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The Americans with Disabilities Act and how it affects post-secondary education

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Abstract
The Americans with Disabilities Act and how it affects post-secondary education is what this literature review addresses. The Americans with Disabilities Act of 1990 (ADA) prohibits discrimination against someone with a disability in places of employment and public places. In 1973, the United States Congress passed Section 504 and The Individuals with Disabilities Education Act (IDEA) was passed in 1990. Both helped solidify regulations regarding discrimination by any entity that receives federal funding including educational institutions. The law requires employers or schools to make a change or adjustment in a work or educational setting, program, or job that makes it possible for an otherwise qualified employee or student with a disability to perform the duties or tasks required. The focus of this review is how the Americans with Disabilities Act affects post-secondary educational institutions and the effectiveness of assistive technology in post-secondary education.

The Americans with Disabilities Act has mandated that school administrators and businesses make reasonable accommodations for those who have disabilities. The use of technology including the purchase, training, and support may be necessary to .accommodate someone. Structural or building renovations may also be necessary. The future for those with disabilities should include increased support and training. A reasonable accommodation should be made anytime that the accommodation will help assist a person with a disability become a more engaged and valuable member of society.

THE AMERICANS WITH DISABILITIES ACT AND HOW IT AFFECTS POST-SECONDARY EDUCATION

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ABSTRACT

The Americans with Disabilities Act and how it affects post-secondary education is what this literature review addresses. The Americans with Disabilities Act of 1990 (ADA) prohibits discrimination against someone with a disability in places of employment and public places. In 1973, the United States Congress passed Section 504 and The Individuals with Disabilities Education Act (IDEA) was passed in 1990. Both helped solidify regulations regarding discrimination by any entity that receives federal funding including educational institutions. The law requires employers or schools to make a change or adjustment in a work or educational setting, program, or job that makes it possible for an otherwise qualified employee or student with a disability to perform the duties or tasks required. The focus of this review is how the Americans with Disabilities Act affects post-secondary educational institutions and the effectiveness of assistive technology in post-secondary education.

The Americans with Disabilities Act has mandated that school administrators and businesses make reasonable accommodations for those who have disabilities. The use of technology including the purchase, training, and support may be necessary to accommodate someone. Structural or building renovations may also be necessary. The future for those with disabilities should include increased support and training. A reasonable accommodation should be made anytime that the accommodation will help assist a person with a disability become a more engaged and valuable member of society.

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INTRODUCTION

The history of the Americans with Disabilities Act has great impact on how businesses and educational institutions may provide accommodations for those with disabilities. There were several revisions of the Act, including additional sections to the Act.

Some disabilities may require accommodations including hearing impairments, mobility or physical impairments, visual impairments, and health impairments. Types of assistive technology that can accommodate special needs include positioning, access, environmental control, and augmentative communication. Assistive listening, visual aids, and computer-based instruction are also types of assistive technology.

College and universities may be required to provide accommodations for students with disabilities. Some of these may include providing a note taker, extra assignment or test time, and the use of recording or listening devices in the classroom. Disclosing and documenting a disability is the responsibility of the student. Students must also consider financial assistance, training and upkeep of equipment, and the support they will receive on-campus.

College students are less likely than younger students to disclose their disability. They worry about what others will think and how they will be treated. However, many have learned to self-accommodate. Research shows that those students who most need help are more likely to ask for help. College students who have disabilities and earn degrees are reported to have a higher job satisfaction following graduation. As a result, post-secondary educational institutions are being asked more to provide accommodations

for students with disabilities. Computer-based technologies have further assisted students with accommodations and therefore raised expectations for those students.

METHODOLOGY

The main research materials I used for this literature review were Internet sources and journal articles. I used the Google search engine for most Internet resources. My keywords were as follows: *ADA, Americans with Disabilities, Americans with Disabilities Act, disabilities*, and *post-secondary education and the Americans with Disabilities Act.* I also used the keywords *assistive technology, learning disabilities, benefits of assistive technology, and students with disabilities.* I used these singly and a combination of some to retrieve resources. The online databases were EBSCOhost, JStor, and LexisNexis through the Cornell College Library. One other resource I used is the Cornell College Library online catalog. I used this to determine if the Cornell Library had some of the articles in print rather than online. Most of the journal articles I used were peer reviewed journals and, therefore, made me think they were more valid than others. I tried to read research that was done within the last five years. Though some of the websites did not have dates, most of them that didn't were based on the history of the ADA. The history of the ADA was repeated in many sources. Many authors that I researched have done several articles, these include Brodrick, Mayerson, Oblinger, and Ranskind. All considered to be experts in the field and have more than one publication to their name.

ANALYSIS AND DISCUSSION

Background

History of ADA

The Americans with Disabilities Act of 1990 (ADA) prohibits discrimination against someone with a disability in places of employment and public accommodations such as hotels, restaurants, stores, theaters, health care facilities, convention centers, and parks, etc. (Americans with Disabilities, Retrieved January 18, 2006). There are many examples of persons with disabilities, but some of the most obvious are those with hearing and sight impairments or those with physical handicaps.

On July 26, 1990, The Americans with Disabilities Act was signed at the White House. However, the fight for accommodations for those with disabilities started long before the signing of this Act. Persons with disabilities have long fought for the right to have equal access to public facilities, including schools. They have also fought for the right to live independently. The fight to live independently began with small support groups of parents in communities challenging those areas to make accommodations for their children who had some form of disability. Many challenged these groups who believed that persons with disabilities should be institutionalized in homes where accommodations could be made. These small activist groups officially began the disability rights movement (Mayerson, 1992).

In 1973, the United States Congress passed Section 504 of the 1973 Rehabilitation Act (Mayerson, 1992). Section 504 banned discrimination on the basis of disability by those who received federal funds (Americans with Disabilities, 2006).

