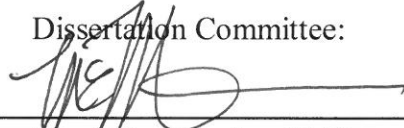ASSISTIVE TECHNOLOGY USE AMONG AMERICAN INDIAN/ALASKAN

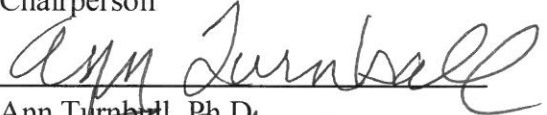NATIVES WITH MILD DISABILITIES

By

Perry R. Graves

Submitted to the graduate degree program in the Department of Special Education and the

Graduate Faculty of the University of Kansas in partial fulfillment of the requirements for

the degree of Doctor of Education

Dissertation Committee:
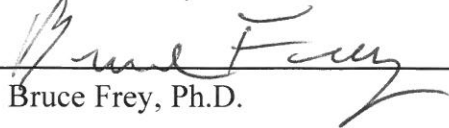
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following dissertation:

ASSISTIVE TECHNOLOGY USE AMONG AMERICAN INDIAN/ALASKAN NATIVES

WITH MILD DISABILITIES

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ABSTRACT

This descriptive study explores the reasons why American Indian/Alaskan Native (AI/AN) students with mild disabilities are likely to have a difficult transition into adulthood and why assistive technology (AT) is not playing as large of a role in helping these students in their transition from secondary to postsecondary education as one would it expect it to. An online survey was developed to collect data regarding AI/AN students with disabilities perceived use and experiences of AT at two points in time: (a) while in secondary school and (b) in their current postsecondary college or university. Descriptive statistics were calculated for the data collected and a comparison was made of the students' high school and postsecondary AT experiences and use. Potential reasons for the negligible use of AT at the secondary and postsecondary levels are discussed.

CHAPTER ONE

Introduction to the Problem

The number of students with mild disabilities in the U.S.'s elementary and secondary schools, which includes specific learning disabilities (LD), emotional/behavioral disorders (ED), and mild mental retardation (MR), has increased over the last two decades. According to the U.S. Department of Education's National Center for Education Statistics (NCES), during the 1976-77 school year there were approximately 2 million children with mild disabilities, ages 3 to 21 years, served in federally supported programs for the disabled (2011). By 1997, when the reauthorization of Individuals with Disabilities Education Act (IDEA) became effective, more than 5.4 million children with disabilities were due for consideration of their individualized education program (IEP) with about 3.7 million (68.5%) of these children classified as having a mild disability (U.S. Dept. of Ed., Office of Special Ed. Programs, 2011).

When comparing the transition into adulthood of students with disabilities to their peers, students with all types of disabilities have lower high school graduation rates, postsecondary enrollment, postsecondary graduation rates, and employment status (Aud et al., 2012; Newman et al., 2011; Bureau of Labor Statistics, 2012). Similarly, statistics concerning American Indian and Alaskan Native (AI/AN) students with or without disabilities indicate that they will also encounter educational and employment obstacles as they transition into adulthood. For an AI/AN high school student with a disability their transition into adulthood will most likely be an arduous process.

The use of assistive technology (AT) with students having a disability has been viewed by many professionals as an instructional approach that could benefit these students and should be used in greater numbers. Rose, Hasselbring, Stahl, and Zabala (2005) advised that "the

enormous power of such computer-based technologies to assist individuals with disabilities in overcoming barriers to educational access, participation, and progress is evident in the research base" (p. 507).

