. This alternative extra credit is estimated to also take 10 minutes to complete, same as the survey. Similarly, when this assignment is completed, the participant will be instructed to email Jackie at lovej@uwm.edu with their name, their professor's name, and their course name/number.

H4. If cash or gift cards, select the appropriate confidentiality level for payments (see section notes):

Level 1 indicates that confidentiality of the subjects is not a serious issue, e.g., providing a social security number or other identifying information for payment would not pose a serious risk to subjects.

- For payments over \$50, choosing Level 1 requires the researcher to collect and maintain a record of the following: The payee's name, address, and social security number, the amount paid, and signature indicating receipt of payment (for cash or gift cards).
- When Level 1 is selected, a formal notice is not issued by the IRB and the Account Payable assumes Level 1.
- Level 1 payment information will be retained in the extramural account folder at UWM/Research Services and attached to the voucher in Accounts Payable. These are public documents, potentially open to public review.

Level 2 indicates that confidentiality is an issue, but is not paramount to the study, e.g., the participant will be involved in a study researching sensitive, yet not illegal issues.

- Choosing a Level 2 requires the researcher to maintain a record of the following: The payee's name, address, and social security number, the amount paid, and signature indicating receipt of payment (for cash or gift cards).
- When Level 2 is selected, a formal notice will be issued by the IRB.
- Level 2 payment information, including the names, are attached to the PIR and become part of the voucher in Accounts Payable. The records retained by Accounts Payable are not considered public record.

Level 3 indicates that confidentiality of the subjects must be guaranteed. In this category, identifying information such as a social security number would put a subject at increased risk.

- Choosing a Level 3 requires the researcher to maintain a record of the following: research subject's name and corresponding coded identification. This will be the only record of payee names, and it will stay in the control of the PI.
- Payments are made to the research subjects by either personal check or cash. Gift cards are considered cash.
- If a cash payment is made, the PI must obtain signed receipts.
- If the total payment to an individual subject is over \$600 per calendar year, Level 3 cannot be selected.

If Confidentiality Level 2 or 3 is selected, please provide justification.

SECTION I: Deception/ Incomplete Disclosure (INSERT "NA" IF NOT APPLICABLE)
Section Notes... <ul style="list-style-type: none">• If you cannot adequately state the true purpose of the study to the subject in the informed consent, deception/ incomplete disclosure is involved.

I1. Describe (a) what information will be withheld from the subject (b) why such deception/ incomplete disclosure is necessary, and (c) when the subjects will be debriefed about the deception/ incomplete disclosure.

Results of the survey will be withheld from the students and the teacher until all data has been analyzed. Once the data analysis is complete, all participants can have access to their class data upon request. This withholding prevents added bias for any students who have yet to complete the surveys.

IMPORTANT – Make sure all sections are complete and attach this document to your IRBManager web submission in the Attachment Page (Y1).



Department of University Safety & Assurances

New Study - Notice of IRB Exempt Status

Melody Harries
IRB Administrator
Institutional Review Board
Engelmann 270
P. O. Box 413
Milwaukee, WI 53201-0413
(414) 229-3182 phone
(414) 229-6729 fax

<http://www.irb.uwm.edu>
harries@uwm.edu

Date: June 24, 2016

To: Roger Smith, PhD
Dept: Health Sciences

CC: Jacqueline Love

IRB#: 16.385

Title: Validation of distance education accessibility research tools

After review of your research protocol by the University of Wisconsin – Milwaukee Institutional Review Board, your protocol has been granted Exempt Status under **Category 1** as governed by 45 CFR 46.101(b).

This protocol has been approved as exempt for three years and IRB approval will expire on **June 23, 2019**. If you plan to continue any research related activities (e.g., enrollment of subjects, study interventions, data analysis, etc.) past the date of IRB expiration, please respond to the IRB's status request that will be sent by email approximately two weeks before the expiration date. If the study is closed or completed before the IRB expiration date, you may notify the IRB by sending an email to irbinfo@uwm.edu with the study number and the status, so we can keep our study records accurate.

Any proposed changes to the protocol must be reviewed by the IRB before implementation, unless the change is specifically necessary to eliminate apparent immediate hazards to the subjects. The principal investigator is responsible for adhering to the policies and guidelines set forth by the UWM IRB, maintaining proper documentation of study records and promptly reporting to the IRB any adverse events which require reporting. The principal investigator is also responsible for ensuring that all study staff receive appropriate training in the ethical guidelines of conducting human subjects research.

As Principal Investigator, it is also your responsibility to adhere to UWM and UW System Policies, and any applicable state and federal laws governing activities which are independent of IRB review/approval (e.g., [FERPA](#), [Radiation Safety](#), [UWM Data Security](#), [UW System policy on Prizes, Awards and Gifts](#), state gambling laws, etc.). When conducting research at institutions outside of UWM, be sure to obtain permission and/or approval as required by their policies.

Contact the IRB office if you have any further questions. Thank you for your cooperation, and best wishes for a successful project.

Respectfully,

Melody Harries
IRB Administrator



UNIVERSITY of WISCONSIN
MILWAUKEE
 Department of University Safety & Assurances

Melody Harries
 IRB Administrator
 Institutional Review Board
 Engelmann 270
 P. O. Box 413
 Milwaukee, WI 53201-0413
 (414) 229-3182 phone
 (414) 229-6729 fax

<http://www.irb.uwm.edu>
harries@uwm.edu

Modification/Amendment Notice of IRB Exempt Status

Date: September 21, 2016

To: Roger Smith, PhD
Dept: R2D2

CC: Jacqueline Love

IRB#: 16.385

Title: Validation of distance education accessibility research tools

After review of your proposed changes to the research protocol by the University of Wisconsin – Milwaukee Institutional Review Board, your protocol still meets the criteria for Exempt Status under **Category 1** as governed by 45 CFR 46.101 subpart b, and your protocol has received modification/amendment approval for:

- Changes in survey questions
- Addition of extra credit option
- Increase in total number of subjects

This protocol has been approved as exempt for three years and IRB approval will expire on **June 23, 2019**. If you plan to continue any research related activities (e.g., enrollment of subjects, study interventions, data analysis, etc.) past the date of IRB expiration, please respond to the IRB's status request that will be sent by email approximately two weeks before the expiration date. If the study is closed or completed before the IRB expiration date, you may notify the IRB by sending an email to irbinfo@uwm.edu with the study number and the status, so we can keep our study records accurate.

Any proposed changes to the protocol must be reviewed by the IRB before implementation, unless the change is specifically necessary to eliminate apparent immediate hazards to the subjects. The principal investigator is responsible for adhering to the policies and guidelines set forth by the UWM IRB, maintaining proper documentation of study records and promptly reporting to the IRB any adverse events which require reporting. The principal investigator is also responsible for ensuring that all study staff receive appropriate training in the ethical guidelines of conducting human subjects research.

As Principal Investigator, it is also your responsibility to adhere to UWM and UW System Policies, and any applicable state and federal laws governing activities which are independent of IRB review/approval (e.g., [FERPA](#), [Radiation Safety](#), [UWM Data Security](#), [UW System policy on Prizes, Awards and Gifts](#), state gambling laws, etc.). When conducting research at institutions outside of UWM, be sure to obtain permission and/or approval as required by their policies.

Contact the IRB office if you have any further questions. Thank you for your cooperation and best wishes for a successful project.

Respectfully,

Melody Harries
 IRB Administrator

Appendix B: Recruitment Email

Hello-

My name is Jackie Love and I am an occupational therapy graduate student at UWM in the college of health sciences. I am currently conducting research to examine how students with disabilities approach disability identification and accommodation needs in post-secondary education. I am looking for students at UWM to participate in one survey for my research. The survey would take no more than 5 minutes to complete and could be distributed to your class via email (internet survey) or I could come to your class and administer a paper version for those classes that are not online. The data that I would be able to collect would help me with recommendations for future coursework and educational policy and will hopefully provide justification for additional support for educators. Attached is a description of the project. Please let me know if you would be willing to encourage your students to take the surveys and help me with my research. Once I receive confirmation from you, we can schedule a time and place for the survey to be administered.

Thank you so much for your time.

Jackie Love
Graduate Assistant, R2D2 Center
MS Occupational Therapy, December 2017
University of Wisconsin- Milwaukee
262-366-1675
lovej@uwm.edu

Appendix C: Survey

By completing this survey, you are agreeing to participate in this research

Course Name and/or Course Number: _____

How is your class administered?

- Face to Face
- Online
- Hybrid (some days are online and some are face to face)

What year are you in school?

- Freshman
- Sophomore
- Junior
- Senior
- 5th year +
- Graduate/PhD
- Other _____

What is your field of study?

- Architecture and Urban Planning
- Art and Humanities
- Business
- Education
- Engineering & Applied Sciences
- Freshwater Sciences
- Health Sciences
- Information Studies
- Letters & Sciences
- Nursing
- Public Health
- Social Welfare
- Other _____

Is English your primary language?

- Yes
- No

Do you have a disability?

- Yes
- No

How severe is your disability?

- None
- Mild
- Moderate
- Severe

Please indicate if you have any of the following categories of diagnoses. I have a diagnosis or diagnoses that belong to any of the following categories: (Select all that apply):

- Sensory Disorder- includes vision, touch, and hearing impairments
- Learning, Behavior, &/or Cognitive Disorder- includes autism, AD/HD, dyslexia, brain injuries, communication disorders, etc
- Systemic Condition- includes cancer, respiratory impairments, multiple sclerosis, allergies, spina bifida, etc
- Mobility and Orthopedic Disorder
- Communication Disorder
- Other: _____
- I do not have a diagnosis in these categories

I have an impairment affecting your education that belongs to any of the following categories:

(Select all that apply)

- I have a cognitive impairment that affects learning, memory, communication, planning, cognitive processing, problem solving, concentration, or attention
- I have a sensory impairment that impacts hearing, vision, or visual-spatial abilities
- I have a behavioral impairment that affects my anxiety, mood, social skills, non-verbal communication, flexibility, adaptability, or impulsivity
- I have a motor impairment that affects my fine motor, gross motor, stamina, or balance
- I have an impairment that does not fall into any of the categories above.
- (Please list): _____
- I do not have any type of functional impairment

Do you utilize any assistive technology which correct for your disabilities or impairments? (ex: using contacts or glasses to fully correct for impaired vision)

- Yes. I use the following technology: _____
- I use assistive technology but I do not feel like it corrects for my disability or impairment
- No, I do not use assistive technology
- I do not have a disability or impairment

Have you disclosed any disabilities or impairments to your university?

- Yes
- No
- Unsure

What are the factors that caused you to not disclose your disabilities or impairments to the university? (Select all that apply)

- Did not think it would help
- Did not know that I could
- Did not know how to disclose
- Did not want the university to know about my disability
- Do not want accommodations
- Do not need accommodations
- I do not have a disability or impairment to disclose
- Other: _____

Are you aware of the services provided by the office of disability student services (also known as ARC) here on campus?

- Yes
- No

Have you ever used the services provided by the office of disability student services?

- Yes
- No

Have you previously completed this survey for another class in the Fall 2016 semester?

- Yes
- No

**You have reached the end of the survey.
Thank you for participating!**

Appendix D: Data Collection Script

Hello my name is _____ and I work at the R2D2 Center here at UWM. We conduct research in the field of design and disability. We are currently working on a study that examines the relationship between disability and post-secondary education. We have a short survey that we would love to have you fill out if you are willing to do so. All responses are completely anonymous and will not impact your standing in this course or at this university so please be as honest as possible. The first page of the study is a full study description. This is yours to keep if you want it. Just tear off the top page and hand the rest in once completed. When filling out the survey, please answer each question in order and try not to go back and change any responses. We are interested in what your first instinct was when selecting a response. Also please note that some of the questions may seem repetitive. This is intentional as we are also playing with some wording. Please still answer all questions, even if they seem the same as other questions previously answered. Please let us know if you need any help reading or taking the survey and we will come around to help. When you are done, just raise your hand and we can come around to collect them.

Appendix E: Information on Study

University of Wisconsin – Milwaukee Consent to Participate in Online Survey Research Study

Title: Validation of distance education accessibility research tools

Persons Responsible for Research: Roger Smith, PhD, OT and Jackie Love, BS

Study Description: The purpose of this research study is to evaluate the efficiency and usability of the developed distance education accessibility research surveys as well as to establish survey validity. We are also exploring the links between different types of students who participate in post-secondary education. If you agree to participate, you will be asked to complete a survey that will take approximately 5 minutes to complete. This survey is one survey of a set of 6 surveys and research tools that are currently being tested. The questions in this survey will focus on any limitations you may experience as a student in this course. Please be as honest as possible.