Section 504 was modeled after earlier laws which prohibited discrimination based on race, ethnic origin, and sex (Alexander, Hawes & Audet, LLP, 2006). This marked the first time that persons with disabilities were considered a minority and subsequently allowed Congress to pass other legislation surrounding the discrimination of those with disabilities. After Section 504 was passed, the Department of Health and the Department of Education and Welfare were given the task of creating the regulations that would accompany Section 504 (Mayerson, 1992). It was not until May 4, 1977 that the regulations were issued. For the next several decades, there was much debate surrounding the initial regulations stating that the regulations put too much burden on businesses (Mayerson, 1992). Persons with disabilities and those who represented them continued to send letters and have contact with the White House and their own constituents supporting the regulations and what they stood for.

During much of the 1980s, the debates continued and legislative battles were challenged by supporters for those with disabilities. Finally, in 1988, the Fair Housing Act (FHA) was amended and included provisions to improve housing for persons with disabilities. This included improved policies on enforcement. Also in the 1980s, a major court case was heard by the Supreme Court involving someone with a disability. A hearing-impaired woman was trying to gain admission to a nursing program at Southeastern Community College (Mayerson, 1992). The college claimed that she would not be able to do the tasks needed to be in the program. The Supreme Court agreed and stated that her hearing impairment made her unqualified to participate in the program.

However, the Supreme Court also decided that legislators needed to be further educated on disability-based discrimination.

Between 1988 and 1990, the ADA went through many drafts, revisions, and negotiations. During this period, some with disabilities were asked to document instances of daily instances of discrimination (Mayerson, 1992). This helped to educate those writing the Americans with Disabilities Act. Many legislators as well as representatives from the disabled community were involved in drafting the Act. It also took many Senate hearings for congressional members to hear personal testimonials and legislative issues to finally pass the ADA. The ADA's basic assumption is that persons with disabilities want to work and want to be members of their communities and that segregation and discrimination should not be tolerated. Additional legislation was passed to support the needs of students with disabilities in an educational setting.

The Individuals with Disabilities Education Act (IDEA), another part of the ADA that was passed in 1990 as part of the special education law, provides the legal definition for an assistive technology device. It is "any item, piece of equipment, or product system...that is used to increase, maintain, or improve functional capabilities of individuals with disabilities" (FGAT, 1997, p.1). IDEA also recommends services schools must provide to those with disabilities, including;

- Evaluation of the technology needs of the individual, including a functional evaluation in the individual's customary environment;
- Purchasing, leasing, or otherwise providing for the acquisition of assistive technology devices for individuals with disabilities;

- Selecting, designing, fitting, customizing, adapting, applying, maintaining, repairing, or replacing of assistive technology devices;
- Coordinating and using other therapies, interventions, or services with assistive technology devices, such as those associated with existing education and rehabilitation plans and programs;
- Assistive technology training or technical assistance with assistive technology for an individual with a disability, or, where appropriate, the family of an individual with disabilities;
- Training or technical assistance for professionals, employers, or other individuals who provide services to, employ, or otherwise are substantially involved in the major life functions of individuals with disabilities. ("FGAT," 1997, p.3)

The purpose of this law is to ensure that school districts are evaluating student's technology needs, acquiring the necessary equipment, coordinating therapies or interventions, and providing training for the individual, the individual's family, or school staff involved with the student ("FGAT," 1997).

Examples from the Americans with Disabilities Act

Examples of discrimination against those who have a disability may include barriers to employment, transportation, public accommodations, public services, and telecommunications. The American with Disabilities Act (ADA) was not meant to impose heavy financial burden on businesses or schools, but to offer fair opportunity to those with disabilities. It also was meant to allow society to benefit from the skills and

talents of those who have disabilities. This does not mean that persons with disabilities will be able to perform all the same functions as someone without a disability might, but it does allow for reasonable accommodations for them. A reasonable accommodation is a change or adjustment in a work or educational setting, program, or job that makes it possible for an otherwise qualified employee or student with a disability to perform the duties or tasks required (Alexander, et al., 2006).

The ADA applies to private employers, state and local governments, employment agencies, and labor unions that have 15 or more employees. The Act prohibits discrimination in the job application process, hiring, firing, job advancement, salary and benefit compensation, and training. It also applies to things such as tenure, layoff, leave, and recruitment (Alexander, et al., 2006).

There is much documentation on how one is determined a qualified individual for disability accommodations, but the basic stipulation includes a person who has a physical or mental impairment that substantially limits one or more major life activities. Persons discriminated against because they have a known relationship with someone who has a disability are also protected. Some of the major life activities that are included are seeing, hearing, speaking, walking, breathing, learning, taking care of oneself, performing manual tasks, and working. Examples of those who would be covered by the ADA are someone with paralysis, HIV, and epilepsy. Specific learning disabilities are covered, but the Act does not cover those with minor or non-permanent conditions such as a sprain, broken limb, or someone with the flu or other short term illness (Alexander, et al., 2006).

Individuals who can perform a reasonable skill, experience, education, or other requirement for employment must be considered for the position. They must also be able to perform the essential functions of the job. This may include things like lifting a certain amount, typing a certain amount per minute, or being able to move without restriction. An employer does not have to give special preference to those with disabilities, but must reasonably consider those persons if they are qualified and can do the essential functions of the job. The employer must also decide if the person can do the job efficiently and effectively if a reasonable accommodation is made for him/her. For instance, if someone in a wheelchair is considered for a secretarial-type position requiring little mobility and this person is the most qualified, the employer must consider this person for hiring and may be asked to make a reasonable accommodation for him/her. A reasonable accommodation may be to purchase a new desk that would allow for a wheelchair. Reasonable accommodations include making facilities used by that employee accessible. It may also include restructuring a job, modifying work schedules, or purchasing new equipment. Reasonable accommodations must be viewed and considered on an individual basis. The main consideration employers should look at is whether this employee, with reasonable accommodations, can perform at equal levels to those of an average person. This person does not have to possess equal or higher achievement levels as a stellar employee (Alexander, et al., 2006).

