5-2017

Knowledge of Assistive Technology and Services Available to Students With Disabilities

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KNOWLEDGE OF ASSISTIVE TECHNOLOGY AND SERVICES AVAILABLE TO STUDENTS WITH DISABILITIES

by

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B.S. May 2013, Old Dominion University

A Research Study Submitted to the Graduate Faculty of
Old Dominion University in Partial Fulfillment of the
Requirements for the Degree of

MASTER OF SCIENCE

OCCUPATIONAL AND TECHNICAL STUDIES

OLD DOMINION UNIVERSITY
May 2017

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ABSTRACT

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The purpose of this study was to investigate the knowledge of students and faculty regarding the assistive technology and services available to students with disabilities at a university in the southeastern United States. This study consists of 300 participants who were asked to respond to 8 questions which were designed to collect data aligned with the three research objectives. The findings may be used to determine if further education or communication is needed in order to better inform students, staff, and faculty of assistive technology and services available on campus.

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CHAPTER I
INTRODUCTION

In order for learners with disabilities to transition from secondary education to a university setting, they must have an array of learning technologies available. This can be accomplished through the use of digital environments that provide learners with multiple options of communication that are flexible and appealing.

Transitioning from secondary education (SE) to higher education (HE) can be a challenge for all learners, but especially for learners with disabilities. In order for the transition to be successful, the learner must have certain capabilities such as time management, study skills, and organizational strategies to be able to adapt to the rigor of attending a university. Support in learning the above stated skills are provided in secondary education. The Individuals with Disabilities Education Improvement Act (IDEIA, 2004) is the core legislative program governing federal, local, and state assistance for special education and related services in the United States (Peterson-Karlan, 2011). It is the responsibility of the educators, parents, and the learner to learn more about disabilities and how to best accommodate the student and prepare them for independence and success. Sitlington et al. (2007) recommend a functional assessment of assistive technology AT as part of the transition planning process in order to better prepare individuals to use technology in work and college environments (Asselin, 2011).

The definition of AT first appears in U.S. Law in the Technology-Related Assistance Act of 1988 (P.L. 100-407), and subsequently was adopted in the IDEA (1990) legislation (Peterson-Karlan, 2011). The Technology-Related Assistance for Individuals with Disabilities Act (P.L. 100-407) was signed into law by President Reagan on August 19, 1988. This law provides funding to develop statewide, consumer-responsive information and training programs designed to meet the assistive technology AT needs of individuals with disabilities of all ages (National

Association of Special Education Teachers, 2007). An AT device is "any item, piece of equipment or product system whether acquired commercially or off the shelf, modified, or customized, that is used to increase, maintain, or improve functional capabilities of individuals with disabilities" (20 U.S.C. § 1401(1) (Peterson-Karlan, 2011). Persons with significant disabilities may share in educational opportunities by using assistive technology devices to manipulate course materials (Levin and Scherfenberg, 1990).

HE institutions are being challenged to provide a range of educational opportunities through the use of AT and universally designed instruction due to the increasing number of enrollments of students with disabilities. When a student has been diagnosed with a disability, their accommodations will state specific technology that is needed in order to assist the student in a variety of settings. It consists of tools and techniques that enhance the effectiveness in the area of AT applications. Although there is a range of AT devices available, the field is constantly expanding and there is a lack of knowledge or usage (Borthick, 1999).

AT offers students with disabilities a chance for active participation in a university setting. Accommodations in HE most often include extended time on tests, note takers or course notes, learning strategies or study skills instruction, alternative materials and formats, and access to AT (National Center for Education Statistics, 2011a). The features of specific products should be matched to the individual's functional needs, place of use and intended purpose.

STATEMENT OF THE PROBLEM

Emerging assistive technology provides a unique opportunity to alleviate some of the challenges of people with disabilities. Such as being able to get to class and various other places around campus as well as being included in campus activities. In order for students to be successful in a university setting they must have basic knowledge of learning technologies. This

can be accomplished through a digital environment which provides learners with multiple options of communication that are flexible and appealing. This study addresses whether students and faculty are aware of the assistive technologies and services that are available to students on campus?

RESEARCH OBJECTIVES

This study seeks to address two research objectives:

RO_1: Identify if students and faculty have experience using assistive technology and services available to students on campus.

RO_2: Determine if the students and faculty are interested in learning more about assistive technology.

BACKGROUND AND SIGNIFICANCE

If raising awareness of AT and AT services available to students with documented disabilities will determine if the documented accommodations assigned to the students are effective, then this study may help promote learning and contribute to the success of the student. When the students are aware of the AT and AT services available, they may be able to use the resources to contribute to their success and promote learning. Greater awareness may contribute to the success of the student.

Assistive technology is the key to constructing educational environments that are inclusive for individuals with disabilities. This statement is supported by (Rocklage, Gillett, Peschong, and Delhorey, 1995, p3) who state "...technology in the area of assistive technology is critical and can facilitate the support and full participation of an individual in daily tasks and activities." Moreover, Wilds (1989) claims, “The primary aim should be to allow students with disabilities access to assistive technology which meets their needs and provides for maximum

participation in social and educational environments" (p6). Inclusion and technology work together to construct effective and efficient learning environments for learners with disabilities. The proper technology supports and accommodations affords many disabled students the option to take full advantage of their education. Opportunities for interactions found in inclusive settings, allows students to truly demonstrate their abilities (Attri et al, 2014). The availability of assistive technology devices and services enables some individuals with disabilities to

- have greater control over their own lives;
- participate in and contribute more fully to activities in their home, school, work environments, and in their communities;
- interact to a greater extent with non-disabled individuals;
- benefit from opportunities that are taken for granted by individuals who do not have disabilities (Hosmer, 1995, p11)

Assistive technology is not a cure for learning issues, but it can help learners work around their challenges while playing to their strengths. AT helps learners become more successful, productive students. At the same time, their confidence and independence can grow. The appropriate AT tools can be instrumental in helping learners become more successful and independent and can assist learners in using their abilities to work on areas of weakness.

Fischer, Pumpian, and Sax (1995) stated that "although many educators are utilizing a range of 'supplementary aids and services' necessary to educate students with disabilities with their non-disabled peers, many are not sufficiently familiar with assistive technology to use it effectively" (p.3). Furthermore, it was reported that the average professional may have limited experience with the use of assistive technology. Those who attempt to acquire it for their

students rarely consider applications of technology beyond computers, wheelchairs, or commercially available communication devices (Fischer, Pumpian, & Sax, 1995).