Risks / Benefits: Risks to participants are considered minimal. All data will be anonymous. Your teachers and your institutions will not know who submitted what responses so anything that you say as a part of this survey will not affect your grade or standing in this course. Collection of data and survey responses using the internet involves the same risks that a person would encounter in everyday use of the internet, such as breach of confidentiality. While the researchers have taken every reasonable step to protect your confidentiality, there is always the possibility of interception or hacking of the data by third parties that is not under the control of the research team. There will be no costs for participating.

Benefits of participating include helping your professor to better their course and encourage the implementation of universal design throughout the campus. Participants will also be able to help to further future research in the field of distance education and universal design.

Limits to Confidentiality: Identifying information such as your name, email address, and the Internet Protocol (IP) address of this computer will not be asked or available to the researchers. Data will be retained on the Qualtrics website server for 5 years and will be deleted by the research staff after this time. However, data may exist on backups or server logs beyond the timeframe of this research project. Data transferred from the survey site will be saved on a password protected computer indefinitely. Only the staff at the R2D2 Research Center will have access to the data collected by this study. However, The DETA Research Center, the Institutional Review Board at UW-Milwaukee or appropriate federal agencies like the Office for Human Research Protections may review this study's records.

Voluntary Participation: Your participation in this study is voluntary. You may choose to not answer any of the questions or withdraw from this study at any time without penalty. Your decision will not change any present or future relationship with the University of Wisconsin Milwaukee.

Who do I contact for questions about the study: For more information about the study or study procedures, contact Jackie Love at lovej@uwm.edu or 262-366-1675

Who do I contact for questions about my rights or complaints towards my treatment as a research subject? Contact the UWM IRB at 414-229-3173 or irbinfo@uwm.edu Research Subject's Consent to Participate in Research: By entering this survey, you are indicating that you have read the consent form, you are age 18 or older and that you voluntarily agree to participate in this research study.

Thank you for your participation!

Jacqueline M. Love

Jackie Love
MSOT Class of 2015
UW-Milwaukee | R2D2 Center
lovej@uwm.edu

Appendix F: Course Descriptions

- Anthropology (Anthro) 102: Introduction to Anthropology: Culture and Society
 - Science of human behavior in different cultural contexts; human biological and cultural variability; human societies of the present and recent past; dynamics of culture change
- Art History (Art Hist) 101: Ancient and Medieval Art and Architecture
 - The great originative styles of Egypt, Greece, Rome, and the Christian West in architecture, sculpture, and painting
- Biomedical Sciences (BMS) 301: Fundamentals of Human Pathology
 - Pathological mechanisms underlying disease states, diagnosis and treatment of these disorders; topics cover cell injury, inflammation, immunopathology, repair, regeneration and fibrosis.
- Business Administration (BA) 100: Introduction to Business
 - Introduction to the nature and functions of business, the culture of the business world and business education, and the skills to be successful in both
- Business Administration (BA) 210: Introduction to Management Statistics
 - Introduces statistical principles and techniques necessary for management applications. Regression is presented to convey statistical thinking, modeling and analysis.
- Biological Sciences (BioSci) 101: Introduction to Microbiology
 - The nature and activities of microorganisms, including surveys of bacteria, fungi, viruses, immunology, and disease applications. 3 hrs lec, 3 hrs lab
- Economics (Econ) 103: Principles of Microeconomics
 - Economic reasoning; price determination, specialization, and efficiency. Applications include international trade, antitrust, environmental protection, highway congestion.
- English (Eng) 100: Introduction of College Writing and Reading

- Critical reading and writing, with emphasis on the processes of writing, revision, and academic conventions. Students produce a portfolio of revised essays
- English (Eng) 102: College Writing and Research
 - Extensive engagement with academic research writing and reflective analysis. Students will produce a portfolio of revised writing.
- English (Eng) 201: Strategies for Academic Writing
 - Intensive practice in expository writing designed to continue development of already proficient writers
- Health Sciences (HS) 105: Survey of Health Professions
 - An introduction to health professions, their work settings and roles on the healthcare team. Other topics include: patient-professional communication, patient characteristics, medical terminology.
- Kinesiology (Kin) 325: Anatomical Kinesiology
 - Anatomical analysis of the human body including joint actions, anatomical, muscular, and neuromuscular control aspects necessary for movement
- Nursing 101: Cultural Diversity in Healthcare
 - Enables student to conceptualize cultural diversity as a basic component of American society with implications for sensitivity and respect in health promotion and human relations
- Philosophy (Ph) 101: Introduction to Philosophy
 - Introduction to the philosophical thinking through examination of such topics as Plato's and Aristotle's contribution to Western civilization; free will and moral responsibility; God, morality, and knowledge.
- Psychology (Psych) 101: Introduction to Psychology
 - The scientific study of behavior
- Sociology (Soc) 103: World Society
 - Demographic and development trends related to political, economic, and eco-systems. Policy options and strategies regarding population growth, economic development, and selected institutional issues.

Appendix G: Relationship Between Disability and Severity of Disability

How severe is your disability? * Do you have a disability? Crosstabulation

Count

		Do you have a disability?		Total
		Yes	No	
How severe is your disability?	None	3	848	851
	Mild	30	5	35
	Moderate	20	2	22
	Severe	1	0	1
Total		54	855	909

Cases who said identified as no disability but then identified as having a mild, moderate, or severe disability in the following question:

1. Mild impairment, learning dx, behavioral impairment, does not use AT, disclosed disability to the university and is aware and using DSS
2. Mild impairment, sensory dx, sensory impairment, uses contacts/glasses, have not disclosed disability, no not need accommodations, aware of DSS, no not use DSS
3. Mild impairment, learning dx, behavioral impairment, do not use AT because no disability, have not disclosed disability, nondisclosure because no disability, aware of DSS but do not use it
4. Mild impairment, learning dx, sensory impairment, no AT used, have not disclosed disability, do not know how to disclose disability, do not use and not aware of DSS
5. Mild impairment, learning dx, behavioral impairment, do not use AT, unsure if disclosed disability, did not think it would help to disclose, aware of DSS but have not used
6. Moderate impairment, no diagnosis, no impairment, yes I use AT but it does not correct for disability, no disclose, did not know I could disclose, do not know or use DSS, ESL student
7. Moderate disability, learning dx, behavioral impairment and no impairment, use glasses and contacts, unsure if disability is disclosed, did not know that they could disclose disability, do not know about or use DSS

8.

Appendix H: Detailed Charts of Participants and Recruitment Efforts

The charts below list the courses, separated by whether they completed their surveys in person or online. Courses with a star next to their name indicate the courses that are traditionally taught but participated in this research online.

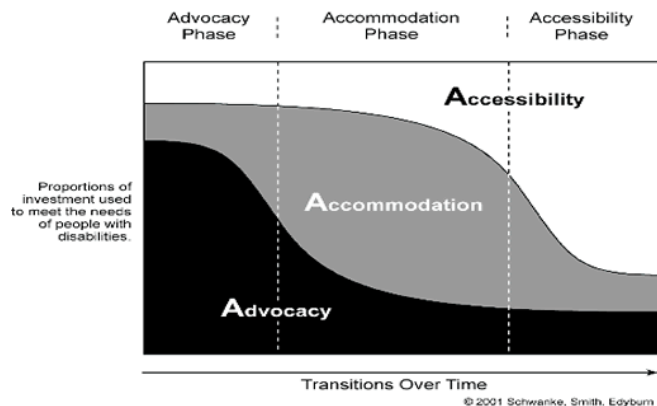
Traditional					
Course	Participants	# people present	# of people enrolled	% participated	% of whole class recruited
BA 100	187	189	191	98.90%	97.90%
Bio Sci 101	37	39	71	94.90%	52.10%
BA 210	76	78	84	97.40%	90.50%
Econ 103	57	57	59	100.00%	96.60%
Eng 100	24	24	24	100.00%	100.00%
Eng 102	30	30	30	100.00%	100.00%
Eng 201	38	38	39	100.00%	97.40%
Kin 325	54	54	55	100.00%	98.20%
Nursing 101	152	152	156	100.00%	97.40%
Ph 101	41	43	44	95.30%	93.20%
Total	696	704	753	98.65%	92.33%

Online

Course	Participants	# people present	# of people enrolled	% participated	% of whole class recruited
Anthro 102	2	na	83	2.40%	2.40%
Art Hist 101	4	na	59	6.80%	6.80%
BMS 301*	5	na	33	15.20%	15.20%
HS 105	5	na	28	17.90%	17.90%
Psych 101*	190	na	268	70.90%	70.90%
Soc 103	7	na	104	6.70%	6.70%
Total	213		575	19.98%	19.98%

Appendix I: EqTDs

Figure 1: Advocacy, Accommodation, Accessibility Model



Brief Description: A3 Model Diagram

Summary Description: This model depicts the theoretical relationships of advocacy, accommodation, and accessibility as strategies used to meet the needs of people with disabilities, and as a function of time.

Detailed Description: The model shows that in the first phase, the advocacy phase, there is a large amount of advocacy taking place, with a small amount of accommodation and a small amount of accessibility. In the second phase, the accommodation phase, advocacy is decreasing, while the amount of accommodation is much larger, and the amount of accessibility is increasing. In the final phase, the accessibility phase, the amount of accessibility is large, while the amount of accommodation is small, and the amount of advocacy is small.

An arrow at the bottom of the chart points from left to right indicating that on this time continuum, 1) the closer the approach to the left side where an organization relies primarily on advocacy, the “worse” the approach is, 2) the closer the approach to the right side where an organization relies primarily on accessibility, the “better” the approach is, and 3) the “Expected transition in overall approach with time” is for organizations to move from left to right.

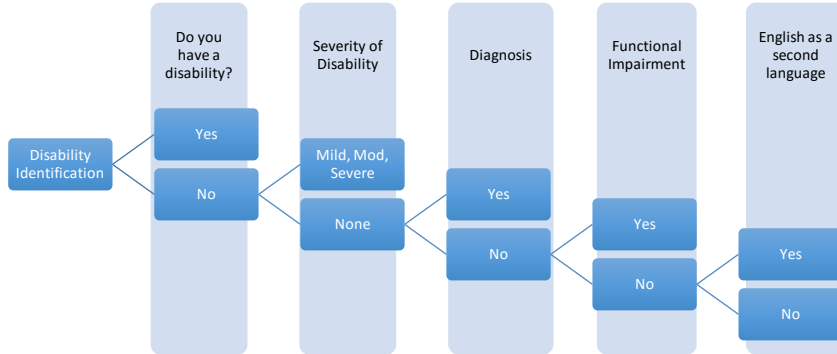
Theoretical relationships of advocacy, accommodation, and accessibility are demonstrated as a function of time (the x-axis) in a 100% stacked area chart. That is, the contributions of advocacy, accommodation, and accessibility to an organization's approach sum to 100% of its approach at any point in time. The y-axis is labeled, "System's Overall Approach (expressed as the proportions of the three strategies used to meet the needs of people with disabilities)."

Advocacy (shown in black) forms the bottom of the stack. To the far left, it represents the majority of the approach. It falls off with time until it represents a small portion of the approach. Accommodation (shown in white) forms the middle layer. It starts out as a small portion, grows to become a majority, and then tapers off to a small portion again. Accessibility (shown in black) forms the top and final layer. It starts as a small portion and has the opposite trend of advocacy, increasing with time until it represents the majority.

The chart is divided up into three different phases. The leftmost is the "Advocacy Phase," in which advocacy dominates and accommodation and accessibility represent small, but increasing, portions. The center is the "Accommodation Phase," in which accommodation dominates, advocacy decreases, and accessibility increases with time. The rightmost is the "Accessibility Phase," in which accessibility grows to be dominant, with both accommodation and advocacy contributing smaller and smaller portions over time. The rightmost phase is the "Accessibility Phase," in which accessibility dominates, and accommodation and advocacy contribute small portions. Each phase is divided by a dotted vertical line.

An arrow at the bottom of the chart points from left to right with the label "worse" on the left side, and the label "better" on the right side. Below this arrow is the label, "Expected Transition in Overall Approach Over Time."

Figure 2: Disability Identification throughout survey

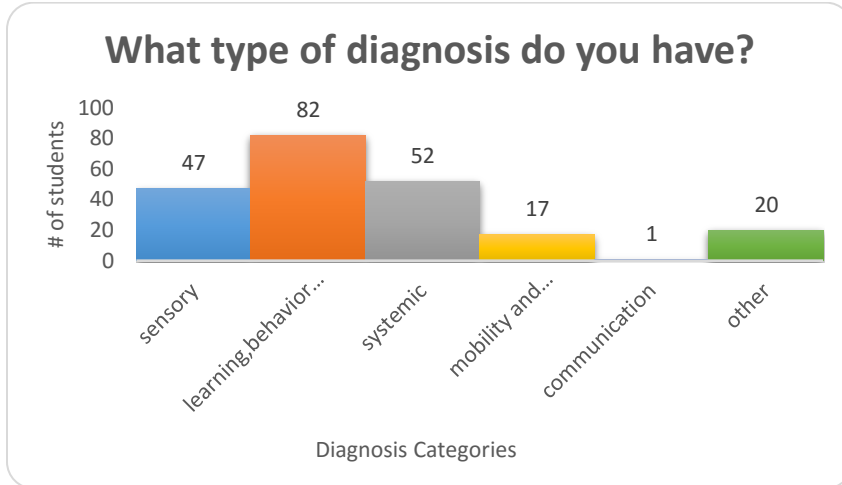


Brief Description: flowchart of disability identification throughout the survey

Essential Description: This flowchart depicts how disability rates were additive throughout the survey, starting with the question “Do you have a disability?”