An employer cannot request a job applicant to take a medical examination before making a job offer. They can, however, ask for this after an offer has been made. If the job candidate is not hired after a post-offer medical examination, the employer must

prove that is was a result of not being able to perform the essential functions of the job or that no reasonable accommodation could be made for the person. The employer could also rescind the offer if the person poses a risk to the workplace or tests positively for illegal use of drugs (Alexander, et al., 2006).

Structural changes to buildings may be required under certain circumstances. These mostly occur when the building is a public space and the building is not exempt by other ADA rules. A public space must ensure that individuals with disabilities are not excluded from services, programs, and activities because of accessibility issues. This may include having working elevators, ramps outside or inside the building, and larger entryways to accommodate wheelchairs. The ADA also requires that any new construction of a state or local government building should be in compliance with the ADA. Most private companies are also ensuring that ADA compliance issues are met when constructing new buildings (Common questions about Title II of the Americans with Disabilities Act, 2006).

Focusing on Specific Disabilities

There are many types of disabilities included under the Americans with Disabilities Act. Some of these include hearing impairments, mobility or physical impairments, and visual impairments. Perhaps less obvious, but still covered are health impairments.

Hearing Impairments

One of the most important things a student who has a hearing impairment needs is to receive effective communication of all class-related information and material. In some

cases, students with a hearing impairment can request an interpreter or a note-taker. A public institution must accommodate this student with auxiliary aids. Decisions regarding appropriate accommodations must be made on a case-by-case basis. According to the National Association of the Deaf, the term deaf means that a student is unable to hear well enough to rely on his/her hearing and use it as a means of processing information. Below are some common accommodations for hearing-impaired students.

For Tests:

- Extended time
- Interpreters
- Note-takers
- Real-time captioning – converting spoken language into written text
- Overheads
- Listening devices
- Word processors
- Class and lab work
- Alternative text formats
- Adaptive technology
- Qualified readers
- Scribes
- Audio Induction Loop, Infrared Systems, Assistive Listening Devices or FM systems which transmit the sounds in a classroom to a student's amplifier device or hearing aid

- Preferred seating at the front of the class and away from loud noises.

(Brodrick, Filo, Gephart, Gomez, & Willits, 2005, p. 101)

Hearing-impaired also means that hearing is affected, but is not as severe as deafness. Individuals who are hearing-impaired can also be referred to as hard of hearing. Many can still use some hearing for communication purposes. There are many indicators that a student may have an auditory disability. Some of these include the student mishearing words in a lecture, tuning out class discussions, or writing down the wrong words. Faculty members who have a student in class with a hearing disability may offer the student information in writing, may speak more slowly, and may minimize background distractions or noise. Faculty may also review key points, encourage the student to repeat what he/she have said, or encourage the student to ask questions.

Mobility or Physical Impairments

Many think physical disabilities are more the responsibility of the general institution rather than the individual professor. However, there are many things an individual professor can do to help accommodate students with mobility impairments. Examples of mobility impairments include arthritis, multiple sclerosis, amputation, and repetitive stress injuries. A student with mobility impairments may have trouble getting to class on time, may find it difficult to walk for long periods of time, and may have difficulty handling or moving objects such as pencils, books, etc. (Brodrick, et al., 2005). These students may also tend to have low stamina, may use a wheelchair, walker, or crutches, and have a tendency to have more occurrences of respiratory illnesses. Some possible accommodations for students with mobility impairments are listed below:

- Note-takers
- Tape recorders
- Extended time on exams
- Alternate locations for exams
- Moving classroom to an accessible building
- Extended time for assignments
- Distraction-reduced testing environment
- Advance notice of field trips and classroom changes
- Classroom with clear, wide aisles
- Seating near exits
- Scribes
- Additional space for service animals
- Accessible transportation for field trips and off-campus assignments
- Special accommodations for any overseas courses
- Modification of classrooms. (Brodrick, et al., 2005, p. 117) There also could be accommodations made within the classroom itself including rearranging desks or the use of technology to help a student.

There are several suggestions for faculty members who may have a student with mobility impairments in class. The first suggestion is to make sure the student knows that the faculty member is available for meetings to discuss the accommodations the student may need. It is also important that the student understand how his/her work will be assessed or graded. It is important that this is clarified before the course begins. A

student's input is very important when trying to determine or agree upon reasonable accommodations. Just because a professor had a student with mobility requirements before, does not mean they will need to make accommodations with another student in the same manner.

Access to historical buildings can be treated differently than other structures on campus. Historical buildings are determined by specific regulations by state and local governments. Basically, if a building renovation threatens or destroys the importance of the structure, it may be considered for historic status. Cornell College in Mt. Vernon, Iowa is one of two colleges in the United States whose entire campus is on the National Register of Historic Places (Cornell College Website, 2006). This makes the college exempt from most building reconstruction for ADA purposes, but Cornell does comply with ADA regulations anytime a new building is constructed on the campus. This includes wheelchair accessibility, elevators, and wider doorways.

Visual Impairments

Visual impairments refer to students having varying levels of impairment from low vision to complete blindness. Students with visual impairments may struggle with glare or poor lighting, have difficulty in learning visual concepts, experience difficulty getting to class on time or at all due to transportation problems, and may depend on an animal to get to class such as a guide dog. Below are some examples of accommodations for those with visual impairments. However, all visual impairment accommodations must be considered on a case-by-case basis.

- Alternative text
- Brailled text
- Material in large print text
- Scan/Read technology
- Extended time
- Preferred seating
- Readers
- Enlarged print
- Distraction-reduced testing environment
- Note-takers or recording devices. (Brodrick, et al., 2005, p. 131)

Suggestions for faculty members who have a student with a visual impairment may include having other students say the student's name before speaking. It is also important that professors speak clearly and give good descriptions of concepts. Above all else, the professor should ensure that students are able to hear them and other students in the classroom. Black type on white paper and shiny paper are hard for visually-impaired students to read. Students who have visual impairments rarely have lower cognitive abilities so professors should not assume that they do. Increasing the type size, adjusting the contrast, using audio books, and holding reading materials closer to the individual are some reading enhancement techniques that can be used for visually-impaired students.