This study gathers information through a survey about the awareness of assistive technology available for use by students with physical disabilities, including visual and hearing impairments. The survey will include topics such as frequently used devices, services of the Educational Accessibilities Office (EAO) in terms of technology, quality of training on devices for students and their opinions on the current services available on campus.

LIMITATIONS

This study concentrates on students at one university in the Southeast region of the United States. The original number for respondents included 300 participants to include both graduate and undergraduate students and faculty. Efforts were made to gather information from a convenience sample of participants. The present study relies on student perceptions and self-reporting of their disability. No efforts will be made to verify the responses.

ASSUMPTIONS

This study was designed to assess the knowledge of students in regards to the assistive technology and services available on a university campus in the Southeast U.S. with disabilities on campus. The assumptions of this study are:

1. Assistive Technology provides a unique opportunity to alleviate some of the challenges of students with disabilities (Levin and Scherfenberg, 1990).
2. Assistive technologies promote independence for students with disabilities as they adapt and interact in their environment (Asselin, 2011).
3. Students may or may not accurately report on their disability, experience, and awareness of assistive technology.

PROCEDURES

This study invited participants to complete a survey designed to assess their knowledge of the services and products available to students with disabilities on campus. A descriptive study is conducted to determine the current awareness of students about the assistive technology, services and supports available in higher education for people with disabilities. The targeted populations were multicultural, male and female, and currently enrolled undergraduate and graduate students, and faculty at a higher education institution in the Southeast U.S. The survey was distributed to the students and the responses were collected. The answers were tallied and a statistical analysis was completed which would determine if students and faculty were aware of or interested in learning about the services that are available for students with disabilities on campus. Knowledge of awareness would be determined from the results.

DEFINITION OF TERMS

The following list of terms and respective definitions are provided for further clarification on verbiage used during this research study.

I. Accommodation - Any modification or adjustment to a job or the work environment that will enable a qualified applicant or employee with a disability to participate in the application process or to perform essential job functions (American Psychological Association, 2009).

II. Assistive Technology (AT) - Any item, piece of equipment or product system, whether acquired commercially, modified, or customized, that is used to increase, maintain, or improve functional capabilities of individuals with disabilities (American Psychological Association, 2009).

III. Assistive Technology Services -Any service that directly assists an individual with a disability in the selection acquisition, or use of an AT device (Early Childhood Technical Assistance Center, 2012).

IV. Disability - A physical or mental impairment that substantially limits one or more major life activities, a person who has a history or record of such an impairment, or a person who is perceived by others as having such an impairment (ADA National Network, 2017).

V. Higher Education (HE) - Education beyond high school, especially at a college or university (Webster's II New College Dictionary, 1999).

VI. Secondary Education (SE) – Refers to the last seven years of statutory formal education (grade six through grade twelve) (Webster's II New College Dictionary, 1999).

VII. Technology - machinery and equipment developed from the application of scientific knowledge (Webster's II New College Dictionary, 1999).

OVERVIEW OF CHAPTERS

This research study provides further insight into the viewpoints of college students with disabilities regarding available accommodations and services at Old Dominion University. This information will be shared with the Education Accessibility Office to provide information on the needs of this population for inclusion on this college campus.

Chapter II will review literature on disabilities and identity, thirteen of the major disabilities categories, higher education and assistive technologies, the effectiveness of reasonable accommodations and performance plans. The assistive technology of particular concern is those created to assist in the learning environment. Chapter III provides the methods and procedures conducted. Chapter IV discusses the data reported and Chapter V discusses the

conclusions from the data gathered and offers recommendations for future research in relation to this study.

CHAPTER II

REVIEW OF LITERATURE

The focus of this review is to determine the students' knowledge of assistive technology and services available on a university camps. The research objectives are addressed to assess students' awareness of the assistive technology and services available on campus, and their interest in learning more about assistive technology. This Literature Review defines disabilities and identity, the need for student support and accommodations, assistive technologies, and performance plans.

Today's classrooms are comprised of more diverse learners than ever before. Reflecting recent educational and societal movements, over 95% of students with diagnosed disabilities participate in the general education classroom alongside their peers (U.S. Department of Education, 2001). Learners acquire knowledge in different ways and have different needs. Their needs, abilities or preferences aren't always obvious. There is a great challenge for educators to created learning opportunities within the general-education classrooms that are inclusive and effective for all students.

Disability and Identity

"In psychological research, the term identity is often used to refer to the self, expressions of individuality and the groups to which people belong" (Dunn & Burcaw, 2013, p. 148). Our individuality defines us, because it contains character traits and defines social roles, which help us to focus on our previous, current, and future goals. Disability is an identity framework which characterizes you as part of a group or as a minority. Those groups are sometimes subjected to prejudice or discrimination.

Adolescent's identity and social participation are shaped by the activities they choose and the friendships they develop (Barber, Stone, Hunt & Eccles, 2005; Eccles & Barber, 1999). A significant amount of evidence suggests that participation in school and community-based activities are associated with short- and long-term positive development (Barber, Stone, & Eccles, 2003). However, although individuals with disabilities are taught skills that can help them lead satisfying lives as independently as possible, they can often experience social separation which can limit their opportunities to engage in significant relationships. Because of the shift toward equal opportunity and participation, it is imperative to consider how their identity development differs from that of individuals without disabilities. This shift has caused more individuals with disabilities to attend higher education institutions.

Major Disabilities Categories

In order for educators to understand some of the issues and challenges faced by learners with disabilities, they must understand the major disability categories. Under the Individuals with Disabilities Education Act (IDEA, P. L. 105-17), there are 13 categories under which a student is eligible to receive the protections and services promised by this law. The major disabilities categories are described as follows.

Autism, as defined by Individuals with Disabilities Education Act (IDEA), refers to "a developmental disability significantly affecting verbal and nonverbal communication and social interaction, generally evident before age three that adversely affects a child's educational performance" (P.L. 101-476).

Deafness An inability to comprehend verbal language due to an inability to hear characterizes deafness. The official definition of deafness from the Individuals with Disabilities

Education Act IDEA is “a hearing impairment that is so severe that the child is impaired in processing linguistic information through hearing, with or without amplification” (P.L. 105-17).