Detailed Description: This flowchart provides a visual representation of how the additive disability number was calculated. The calculation started with the question “Do you have a disability?”. People who said yes to this question were pulled out. People who said no to this question but said that they had a severity of disability as mild, moderate, and severe were then added to the count. People who identified as no disability, no severity of disability, but selected at least one diagnosis were added to the total additive count. People who still did not identify with a diagnosis but then identified with a functional impairment were added to the count. Lastly students who did not otherwise identify with a disability but identified as English as a second language were added to the count. The questions were added in order that they were asked in the survey with the exception of the last question which was intentionally left at the end so that the additive number could include ESL students but could also be examined without it.

Figure 3: Frequencies of Reported Diagnoses



Brief Description: Chart depicting reported diagnoses in this survey

Essential Description: The chart above depicts the categories of diagnoses that the students who participated in this survey selected and depicts the prevalence of the selections in each category.

This chart shows that learning, behavioral, and cognitive diagnoses was the highest selected category.

Detailed Description: This chart shows how many people selected at least one diagnosis. The categories depicted are the same as the categories in the survey: sensory,

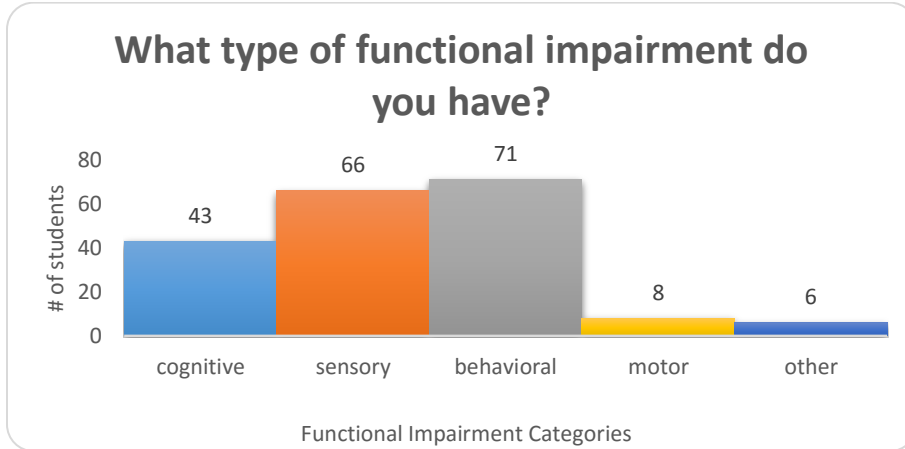
learning/behavioral/cognitive, systemic, mobility/orthopedics, communication, and other.

Frequencies were as follows: sensory-47, learning behavioral cognitive-82, systemic-52,

mobility-17, communication-1, and other-20. If students identified multiple diagnosis this were

all counted in this chart.

Figure 4: Frequencies of Reported Functional Impairments

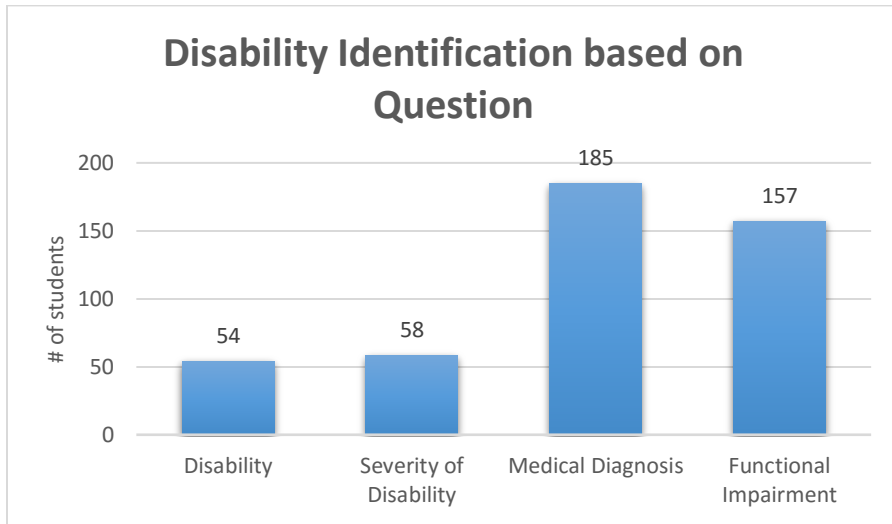


Brief Description: Chart depicting the frequencies of functional impairments reported in this survey

Essential Description: This chart depicts the frequencies of functional impairments that were reported in this survey. The two highest categories identified were the sensory impairments and the behavioral impairments.

Detailed Description: This chart shows how many people selected at least one functional impairment. The categories depicted are the same as the categories in the survey: sensory, cognitive, behavioral, motor, communication, and other. Frequencies were as follows: sensory-66, cognitive-43, behavioral-71, motor-8, communication-0, and other-6. If students identified multiple diagnosis this were all counted in this chart.

Figure 5: Comparison of Disability Identification Question Responses

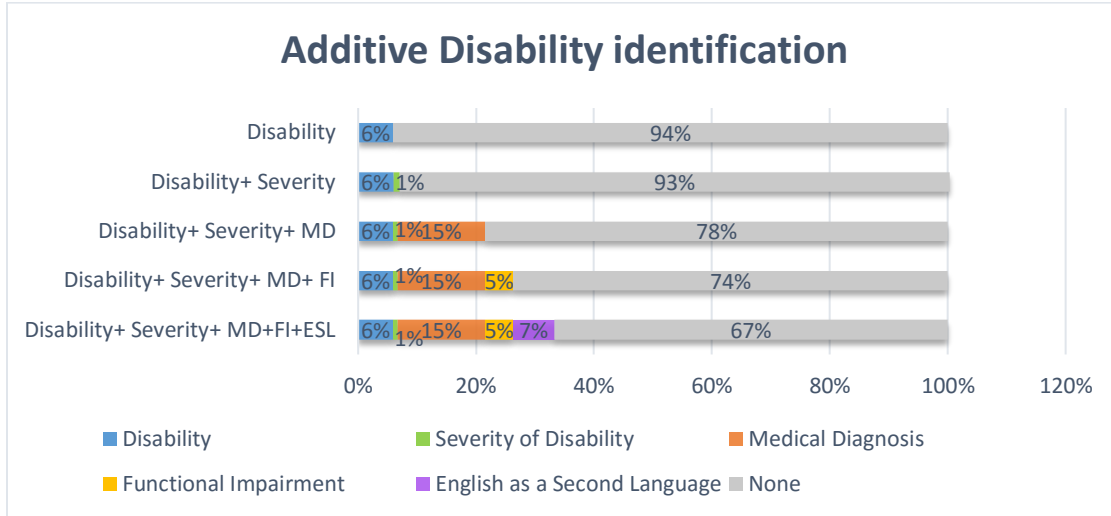


Brief Description: chart comparing the prevalence of students with disabilities based on question asked

Essential Description: This chart summarizes the frequency of disability identification for each of the four disability question asked. The highest frequency was medical diagnosis, followed by functional impairments.

Detailed Description: The chart summarizes the frequency of disability identification for each of the four disability questions asked. 54 people identified as having a disability, 58 people reported a mild, moderate, or severe disability, 185 people reported a medical diagnosis, and 157 people reported a functional impairment. The vertical axis goes from 0-200 and the four bars are separated by a small space and are blue in color.

Figure 6: Depiction of Disability Identification (additive)

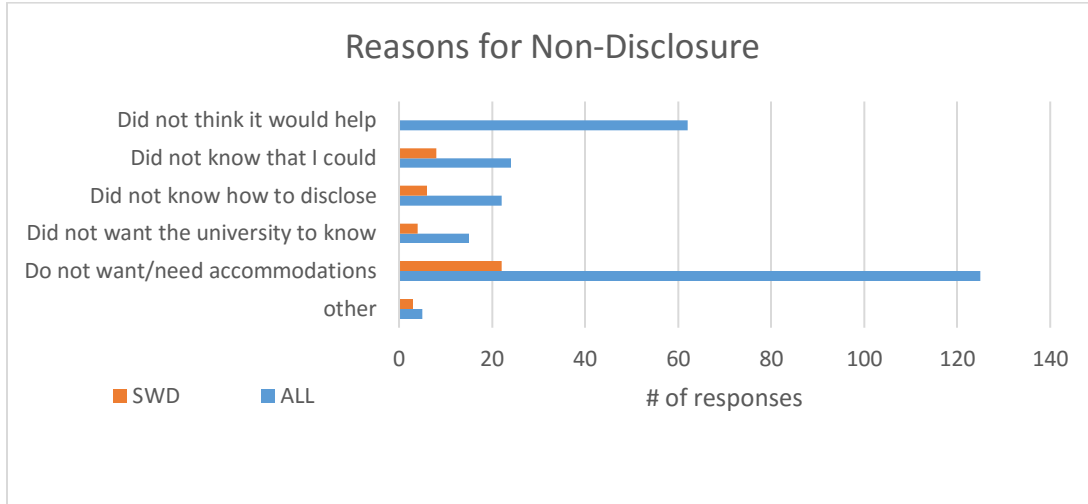


Brief Description: chart depicting the additive prevalence of students who may require educational accommodations

Essential Description: This chart depicts the additive frequency of disability identified in this survey. When all added together, it totals to 34%.

Detailed Description: This chart shows the additive frequency of disability identified in the survey. It consists of 5 horizontal bars. The bottom axis shows percentage markers going from 0-100%. The top horizontal bar shows the percentage of students who identified with a disability (6%). The second bar shows the percentage of students who identified with a disability or severity of disability (7%). The third bar shows the percentage of students who identified with a disability, severity of disability, or diagnosis (22%). The fourth bar shows the percentage of students who identified with a disability, severity of disability, diagnosis, or functional impairment (27%). The fifth bar shows the percentage of students who identified with a disability, severity of disability, diagnosis, functional impairment, or speak English as a second language (34%).

Figure 7: Reasons for Non-Disclosure among all recipients and SWD



Brief Description: chart depicting the reasons that students did not disclose their disability to the university

Essential Description: The chart above depicts the reasons that students did not disclose their disabilities to the university as self-reported in this survey. Options listed include: did not think it would help. Did not know that I could, did not know how to disclose, did not want the university to know, and do not want or need accommodations. Among students with disabilities, the top two selected categories were: I do not want/need accommodations and I did not know that I could get accommodations.

Detailed Description: This chart is a horizontal bar graph which depicts the reasons for non-disclosure along the vertical axis. The horizontal axis reports the number of responses from 0-140. Each reason for non-disclosure has two bar graphs associated with it. The first is blue and depicts the total number of people in the survey who reported that category. The second bar is orange and depicts the response rates only from the students who also identified as having a disability. The top two responses for all students were did not think it would help and do not want/need accommodations. For students who also identified as having a disability, the top

responses were I do not want/need accommodations and I did not know that I could get accommodations.

Table 1: Multiple Response Frequencies

# of categories selected	Frequency	
	diagnosis	functional impairment
1	185	157
2	27	22
3	2	6
4	1	1

Brief Description: This table shows how many students reported more than one diagnosis or functional impairment.

Essential Description: This table shows that 30 students reported more than one diagnosis and 29 students reported more than one functional impairment. One student reported four diagnoses and four functional impairments which was the most that anyone reported.

Detailed Description: This table has 3 columns. The first column is the number of categories which were selected which range from 1 to 4. The second column is the frequency at which diagnoses were selected. The third column is the frequency at which functional impairments were selected. 185 students selected only one diagnosis while 157 students selected only one impairment. 27 students selected 2 diagnoses and 22 students selected 2 functional impairments. 2 students selected 3 diagnoses and 6 students selected 3 functional impairments. One student reported one diagnosis and one functional impairments.