The Individuals with Disabilities Education Act's (IDEA) 1997 amendments mandated that a student's AT needs be considered in their individualized education program (IEP). With this in mind, it would be reasonable to expect a high prevalence of AT use in the United States' secondary and postsecondary schools. On the contrary, studies indicate that the opposite is true (Fichten et al., 2001; Kleiner & Farris, 2002; NLTS2, 2003; NLTS2, 2007; Marino, Marino, & Shaw, 2006; Bausch & Hasselbring, 2004; Parette & Peterson-Karlan, 2007). Why isn't AT playing as large of a role in helping students with disabilities in their transition from secondary to postsecondary education as one would it expect it to? This is the overarching question of this study. An online survey was developed to examine the assistive technology (AT) experiences and use of AT by AI/AN postsecondary students with disabilities. The online survey asked questions regarding their perceived experiences and actual use of AT at two points in time- high school and at their current college or university. The research questions for this study included:

1. What are the AT experiences and uses of AI/AN students with disabilities enrolled in U.S. tribal colleges?

2. What were the AT experiences and uses of AI/AN students with disabilities when in high school?

3. What were the AT services offered to AI/AN students with disabilities when in high school and postsecondary settings?

CHAPTER TWO

Review of Literature

Postsecondary Education for Students with Disabilities

In 2006 about 73% of the total U.S. public school students exited high school with a regular high school diploma compared to 62% of students with specific learning disabilities (Aud et al., 2012; Planty et al., 2008). Additionally, the high school curriculum for students with disabilities varied from that of the general population. In a 2011 report, The National Longitude Transition Study-2 (NLTS2), reported that students with disabilities earned fewer overall credits, on average, than did their peers in the general population and the coursework of students in the general population was focused more heavily on academic courses, compared with that of students with disabilities (Newman et al., 2011).

The NLTS2 reported that youth with disabilities were more likely to have enrolled in two-year or community colleges (44%) than in vocational, business, or technical schools (32%) or four-year colleges or universities (19%) (Newman et al., 2011). However, students with disabilities enroll in postsecondary education at a lower rate than the general population. The NLTS and NLTS2 reported that the percentage of secondary level students with disabilities who enrolled in postsecondary education, within two years of leaving secondary school, increased from 14.6% for the 1985-86 school year exiters (Wagner, 1989) to 60% in 2009 for students reported to have continued on to postsecondary education within 8 years of leaving high school. (Newman et al., 2011).

When comparing postsecondary educational attainment to their peers, students with disabilities have lower rankings. Students with disabilities graduate from our nation's colleges and universities at a lower rate than their peers without disabilities. The National Center for

Education Statistics (NCES) reported that among the 1989–90 beginning postsecondary students, students with disabilities were less likely than those without disabilities to have attained bachelor's or associate's degrees (NCES, 2000). By 1994, among those students enrolled in public 4-year institutions, 33% completed a bachelor's degree compared with 48% of the students not reporting a disability (NCES, 2000). Likewise, Newman et al. tracked a nationally representative sample of secondary school students with disabilities aged 13 to 16 years old for an 8 year period from 2001-2009. Compared to their peers in the general population the completion rate at 4-year colleges for these students was 34% compared to 51% for the general population (2011).

Both high school and postsecondary educational attainment for students with disabilities has been lower than the general population for the last two decades. Students with disabilities not only graduate from high school at a lower rate, but they graduated from high school with fewer overall credits, on average, than did their peers in the general population and their curriculum was less focused on academic courses than that of their peers in the general population. When students with disabilities did enroll in postsecondary education they were more likely to have enrolled in two-year or community colleges than in vocational, business, technical schools, or four-year colleges or universities. The percentage of students with disabilities in U.S. postsecondary institutions more than quadrupled from 1985 (14.6%) to 2005 (60%), but has remained steady for the last decade. The graduation rate for students with disabilities from our nation's colleges and universities is also lower than the general population. For the majority of the students with disabilities who graduate from our nation's colleges and universities the difficulties that they will face will continue with their transition into the workforce.

Employment Expectations for Students with Disabilities

As students with disabilities transition into the workforce they will face higher unemployment and lower employment status than that of the general population. The U.S. Department of Labor's Bureau of Labor Statistics (BLS) reported that persons with a disability who had completed higher levels of education were more likely to be employed than those with less education. However, at all levels of education, persons with a disability were much less likely to be employed than were their counterparts with no disability (BLS News Release, 2012). In 2011, the unemployment rate of persons with a disability (aged 16 years and over) was 15% compared to 8.7% for the general population. Additionally, workers with a disability were slightly more likely than those with no disability to work in production, transportation, and material moving occupations 14 % compared with 12%. Those with a disability were less likely to work in management, professional, and related occupations 32% compared with 38% (BLS News Release, 2012).