Deaf-blindness refers to a child with both hearing and visual disabilities. The Individual with Disabilities Education Act IDEA officially defines the term as “concomitant [simultaneous] hearing and visual impairments, the combination of which causes such severe communication and other developmental and educational needs that they cannot be accommodated in special education programs solely for children with deafness or children with blindness” (P.L. 105-17).

Emotional Disturbance In the special education realm, conditions which generate behavioral issues fall under the category emotional disturbance. Several disorders receive this classification, as the Individuals with Disabilities Education Act’s (IDEA) definition suggests. This lengthy definition reads:

A condition exhibiting one or more of the following characteristics over a long period of time and to a marked degree that adversely affects a child’s educational performance:

(A) An inability to learn that cannot be explained by intellectual, sensory, or health factors.

(B) An inability to build or maintain satisfactory interpersonal relationships with peers and teachers.

(C) Inappropriate types of behavior or feelings under normal circumstances.

(D) A general pervasive mood of unhappiness or depression.

(E) A tendency to develop physical symptoms or fears associated with personal or school problems (IDEA, P.L. 105-17).

The term includes schizophrenia. The term does not apply to children who are socially maladjusted, unless it is determined that they have an emotional disturbance.

Hearing impairment as a disability category is similar to the category of deafness, but it is not the same. The official definition of a hearing impairment by the Individuals with Disabilities Education Act (IDEA) is "an impairment in hearing, whether permanent or fluctuating, that adversely affects a child's educational performance but is not included under the definition of "deafness" (P.L. 105-17).

Intellectual disability, formerly labeled "mental retardation," is defined by the Individuals with Disabilities Education Act (IDEA) as "significantly sub average general intellectual functioning, existing concurrently [at the same time] with deficits in adaptive behavior and manifested during the developmental period, that adversely affects a child's educational performance (P.L. 105-17). It is not, however, a currently accepted practice to refer to individuals with intellectual disabilities as "mentally retarded." This term can be offensive and should no longer be used.

Multiple Disabilities According to the Individuals with Disabilities Education Act's (IDEA), multiple disabilities refers to "concomitant [simultaneous] impairments (such as intellectual disability-blindness, intellectual disability-orthopedic impairment, etc.), the combination of which causes such severe educational needs that they cannot be accommodated in a special education program solely for one of the impairments. The term does not include deaf-blindness (P.L. 105-17).

In other words, a student whose special needs are categorized under multiple disabilities requires coinciding adaptions for more than one disability. The exception is the combination deafness and blindness, as this pair of impairments has its own classification under IDEA.

Orthopedic Impairment is defined by the Individuals with Disabilities Education Act (IDEA) as "a severe orthopedic impairment that adversely affects a child's educational

performance (P.L. 105-17). IDEA specifies that this term "includes impairments caused by a congenital anomaly [birth defects], impairments caused by disease (e.g., poliomyelitis, bone tuberculosis), and impairments from other causes (e.g., cerebral palsy, amputations, and fractures or burns that cause contractures (P.L. 105-17). Put directly, orthopedic impairments involve physical disabilities which could affect the academic process.

Other Health Impairments is an umbrella term, "other health impairment" (OHI) encompasses a range of conditions. The Individuals with Disabilities Education Act (IDEA) names several such disorders in OHI's official definition: "having limited strength, vitality, or alertness, including a heightened alertness to environmental stimuli, that results in limited alertness with respect to the educational environment, that— (a) is due to chronic or acute health problems such as asthma, attention deficit disorder or attention deficit hyperactivity disorder, diabetes, epilepsy, a heart condition, hemophilia, lead poisoning, leukemia, nephritis [a kidney disorder], rheumatic fever, sickle cell anemia, and Tourette syndrome; and (b) adversely affects a child's educational performance (P.L. 105-17).

Specific Learning Disability is defined as "a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, that may manifest itself in the imperfect ability to listen, think, speak, read, write, spell, or to do mathematical calculations (P.L. 105-17). This disability category includes such conditions as perceptual disabilities, brain injury, minimal brain dysfunction, dyslexia and developmental aphasia (a type of language disorder).

The Individuals with Disabilities Education Act (IDEA) officially defines **speech and language impairments** as "a communication disorder such as stuttering, impaired articulation, a

language impairment, or a voice impairment that adversely affects a child's educational performance (P.L. 105-17).

Traumatic Brain Injury - A student with a brain injury may qualify for special education services under the disability category traumatic brain injury (TBI). The Individuals with Disabilities Education Act (IDEA) outlines the conditions that fall within this classification, formally defining TBI as "an acquired injury to the brain caused by an external physical force, resulting in total or partial functional disability or psychosocial impairment, or both, that adversely affects a child's educational performance" (P.L. 101-476).

The definition continues to specify, "Traumatic brain injury applies to open or closed head injuries resulting in impairments in one or more areas, such as cognition; language; memory; attention; reasoning; abstract thinking; judgment; problem-solving; sensory, perceptual, and motor abilities; psycho-social behavior; physical functions; information processing; and speech. The term does not apply to brain injuries that are congenital or degenerative, or to brain injuries induced by birth trauma" (P.L. 101-476).

Higher Education and Assistive Technology

Once a student transitions from K-12 to higher education, the AT devices, services and training previously provided by IDEA no longer applies in the post-secondary setting. The Americans with Disabilities Act (1990/2008) and Title II and Section 504 of the 1973 Rehabilitation Act (P.L. 101-476) insure that individuals with disabilities will not be discriminated against in all postsecondary institutions, including colleges, universities, vocational, and adult education programs that receive federal financial assistance (Asselin, 2011). Students must prove that they are included in the protected class against discrimination in order to receive appropriate accommodations. If the student previously received a 504 plan or

received services through an Individualized Education Plan (IEP), the educational institutions are required to provide reasonable accommodations to the qualified persons with documented disabilities (Asselin, 2011). Accommodations in higher education most often include extended time on test, note takers or course notes, learning strategies or study skills instruction, alternative materials and formats, and access to assistive technology (National Center for Education Statistics, 2011a).