Table 2: Relationship between disability questions

	Disability (54)	Severity of Disability (58)	Medical Diagnosis (185)	Functional Impairment (157)	Disclosure (26)	Use ARC (24)	ESL (78)
Disability (54)	54						
Severity of Disability (51)	51	58					
Medical Diagnosis (185)	46	51	185				
Functional Impairment (157)	45	51	113	157			
Disclosure (26)	15	16	21	20	26		
Use ARC (24)	13	14	18	17	15	24	
ESL (78)	4	6	9	12	4	1	78

Brief Description: This table shows the relationship that exists between the number of people who reported a disability, diagnosis, functional impairment, disclosure, use of the ARC, or students who are ESL.

Essential Description: This chart shows the relationship that exists between the disability questions. The number of people who identified with each question were as follows: disability (54), severity of disability (58), diagnosis (185), functional impairment (157), disclosure (26), use of the ARC (24), ESL (78). This chart also shows the relationships that exist between the questions. Of the 54 students who reported a disability, 51 also reported a severity of disability, 46 reported a diagnosis, 45 reported a functional impairment, 15 reported they had disclosed to the university, 13 reported that they use the ARC, and 4 reported that they spoke English as a second language. Of the 58 students who reported a severity of a disability, 51 also reported a diagnosis, 51 reported a functional impairment, 16 stated that they had disclosed to the university, 14 reported that they use the ARC, and 6 reported that they spoke English as a second

language. Of the 185 students who reported diagnosis, 113 reported a functional impairment, 21 stated that they had disclosed to the university, 18 reported that they use the ARC, and 9 reported that they spoke English as a second language. Of the 157 students who reported a functional impairment, 20 stated that they had disclosed to the university, 17 reported that they use the ARC, and 12 reported that they spoke English as a second language. Of the 26 students who stated that they had disclosed to the university, 15 reported that they use the ARC, and 4 reported that they spoke English as a second language. Of the 24 students who reported that they use the ARC, only 1 reported that they spoke English as a second language.

Detailed Description: This chart is an 8x8 grid with the same labels going across the rows and columns in order to compare the categories. The categories are listed in order are: disability, severity of disability, diagnosis, functional impairment, disclosure, use ARC, and ESL. The squares where the same category meet up (ex: disability and disability) the number of people who reported a disability is listed. These numbers are highlighted in yellow and present as a diagonal across the chart from the top left to the bottom right. Squares up and to the right of this yellow diagonal are blacked out since they would replicate the same numbers on the other side of the diagonal. Then the rest of the numbers represent the relationship of people who selected both categories. This chart does not tell the viewer whether more than those 2 categories was selected and just compares between the two categories.

Table 3: Assistive technology identified

Type of assistive technology	#	%
ankle brace	1	0.77%
contacts/glasses	110	84.6%
computer/phone	2	1.5%
medication	9	6.9%
hearing aid	1	0.77%
knee brace	1	0.77%
shoe lift	1	0.77%
metal bar in sternum	1	0.77%
omnipod	1	0.77%
recorder for lectures	1	0.77%
VISA	1	0.77%
many things	1	0.77%
total	130	

Brief Description: This is a table of assistive technology that was identified by students in this survey. It lists the types of technology, the number of people who listed that technology, and the percentage of technology that was identified.

Essential Description: This table shows the assistive technology that students identified in this survey. The list consists of ankle brace, glasses and/or contacts, computer/phone, medication, hearing aid, knee brace, shoe lift, metal bar in sternum, omnipod, recorder for lectures, VISA, and one student wrote many things. The most frequently identified technology included contacts and glasses (110 students) and medication (9 students).

Detailed Description: The table above is separated into 3 columns and 14 rows. The top row titles the column. Column one contains all of the assistive technology that has been identified in this study. Column two lists the number of people who listed that technology and column three has the percentage of that AT in comparison to all AT that was identified. Only one person

(.77%) listed the following AT: hearing aid, ankle brace , knee brace, shoe lift, metal bar in sternum, omnipod, recorder for lectures, VISA, and many things (nondescript). 110 people listed that they use contacts and/or glasses which accounts for 84.6% of the identified AT. Two people (1.5%) listed computer/phone and 9 people (6.9%) listed medication as their assistive technology which corrects for their condition. This chart simply shows the number of people who listed an assistive technology and cannot accurately depict everything used. It also does not tell us how many of the people who listed an assistive technology also listed a functional impairment or diagnosis.

Table 4: Demographics of Sample

Demographics		Frequency	Percentage
Year in School			
	Freshman	473	52.0%
	Sophomore	179	19.7%
	Junior	143	15.7%
	Senior	42	4.6%
	5th year	21	2.3%
	Graduate/PhD	33	3.6%
	2nd degree	14	1.5%
	non-degree	4	0.4%
Field of Study			
	Architecture and Urban planning	6	0.7%
	Art and Humanities	21	2.3%
	Business	314	34.5%
	Education	41	4.5%
	Engineering	19	2.1%
	Health Science	130	14.3%
	Information Studies	11	1.2%
	Letters and Science	108	11.9%
	Nursing	205	22.6%
	Public Health	5	0.6%

	Social Welfare	29	3.2%
	Undecided	20	2.2%
English as a Primary Language			
	Yes	831	91.4%
	No	78	8.6%

Brief Description: This chart is a breakdown of the demographics of the survey. It shows the numbers and percentages of students in regards to their year in school, field of study, and primary language.

Essential Description: This chart shows that in this survey there were 473 freshmen (52%), 179 sophomores (19.7%), 143 (15.7%) are juniors, 42 (4.6%) are seniors, 21 (2.3%) are in the 5th year of school, 33 (3.6%) are graduate or PhD students, 14 (1.5%) are second degree students, and 4 (0.4%) are non-degree seeking students. When looking at field of study, 6 (0.7%) of students are studying architecture and urban planning, 21 (2.3%) of students are studying art and humanities, 314 (34.5%) of students are studying business, 41 (4.5%) of students are studying education, 19 (2.1%) of students are studying engineering, 130 (14.3%) of students are studying health sciences, 11 (1.2%) of students are studying information studies, 108 (11.9%) of students are studying letters and science, 205 (22.6%) of students are studying nursing, 5 (0.6%) of students are studying public health, 29 (3.2%) of students are studying social welfare, and 20 (2.2%) of students are undecided in their major. In this study, 831 (91.4%) students identified as speaking English as their primary language and 78 students (8.6%) said that English was a secondary language for them.

Detailed Description: This chart is divided into 4 columns. The first column has the three demographics categories: year in school, field of study, and English as a primary language. The

second column has more detail about these questions. Under year in school, it lists: freshman, sophomore, junior, senior, 5th year, graduate student, second degree student, and non-degree seeking student. Under field of study it lists: architecture and urban planning, art and humanities, business, education, engineering, health science, information studies, letters and science, nursing, public health, social welfare, and undecided. Under English as a primary language, the answers yes and no are listed. The third column lists the frequency that the category was selected and the fourth column gives the percentage of the whole sample. These numbers are listed in the essential description above.

Table 5: Recruitment of Traditional and Online Students

	# of participants	Sample Size	% of possible participants
Traditional	696	704	98.65%
Traditional course with online survey participation	195	301	64.78%
Online	18	274	6.57%

Brief Description: This table depicts the results of the recruitment efforts in online and traditional classrooms. Categories were split into traditional classrooms, online classrooms, and traditional courses who participated in this survey online.

Essential Description: This chart shows that of the traditional classes recruited, there were 704 possible participants who had shown up to class that day. Of these 704 students, 696 decided to participate (98.65%). Of the online courses 274 students were recruited and only 18 participated (6.57%). Lastly, there were some traditional courses who decided to participate in this survey

online. Because these mixed methods a bit, a separate category was created. In this category, 301 students were recruited and 195 participated (64.78%).

Detailed Description: This chart has four columns and 4 rows. The top row is set apart in a navy blue color while the rest of the chart is grey. The top row identifies column one as the style of educational instruction. Column 2 is the # of students who participated in the study. Column 3 is the total possible sample size who could have participated, and column 4 is the % of students who participated out of the possible total number.

Table 6: Online vs Traditional Classroom Disability Prevalence

	Online	Traditional
Disability	11%	6%
Severity of Disability	11%	6%
Medical Diagnosis	11%	21%
Functional Impairment	11%	17%

Brief Description: This chart depicts the prevalence of the disability based on response rates to the disability questions in online classrooms compared to traditional classrooms.

Essential Description: This chart shows that 11% of online students also reported having a disability, severity of disability, diagnosis, and functional impairment. In traditional classrooms, 6% of students reported a disability and a severity of disability. 21% of students reported a diagnosis and 17% of students reported a functional impairment.

Detailed Description: This chart shows the prevalence of students with disability in online classrooms and in traditional classrooms. This table has three columns and five rows. The top row has the column titles. Column one has the four main disability questions listed, one in each row: disability, severity of disability, diagnosis, and functional impairment. Column two is the online students and column three is the traditional classrooms. This chart shows that 11% of online students also reported having a disability, severity of disability, diagnosis, and functional impairment. In traditional classrooms, 6% of students reported a disability and a severity of disability. 21% of students reported a diagnosis and 17% of students reported a functional impairment.

Table 7: Frequencies of non-disclosure reasons

Multiple Response Rates	
#	frequency
0	28
1	823
2	37
3	14
4	4
5	3

Brief Description: This table shows the number of reasons that students gave when answering the question “Why didn’t you disclose your disability to the university?” This question allowed students to check multiple answers to get the most accurate reasons as to why students do not disclose.

Essential Description: For the question in the survey which asks “Why didn’t you disclose your disability to the university? Students were provided with many multiple choice answers as well as a write in option. This chart shows that 28 people skipped this question, 823 people responded with one answer, 37 people responded with 2 answers, 14 people responded with 3 answers, 4 people responded with 4 answers, and 3 people responded with 5 answers.

Detailed Description: For the question in the survey which asks “Why didn’t you disclose your disability to the university? Students were provided with many multiple choice answers as well as a write in option. This table has two columns. The first column is the number of answers that were given for this question with corresponding rows from 0-5. The second column has the frequency of the responses. This chart shows that 28 people skipped this question, 823 people responded with one answer, 37 people responded with 2 answers, 14 people responded with 3 answers, 4 people responded with 4 answers, and 3 people responded with 5 answers.

Appendix J: Thesis Proposal

**University of Wisconsin-Milwaukee
Department of Occupational Science and Technology**

M.S. THESIS PROPOSAL

“Wording Matters: Disability Identification in Post-Secondary Education”

Jacqueline Love

Friday, June 23rd, 2017
2pm

Committee:
Dr. Roger O. Smith, Advisor
Dr. Mark Johnston
Dr. Raymond Fleming

In partial fulfillment of the requirements for the Degree of Master of Science in
Occupational Therapy at the University of Wisconsin-Milwaukee

Proposal Abstract

Background. The prevalence of students with disabilities (SWD) in postsecondary education has increased exponentially over the last 30 years and it is likely that even more students with disabilities exist that have not disclosed their disability to the university. There are many reasons why students choose not to disclose, but when they don't, the university is less likely to be able to accommodate their academic needs. This can result in poor academic achievement and even failure to obtain a degree. This inaccurate identification of SWD also impacts the accuracy of demographic information used to interpret educational research and inform educational policy. Without accurate demographic information, universities are not truly considering SWD in policy development which has an impact on student success as a whole.

Objective. This study aims to take a closer look at the prevalence of disability on a college campus, evaluate how the terminology we use to discuss disability impacts the level of disability disclosure, and establish recommendations for terminology and methodology for data collection which considers SWD for future research.

Methods. Nine hundred and thirty-one students from the University of WI-Milwaukee volunteered to participate in this anonymous survey questionnaire. Purposeful and convenient sampling was used to target students from UWM enrolled as a freshman or sophomore since attrition from college tends to occur within the first two years of enrollment. Data was collected using both in class and online methods. The questionnaire consisted of 16 multiple choice questions concerning disability

identification, disability disclosure, and awareness of disability student services. No incentives were provided by researchers for participation.

Results. It is expected that discrepancies will exist in the ways that students answered the various questions concerning disability identification. Having a better understanding of how terminology used effects disability identification will help to inform more accurate methodologies for demographic data collection and provide guidance to educational researchers and increase the accuracy and relevance of research.

Introduction

The diversity of the student population, including minorities, students over the age of 25 and students with disabilities (SWD) in postsecondary education, has grown substantially over the last two decades (Roberts et al, 2011; Fuller et al, 2004). In 1978, studies showed that full-time students with disabilities at the postsecondary education level was only 2.6%. In 2011, literature cites this number between 10.8-11.3% and other studies suggest that as much as 50% of students with disabilities do not disclose their disabilities to their universities or professors (Smith, Hirschman, Rust, 2010; Siegler, 2007; Kastner 2009). This suggests that the percentage of the student population that may require deliberate educational planning or services from that of mainstream students could be as high as 18-20% (Roberts, 2011). These and other relevant statistics, however, are elusive and have not been well documented. This leaves educators and policy makers guessing what inclusive educational investments and approaches may be best.