For the majority of students with disabilities, regardless of whether they pursue postsecondary education or not, they may expect higher unemployment and lower employment status than that of the general population. While it is true that postsecondary education is helpful for a student with a disability in obtaining employment, persons with a disability were much less likely to be employed than were their counterparts with no disability. The difficulty that students with disabilities experience is shared by the AI/AN students with or without disabilities. As we shall see, similar to students with disabilities, AI/AN students may expect lower high school graduation rates, postsecondary enrollment, postsecondary graduation rates, and employment status as they transition into adulthood.

Postsecondary Education and Employment Expectations for AI/AN Students

In 2000, the AI/AN population in the United States comprised 1.5% of the total U.S. population. 25.7% of all AI/AN lived in poverty compared to 12.4% of the total U.S. population. The median earnings of AI/AN men ($28,900) and women ($22,800) who worked full-time, year-round, were substantially below those of all men ($37,100) and women ($27,200) in the U.S. (Ogunwole, 2006).

Educationally, the percentage of spring 2002 AI/AN high school sophomores that graduated by 2006 was 74.7% compared to 87.8% of the total general population (NCES, 2008). Results from the 2000 census showed that 41.7% of AI/AN reported some college attendance or attaining a bachelor's degree or higher compared to 51% of the total U.S. population. However, only 11.5% of American Indian and Alaskan Natives obtained a bachelor's degree or higher compared to 24.4% of the total U.S. population (Ogunwole, 2006).

Freeman and Fox (2005) reported that in 2003, the unemployment rate for AI/AN, ages 16 and over, was 15%, 9 percentage points higher than the general population's rate of 6%. AI/AN were less likely than the total population to be employed in management, professional, and related occupations. The U.S. Census Bureau reported that 24.3% of all American Indians and Alaska Natives reported occupations in these areas compared to 33.6% of all U.S. workers. Not surprisingly, 44.6 % of American Indians and Alaska Natives reported employment in service, sales, and office jobs compared to 41.6% of all U.S. workers (Ogunwole, 2006).

For AI/AN students with or without disabilities the statistics indicate that they will encounter educational and employment obstacles as they transition into adulthood similar to those obstacles faced by students with disabilities. AI/AN families lived in poverty at twice the rate of the total U.S. population. Not surprisingly, the unemployment rate was twice that of the

general population and the earnings of AI/AN men and women fall substantially lower than that of the general population. It is logical to conclude that for an AI/AN high school student with a disability it is likely that their transition into adulthood will be difficult.

For many professional educators the statistics concerning the difficulties that students with disabilities and AI/AN face are nothing new. The literature is abundant with studies concerning their plight. However, solutions to help these students are far less abundant. A growing number of educators are looking towards the use of assistive technology (AT) to support postsecondary school outcomes as shall be explained in the next section.

Using AT to Support Postsecondary Outcomes

The use of AT with all students as well as students with disabilities has been viewed by many professionals as an instructional approach that should be used in greater numbers. According to King-Sears, Swanson, and Mainzer (2011):

> The distinction between assistive and classroom technology is based on the student's need: If the student needs the technology to function, it is assistive technology (Individuals with Disabilities Education Act, 2004, § 602). If the student benefits from using the technology, but can function without it, then it is classroom technology (p. 569-70).

Rose, Hasselbring, Stahl, and Zabala (2005) advised that "the enormous power of such computer-based technologies to assist individuals with disabilities in overcoming barriers to educational access, participation, and progress is evident in the research base" (p. 507). Examples of AT software that has been found to be helpful for students with disabilities in reading and writing include concept mapping software; word prediction software; voice recognition software; text- to-speech software; and talking word processing software (Morrison,

2007; Martinez-Marrero & Estrada-Hernández, 2008). As we shall see, when one considers the compensatory role that this AT may take and the federal legislation mandating that its use be considered it is baffling that its usage in secondary and postsecondary schools is minimal at best.