Health Impairments

It is important that a student who suffers from health impairments communicate early and clearly with the disability services office on campus. Examples of health

impairments include epilepsy, diabetes, chronic fatigue syndrome, sickle cell anemia, and stroke. HIV, cancer, cystic fibrosis, asthma, and Crohn's disease are also examples. Some of these impairments are more difficult to diagnose. There are different accommodations and suggestions for each of the preceding impairments, but there are also some general accommodations. These include:

- Note-takers
- Extended time for tests and assignments
- Excused absences for medical episodes
- Distraction-reduced room for testing
- Books on tape
- Lab assistants
- Large print computer screen. (Brodrick, et al., 2005, p. 153)

Health impairments need to be considered on an individual basis. Two people who suffer from epilepsy, for example, may have completely different needs. A student with a health impairment may never need special accommodations, but it may important for that student to still disclose the impairment just in case they ever do.

Types and Strategies of Assistive Technology

Computers can be one important type of assistive technology, but there are also a variety of assistive technologies that have little to do with a computer. Computers allow student's with disabilities options for writing, speaking, and locating information. Additional assistive technology aids range from low cost and low tech solutions to very expensive and high tech solutions. Some common types of assistive technology

applications include positioning, access, environmental control, augmentative communication, assistive listening, visual aids, computer-based instruction, social interaction, and recreation ("FGAT," 1997).

Positioning

It is very common for educators to simply rearrange a room to accommodate a student with a disability. Each student must be considered on a case-by-case basis. Non-slip and level floors will help those with wheelchairs be able to maneuver better. Positioning may include moving a student closer to the front of the room or adjusting a desk or table to accommodate his/her special needs. For students who are more severely disabled, padding, special chairs, straps, supports, etc. may be used to help position the student comfortably ("FGAT," 1997). Other items used for positioning might include bean bag chairs, trays, wheelchairs, and walkers. There is no universal way to determine what individual students might need. It is also important to scatter wheelchair accessible desks or tables throughout the room so that all are not congregated in one area which may result in additional difficulties of getting around the desks or one another.

Access

Access commonly refers to the student's ability to access computers or environmental controls. Determining which body parts can be used to gain access is the first step. Many times, alternative input devices are used to assist the student. There are many alternative input devices. Alternate keyboards, interface devices, joysticks, keyboard modifications, and keyboard additions are just a few. Others may include optical point devices, pointing and typing aids, switches with scanning, scanners and

optical character recognition, trackballs, touch screens, and voice recognition. Keyboards that can be used with one hand may help as well. Pointing devices are anything that assists the student with controlling the cursor on the screen. Ultrasound, infrared beams, nerve signals, brain waves, and eye movements are all ways in which students may be able to control the screen. Joysticks are also used for this purpose and may be used by the hands, feet, chin, etc. ("FGAT," 1997). Alternative keyboards may have larger- or smaller-than-standard keys or may have alternate key combinations or configurations (Ranskind, 1993). Access also refers to the student being able to enter and exit a building. Computers also offer built-in accommodations for disabilities including larger screens sizes and sound that coincides with key strokes.

Environmental Control

Environment control is a student's ability to independently use equipment in a classroom. Examples of this include remote controls, on/off switches adapted for a particular student, and robotic arms. Some of these items allow students to turn lights on and off, open doors, and operate appliances ("FGAT," 1997).

Augmentative Communication

Augmentative communication refers to the students communicating to interact with others. This is necessary in schools for social contact and to allow students to learn from others. Augmentative communication devices include communication boards, programmable switches, electronic communication devices, speech synthesizers, and recorded speech devices ("FGAT," 1997). Braille embossers and translators also belong in this category.

Assistive Listening

Assistive listening is learning by listening. Some students may have complete hearing losses, but many have slight hearing loss and need something to help them hear better and more clearly. They are also necessary to help students speak, read, and follow directions. Some examples of assistive listening devices include hearing aids, personal FM units, sound field FM systems, Phonic Ear, and closed caption television ("FGAT," 1997).

Visual Aids

Visual aids are aids that help individuals see things better. Enlarging text, using tactile or hearing aids, and increasing contrast are a couple of ways visual aids may be used. Screen readers, screen enlargers, magnifiers, and large-type textbooks are just a few ways. Other aids which may help are Braillers, light boxes, synthesizers, and scanners. Talking word processors are also becoming increasingly popular visual aids. Braillers transfer computer-generated text into Braille, which is embossed output. Screen enlargers or magnifiers allow the student to enlarge all or a portion of the screen to increase legibility. One of the most widely used assistive devices for a visually-impaired student is a white cane to assist with moving around physical objects ("FGAT," 1997).

Computer-Based Instruction

Computer-based instruction can assist students by making learning independent. Software can include activities or tests related to the curriculum. Some software programs will help with writing, spelling, calculation, reading, and higher level thinking skills. Software may include features such as easy-to-read screens, logical labels or icons,

user-friendly documentation, and alternatives to a mouse. Auditory cues, visual cues, and graphics may also be used. Word processors now come with the capabilities to help those with learning disabilities. They do this with word processing, spell checking, proofreading, abbreviation expanders, and outlining or brainstorming (Ranskind, 1993). Some also have speech recognition, speech synthesis and optical character recognition ("FGAT," 1997).

ADA and Post-Secondary Education

The Education Reform Act of 1993 ensures that all students have the tools and skills to become a productive person, employee, and community member and to recognize that education is a life-long effort. Many colleges and universities have developed programs or offices to support students with disabilities. The services vary widely from school to school. They also vary from public to private schools. In most cases, it is the individual's responsibility to seek out a college or university which can accommodate his or her disability. Students must advocate for themselves and inform instructors and administrative offices of their disability and their needs. This means that it does not matter whether the school is public or private. If the school receives any federal funding, the school must adhere to ADA regulations. The only colleges and universities that are exempt from the ADA accommodations are those which are religiously affiliated and those which do not receive federal funding. Most post-secondary institutions make general accommodations for students with disabilities (Post-secondary Education, 2006).