Although the opportunity for higher education was made available to the underrepresented groups, the educational practices and culture did not change in order to address the needs of the newly enrolled group of students. Even though the doors were opened, no effort was made to change the educational practice in higher education, such as the curriculum, teaching and testing methods or physical layout of classrooms. As a result, this created barriers for the students with disabilities, by making access difficult, the retention and graduation rates were affected (Henderson, 2001).

Today's classrooms are comprised of more diverse learners than ever before. Reflecting recent educational and societal movements, over 95% of students with diagnosed disabilities participate in the general education classroom alongside their peers (U.S. Department of Education, 2001). Equally important, however, are the formidable physical and learning barriers. Students with disabilities encounter significant challenges of physical accessibility and access to curriculum and instruction.

Postsecondary education is more than simply having physical access to a particular course or college classroom, but, rather, is about the improved outcomes that are available to students, including the ability of students to set goals for their own learning, career, and relationships (Grigal & Hart, 2010). The intent of laws and services is to provide learners with

disabilities the option to participate freely in the classrooms like students without disabilities. Therefore, the instructional content should be the focus, not the learners' disability. If learners are given options on how they can learn in their own way, they want to experience inclusion within the typical learning environment. Creating a learner experience that increases retention and meets the needs of differential learners indicates that a "one size fits all" approach will not be effective (Rogers et al., 2007).

Curriculum and instruction should include accessible alternatives that engage students with different backgrounds, learning styles, abilities, and disabilities (Simoncelli & Hinson, 2008). Specifically, universal design for learning uses innovative technologies to address diverse learning needs (Meo, 2008). Multimodal materials and methods such as image, gesture, music, spoken language, and written language provide a broad base for all learners (Pliner & Johnson, 2004). Some people need to have the same material presented in several of their modes in order to really learn it, while others can effectively learn using any single one of their multiple preferences. Multi-modal methods are used to present classroom material, in a manner to address a variety of learning styles and strengths like auditory, and kinesthetic. Through the use and creation of multimodal texts, students have opportunities to use linguistic, visual, and audio modes in order to experience, explore, theorize and apply meaning.

Effectiveness of Reasonable Accommodations

The Americans with Disabilities Act (1990) require that HE institutions are responsible for providing accommodations to a student who discloses a disability. They are also required to make reasonable adjustments or modifications to practices, policies and procedures, and to provide auxiliary aids and services for students with disabilities, unless to do so would "fundamentally alter" the nature of the programs or result in an "undue burden" (Bento,1996).

Providing accommodations do not compromise the essential elements of a course or curriculum; nor do they weaken the academic standards or integrity of a course. Accommodations simply provide an alternative way to accomplish the course requirements by eliminating or reducing disability-related barriers. They provide a level playing field, not an unfair advantage (Bento, 1996).

Reasonable accommodations are modifications or adjustments to the tasks, environment or to the way things are usually done that enable individuals with disabilities to have an equal opportunity to participate in an academic program or a job (U.S. Department of Education, 2007). The Americans with Disabilities Act (1990) stipulates that postsecondary institutions are responsible for providing necessary accommodations when a student discloses a disability. Under federal disability law (American Psychological Association, 2009) only if the student has disclosed a disability are you or your program responsible for providing accommodations. Most often, it is up to the student to advise or initiate the accommodation process with the disability office on campus. The office makes the determination as to whether the student is eligible for services. If so, the appropriate accommodations and services will be coordinated based on the documentation and in consultation with the student and other professionals. The disability office may also opt to obtain their own professional determination of whether specific requested accommodations are necessary. Higher education institutions are required to provide effective and efficient auxiliary aids and services that will meet the needs of students with disabilities. The appropriateness of an aid or service must be analyzed in its specific context. The students who will use these aids and services are consulted and included in the plan. Auxiliary aids and services can take many forms, depending on the individual student's needs. Examples of

auxiliary aids and services that colleges and universities might be required to provide for students with disabilities include:

> Qualified interpreters or other effective methods of making aurally delivered materials available to individuals with hearing impairments, note takers; qualified readers, tape-recorded or digitally recorded texts, or other effective methods of making visually delivered materials available to individuals with visual impairments or learning disabilities; class materials in alternative formats (e.g. texts in Braille, on audiotape, or as digital files); acquisition or modification of equipment or devices (Americans With Disabilities Act of 1990, Pub. L. No. 101-336, 104 Stat. 328 1990).

The purpose of the aid or service is to provide an equal and fair opportunity for the student to be able to participate in activities or educational programs. Auxiliary aids or services are individual and unique as the student it serves. Accommodations are established which will support the student with a disability in the academic setting. Since some students are not familiar with using accommodations, and the types of classes change from one semester to another, the accommodations may have to be adjusted during the course of their academic career in order to continue to balance the burden of having a disability as a student. Accommodations are assigned to students according to their specific academic activities.

For example, the type of accommodation needed by a student who is hearing-impaired may vary, depending upon whether the format is a large lecture hall or a seminar. With the one-way communication of a lecture, the service of a note taker may be adequate, but in the two-way communication of a seminar, an interpreter may be needed (Bento, 1996). Each accommodation is unique to the student and their specific disability.

Assistive Technology

The definition of assistive technology (AT) first appears in U.S. Law in the Technology-Related Assistance Act of 1988 (P.L. 100-407), and subsequently was adopted in the IDEA (1990) legislation (Peterson-Karlan, 2011). An AT device is "any item, piece of equipment or product system whether acquired commercially or off the shelf, modified, or customized, that is used to increase, maintain, or improve functional capabilities of individuals with disabilities" (20 U.S.C. § 1401(1) (Peterson-Karlan,2011). AT can also be services and access to training for the use of the devices. AT are learning tools that have the potential to assist persons with disabilities with performing a task. Learners understand their individual strengths, skills, and needs through transitioning planning and assessment. This transition process provides the foundation for securing access to accommodations, assistive technology and information technology in college environments (Asselin, 2011). For students with disabilities, self-awareness, self-advocacy, and decision-making are critical skills for successful transition to the college environment (Cobb et al, 2008). Those services can entail information and technical assistance for users as well as coordination with vocational rehabilitation to assist in evaluating individual characteristics to match device functions to needs (Asselin, 2011).