The role of the AT used by students with disabilities should also be considered. Edyburn (2003) referred to the roles of AT as either compensatory or remedial. The compensatory approach helps an individual perform a specific task by using AT. For example, when a student with a writing disability uses speech-to-text software to help with preparing an English class paper, his or her aim is to bypass the writing disability by compensating in spelling and writing fluency, not to learn to write. The remedial approach is used to improve areas of deficiency. An example is a student who uses a computer program to practice spelling words. The goal is to remediate or improve spelling skills.

Defining AT. The definition of AT as was defined by the Technology Related Assistance for Individuals with Disabilities Act of 1988 (the Tech Act) is, "any item, piece of equipment, or product system, whether acquired commercially off the shelf, modified, or customized, that increases, maintains, or improves functional capabilities of individuals with disabilities" (Martinez-Marrero & Estrada-Hernández, 2008, p. 56). The language of this definition has ended up being adapted by subsequent legislation addressing individuals with disabilities and assistive technology. This has included the Tech Act's 1994 amendments, the Technology Related Assistance for Individuals with Disabilities Act of 1998, the Individuals with Disabilities Education Act of 1990 (IDEA) and its 1997 and 2004 amendments (Edyburn, 2004; Martinez-Marrero & Estrada-Hernández, 2008). The Tech Act also defined AT service as: "any service that directly assists an individual with a disability in the selection, acquisition, or use of an assistive technology device" (Edyburn, 2004, p. 16).

AT use in secondary settings. The Individuals with Disabilities Education Act's (IDEA) 1997 amendments mandated that a student's AT needs be considered in their individualized education program (IEP). With this in mind, it would be reasonable to expect a high prevalence of AT use in the United States' secondary schools. On the contrary, studies indicate that the opposite is true (Kleiner & Farris, 2002; NLTS2, 2003; NLTS2, 2007; Marino, Marino, & Shaw, 2006; Bausch & Hasselbring, 2004; Parette & Peterson-Karlan, 2007). Morrison (2007) recognized the need for AT experts when she wrote, "While it is recognized that assistive computer technology (ACT) can have a positive impact on learning for students with learning problems, the process for the integration of assistive technology into the curriculum is more complex." She cited the need for "easy access" to professionals with expertise in technology and pedagogy (p. 83).

Historically, Kleiner and Farris (2002) reported that nationally in 2001, 39% to 56% of elementary and secondary schools that had students with disabilities provided assistive or adaptive software. The National Longitudinal Transition Study-2 (NLTS2, 2003) estimated that between 2001 and 2003, 4.5% of all of the youth with disabilities in their study (a nationally representative sample of more than 11,000 youth with disabilities) received assistive technology services during their last year of secondary schooling. This estimate increased to 5.7% for 2007 (NLTS2, 2007). Interestingly, while the percentage of students with any disability condition who received assistive technology services increased from 4.5% to 5.7% from 2001 to 2007, the percentage of students with mild disabilities who received assistive technology services fell to 0% (to low to reliably estimate) for students with learning disabilities and emotional disturbance and 4.6% for students with mental retardation (NLTS2, 2007).

Bausch and Hasselbring (2004) also reported that the lack of AT trained personnel has had an impact on U.S. secondary schools' ability to provide AT services. They reported that although AT devices and services have been legally mandated for several years prior to 1997, the requirements of IDEA 1997 had enormous implications impacting approximately six million school-aged students identified with a disability. One of the implications was that states began writing assistive technology policies, procedures, guidelines, and technical assistance manuals to reflect the change in federal law. However, because of the lack of qualified personnel it has been problematic for districts to find AT trained personnel, thus directly impacting the services that can be provided for students with disabilities. In addition, Marino, Marino, and Shaw (2006) noted that while it is the IEP team's responsibility to ensure that AT is considered for all students, this task can be "overwhelming due, in large part, to a critical shortage of AT specialists who help IEP teams make decisions regarding AT for students with disabilities" (p. 18).