Accurately identifying students with disabilities provides a unique challenge to educational researchers and academicians. Disability identity is a complex social issue which stems from the terminology that we use to talk about disability and the connotations these words and phrases possess. The word “disability” itself has many commonly used definitions making it difficult for anyone to really know what is trying to be said without further investigation. Furthermore, its, often negative, connotations can cause individuals to shy away from disability identification, resulting in an inaccurate

depiction of the make-up of students with disabilities in post-secondary education (Gronvik, 2007).

At the post-secondary educational level, students are required to advocate for their own services, requiring them to identify their disability to the university before they can start receiving any kind of academic accommodation. This model of educational assistance, accommodation vs universal design, makes it almost impossible for the university to provide assistance if the students do not identify their disability and advocate for their needs. Currently, universities are collecting disability identification demographic data on a very basic level, if at all, which is resulting in student demographic information that underrepresents the students with disabilities in postsecondary education. This inaccurate demographic information can result in policy that is created without disability in mind, making it even more likely that SWD will struggle to successfully complete a college degree.

The purpose of this study is to obtain a more accurate representation of the disability population in postsecondary education and to more closely examine the relationship that exists between disability terminology and the rate of disability disclosure. By identifying wording and phrasing that students identify with and are comfortable with, we can obtain a more clear and accurate picture of the demographics of a university's student body. This study will result in recommendations for universities to follow in order to get a more accurate depiction of their student demographics. This knowledge puts the University in a better position to determine the appropriate funding for Student Disability Services, provide appropriate outreach to those who might actually

benefit from accommodations, better assist teachers in preparing for the instruction of a diverse student body, and inform educational research as a whole. Knowing the number of students who could benefit from accommodations also helps to solidify the argument for universal design in education as a way to anticipate barriers to education. This can result in increased educational success and decreased student drop outs for all students, not just those with disabilities.

Significance to the field of Occupational Therapy

As defined by the AOTA, occupational therapy is the therapeutic use of everyday life activities with individuals or groups for the purpose of enhancing or enabling participation in roles, habits, and routines in home, school, workplace, community, and other settings. The American Occupational Therapy practice framework informs occupational therapists on ways to examine the relationship between the person, their engagement in valuable occupations, and the environment (Occupational Therapy Practice Framework, 2014). When a student is unable to successfully engage in the educational setting due to environment or lack of support, it is concerning to an occupational therapist. These barriers to participation could result in the individual withdrawing from the occupation all together which can impact occupational balance and the ability to engage in future desired occupations. In this case, dropping out of school negatively impacts degree attainment which can affect future employment opportunities.

This study examines the occurrence of disability identification in an educational setting and considers how the rate of identification impacts educational success, the

retrieval of educational supports, and the effectiveness of policy driven by educational research. Understanding more about the ways that people identify, or don't identify, with disability will positively impact the ability of educators to meet the needs of their students. Knowing what questions to ask when trying to achieve accurate demographic information will also help educational researchers and policy makers to achieve better results with their research, providing a more accurate picture of the population and hopefully influencing the creation of more inclusive educational policy, allowing for successful occupational engagement in academics for all students.

Literature Review

When considering the impact of disability identification in post-secondary education, it is essential to have a thorough understanding of the existing research and literature pertaining to the field. Due to the complexity of this topic, there are many areas that inform it. This review examines several key areas of the literature concerning students with disabilities in postsecondary education. These include understanding a) how services are currently provided for students with disabilities in higher education today, b) the distinction between individual accommodation services and universal design approaches in education, c) how higher education collects demographic data on its students with disabilities, d) the potential effects of terminology and demographic data collection methodology and d) why accurate demographic data matters. Without a comprehensive knowledge base in these areas, it would be difficult to even begin to understand disability identification in post-secondary education.

Educational Law and Policy

Prior to the 1970s, there were no federal laws in place to protect the educational rights of individuals with disabilities (Stodden and Conway, 2003). Finally, in 1973, the Rehabilitation Act was passed. Section 504 of this act banned recipients of federal funds from discriminating against people with disabilities. Since public schools receive federal funds, this was the first law that really impacted disability and education. In 1975, the Individuals with Disabilities Education Act (IDEA) was passed. This law was designed to be a more proactive law protecting the educational rights of students with disabilities as opposed to a reactive one like the Rehabilitation Act. IDEA established the right of children with disabilities to attend public schools, receive individualized services free of charge, and receive instruction in a regular classroom whenever possible. However, IDEA does require that to receive services, the child has at least one of a list of specific impairments and needs special education and related services by reason of such impairment (Aron and Loprest, 2012). In 1986, part C of IDEA was established to enhance services from children from birth to 2 years old. The goals of this addendum focused on enhancing development of infants and toddlers with disabilities in order to reduce future healthcare and education costs/needs and maximize the likelihood of independent living in adulthood. In 1990, the Americans with Disabilities Act (ADA) was passed. The ADA is “a civil rights law that prohibits discrimination against individuals with disabilities in all areas of public life, including jobs, schools, transportation and all public and private places that are open to the general public.” (adata.org). This law worked to protect the rights of individuals with disabilities and ensure equal opportunities in areas such as public accommodations, employment,

transportation, government services, and telecommunications. Additional amendments to IDEA in 1997, focused on improving student access to the general education classroom and increasing services to help students who age out of special education (Aron and Loprest, 2012; Stodden and Conway, 2003).

Educational Supports and the Transition to College

Federal legislation such as the Americans with Disabilities Act (ADA) of 1990 and the Individuals with Disabilities Act (IDEA) of 1997 have made education more accessible to individuals with disabilities. As a result, we have seen disability prevalence in postsecondary education increase over the last few decades. Since 1978, the number of recorded students with disabilities in post-secondary education has jumped from 2.6% to 10.5% in 2000 (Stodden and Conway, 2003).

Educational supports in high school are vastly different from the supports given at the postsecondary level. In high school, students with disabilities reside in a protective environment where the school and its personnel are legally responsible for identifying and providing services to support education under IDEA. The student is not responsible for orchestrating their own care (Stodden and Conway, 2003). At the college level, accommodations and needs are met for students by ADA and Section 504 of the rehabilitation act. Under Section II and III of the ADA, postsecondary institutions “are required by law to provide any reasonable accommodation that may be necessary for those persons with an identified disability to have equal access to the educational opportunities and services available to nondisabled peers (Stodden, Jones and Chang, 2002). Disability Student Services (DSS) is an important piece of this puzzle. These

offices provide a human link to the accommodations provided by the university. In a qualitative study, utilizing focus groups to explore disability supports, students identified DSS and access to assistive technology as the most vital components to their educational success. However, many students also expressed that many times these services are not available as needed. Assistive technology was not always available for student use and the DSS office appeared understaffed and could therefore only expend time to help those with the most time sensitive or urgent situations. Many students in this study were also either completely unaware of the services provided by DSS or were unaware as to the extent of services that they could receive. Lastly, students stated that there appeared to be a large gap between policy and practice in postsecondary education. Just because a policy is in place, doesn't mean that a student won't have to advocate for even the most basic accommodations. (Dowrick, 2005).

It seems that, at the postsecondary educational level, the student is suddenly expected to initiate and pursue their own educational supports. In order to receive accommodations, students have to be willing and able to report their disabilities to school officials, provide documentation to prove their disability has been identified through the proper channels and seek viable accommodations for their unique needs to ensure their educational success, a need that, prior to this point, has been handled by parents, teachers, and administrators. In short, the need for the student to be able to identify their needs, seek help through the proper channels, and self-advocate becomes incredibly vital to their educational success in postsecondary education.

Educational Successes of SWD

There have been a variety of previous studies which have examined the relationship that exists between SWD and educational success. Research suggests that SWD are more at risk to not complete schooling than their non-disabled classmates. According to the National Center for Educational Statistics, 14% of all youth 18 and older did not complete high school. Of those who did not complete high school, 36% were students with learning disabilities and 59% were students with emotional/behavioral disabilities (Thurlow, 2002).

Retention becomes an even more prevalent issue at the college level. Retention of all college students is incredibly important for a post-secondary institution because every student who drops out must be replaced, making enrollment management much more complicated. Only 12% of students with disabilities graduate from college as opposed to 23% of their non-disabled student peers (National Organization on Disabilities, 2000). To top it off, students with less apparent disabilities such as learning disorders or mental health conditions are even less likely to succeed in postsecondary education. According to a study by Wessel et al, students with non-apparent disabilities were 8% less likely to graduate than their peers with apparent disabilities (Wessel et al, 2009).

Most jobs in the United States today require at least a high school diploma. Therefore, students who do not graduate high school or college are at a serious disadvantage. Students who drop out of school report unemployment rates as much as 40% higher than their educated peers (Thurlow, 2002). According to a study by Stodden and Dowrick, employment rates for people with disabilities especially have a

dramatically positively correlation with education level (Stodden, and Dowrick, 2000) making educational success even more imperative for future independence.

Universal Design

The goal of universal design has been defined as the normalization of disability (Story, 1998). The US census Bureau states that over 20% of the population lives with some form of disability and these numbers do not even begin to address transient disabilities and impairments resulting from illness or injury (Wilcox, 2003; Kastner, 2009). According to Ronald Mace and the Center for Universal design, universal design (UD) is the design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design. The Center of Universal Design has established 7 core principles that define UD and guide its implementation (Conell, 1997; Mace, 1990). These seven principles are as follows:

1. Equitable use: The design is useful and marketable to people with diverse abilities.
2. Flexibility in Use: The design accommodates a wide range of individual preferences and abilities
3. Simple and Intuitive Use: Use of the design is easy to understand regardless of the user's experience, knowledge, language skills, or current concentration level.
4. Perceptible Information: The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.
5. Tolerance for Error: The design minimizes hazards and the adverse consequences of accidental or unintended actions
6. Low Physical Effort: The design can be used efficiently and comfortably with a minimum of fatigue.

7. Size and Space for approach and Use: Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture, or mobility.

Universal design promotes inclusion, fosters independence, and saves time and money on future individualized adaptations. Universal design benefits people of all ages and abilities levels. For example, adding a sensor to a door that causes it to open when someone approaches not only helps those in a wheelchair but also a person carrying a large box, a parent pushing a stroller, an elderly person, and a small child. This simple modification promotes ease of independence for a large population of people, both those who we would assume are in need of environmental adaptations and those who we might not have assumed could benefit. (Kastner, 2009)

Universal Design in Education

One of the most significant challenges of a post-secondary educator is to recognize and accommodate learning differences among their students. The notion that all students learn the same or have the same needs for academic success, regardless of their disability status, is demonstrates inexperience and ignorance. Each student and their learning is impacted by a myriad of factors including: 1) social relationships, values and characteristics, 2) information processing and orientation skills, 3) communication patterns, 4) learning styles and strategies, 5) motivational styles, and 6) psychological characteristics (Anderson, 1992). With a student body which is increasingly becoming more diverse in age, gender, ethnicity, race, sexual orientation, experience, and ability

level, implementing inclusive educational design has never been so necessary (Siegler, 2007; Anderson, 1992; Burgstahler, 2008).

The principles of universal design have become more common in architectural and environmental design in order to meet legal requirements and enhance accessibility for all people. However, universal design goes far beyond making physical environments accessible. The concepts of universal design have begun to be adapted to education as a whole (Roberts et al., 2011). Although only emerging as a concept in the early 2000s, universal design instruction (UDI) has been cited by many as the answer to effectively teaching a growingly diverse student population, especially in non-traditional educational settings such as in online courses (Rose and Meyer, 2002; Scott et al, 2003; Burgstahler, 2015; Street et al, 2012). This proactive approach to educational design helps to make postsecondary education accessible to the largest group of people and minimizes the needs for individual accommodations. In 2001, 9 principles for UDI instruction were published to guide UD in education (Shaw, Scott, and McGuire, 2001). These principles were based on the original 7 principles with two additional added; principle 8: a community of learners and principle 9: instructional climate (Rickerson and Deitz, 2002).

1. Equitable Use: accessing course information such as syllabi, in a variety of formats, including print, disk, and online.
2. Flexibility in Use: Varying instructional methods, including lecture, discussion, and individual and group activities
3. Simple and Intuitive: Clearly describing course expectations for grading, in different formats, for example narratives and rubrics.

4. **Perceptible Information:** Using videos that include subtitles, or captioning, for those who may not here, for whom English is not a first language, or for those who have trouble processing verbal information.
5. **Tolerance for Error:** Providing ongoing and continual feedback on coursework rather than at specified interim periods, such as midterm or final exams.
6. **Low physical effort:** providing lecture notes, so students who have difficulty taking notes do not need to take notes.
7. **Size and space for approach and use:** Making seating easily accessible, if possible, so everyone can see each other and communicate with one another directly. Circular seating may address this principle.
8. **Community of learners:** Creating a variety of learning settings, for example, use of email groups, social networking sites, or chat rooms.
9. **Instructional climate:** Including a statement in the syllabus indicating the desire to meet the instructional needs of all students and for students to convey their needs to the instructor.