Summary

Although students with disabilities are enrolling in colleges in higher numbers, The National Center for Education Statistics (1999) reports that nearly half (47%) have left college without completing a degree as compared to roughly 36% of students without disabilities. Postsecondary education is more than simply having physical access to a particular course or college classroom, but, rather, is about the improved outcomes that are available to students,

including the ability of students to set goals for their own learning, career, and relationships (Grigal & Hart, 2010).

Higher education institutes are only required to provide aid and service during classroom instruction and extra curricula activities. If a student needs a reader in class, they may also need a reader during their individual study time. Any individual activity outside of the classroom is considered personal use. Personal attendants and individually prescribed devices are the responsibility of the student who has a disability and not that of the institution (Bento, 1996). Most higher education institutions provide accommodations to students with disabilities which includes extended time on test, note takers or course notes, learning strategies or study skills instruction, alternative materials and formats, and access to assistive technology (National Center for Education Statistics, 2011a). This study sought to assess the students' knowledge and attitudes about the assistive technology available in higher education for people with disabilities as well as the services and supports available at the university level. Chapter III discusses the methods and procedures used to complete this study. It includes information about participants, instrument used, data collection and analysis.

CHAPTER III

METHODS AND PROCEDURES

This chapter discusses the methods and procedures used in this study which included subsections that detail participants and setting, research design and use, methods of data collection and data analysis.

Participants and Setting

The participants for this study were comprised of current students and faculty on the main campus at Old Dominion University in Norfolk, Virginia. These are the students who are enrolled in classes on campus and receive communication of campus news and happenings.

The University has a total undergraduate enrollment of 20,115, its setting is urban, and the campus size is 251 acres. It utilizes a semester-based academic calendar. The University is ranked as Tier 2 among the Best Colleges of National Universities (Old Dominion University, 2016). With offerings from six different academic colleges, the University offers studies that are designed to help you bring your talents, your ideas and your goals to life. You gain knowledge and experience in classrooms and facilities with the latest teaching technologies, and through internships with universal manufacturing companies (Academics, 2017).

Research Design and Instruments Use

The research design consisted of a three-phase model needs assessment which entailed preparing, managing and reinforcing change, to help ensure operational effectiveness of the current process for disseminating information for products and services available to students with disabilities and the faculty who serve them (Witkin & Altschuld, 2005). The model is a systematic approach that progresses through a defined series of phases from problem identification to problem resolution (Kaufman, 1972). Within an instructional context, needs

assessments could be conducted at the learner level, either looking at gaps in knowledge, or preferably, looking at gaps in human performance and behaviors first, and then seeking to identify the relevant gaps in knowledge so as to better target desired results (Guerra-Lopez, 2012). The needs assessment helped to identify what type of products and services were available to students with disabilities, changes needed to improve the communication process, assumed the changes will add value to the students, faculty/staff and university, and compare what should be versus what was. The researcher concluded with the statistical analysis performed on the data.

The researcher determined that the best data collection method suited for the research objectives were met by conducting a survey. This method of data collection was appropriate because of the accessibility of the respondents which made direct distribution to the participants cost-effective. In conjunction with choosing the survey as the appropriate research instrument, the process did not require any personal contact information. This method required little time and expense due to the participants being located in the area. The survey was reviewed by the Office of Educational Accessibility for validity. Appendix A and B was the information sheet and survey created for students and Appendix C and D was the information sheet and survey created for faculty.

Case studies emphasize detailed contextual analysis of a limited number of events or conditions and their relationships (Yen, 1984). This research design will be conducted using a quantitative case study methodology. A case study is an in depth analysis of a particular group, individual, circumstance, or place. This methodology attempts to help us reach a better understanding of the assistive technologies available for students with disabilities by collecting

adequate information regarding this group. It is also helpful in bringing clarity or understanding to what is known through previous research.

The Office of Educational Accessibility is a supportive environment which offers dynamic educational support services for students who experience disabilities so they can be successfully accommodated and included in the rich diversity of university life. The office offers a wide variety of accommodations and supports to students based on their individual needs so they will have equal access to the university environment. The office also works collaboratively with partners across campus to ensure that all aspects of campus are inclusive in nature (OEA, 2016). Office staff work with faculty, administrators, and students toward the goal of complying with state and federal regulations and integrating the student with a disability into the university community.

Methods of Data Collection

Data was collected to help establish procedures and methods designed for disseminating information regarding products and services available to students with disabilities in hopes that the university will use the findings as an opportunity to develop additional channels of communication. The researcher's intent is to conduct the survey to help identify gaps between *what is* and *what should be*.

The survey consists of a list of questions to be answered by approximately 10% of the student and faculty population, which is 250 students and 50 faculty at the University, encouraging them to answer freely and to record all their responses (see Appendices A-D). Participants were asked to take part in this case study because we are trying to learn about the knowledge of services, products and experiences of college students with disabilities in Higher Education. Participants were selected randomly on campus and asked to complete the survey.

The survey took approximately 10 minutes to complete. There were no anticipated risks to participating. If a student was uncomfortable in responding to a questions, they were free to skip the question. A total of 250 students' surveys and 50 faculty were conducted to include both male and female. Participants did not receive any payment for participating in this case study.

The case study was designed to discover data on students' awareness, experiences, and perceptions of assistive technology. The researcher who developed the survey used an expert review panel from the Office of Educational Accessibility to review the survey instrument to improve content validity (i.e. the effectiveness of the questions and data to be collected). Expert reviews have several advantages over the use of other formative evaluation approaches. The chief advantage is that the review furnishes a different type of information than that obtained from one-to-one, small groups or field test situations (Tessmer, 2001). Investigator triangulation will be utilized in order to reduce the possibility of interpreter bias. An expert review panel is an efficient, low-cost method of survey validation (Yan, Kreuter & Tourangeau, 2012). The study received Human Subjects Approval prior to data collection (Appendix E).

Data Analysis

The statistical methodology consisted of using the responses from the results of the surveys. Quantitative data was collected, consolidated, reviewed and interpreted. The survey was created using Survey-Monkey software. The student survey consisted of a total of 8 questions each to include one 4-point Likert scale question, one directly related to a documented disability, one question which addressed the current use of assistive technology, one which addressed interest in learning about assistive technology and services on campus and four questions ask about the awareness of the assistive technology and services available. Answering the questions were voluntary and any question could be skipped if the respondent chose not to answer. The

survey was available in print for participants to complete and return. The survey and research procedures were not administered without prior approval of by the Human Subjects Committee (Appendix E).