The lack of AT use in secondary schools has been attributed by Parette and Peterson-Karlan, 2007 to no guidance provided by the federal government with regard to helping educational professionals understand the compensatory function of AT, and "what devices are helpful in compensating for student deficits that are barriers to student achievement" (p. 387). They cited a Supreme Court ruling (*Hedrick Hudson School District v. Rowley*) "that supports the compensatory nature of AT in ruling that schools are required to provide a 'floor of opportunity' when making curricula and student support decisions for students with disabilities" (p. 388). The ambiguity of the wording of the U.S. federal laws, which mandates that school districts to consider AT with a student's IEP, is also seen as an impediment to AT usage. This

ambiguity leaves these laws open to multiple interpretations without specific legal guidelines (Edyburn, 2004; Lee & Templeton, 2008).

Financial concerns have also been cited as a reason for minimal AT use by students with disabilities in secondary and postsecondary schools. Although it was mandated in IDEA 2004 that the IEP team must consider whether the child requires AT devices or services, it does not offer guidance on how to document whether AT was considered. According to Lee and Templeton (2008):

> The term *consider* can be open to multiple interpretations without specific legal guidelines. How can one document that the IEP team did, indeed, consider AT when they decided not to recommend an item for the student? . . . Once it is decided that an AT item is required and, therefore documented on the IEP, the IEP team must provide the item to the student at no cost. Lack of funding cannot be used as an excuse for not providing the device, but it is possible that the professionals may be pressured into not recommending an expensive AT item that school administrator's fear is too costly (p. 216-217).

Similarly, professionals at the postsecondary level may also be reluctant to recommend an AT item for a student due to the high price of an item. Stumbo, Martin, and Hedrick (2009) noted that in a study of 139 graduates with disabilities, recruited from 20 postsecondary institutions across the U.S., the results revealed that "as the cost of an AT device increased the reported frequency of use, that is, the number of students using it, decreased" (p. 103).

Mull and Sitlington (2003) identified equipment abandonment as both an issue and a barrier to the general use of technological accommodations by students at both the secondary and postsecondary levels. They found that nearly 1/3 of all purchased AT

devices were abandoned by students. One of the reasons given for this abandonment was that the equipment made the individual stand out in a group. This was because a student may have the perception that using certain AT devices would not allow social acceptance by his or her peers. Parette, Wojcik, Peterson-Karlan, and Hourcade, (2005) explained that, "If, in fact, education professionals are insensitive to the preferred technologies of students with disabilities they may inadvertently be inhibiting optimal learning experiences for these students" (p. 2). They argued that student's perceptions of particular devices and their utility have to be considered. They identified certain AT devices as being "cool" or having appeal to current school-age students with mild disabilities. These devices included portable word processors, talking word processors, word prediction programs, computer based organizational tools, speech recognition, audible text, and text-to-speech programs.

A review of the literature strongly indicates that AT is minimally used at the secondary level. Historically, Kleiner and Farris (2002) reported that 39% to 56% of the elementary and secondary schools that had students with disabilities provided AT or adaptive software. The NLTS-2 (2003), estimated that less than 5% of all students with disabilities received AT services during their last year in high school and for student's with mild disabilities this percentage decreased even further by 2007. The lack AT experts at the secondary level, the federal government's lack of guidance and the ambiguity of the wording of federal disability laws, financial concerns, and equipment abandonment are given as reasons for the lack of AT use at the secondary level. At the postsecondary level, these reasons plus the change in laws protecting students with disabilities, the lack of AT policies, and the attrition of the number of students who seek accommodations are reasons given for minimal AT use.

AT use in postsecondary settings. At the postsecondary level, the responsibility for arranging for accommodations and supports shifts from the school to the student. In addition, a student may elect to not self-disclose to their postsecondary institution that he or she has a disability (Getzel & Thoma, 2008). According to Newman et al. (2011), 63% of postsecondary students who were identified by their secondary schools as having a disability did not consider themselves as having a disability by the time they had transitioned to postsecondary school and did not disclose to their postsecondary institution that they have a disability. An additional 9% considered themselves as having a disability but chose not to disclose it to their postsecondary schools. Out of the 28% of the postsecondary students who did self-disclose as having a disability, approximately 70% reported that they had received accommodations and supports from their postsecondary institution. However, among these accommodations, 37% used technology aids, such as computer software designed for students with disabilities.