Universal Design Instruction (UDI) provides the ability for educators to more efficiently and effectively interact with a more diverse student body. Studies have shown that UDI strategies improved learning for both struggling and non-struggling students, making these strategies better not just for SWD but all students (Roberts, 2011; Siegler, 2007).

A3 Model

The A3 model, developed by Schwanke, Smith, and Edyburn (2001), is an important theoretical model which examines the relationship that exists between individual accommodation and universal design. The A3 model, formally the AAA model, is composed of 3 stages (advocacy, accommodation, and accessibility) which

depict how disability needs are met over time. In the Advocacy Phase (phase one), advocacy efforts to highlight the need for system change in response to the needs of people with disabilities is high. In this phase, the organization is only minimally anticipating the needs of people with disabilities. In the accommodation phase (phase two), individual accommodations are made to inaccessible design. Organizations are aware of the need for change and have systems in place to provide assistance when needed. In phases one and two, accommodation is reactionary and relies heavily on the individual to request assistance. Because of this, these phases do not facilitate complete independence in task completion. Lastly, in the Accessibility phase (phase 3), the needs of people with disabilities are predominantly met through accessible design. This phase is proactive rather than reactive and facilitates the most independence and task success for the individual. (Siegler, 2007; Fernandes, 2010)

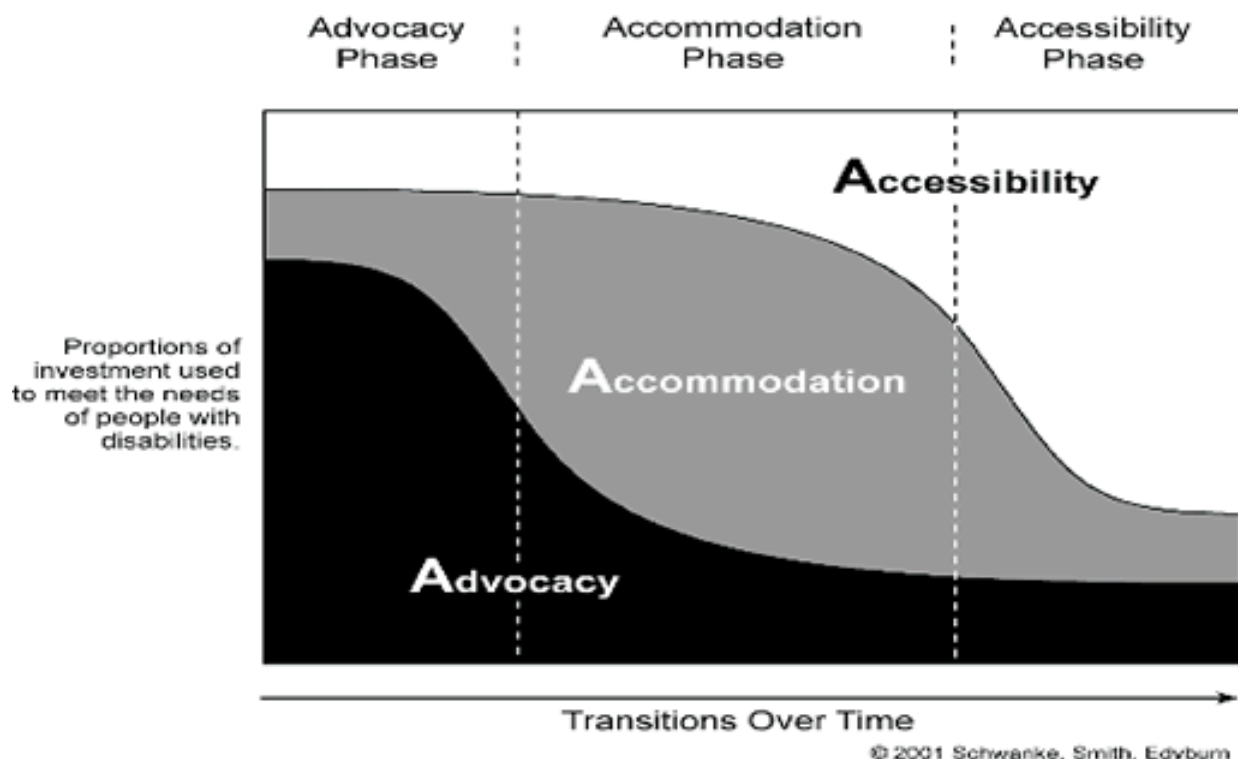


Figure 1: Advocacy, Accommodation, Accessibility Model

Accommodation Vs Universal Design

Postsecondary education is largely functioning in the Accommodation phase of the A3 model. Using an accommodation centered model for accessibility creates an individualized approach to meet educational needs which can often be segregating, resulting in feelings of separation and humiliation (Parette and Scherer, 2004). Using an accommodations model requires students with disabilities to individually contact the university and provide documentation to prove their disability in order to qualify for academic accommodations (Eckes & Ochoa, 2005). This requires the student to not only be able to advocate for themselves and their needs at 18 years old, but also to be comfortable disclosing their disability to the university, their teachers, and sometimes their classmates. Many students choose not to disclose for a variety of reasons which impacts their ability to obtain access to the resources that they need to succeed in postsecondary education. By using a UDI model in postsecondary education, all students can receive the help that they need without having to justify their need for accommodation or feeling “othered” from their peers.

Disability Defined

Disability is a term that has a variety of meanings, both in the literature and in the world around us. In a legal sense, the ADA defines a person with a disability as a person who has a physical or mental impairment that substantially limits one or more major life activity. This definition centers around the physical aspects of a disability and

defines it on an individual level (Rieser, 2006). The World Health Organization (WHO) takes a different approach. The WHO defines disability as an umbrella term which includes impairments, activity limitations, and participation restrictions. As a result, they argue that disability is not a health problem but a “complex phenomenon, reflecting the interaction between features of a person’s body and features of the society in which he or she lives.” Coming to an agreement on this definition is of importance if we expect to make laws or require persons with a disability to self-identify. We cannot expect to be effective in disability legislation and service provision if we cannot even decide who is defined as “disabled” and yet disability related literature seems to universally acknowledge the fact that no commonly used and agreed upon definition exists.

Disability Identification

There is a lot of variety that exists between who identifies as a person with a disability and who does not. This discrepancy in identification is most commonly seen among those with “hidden disabilities.” Hidden disabilities are conditions that are less obvious to the eye such as learning disabilities, mental health conditions, and systemic conditions. Their less-visible nature makes it easier for students with these types of disabilities to refrain from disclosing their disability to the university. Some studies reported that as many as 50% of SWD may not report their disabilities to their university (Smith, Hirschman, Rust, 2010). This lack of disclosure can negatively impact their ability to access the resources that they need to succeed in postsecondary education. There are many reasons that a student may choose not to disclose their disability to the university (Goode, 2006). Some simply don’t know how to do so or don’t fully understand how doing so may benefit them in their educational pursuit. Others are

acutely aware that officially disclosing their disability makes them extra visible to their classmates, friends, and teachers. This excessive calling of attention to the disability can make the student feel like an outsider in their classroom and opens the door for discrimination, both unintentional and intentional (Alexandrin, 2008; Fernandes, 2010; Barnes and Mercer, 2011). The term “disability” can also be de-gendering represented best by the 3 gender bathrooms: men, women, handicapped (Gronvik, 2007). Many students also struggle with their own identity as a SWD and do not see agreement in the way the university classifies SWD and how they see themselves. Lastly, some students who want to disclose never officially do because of the amount of paperwork required to do so. Declaring a disability with the university in order to gain access to services is an extensive process that requires detailed planning and organization, executive functions that many 18 years old struggle, regardless of disability status (Fernandes, 2010). However, not disclosing and seeking support is likely to result in a lack of accommodation and academic supports in higher education.

Disability Research

Evidence can be defined as the knowledge that connects research to practice (Johnston et al, 2009). This evidence, combined with expertise and the values of persons with disabilities, influence community practices concerning disability. Policies and practices concerning people with disabilities, both in education and otherwise, are expected to be grounded in the best available evidence. However, there are a lot of challenges that exist regarding disability research. First, very few level one studies concerning disability and rehabilitation exist. This scarcity of disability focused research

makes it difficult to base intervention or policy in research. This lack of disability related research can be attributed to many factors (Johnston et al, 2009).

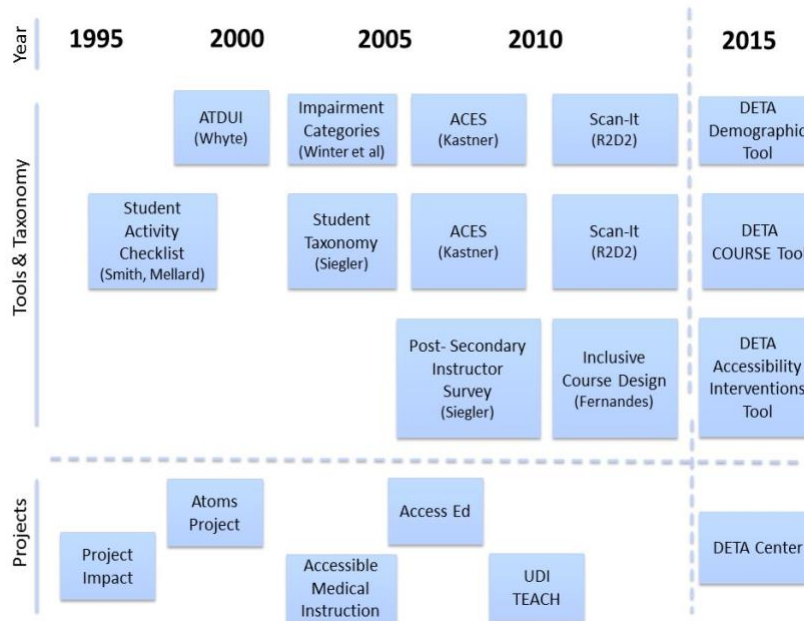
1. Great Breadth and Complexity: Disability involves the interactions between biological, psychological, social, economic, legal, and environmental factors which makes it a very complicated topic to research and near impossible to control for
2. Emphasis on empowering people with disabilities: it is important to include people with disabilities in on the decision process and design methodologies that allow for such participation
3. Small Sample Sizes: disability is so diverse that finding people with the same disabilities is difficult and can result in relatively small sample sizes
4. Difficulty with blinding and placebo control: in many cases, it is harder to hide a disability specific intervention, such as an assistive device
5. Difficulty defining an ethical and practical control group
6. Need for enabling technology: existing evidence grades do not address research methods used to evaluate assistive technology or universal design for accessibility and successful use
7. Adequate funding levels
8. Need to address large social systems that are difficult to manipulate experimentally

These listed complications include many of the factors that impede disability research, and can be considered relatively complete if we are willing to make the assumption that we can accurately identify and categorize our control and experimental groups. Consider how research is impacted when researchers are not even accurately identifying disability in their research and policy development.

Informing Past Research at R₂D₂ Center

The Rehabilitation Research Design and Disability (R₂D₂) Center at the University of WI-Milwaukee, directed by Dr. Roger O. Smith, performs discovery, innovation, training and dissemination activities around technology and disability. Research projects in this center focus on universal design, measurement and outcomes, and assistive technology. The author of this thesis has been employed by and actively participating in this research since January of 2016.

The complexity and sheer number of relevant variables for studying UDI is substantial and somewhat daunting. Considerable work in educational accessibility assessment has been performed at the R₂D₂ Center over the years. Since 1998, R₂D₂ has published 9 research studies and created numerous evaluative tools in the field of education and disability. Each UDI and Disability research project completed by R₂D₂ created a taxonomy which built on the information learned from past studies while incorporating new research. A multi-decade timeline of R₂D₂ research related to UDI and disability is portrayed below in Figure X.



Historical Development of Disability-Related Research Tools

This timeline pictorially depicts the longevity and detail in which various R2D2 projects have examined disability and education. Over the last 20 years, tools and taxonomies have been created and multiple students have written a thesis (including Kastner, Siegler, and Fernandes) informing the knowledge surrounding this topic. Educational research at the R2D2 Center has examined the student and teacher perspectives and most recently, in conjunction with DETA, the target audience shifted to future researchers. The National Distance Education and Technological Advancement (DETA) Center at the University of Wisconsin-Milwaukee was created in 2013 to promote student access and success through evidence-based distance education, especially for underrepresented populations, such as SWD. The R2D2 Center works in conjunction with the DETA Center to create tools to help prompt educators and researchers examine the relationships that exist between UDI and Disability and tease out not only what is effective, but what is not, for students with disabilities.