Colleges and universities have specific regulations that cannot be ignored. For example, they cannot place a quota on the number of persons with disabilities who are

accepted into any of their programs. General accommodations at an educational institution may include American Sign Language (ASL) interpreters, the use of tape recorders or other recording devices, and modifications in the length of time for completion of assignments or tests. If there are several persons with disabilities who can and should be accepted into a program, the college must make accommodations for these individuals. Colleges also cannot require students to disclose their disability. However, most students do choose to disclose so that reasonable accommodations can be made. A student with a disability cannot be excluded from any aspect of college programs, including academics, residential living, or student life. Schools may not discriminate on the basis of financial assistance or work-study employment or limit the student's ability to complete studies based on rules such as banning recording devices in the classroom (Post-secondary Education, 2006).

Colleges and universities may not have eligibility requirements that screen out or identify persons with disabilities. This is especially important in the admissions process. Postsecondary schools must not discriminate on the basis of disability and must ensure that programs are accessible to students. They do not, however, have to ensure that extracurricular activities are accessible to students with disabilities. Some of the ways schools accomplish reasonable accommodations to ensure access for extracurricular activities is to provide architectural access to buildings such as elevators, larger doorways, and ramps inside or outside of buildings. Schools can also provide learning aids or services such as microphones, ear pieces, and interpreters (Leuchovius, 1994).

Some of the more difficult modifications are when schools modify their policies, practices, or procedures to make programs accessible to students with disabilities. Modifications may include rescheduling of classes to a more accessible location, substituting courses, and providing extra time for assignments or exams. It may also include allowing tape recorded lectures or providing note takers. Accommodations are not necessary if they would fundamentally alter the nature of the course, program, or activity. Colleges must also provide transportation to students with disabilities equal to that which they offer to students who do not have disabilities. They also cannot charge for providing an accommodation (Leuchovius, 1994).

Though many schools are willing to make accommodation, they may also require documentation of a student's disability. In obvious cases where a student is in a wheelchair or is blind or deaf, the school may not require documentation, but in most cases the administration does require documentation. There are, however, many hidden disabilities which do require documentation such as learning disabilities, psychiatric disabilities, or chronic health impairment. The documentation that most schools require must contain the actual disability diagnosed by a physician, psychologist, etc. Documentation may also include suggestions for reasonable or appropriate accommodation. It is the responsibility of the student to attain and provide this documentation to the school. A student is required to disclose a disability only when they expect accommodations to be made for that disability (Leuchovius, 1994).

Allowing a student to have additional testing time, sign language interpreters, readers or recorders, and alternative test formats are some accommodations that can be

made for testing. Accommodations for testing must be made by colleges and universities. The purpose of test accommodations is to provide the student with a disability the opportunity to demonstrate his/her knowledge of the subject matter. Sometimes this can be done in alternative ways. For example, some professors will choose to give a student with a disability an oral exam rather than a written exam. If instructors refuse to give reasonable accommodations for a student with a disability, the student should contact the appropriate office for students with disabilities on the campus, or if one does not exist, the student should contact a local ADA/504 coordinator (Leuchovius, 1994).

Freiden (2003) offers that changes may be occurring in high school graduation rates and enrollment in colleges because of the passing of the ADA. "The percentage of students with disabilities graduating from high school with a diploma has risen steadily in recent years (51.7% in 1994 to 55.4% in 1998)" (p.1). He suggests that as a result, there are many more freshmen entering college who are considered to have some type of disability. The ADA allows for accommodations for persons with disabilities and therefore it makes sense that more students are graduating from high school and enrolling in a postsecondary institution. Accommodations allowed for students with disabilities in postsecondary education usually results in higher education degrees and more opportunities for future employment after graduation.

Some of the issues that have arisen in postsecondary education for those with disabilities are funding opportunities and structural and pedagogical obstacles. Students may find a wide variety of reasonable accommodations at different schools. One school may be willing to make an accommodation where another may not. Some schools do not

have a specific office for students with disabilities, but may have individuals assigned to other jobs that split the responsibilities of dealing with student disabilities. Locating the right college becomes a very frustrating process for students with disabilities. Some schools have limited resources, inconsistent terminology which is used, or difficulty determining student's needs are.

Considerations for College-Bound Students with Disabilities

Preparing for college can be hard enough for high school students, but students with disabilities have even more of a challenge when applying to colleges. Things to consider may include financial assistance, training and maintenance of assistive technology equipment, and support while on-campus. Participation on-campus and structural considerations are also important.

Financial Assistance

Most schools or students attending those schools receive some kind of financial assistance. Most financial awards are based on the financial needs of the student. Other students receive scholarships for academic excellence, athletics, or some other extracurricular activity. A small portion of what is left goes to students who are in a minority group and is merit-based rather than need-based. Most schools have little, if any, financial assistance available for students with disabilities. But typically, a student with a disability spends more on a college education than students who do not. Sometimes Medicaid or some other organization may help in funding some needed assistive technology (Post-secondary Education, 2006).

Training and Keeping Up-To-Date

Some students reach postsecondary schools and have never been diagnosed or exposed to assistive technology. For these students, extra time will be needed for training and understanding the concepts of assistive technology. Maintenance of the equipment and knowing when updates are available must also be considered. If the assistive technology being used is hooked up to a computer, the device may need to be updated when the computer is updated. All of this takes extra time and effort for the student, his/her family, and for the technology support staff.

Support While On-Campus

One of the most important considerations a student must know is what type of support they will receive when they arrive on campus. Many schools have offices for disabled students, but many do not. Many times schools have several staff members splitting up the duties for students with disabilities. Students must consider whether they will be providing all of their own devices or whether the college will help with some, but not others (Post-secondary Education, 2006). An example of this may be a student who needs special word processing software with voice recognition. The school may be willing to provide the software, but not the computer or vice versa.