Summary

This chapter discussed the methods and procedures used in this study which include subsections which detail participants and setting, research design and use, methods of data collection and data analysis. The survey questions were designed to collect data to answer the research objectives of this study. Surveys were distributed directly to the participants within a classroom setting. Chapter IV will discuss the response rate, and present the findings of the survey.

CHAPTER IV

FINDINGS

Chapter III discussed the methods and procedures used to collect data that was pertinent to answering the problem of this study. The purpose of this study was to evaluate the knowledge of students and faculty of the resources and services available for persons with disabilities on campus. This chapter presents the data collected for the study. The data received from the surveys are presented in this chapter and explained in detail.

Response Rate

Surveys were distributed to 250 students and 50 faculty within the university. The participants were given 10 minutes at the end of their class period to complete the survey. According to Survey Monkey (Survey Monkey Brand Perception Survey, October 2009) one hundred fifty students and twenty of the faculty (40%) participated in taking the survey. The data was entered in survey monkey and the total responses were received. See Table1.

Table 1
Survey Response Rate Students/Faculty

Surveys Given	# of Responses	Response Rate(%)
250 (Students)	150	60%
50 (Faculty)	20	40%

Report of Survey Findings

The survey assessed students' knowledge of the assistive technology and services available for students with disabilities on campus. The survey consisted of eight (8) questions. Participants were asked to answer each item. The findings were reported according to each of the two research objectives from Chapter I.

Documented Disability

The first survey question for students was designed to capture sample demographic

of students with documented disability(ies). Results of survey question 1 showed that twenty one (14%) responded yes and one hundred twenty-nine (86%) responded no.

In continuum with question one for students, if the respondent answered yes, some of the listed disabilities included:

- ADHD
- Anxiety
- Autism
- Blind
- Dyslexia
- Visually Impaired

The first questions for faculty was designed to determine if the faculty had experience working with students with documented disabilities in the classroom. Results of the survey showed that fifteen (75%) responded yes and four (20%) responded no and one (5%) were uncertain.

In continuum with question one for faculty, if the respondent answered yes, some of the listed disabilities included:

- ADHD
- Anxiety
- Dyslexic
- Schizophrenia
- Hearing Impaired
- Mobility
- TBI

Use of assistive technology and services on campus

Question number two asked respondents to indicate if they currently use assistive technology or services on campus. This questions was designed to address RO1: The results show that forty-five (30%) of the students responded yes and one-hundred five (70%) responded no; seventeen (85%) of the faculty responded yes and three (15%) faculty

responded no.

Question 3 asked if the respondents were familiar/experienced using AT product(s) or service(s) on campus. This question was asked in conjunction with question 2. The results indicated that twenty-six (17%) of students responded yes and seventy-five (50%) responded no, forty-nine (33%) responded uncertain; nine (47%) of the faculty responded yes and seven (33%) responded no, four (20%) responded uncertain. The results indicate that faculty are more familiar with the products and service on campus than students.

Question 4 was in continuum with question three which identified to what degree of familiarity/experience the respondents had with AT product(s) or service(s) on campus. According to the students' response, fifteen (10%) responded slightly familiar, eight (5%) moderately familiar and 127 (85%) of the students responded that they were not familiar at all with AT products or services available on campus. However, the eight (37.5%) faculty responded that they were slightly familiar, eight (37.5%) responded moderately and four (25%) responded that they were not at all familiar with the AT service/products available to students.

Question 5 addressed whether or not the university has an office for students with disabilities?

Twenty-nine student respondents (19%) responded yes, twenty (13%) responded no and one hundred one (68%) responded uncertain if the University has an office for students with disabilities. Likewise, nine (43%) of faculty responded yes, four (20%) responded no and seven (37%) responded uncertain that the University has an office for students with disabilities.

Question 6 addressed whether or not the University had a process in place for assessing the AT needs of students with disabilities.

Twenty-nine (19%) of the students responded yes, twenty (13%) responded no and one hundred one (68%) responded uncertain, and nine (43%) of the faculty responded yes, four (20%) responded no and seven (37%) responded uncertain if the University has a process in place for accessing students with disabilities.

Question 7 asked if there were accessible computer stations and AT devices available in general computer labs such as those found in dormitories and in the library?

Respondents were asked if the university has accessible computer stations and AT devices. Forty-eight (32%) of the students responded yes, nine (6%) responded no and ninety-three (62%) responded uncertain. However, five (25%) of faculty responded yes, six (30%) responded no and nine (45%) responded uncertain.

When asked if the university provides computer stations and AT devices available for student with disabilities on campus ninety-three (62%) of the students and five (25%) of the faculty stated no.

Interested in learning about AT products/services on campus

Question 8 was designed to answer RO2: Identify respondent's interest in learning more about the AT products/services on campus.

Forty-two (28%) of the students responded yes and one hundred eight (72%) responded no. They were not interested in learning more about the products and services available to students with disabilities on campus. Students who responded yes included their email address for future follow-up.

Faculty were asked if they have encountered problems accommodating students with Disability(ies) in their classroom. Eleven (55%) responded, yes, three (15%) responded no and

six (30%) were uncertain that they had encountered some type of problem accommodating students with documented disability(ies).

In continuum with question 8, for the faculty, in regards to the specific types of challenges they may have encountered are listed below.

- Students unaware of available resources or not wanting to register.
- Often they fail to inform
- Schizophrenic students had severe boundary issues/stalking
- I did have a student in my class who had been assisted by a person taking notes. I didn't have to do anything special for him
- They come after something goes wrong
- Need students to communicate their disability (specific needs) with instructor

Summary

The results of data collected during this study have been presented in this chapter. Data was presented that provided information on the knowledge of assistive technology and services available to students with disabilities at a university in the south east region of the United States. This chapter reported the findings of the study survey. The results may help determine if further or different means of communication regarding the assistive technology and services available to students with disabilities should be implemented by university communities. A total of 250 students and 50 faculty at Old Dominion University were given the opportunity to participate in the survey.

Chapter V summarizes the findings, draws conclusions and makes recommendations based on the results from Chapter IV.