As demonstrated in this literature review, previous studies have suggested that students with functional impairments and disabilities do not consistently disclose their impairment to the university or their teachers. This behavior makes sense. Students do not want to publicly admit that they have a disability. They may perceive that disclosure connotes some aspect that they are not as capable as other students. This fact alone can traditional data collection methods that describe disability populations to be inaccurate. Thus, it was evident that special effort must be placed on the complete and correct identification of students with disabilities before any other research could occur. In 2007, researchers at the UWM R₂D₂ Center, began to look at this problem for the first time. Research was conducted as a part of the ACCESS-ed and UD-ITEACH Projects, funded through the U.S. Department of Education as Federal Demonstration Projects to Ensure a Quality Higher Education for Students with Disabilities. The primary purpose of these studies was to understand the difference between the rate at which students with declared disabilities completed courses as compared with the rate at which other students with non-declared disabilities completed the same courses. Through the use of anonymous paper survey, researchers at the R₂D₂ Center attempted to gain further insight into this issue. This survey included a total of 7 questions and was administered to students at UWM in a total of 4 rounds: Spring 2007, Fall 2007, Spring 2008 and Spring 2009. The surveys inquired whether the students spoke English as their first language and if they had any disabilities or impairments. Results from this study revealed that 8% of students surveyed identified with a disability, an additional 11% identified as having a functional impairment, and an additional 5% did not speak English as a first language. Although this study was only reported in presentations and never

formally published, it demonstrated a need to understand more about the relationship between disability identification in post-secondary education.

The Significance of Terminology and Data Collection Methodology

As previously discussed, the terminology surrounding disability is cloudy at best. Definitions for disability are plentiful and sometimes contradictory. Some studies have even pointed to the negative connotation of the word “disability” as a main factor leading to the resistance to embrace a disability identity. This word and its meaning have inadvertently created a social divide between the disabled and able bodied, and as a result, it may never provide the most accurate representation of the disabled community. The social model of disability speaks to this point, pointing to social constructs and policy as the source of the “othering” that occurs when you identify as having a disability. As a result, the social model of disability specifically suggests that impairments are separate from disabilities. That the former is something felt on a very individual and person level whereas the latter is a label imposed on persons by society due to their impairments (Shakespeare, 2006).

However, in an accommodation based educational system, students cannot simply feel impaired in order to receive services from the university. A medical condition must be proven through testing. This makes terminology such as “condition” and “diagnosis” important to consider as well.

The Need for Research on Disability Higher Education Statistics Methodology

The implications of the past research failure to accurately ascertain disability demographics is significant. Appropriate methodology for obtaining this information is also poorly defined resulting in inconsistencies and inaccuracies with demographic data collection which impacts the interpretation of the corresponding research.

Underestimating the number of students with disabilities (SWD) prevents institutional resource planning and investment. This can result in the allocation of insufficient funds to serve students with disabilities and limits the institutions ability to provide the monetary support necessary to facilitate academic success and successful occupational engagement in education.

Understanding the true number of SWDs is essential to providing educational assistance to all students because it really speaks to the overarching educational strategies currently in use. If there really are so many SWDs who do not disclose their disabilities and independently seek accommodations, an educational system built on an individual accommodation strategy becomes ineffective and results in the majority of students needing intervention at a loss for assistance. This could result in the student failing in higher education or at a minimum prevent them from reaching their full potential.

Research Questions

Although the literature demonstrates a large breadth of knowledge in the field of disability and disability identification, there is surprisingly little information that exists examining the relationship between disability identification and post-secondary educational success. This lack of knowledge has generated five overarching research questions that are detailed below.

First, what is the real prevalence of disability in post-secondary education? Understanding the real prevalence of disability is necessary before we can really answer any other questions that may emerge. This question, although descriptive, can be measured by some more specific hypotheses. Examples include:

1. The prevalence of SWD in this study at the studies institution will be larger than the reported national average of SWD in post-secondary education (10.8%).
2. More students in this study will identify as having a diagnosis or functional impairment than will identify as having a disability.
3. Significantly large numbers of students who have disabilities will not be aware of DSS on campus.

Second, what is the methodology that should be used in order to elicit the most accurate demographic information concerning students with disabilities? Examining how the methodology used can impact disability identity and response rates is crucial. If we are able to demonstrate that the prevalence of disability is higher than previously thought, there must be a reason why we are not getting accurate numbers? How does the use of different terminology, such as impairment, disability, or diagnosis, impact disability disclosure? Is a combination of questions more accurate than just asking one? Are there specific orders in which questions should be asked to elicit the most accurate response?

Third, does the prevalence of students with disabilities change in online education vs traditional face to face education? As more and more classes and degree programs move to an online instructional format, does this have implications for SWD? Are more SWD found in online courses vs traditional face-to-face courses?

Fourth, what does the prevalence of students with disabilities say about intervention strategies that should be present in post-secondary education? If there are more students with disabilities than previously thought, how do we make sure that they are receiving the accommodations that they need? Do disability student services need to provide more proactive outreach efforts? Do courses need to be structured differently? Does the educational system need to change the way they provide students with accommodations?

Finally, these questions on prevalence and methodology then speak to a larger fifth question: How does all of this relate to disability and education as a whole and how relevant is it? Although this thesis will tie the first four questions into this last question whenever relevant, this last question is really beyond the scope of practice for this paper. The research from this thesis will inform work on disability and education as a whole but more research will need to be done to understand its full implications.

Methods

Research Design

This study was conducted through the use of survey research using an anonymous questionnaire. The questionnaire included close ended questions with options for students to type in their own response if they felt that the options provided were not adequate. Several strategies were used in this research design to try and answer questions surrounding disability prevalence in post-secondary education that have never been accurately answered before. First, the questionnaire used in this study was based on previously created, tested, and validated surveys and research concerning disability and education from the R₂D₂ Center. Basing this survey off previously validated material helps to add validity to this study.

The methodologies used for sampling and recruitment were also quite unique and specific to this study. When recruiting, stratified sampling was used to ensure that the sample included participants who were mostly in the freshman and sophomore years of their first degree. Students from across the colleges and from both online and in person classes were targeted to provide a more rounded snapshot of the university. Lastly, whole classes were targeted to provide a more accurate look into class make up as a whole. The approved IRB #16.385 detailing the methodology for this study can be found in full in appendix X. One amendment was submitted to the IRB because more participants were obtained than originally assumed possible and a request to recruit more participants was needed. This amendment can also be found in Appendix A.

Population and Sampling

As previously stated, the research design surrounding the population desired and the sampling of this population was very strategic. In an ideal world, every student on campus would have been recruited to provide a perfect picture of the students at the university. This is obviously not only time consuming, but completely unrealistic. Therefore, strategic sampling was necessary to get the students that would be the best representation of the student body as a whole. In order to accomplish this, it was critical to obtain 100% class participation (or very close to it) in order to get an accurate representation of individual course makeup. Although previous studies have focused on just obtaining as many participants as possible, this study noted the importance of full class data. In simply trying to acquire as many participants as possible, the students who will be less likely to volunteer for participation are going to be at risk students, including those with disabilities, there in skewing our demographics data before we can even collect it.

It was also important to get a representation of the whole university. This requires recruitment across disciplines and instructional modes (face to face and online). Although research could not be found to prove or disprove this fact, it is entirely possible that SWD are drawn to a certain type of degree and are more prevalently found in that college. By casting a wide net, it ensures that a discipline bias is less likely.

Lastly, attrition from undergraduate education occurs most frequently during the first 2 years of school (Stinebrickner, 2012; Tinto, 1987, Ishitani, 2003). Therefore, this study sought to recruit students within these first two years in an attempt to obtain a

complete picture of college students before dropouts occurred, also biasing the sample and prevalence of SWD who started in post-secondary education.

Recruitment

Course recruitment occurred in the first 3 weeks of the fall semester in order to capture new incoming freshman. The UWM Fall 2016 course list was analyzed and 40 courses that serve as entry level requirements for degree programs were selected. These courses generally have larger proportions of freshman and sophomores enrolled and thus make it more likely that the preferable age demographic would be achieved. Courses selected varied across disciplines and colleges in order to get a more comprehensive view of the campus and its students. The professors of these courses were contacted through their UWM email address and asked to allow their students to participate in this study. Two waves of emails were sent out in order to generate interest from multiple disciplines. Of the 50 professors contacted, 16 responded and agreed have the survey administered to their class. The recruitment email that was used can be found in Appendix B.

This was a convenient sample of current students at UWM. There were no restrictions for participation based on age, gender, race, or ethnicity. Participants with and without disabilities were included in this sample. Recruitment of full classes was necessary for this study in order to get a picture of what class make up looks like. Partial class recruitment could result in the recruitment of students without disabilities which could impact the accuracy of this study.

Participants

All participants were recruited from the University of Wisconsin-Milwaukee (UWM) in the Fall 2016 semester. At the time of recruitment, UWM had 21,398 students enrolled in their undergraduate programs, 4,639 students enrolled in graduate programs, and 1,503 international students. There were 3,289 new freshmen in the Fall 2016 semester (UWM Office of Assessment and Institutional Research, 2016).

Nine hundred and fifty-seven students from the University of Wisconsin-Milwaukee were recruited for this study and 931 voluntarily participated in this study. Of those who participated, 72% were in their freshman or sophomore year of their first degree and 88% identified as a junior or younger. Colleges represented include: architecture and urban planning, art and humanities, education, engineering, health sciences, informational sciences, letters and sciences, nursing, public health, and social welfare. English was the primary language for 92.3% of all participants and a secondary language for the remaining 8.7%.

Instrumentation

This study utilized a survey instrument for data collection which is available in its full form in Appendix C. The survey was constructed through Qualtrics, an online research suite survey platform. The Qualtrics platform allowed for the creation of an online survey, the exportation of that survey for a paper version with the same formatting, data collection and preliminary data analysis to allow for the identification of early trends. The survey is available in both a paper and online form to increase

methods of dissemination and allow flexibility with participation and survey completion. The survey consists of 16 questions. The first 4 questions establish some demographic information about the student and their course including: what course they were in, how the course was administered, what year the student was in school, and what their intended field of study was. The next question asks whether the student speaks English as a first language or not, as this could impact not only their success completing this survey independently, but also their ability to succeed in a course with English as the language of delivery.

The questionnaire then asks a series of 3 questions which all target disability identification with differing diction and syntax. These include questions that are commonly asked at the university level and in educational research to discern demographic information such as, "Do you have a disability? Yes or no?" This question is followed by two others asking whether the student had a diagnosis or a noted functional impairment that impacted educational success. For these two questions, categories and examples of conditions are provided and participants are able to check as many boxes as they want or write in their own conditions. These three disability-related questions are specifically ordered from most common phrasing to least common phrasing to ensure that one question will not impact the answer for the next.

Next, a series of four questions addresses the impact of disability student services on campus and the self-advocacy of the students. Questions asks whether students have disclosed any mentioned disabilities to the university and why not if they had not. Questions also ask if the students have heard of disability student services and if so, if they had used these services on campus. These questions were developed to

provide insight into the accessibility and availability of academic accommodations for SWD and how effectively those accommodations are provided.

Lastly, the questionnaire asks if the participant has completed this survey previously in another class in order to identify and eliminate the possibility of counting duplicate responses. A question at the end asks if participants received extra credit for their participation in the research to document any incentives provided independently by a professor. An extra credit option was built into the survey just in case some professors offered extra credit to their students so that students did not feel as though they had to participate in research to get extra credit.

Data Collection Strategy & Procedure

Once professors agreed to allow their class to participate in the research, the professor was presented with the option to have the survey administered to students during class in a paper format or disseminated electronically via a survey link. The overall approach and strategy was to collect as much data in person as possible to improve return rates and ensure full class participation. Although this methodology biases the in-person courses slightly, data collection has shown to be more complete and more easy to ascertain when done in person as opposed to when done via a survey link where the link can be easily deleted or pushed to the back of the inbox. Seven professors elected for in class data collection.

For those who selected an in class dissemination method, a time was scheduled for a researcher to come into the classroom and administer the survey in person. Before the surveys were passed out, the survey administrator read from a script (Appendix D)

to introduce the survey and ensure that every participant heard the same information before deciding whether or not to participate in the survey. Administrators explained that the survey questions may seem repetitive at times and that this was intentional. Students were instructed to fill out all questions in order and answer based on how they read the question the first time. Students were told to take as much time as they needed to complete the survey and to raise their hand if they needed assistance with reading the survey, understanding the questions, or selecting their answers. Students were provided with more detailed information about the research study (Appendix E) which they could choose to keep or turn back in with their surveys if they didn't want it. All students were reassured that participation was voluntary and that there were no repercussions in their course or through the university if they chose not to participate. In order to prevent feelings of peer pressure to participate, surveys were handed out to every student in the class. Students were instructed that if they didn't want to participate, they should just turn the survey in blank ensuring that no one would know who filled out a survey and who turned it in blank. Once completed, students placed surveys into a large brown envelope themselves. Once all surveys were handed in, the survey administrator thanked the class and departed. Participation rates were close to 100% for classes where data was collected in person.