Participation On-Campus

Another factor an incoming student may want to think about is whether they will be able to participate in any social or extracurricular activities at the school (Post-secondary Education, 2006). Typically, schools have at least one residence hall with an elevator, but it may not be the hall that a student with a disability would choose. Students

should consider whether extracurricular activities can be attended such as athletic events, theatre events, etc. College is more than academics and the student must consider all factors of their collegiate life.

Structural Considerations

Many campuses today have made accommodations for disabled students, but not all. One building may be totally remodeled, but if a student chooses a major where most of the classes are taught in an older, non-renovated building, it could present problems. For those with mobility impairments, one of the most important things to consider is whether most buildings on campus have wider doorways, ramps, or elevators. It is also important for the student to look at the classrooms in the buildings to see if there is additional room or alternative accommodations.

General Considerations

Many of these considerations can be answered simply by asking someone at the school. However, depending on the student's disability, it may be important to take an extended detailed tour of the campus with someone who understands his/her needs. Not all colleges respond to student's needs the same when it involves disabilities and not all colleges receive federal funding so they may not have to worry about it. Most schools have made some accommodations, but many smaller schools cannot afford to renovate every building on campus to make sure they are ADA compliant.

Research in the Post-Secondary Setting

Research being done for persons with disabilities is becoming increasingly important as students are becoming more willing to disclose their disabilities. With the

passage of the Americans with Disabilities Act, more students are able to attend post-secondary educational institutions and therefore, look for information and support from colleges and universities. Several studies have shown that students are not as willing to disclose their disabilities as one would think.

Willingness to Seek Help

College students can benefit from academic support for learning disabilities and other disabilities, but only a minority of students take advantage of these services (Haaga & Hartman-Hall, 2002). Haaga and Hartman-Hall researched eighty-six university students with learning disabilities in the Washington, D.C. area by researching their self-esteem and perceptions of their learning disabilities. They believed it was important to look at the reasons why students do or do not choose to use these academic support services. Students who were currently using the support services as well as students who were not were included in this research. Students were asked several questions regarding their willingness to disclose their disability or ask for assistance and it was predicted that most did not because of what others would think. Participants were also asked to observe advertisements for learning services programs. Four main predictions were made prior to this research:

- Having negative perceptions about one's LD (Learning Disabilities can include ADHD, Dyslexia, etc.) (i.e., that the LD is global, not modifiable, and stigmatizing) is associated with less reported willingness to seek help.
- Having negative perceptions of one's own academic, cognitive and social abilities is associated with less reported willingness to seek help.

- An emphasis on performance-focused goals for seeking help in an advertisement for a hypothetical learning center is associated with lower reported willingness to seek help, as opposed to an emphasis on task-focused goals.
- Being exposed to negative reactions from professors and peers in hypothetical situations is expected to reduce reported willingness to seek help. (p.265)

A significance of .05 was used in all statistical tests. The researchers report that fifty-six students were currently using some sort of support assistance. The average self-reported severity of the learning disability was 3.79. Statistics from this research show that students who need the help the most will most likely seek help the most. Results show that a student is more willing to seek help if a professor is involved. Students are also more willing to ask for assistance after reading and viewing hypothetical situations through advertising in which a student received negative responses from a professor. Students who perceived their learning disability as more global or non-modifiable reported less willingness to seek help because they were concerned about reactions from peers and professors. The most significant finding was that the main factor for students' willingness to seek help is concerned with how others in the academic setting will respond to their requests.

Haaga and Hartman-Hall suggest that more research needs to be done in this area because their participants were voluntary and self-reported. Although students had been diagnosed professionally, it was possible that their self-reported learning disabilities had some inaccurate reporting results. Further research in another area or another set of

universities may have different results. Future research may also identify additional factors that play a role in students' perceptions.

Motivational and Attitudinal Factors in Learning Disabilities

In another study done by Hall, Spruill, and Webster (2002), motivational and attitudinal factors in college students were researched. The study involved 17 college students with learning disabilities and 17 students without learning disabilities This study included students who had already been identified by a university's Department of Disability Support Services as having a learning disability. Those students with learning disabilities were matched as closely as possible with another peer without a learning disability. Students were asked to fill out a questionnaire including the type of learning disability, age that it was identified, type of placement, and other identified exceptionalities. The mean age of the participants' age when their disability was identified was 7.29 years old. Types of learning disabilities reported included written language, reading, and mathematics. Those in the learning disabilities group had received some form of special education assistance in earlier education accounted for 70.59%.

The data from this study was interpreted through several scales including the Hall Resiliency Scale, the Nowicki-Duke Locus of Control Scale, and the Need for Achievement Scale. The results of this study suggest that students with learning disabilities obtained significantly higher resiliency scores and significantly higher scores on the Need for Achievement Scale than their matched peers. Hall, Spruill, and Webster found that students with learning disabilities show a strong goal-directed approach and problem-solving initiative. In this study, students with learning disabilities also reported

less college stressors than their peers without learning disabilities. Both groups obtained moderate scores in suggesting their realistic assessment of environmental events that impacted their lives. The results of this study suggest that students "with learning disabilities are motivated by the need to achieve, a factor that may motivate them to apply to college in the first place and to put forth the effort necessary to be successful" (Hall, Spruill, & Webster, 2002, p.84).

The National Center for Education Statistics Study on Postsecondary Students with Disabilities estimates that nearly 6 % of all college and university students have some kind of disability. As a result, many more students are coming to college and asking for some sort of technology assistance either in the classroom or in their campus residence. The University of Washington, The University of Wisconsin at Madison, The University of Texas at Austin, and Rio Salado College are a few colleges that are trying to make a difference for students with disabilities (Oblinger & Ruby, 2004). According to Oblinger and Ruby, The University of Washington was one of the first to develop a lab dedicated to adaptive technology. It allows faculty, students, and staff to test out and play with new assistive technology devices. The goal of this program is to foster the success of persons with disabilities beyond their college careers. The other colleges and universities mentioned previously have similar types of programs which focus on students who need assistance.