CHAPTER V

Summary, Conclusion, and Recommendations

This chapter contains a summary of the study, the conclusions from the previous chapter and recommendations. The purpose of this study was to determine the knowledge of students and faculty of the assistive technology and services on a university campus. The survey's consisted of eight questions each for both students and faculty. The surveys were given to 250 students in which one-hundred fifty (40%) responded. The survey was also given to 50 faculty in which twenty (40%) responded. The data was entered and each response was tabulated. The research objectives for the study were to identify if student(s) and faculty had experience using assistive technology and services available to students with disabilities on campus and determine if the students are interested in learning more about assistive technology available to students with disabilities on campus. This study was necessary to determine if students and faculty are aware of assistive technology and services available to students with disabilities on campus.

Summary of findings

Surveys were used to collect data for this study (see Appendices B and D). They were distributed and collected along with the invitation to participate after several class periods. See Appendices A and C for a copy of the invitations. Participants were asked to respond to 8 survey questions. Each question was designed to correspond with one of the two research objectives. This survey was distributed for one week. The number and percentage of mixed responses for each item were presented in Chapter IV.

According to the findings, for RO1: Identify if student(s) and faculty had experience using assistive technology and services available to students with disabilities on campus, 17% of students and 27% of faculty responded yes. The Office of Educational Accessibilities provides

training on ADA compliance, reasonable accommodations, and equal access to campus classes, activities and resources. For RO_2: Determine if the students are interested in learning more about assistive technology available to students with disabilities on campus. 28% of the students respond and yes. The students who responded yes, included their email address with the survey. This question was not proposed to the faculty.

Conclusions

This section draws conclusions regarding the research objectives based upon the data collected by the survey.

RO_1: Identify if student(s) and faculty had experience using assistive technology and services available to students with disabilities on campus overall. Faculty responded yes and students responded no to having experience using with the assistive technology products or services on campus.

RO_2: Determine if the students are interested in learning more about assistive technology available to students with disabilities on campus overall. Students were not interested learning about AT products and services available on campus.

Discussion

This study was completed to determine if the university needs to implement additional communication strategies regarding the assistive technology and services available to students with disabilities. The generalizability of this study is limited because of the sample size and limitation to Old Dominion University. The following recommendations are made based upon the results of the study:

Given the findings for RO_1, the Office of Educational Accessibility may want to provide more detailed information to students and faculty concerning the availability of products and services to students with disabilities.

- Students should be given the opportunity to provide input as to the type communication strategies they would like to see in place.
- Faculty should be given the opportunity to provide input as to the type of communication strategies they would like to see in place.
- OEA may consider providing demonstrations of the most popular assistive technologies and services
- OEA may consider posting quick reference guides of assistive technology programs
- OEA may consider adding video clips about students with disabilities into other diversity videos and make the training required.
- OEA may consider posting campus resources available for both academic and personal goals in student center, library and Webb center.
- OEA may consider providing faculty with a list of general strategies and classroom strategies for communicating effectively with students with disabilities.

Given the findings for RO_2: Determine if the students are interested in learning more about assistive technology available to students with disabilities on campus. Even though the students responded that they were not interested in learning more about assistive technology and services, the following suggestion was recommended.

- The Office of Educational Accessibility may want to consider ways to encourage students to be aware, engaged and involved with student with disabilities (i.e. disabilities awareness month).

Currently, the university focuses on different cultures by celebrating with various cultural programs, activities and events. Perhaps there could be a disabilities awareness month program, designed to bring awareness that a disability is a culture. It consists of different kinds of people sharing a lot of things in common.

Future Research

The following recommendations are made for conducting additional research on the knowledge of the assistive technology and products available on campus for students with disabilities.

The areas of future research include conducting a study that compares the results found at several universities would provide more information about the level to which students with disabilities feel they are well communicated to regarding resources available on campus.

A more in-depth study, much like this one would give the respondents the opportunity to comment with open responses. This is important because it allows the respondents to share their opinions and experiences as well as offer feedback.

A replication study could also include monitoring of students with disabilities to get more accurate data reflecting their needs and whether or not they are being met. Replication studies would also provide more context for how assistive technologies and support systems are being carried out in different higher education institutions.

This study helped to determine the knowledge of assistive technology products and services available to students with disabilities, changes needed to improve the communication process, assumed the changes will add value to the students, faculty and the Office of Educational Accessibility, and compared what should be versus what was found.

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Appendix A
OLD DOMINION UNIVERSITY
(Information Sheet- Student)

PROJECT TITLE:
Assistive Technology and Services Available to Students with Disabilities in Higher Education

INTRODUCTION
You are being asked to complete a survey that will explore faculty and student perceptions of assistive technology resources available to students. You are being asked to participate in this study because you are a student enrolled at Old Dominion University.

RESEARCHERS
Responsible Principal Investigator:
Jill Stefaniak, PhD, Assistant Professor, College of Education, STEM Education & Professional Studies
Investigators:
Mary Addison, BA, Graduate Student in Instructional Design and Technology

DESCRIPTION OF RESEARCH STUDY
If you take part in the study, you will be asked to participate in a survey that will consists of approximately 8 questions regarding assistive technologies available to students at Old Dominion University. The survey should take approximately 5-10 minutes to complete.

RISKS AND BENEFITS
RISKS: There are no known risks at this time to participate in this study.
BENEFITS: There will be no costs to you for participation in this research study. Information discovered by this study will provide additional guidance to the decision making of educators during the instructional planning process.

COSTS AND PAYMENTS
There will be no costs to you for participation in this research study.

NEW INFORMATION
If the researchers find new information during this study that would reasonably change your decision about participating, then they will inform you.

CONFIDENTIALITY
All information obtained about you in this study is strictly confidential unless disclosure is required by law. The results of this study may be used in reports, presentations and publications, but the researcher will not identify you.

WITHDRAWAL PRIVILEGE
It is OK for you to say NO. Even if you say YES now, you are free to say NO later, and walk away or withdraw from the study -- at any time. Your decision will not affect your relationship with Old Dominion University or otherwise cause a loss of benefits to which you might otherwise be entitled.

QUESTIONS
If you have any questions about this study now or in the future, you may contact Jill Stefaniak at the following phone number: 757-683-6696 or at jstefani@odu.edu. If at any time you feel pressured to participate, or if you have any questions about your rights or this form, then you should contact Dr. Petros Katsioloudis, Chair of the Darden College of Education Human Subjects Review Committee, Old Dominion University, at 757-683-4305 or at pkatsiolo@odu.edu.