Answers from the paper surveys were then entered into Qualtrics in order to keep all of the data stored in one place and allow for preliminary analyzation of data in order to identify trends earlier. Importing of all data to an online platform was completed by the head researcher and was completed in quiet environments to eliminate

distractions and potential transposition errors. Answers were briefly checked after import to ensure accuracy.

Professors were given the option to have their students complete the surveys online if they were not amenable to using class time for data collection. In this case, the same speech administered in person was sent as an email to all of the students of the class with a link to an online version of the survey in Qualtrics. This option was most frequently used by professors who taught online or hybrid courses where in person survey distribution was not a viable option. Participation was much lower for online courses. Most courses only had a couple of students participate. Some online professors independently provided extra credit as an incentive to participate in the survey research. These courses had much higher participation levels but were still significantly lower than their in-class counterparts.

Before beginning the survey, the study was explained to the student. They were then asked if they were completing this research for extra credit. If they responded yes, they were given the option to participate in the survey or complete a different reading assignment if they were not comfortable participating in the research but still wanted extra credit. This helped to make sure that no student felt pressured to participate, regardless of incentives that may have been offered by the professor, independent of this study. This extra credit option involved reading a short article on universal design in education (Tobin, 2013) and listing 3 reasons why universal design was important in education. No student took advantage of this extra credit option. All who were recruited either completed the survey or elected not to participate at all.

Planned Data Analysis

When examining the data from this research, descriptive statistics will be utilized.

Through univariate analysis, statistics will inform questions such as:

1. How many students were in their freshman or sophomore year of their first degree program?
2. How many students identified as a student with a disability? A student with a diagnosis? A student with a functional impairment?
3. How many students have reported their disability to the university?
4. How many students have heard of DSS? How many have used these services?
5. Is there a higher prevalence of SWD in online classes vs traditional in-person classes?

While identifying the statistics associated with these questions is beneficial, it is also important to explore the relationship between some of these variables. This analysis will answer questions, such as:

1. Did people who responded that they do not have a disability also respond that they did not have a diagnosis? Did they respond that they did not have an impairment?
2. What is the relationship between those who said they had a diagnosis and those who said they had an impairment?
3. What percentage of people who said they have a disability also reported their disability to the university?
4. How many students who reported their disability to the university have actually used the services at DSS?
5. Are there students who identified as having a disability, diagnosis, or impairment that they also feel is corrected for using assistive technology?

Once prevalence questions have been sufficiently answered through analysis of the data collected in this study, the other research questions will be addressed.

Informed by the disability prevalence data collected and the literature review, a list of needs and interventions will be generated by the researcher. The list may also be informed by experts in the field through conferences, presentations, and focus groups.

RESULTS

Figures and data presented are a result of preliminary data analysis.

Demographics of Participants

Participants were targeted in their freshman and sophomore years at UWM to get a more accurate picture of student demographics before attrition occurred. 72.18% of the participants in this study self-identified as a freshman or a sophomore and 87.75% identified as a freshman, sophomore, or junior. Data showing the distribution of participant school age is below in Figure 3. Although an equal number of face-to-face and online courses were recruited for this study, participation was predominantly from face-to-face classes. For online courses that did participate, only a few students from each class participated, resulting in incomplete class data sets. A graph of the course mode of instruction is below in Figure 4. The participants for this study primarily spoke English as a first language, with only 8.7% speaking English as a second language (Figure 2).

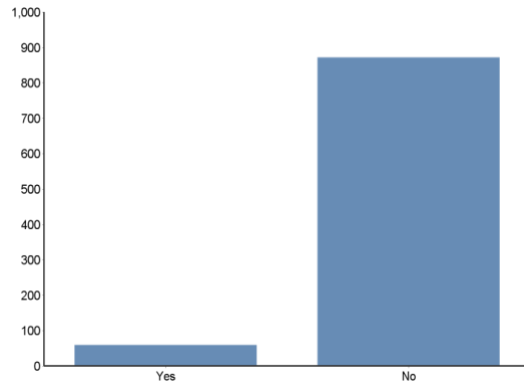


Figure 2: Is English your primary language?

#	Answer	Bar	Response	%
1	Freshman		489	52.52%
2	Sophomore		183	19.66%
3	Junior		145	15.57%
4	Senior		42	4.51%
5	5th year +		21	2.26%
6	Graduate/PhD		33	3.54%
7	Other		18	1.93%
	Total		931	100.00%

Figure 3: Year in School of Participants

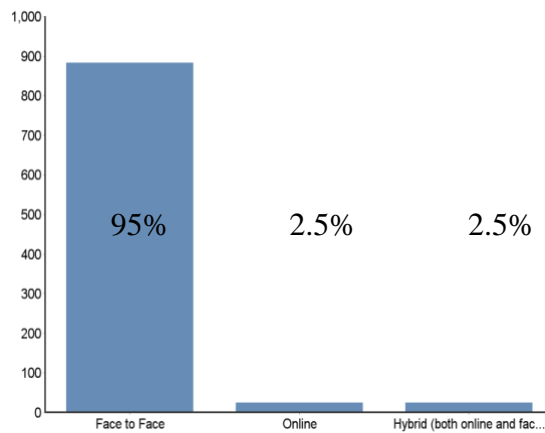


Figure 4: Mode of Instruction

Disability Identification

Students who participated in this study were asked a series of questions about their disability level. When asked if students had a disability, 6% positively identified with having a disability (Figure 5). When asked about the severity about their disability, only one person identified their disability as severe (Figure 6). When asked if they had a diagnosis, 20.41% positively identified with having a diagnosis in one of the suggested areas. When asked if they had a functional diagnosis that impacted their education, 17.4% positively identified with at least one functional impairment. This difference between reported disability identification is depicted in Figure 7 below.

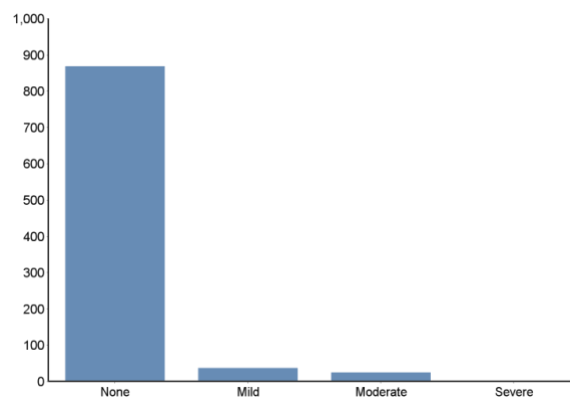


Figure 5: Do you have a disability?

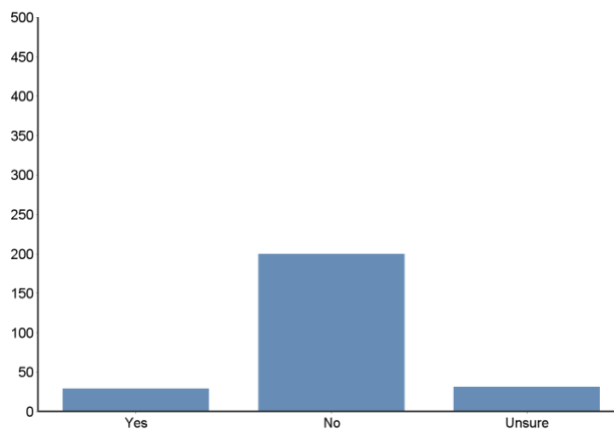


Figure 6: How severe is your disability?

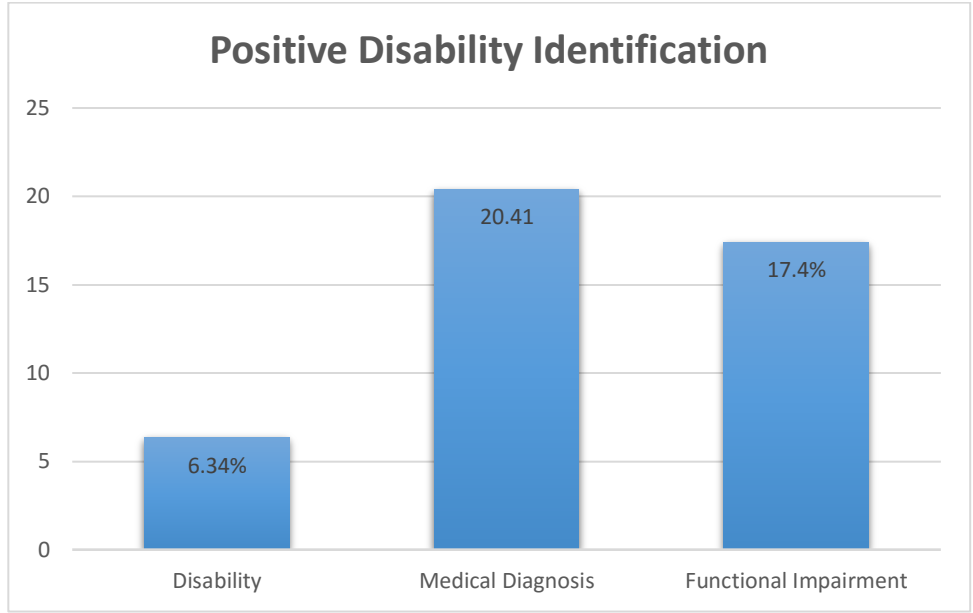


Figure 7: Positive Identification of disability as influenced by terminology

Disability Student Services

When students in this study were asked if they had reported a disability to the university, 11% said that they had and another 12% said that they were unsure whether or not they had reported a disability to the university. This table is below in Figure 8. When asked for reasons why students chose not to disclose, the answers varied. The top two answers were “I don’t need help” at 41.48% and “I did not think it would help (to disclose)” at 27.51%. The full table of answers can be found in figure 9. When asked whether they had heard of disability student services (also referred to as the ARC at UWM), only 48% of students said yes, and only 6% of students said they had used those services before. Data is represented below in Figures 10 and 11.

#	Answer	Bar	Response	%
1	Yes		850	91.30%
2	No		81	8.70%
	Total		931	100.00%

Figure 8: Reported Disability to the University









#	Answer	Bar	Response	%
1	Did not think it would help		63	27.51%
2	Did not know that I could		25	10.92%
3	Did not know how to disclose		23	10.04%
4	Did not want the university to know about my disability		15	6.55%
5	Do not want accommodations		32	13.97%
6	Do not need accommodations		95	41.48%
7	I do not have a disability or impairment to disclose		62	27.07%
8	Other:		5	2.18%
	Total		320	100.00%

Figure 9: Reasons why students chose not to disclose

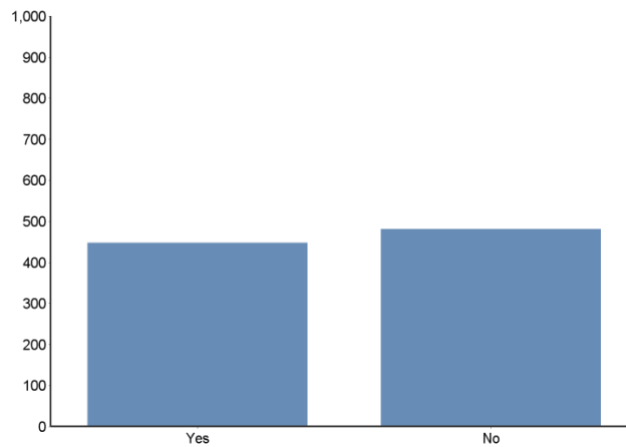


Figure 10: Aware of DSS?

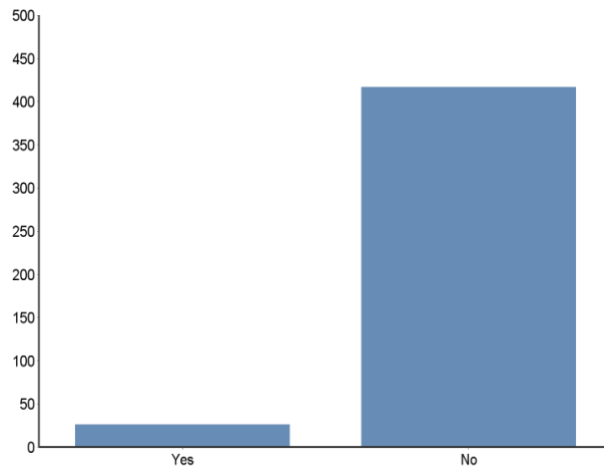


Figure 11: Used services at DSS?

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