Disabilities and Future Employment Satisfaction

In 1990, the Census showed that persons with disabilities who had less than a high school diploma were only employed at 15.6%. Those with at least a high school

diploma were employed at a rate of 30.2%, and those with at least four years of college were employed at a rate of 50.3% (Oblinger & Ruby, 2004). Research shows that college graduates with disabilities also have a greater satisfaction in their employment following graduation.

Madaus, Ruban, Foley, and McGuire (2003) studied a sample pool of 209 students with learning disabilities. While enrolled, each participant was asked to voluntarily self-disclose and submit documents to the university. One hundred and thirty-two of the 209 participants responded to the survey. The researchers also offered small monetary random prizes to solicit as many responses as they could. Their response rate was 67.4%.

The survey used in this research included a four-part section: (a) demographic items, (b) job satisfaction, (c) self-efficacy, and (d) items from the participant's university records. There was also a section for qualitative feedback about the services that were provided by the university while the student attended the school. Ninety percent of the respondents reported that their learning disability impacted their job, but 69% had still chosen not to disclose their learning disability to their employers. Many things were self-implemented by the respondent such as using proofreaders, using time outside of work to complete work requirements, and using assistive technology. Many also asked colleagues for help. Foley Madaus, McGuire, & Ruban, (2003) suggest that self-regulatory strategies and perceptions of employment self-efficacy were significant predictors in whether the person was satisfied with his or her employment. Many used three or more self-

regulatory methods and were confident or very confident about managing the many facets of their jobs.

These researchers suggest that their findings may have implications for support programs for postsecondary students with learning disabilities. Support programs typically focus on academic issues and provide things such as note takers and separate testing locations. Foley, et al. believe that "support programs should strive to assist individuals with LD in becoming independent learners by encouraging them to construct personalized self-regulatory strategies and transfer of strategies to multiple settings" (2003, p.167). Other researchers also support these beliefs (Brinckerhoff, McGuire, & Shaw, 2002; Crux, 1991; McGuire, Hall, & Litt, 1991). There is a possibility that self-regulatory measures practiced in the postsecondary setting may be mirrored in the employment arena, therefore, offering a higher level of satisfaction in employment following graduation.

Considerations for College and University Support

According to Ascuncion, Barile, and Fichten (2001) there are several guidelines for student success when using best practices in the use of educational technologies for learners with disabilities. They are as follows:

- Designing for accessibility for all learners, including those with disabilities, from the beginning results in more useful and cost effective solutions than retrofits.

- Plans and policies addressing IT integration on campus need to be reviewed and updated, if necessary, to ensure that they include provisions for access by persons with disabilities.
- People with disabilities and those who provide disability-related supports to them on campus need to be included in discussions/committees related to the selection of campus-wide educational technologies.
- Faculty training workshops on technology integration in the classroom need to address the issue of accessibility by learners with disabilities.
- Accessible and inclusive design considerations should be used when new learning and computer technologies are adopted and implemented on campus.
- Those responsible for providing IT/computing services and programs to their postsecondary institutions need to learn more about what is involved in providing technology that is accessible to the whole campus community, including learners with disabilities.
- When conducting evaluations of technology-based learning, learners with disabilities should be included whenever possible.
- As a matter of course, subject matter experts in the area of accessibility need to be drawn into the instructional design process from the analysis straight through to the evaluation process.
- Authorware and courseware tools with built-in accessibility features (e.g., WebCT, Blackboard) should be given greatest consideration when choosing to adopt a campus-wide web authoring tool.

- Use free web-based tools, such as Bobby and A-Prompt, which evaluate web pages for their accessibility and provide suggestions for making appropriate improvements. In addition, free software MAGpie (Media Access Generator) provides the facility to add captions to QuickTime, SMIL, and SAMI formats, and to incorporate audio descriptions into SMIL presentations.
- When using PDF files provide a non-PDF alternative (e.g., Word, HTML-based) or follow guidelines for creating accessible PDF files.
- Teaching and online resources should be compatible with adaptive technologies as well as with slow and low end computers.
- Dealing with accessibility for learners with disabilities by replacing a technology rich computer based learning experience with one that does not use technology defeats the purpose of providing an opportunity to develop technology literacy skills for these learners.
- Faculty are encouraged to put course information on the web well before the beginning of term, to make course materials available in alternate formats (e.g., online, diskette), and to allow students to submit assignments in alternate formats (e.g., online, diskette). (Ascuncion, Barile, & Fichten, 2001, p. 1)

The preceding is a list of the many considerations students and faculty need to consider. Each student who has a disability must be considered individually. There may be many more considerations than those listed above depending on the type of disability.

Computer Use for Individuals with Learning Disabilities

Computers can open doors to information for employment and educational opportunities. When computers are designed for the needs of persons with disabilities, it is one of the most liberating devices used (Oblinger & Ruby, 2004). Some colleges fail to design web sites for accessibility, therefore, placing limitations on students with disabilities. Research indicates that the use of technology can increase a student's understanding of skills and content knowledge when a computer is used to deliver well-designed and well-managed instruction. According to Hasselbring and Glaser (2000) the Internet, communication technologies, CD-ROM reference materials, and multimedia presentation tools can provide students opportunities to use their skills in projects with real-world implications or problems.

The effectiveness of word processing tools is similar in both persons with and without disabilities. It offers ease in making corrections and makes text more legible. Most students are more willing to make corrections or revisions to their work if it can be done with word processing tools rather than hand-written. Hasselbring and Glaser suggest that those with mild learning disabilities greatly benefit from using word processing software because it saves time and allows them to participate in the writing process with fewer obstacles.

Word prediction software is similar to word processing, but can include shortcuts to word processing. It can reduce the number of keystrokes used by typing the first or first couple of letters and then give students choices of words to pick from. Other applications allow the computer to say the words aloud. This type of software allows the

student to express their words in the vocabulary that is closely related to their thinking. There are many other types of word processing software alternatives for students with disabilities. Word processing can be used with OCR (Optical Character Recognition) which can scan and read text aloud, allowing students with visual impairments to access more types of print materials. There is also software for speech recognition. This allows students to *train* the computer with their own voice and word process their voice as they speak (Hasselbring & Glaser, 2000).