VOLUNTARY CONSENT
By completing this survey, you are agreeing to participate in this study.

Appendix B
Student's Knowledge of Assistive Technology Services on Campus Survey

The purpose of this survey is to learn what assistive technologies and services are available for students with disabilities on campus. Participation involves completing the enclosed brief survey (10 minutes). Circle the best answer. This survey is confidential.

Thank you for participating in this survey.

1. Do you have a documented Disability?

   Yes No

   If yes, please select it from the list below:

Cognitive	**Physical**
ADHD	Hearing Impaired
Anxiety	Mobility
Autism	TBI
Dyslexic	Visual Impaired/blind
Schizophrenia	Other (please specify)

2. Are you currently using the AT products and services available on campus?

   Yes No Uncertain

3. Are you familiar with various Assistive Technology (AT) products and services on campus?

   Yes No Uncertain

4. If, yes how familiar are you with the AT products and services available on campus?

   Extremely Moderately Slightly Not At All

5. Does the University have an office dedicated to coordinating AT devices and services?

   Yes No Uncertain

6. Does the University have a process for assessing the AT needs of students inside and outside the classroom?

   Yes No Uncertain

7. Are there accessible computer stations and AT devices available in general computer labs, such as those found in dormitories and in the library?

   Yes No Uncertain

8. Are you interested in learning about AT products and services available on campus?

   Yes No

   If yes, enter email address: _____

Appendix C

OLD DOMINION UNIVERSITY
(Information Sheet- Faculty)

PROJECT TITLE:
Assistive Technology and Services Available to Students with Disabilities in Higher Education

INTRODUCTION
You are being asked to complete a survey that will explore faculty and student perceptions of assistive technology resources available to students. You are being asked to participate in this study because you are a faculty member currently teaching at Old Dominion University.

RESEARCHERS
Responsible Principal Investigator:
Jill Stefaniak, PhD, Assistant Professor, College of Education, STEM Education & Professional Studies
Investigators:
Mary Addison, BA, Graduate Student in Instructional Design and Technology

DESCRIPTION OF RESEARCH STUDY
If you take part in the study, you will be asked to participate in a survey that will consists of approximately 8 questions regarding assistive technologies available to students at Old Dominion University. The survey should take approximately 5-10 minutes to complete.

RISKS AND BENEFITS
RISKS: There are no known risks at this time to participate in this study.
BENEFITS: There will be no costs to you for participation in this research study. Information discovered by this study will provide additional guidance to the decision making of educators during the instructional planning process.

COSTS AND PAYMENTS
There will be no costs to you for participation in this research study.

NEW INFORMATION
If the researchers find new information during this study that would reasonably change your decision about participating, then they will inform you.

CONFIDENTIALITY
All information obtained about you in this study is strictly confidential unless disclosure is required by law. The results of this study may be used in reports, presentations and publications, but the researcher will not identify you.

WITHDRAWAL PRIVILEGE
It is OK for you to say NO. Even if you say YES now, you are free to say NO later, and walk away or withdraw from the study -- at any time. Your decision will not affect your relationship with Old Dominion University or otherwise cause a loss of benefits to which you might otherwise be entitled.

QUESTIONS
If you have any questions about this study now or in the future, you may contact Jill Stefaniak at the following phone number: 757-683-6696 or at jstefani@odu.edu. If at any time you feel pressured to participate, or if you have any questions about your rights or this form, then you should contact Dr. Petros Katsioloudis, Chair of the Darden College of Education Human Subjects Review Committee, Old Dominion University, at 757-683-4305 or at pkatsiolo@odu.edu.

VOLUNTARY CONSENT
By completing this survey, you are agreeing to participate in this study.

Appendix D

Faculty's Knowledge of Assistive Technology Services on Campus Survey

The purpose of this survey is to learn what assistive technologies and services are available for students with disabilities on campus. Participation involves completing the enclosed brief survey (10 minutes). Circle the best answer. This survey is confidential.

Thank you for participating in this survey.

1. Do you have experience working with students with documented Disabilities?

   Yes No Uncertain

   If so, please select the disability from the list below:

Cognitive	**Physical**
ADHD	Hearing Impaired
Anxiety	Mobility
Autism	TBI
Dyslexic	Visual Impaired/blind
Schizophrenia	Other (please specify)

2. Are you presently using assistive technology (AT) in the classroom?

   Yes No Uncertain

3. Are you familiar with various Assistive Technology (AT) products and services on campus?

   Yes No Uncertain

4. If, yes how familiar are you with the AT products and services available on campus?

   Extremely Moderately Slightly Not At All

5. Does the University have an office dedicated to coordinating AT devices and services?

   Yes No Uncertain

6. Does the University have a process for assessing the AT needs of students inside and outside the classroom?

   Yes No Uncertain

7. Do students have accessible computer stations and AT devices available in general computer labs, such as those found in dormitories and in the library?

   Yes No Uncertain

8. Have you encountered any challenges working with students with disabilities?

   Yes No Uncertain

   If yes, what kind of challenges have you encountered?

   _____

Appendix E

OLD DOMINION UNIVERSITY

OFFICE OF THE VICE PRESIDENT FOR RESEARCH

Physical Address
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DATE:	June 14, 2016
TO:	Jill Stefaniak, PhD
FROM:	Old Dominion University Education Human Subjects Review Committee
PROJECT TITLE:	[898651-2] Assistive Technology and Services Available to Students with Disabilities in Higher Education
REFERENCE #:	
SUBMISSION TYPE:	Amendment/Modification
ACTION:	DETERMINATION OF EXEMPT STATUS
DECISION DATE:	June 14, 2016
REVIEW CATEGORY:	Exemption category # *[6.2]*

Thank you for your submission of Amendment/Modification materials for this project. The Old Dominion University Education Human Subjects Review Committee has determined this project is EXEMPT FROM IRB REVIEW according to federal regulations.

We will retain a copy of this correspondence within our records.

If you have any questions, please contact Petros Katsioloudis at (757) 683-5323 or pkatsiol@odu.edu. Please include your project title and reference number in all correspondence with this committee.

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within Old Dominion University Education Human Subjects Review Committee's records.