Barriers to Computer Use

The most common reason that computers are not used to help assist students with disabilities is because there is a lack and accessibility of training materials. According to Gerber, training is costly and there is a lack of computer-related information available including evaluations of products and tutorials. Access to training and information needs to be ongoing and newer versions and products need to be shared (Gerber, 2003). Gerber states that persons who need assistive technology spend a greater amount of time, energy, and money learning what technology exists, how to use specific software, and how to overcome compatibility issues. Hasselbring and Glaser (2000) also believe that there is a lack of appropriate technology training in pre-service and in-service teacher education programs. They add that use of technology for multimedia projects can be very motivating for students with disabilities.

Technology plays an important role in educational, employment, and recreational activities for students with and without disabilities. Burgstahler (2003) states that "computer access has the potential to help people with disabilities complete coursework

independently, participate in class discussions, communicate with peers and mentors, access distance learning courses, participate in high tech careers, and lead self-determined lives" (p.3). She also finds that many web pages do not contain accessibility options for those with disabilities. Web pages that do not include text alternatives, that can be read with speech recognition software or Braille output systems, limit information to those with disabilities. Technology access in postsecondary education has the potential to help students during their academic and post-academic careers. Several options that should be considered to overcome the challenges of educational systems' lack of technology support for those with disabilities;

- Stakeholders should have access to training so they can design and select accessible facilities; utilize computers and software; purchase appropriate assistive technology; and ensure that students with disabilities use technology for their maximum benefit as they pursue academics, careers, and self-determined lives.
- Policies and procedures should be established at all academic levels to ensure that universal accessibility is considered when electronic and information technology is procured.
- Policies, procedures, training, and support should be established at all educational levels to ensure that Web page, library resource, and distance learning program developers make their electronic resources accessible to everyone.
- Interagency collaboration on planning, funding, selecting, and supporting assistive technology should be fostered to ensure continuous technology access

and support as students with disabilities transition through academic levels and on to employment.

- Students with disabilities should be included at all stages of technology selection, support, and use, so that they learn to self-advocate regarding their needs for accessible technology in the classroom and workplace.
- Students with disabilities at high school and college levels should participate in internships and other work-based learning experiences where they can practice using technology in work settings.
- Legislators and policy makers should disseminate information about current laws, policies, and resources that are universally designed to meet the needs of various stakeholders. They should also identify and correct inconsistencies and gaps in legislation and policies regarding the selection, funding, and support of technology for people with disabilities. (Burgstahler, 2002, p.5)

Though these suggestions/recommendations may help, there is still much work to do in the postsecondary institution to accommodate students with disabilities. Colleges and universities must allow for funding to help make provisions and structural changes before the accommodation improve.

CONCLUSIONS AND RECOMMENDATIONS

This literature review based on how the Americans with Disabilities Act affects post-secondary education results in the following conclusions and recommendations. The Americans with Disabilities Act has proven to be effective in many areas including

public places, businesses, and primary and secondary educational institutions where compliance is required by law. However, in postsecondary institutions, reasonable accommodations are very loosely defined. Though some colleges and universities are making an effort to assist those with disabilities, the overall support is still lacking for many schools.

The Americans with Disabilities Act (ADA) and The Individuals with Disabilities Education Act (IDEA) of 1990 drastically changed how businesses and educational institutions accommodate persons with disabilities (Mayerson, 1992). The Acts not only helped define what a disability is, but also prohibit the unwillingness of entities to accommodate for disabilities. Businesses may not discriminate against an individual with a disability. If the applicant has the same capabilities and skills to perform the essential functions of the job, he/she must be considered for employment. Provisions must be made to accommodate those with disabilities in any place considered public. These provisions may include having working elevators, having ramps outside or inside the building, and having larger entryways to accommodate wheelchairs. In education, special provisions may be made for students with disabilities. Providing additional time for test taking, providing assistive technology, and providing note takers or recording devices all include examples of reasonable accommodations.

The Education Reform Act of 1993 ensures that all students have the tools and skills to become a productive person, employee, and community member and recognizes that education is a life-long effort. Once a student graduates and begins to attend a postsecondary education institution, the responsibilities for accommodations mostly

transfer to the student. Considerations may include financial assistance, training and maintenance of special equipment, support while on campus, and structural considerations. Federally-funded postsecondary schools must not discriminate on the basis of disability and must ensure that programs are accessible to students with disabilities. However, religiously-affiliated and privately owned schools not receiving federal funding are mostly exempt from providing accommodations.

A student with disabilities at the college level sometimes does not disclose the disability. Reasons for this may include the negative perceptions of individual academic, cognitive, and social abilities. Students, who have been exposed to negative reactions from teachers or peers in the past, are less likely to disclose their disabilities at the college level. Many fear negative reactions will affect their opportunity to be included in activities during their college career.

Finally, research shows that students with disabilities who have graduated or have had a partial postsecondary experience are much more likely to have future employment satisfaction. Many have made adjustments in their college career and have learned to disclose the necessary information to be successful. Many also have learned to be more self efficient in accommodating their disabilities. Larger institutions or institutions committed to helping students with disabilities typically have graduates who are more likely to be satisfied in future employment. Computer-based technologies have dramatically increased the opportunities for students with disabilities by allowing them to participate in classroom and extracurricular activities. The most common reason that computers are not used to help assist students with disabilities is because there is a lack

and accessibility of training materials. This is more common in postsecondary institutions because a student must first disclose the disability before accommodations can be considered or provided. Technology plays an important role in educational, employment, and recreational activities for students with and without disabilities.

The Americans with Disabilities Act has mandated that school administrators and businesses make reasonable accommodations for those who have disabilities. The use of technology including the purchase, training, and support may be necessary to accommodate someone. Structural or building renovations may also be necessary. The future for those with disabilities should include increased support and training. A reasonable accommodation should be made anytime that the accommodation will help assist a person with a disability become a more engaged and valuable member of society.

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