White, Wepner, and Wetzel (2003) surveyed representatives from a cross section of U.S. public and private universities and colleges about AT initiatives. The results of the survey indicated that, with rare exception, there are no set policies in place concerning AT use at most of the responding universities and colleges. In a statistical analysis of 1,067 disability support coordinators from across the U.S in 1999 (650 respondents) and again in 2001 (417 respondents), Christ (2008) reported that there was a difference between two-year and four-year postsecondary institutions in the way they are providing technology services: "First, 50% of public and 75% of private institutions provided no form of assistive technology evaluation for students with disabilities. Second, two-year institutions offered more technology hardware, software, and training than their four-year counterparts" (27).

In order to provide "useful and relevant information for the postsecondary education community" (p. 187), Fichten et al. (2001), in three studies, examined the "computer technology needs and concerns" of close to 800 college and university students with various disabilities in Canada. In Study 1, they conducted focus groups with professors and postsecondary students with various disabilities. In study 2 they obtained in-depth information from structured interviews with professors and postsecondary students with disabilities, and in Study 3 they collected comprehensive information via questionnaire from these students. Their findings indicated that the overwhelming majority of the students used computers, but that almost half needed some type of adaptation to use computers effectively (e.g., screen magnification, dictation software, Braille).

In subsequent research, Fichten et al., (2010) surveyed 131 students from French and 1202 students from English language universities and junior/community colleges with various disabilities from across Canada. These researchers evaluated how well information and communication technology (ICT) needs of students with various disabilities were met at school, at home, and in e-learning contexts. They found that although the results showed more favorable than unfavorable results, the scores were affected by the nature of the students' disabilities and the context of the home or school impacted results. Generally, both groups had similar views about circumstances where their needs were poorly met and about what worked well. They found that the most problematic area of concern was the access to training on how to use computer technologies. An additional problem was the availability computers with adaptive software at school in general use and specialized computer laboratories, as well as those available through the school's loan program.

The use of AT to support postsecondary school outcomes for students with disabilities has been viewed by many educators as an instructional approach that should be used in greater numbers. In fact, the U.S. Department of Education has required that all secondary schools consider AT use with students with disabilities due to IDEA's 1997 amendments. Statistics compiled by Kleiner and Farris (2002) and the NLTS2 (2003 and 2007) report a low prevalence of AT use by students with disabilities at both the secondary and postsecondary levels. The reasons for minimal use at the secondary level include the lack of AT experts to help the IEP team with AT decision making; poor guidance on AT use in education; financial concerns of providing AT to students with disabilities; and equipment abandonment. At the postsecondary level, the reasons cited for minimal use of AT included the number of students with disabilities who decide not to seek accommodations for their disability; lack of policies concerning AT use by students with disabilities at the majority of postsecondary institutions; equipment abandonment, and similar to secondary schools, financial concerns about the cost of providing AT to the students.

In a 2001 study, Fichten et al. found that the overwhelming majority of the postsecondary students with disabilities surveyed in Canada used computers, but that almost half needed some type of adaptation to use computers effectively. In a 2010 follow-up study, of students with disabilities these researchers found that in general, students with disabilities who responded to the survey had their information and communication technology needs met. The most problematic area of concern for postsecondary education students with disabilities was the lack of training on how to use computer technologies (Fichten et al., 2010). These two studies offer insights into AT use among students with disabilities in Canada. However, comprehensive information regarding postsecondary AT use in U.S. postsecondary settings is not as prevalent.

In addition, for unique groups of students such as AI/AN with disabilities enrolled in postsecondary education settings, very little is known.

Purpose of the Research

Few studies have been published concerning AI/AN students, and even fewer concerning those with disabilities and their AT use. However, statistics reported over the last three decades concerning the transition into adulthood for AI/AN students with or without disabilities indicate the difficulty and obstacles these students encounter. This includes lower high school graduation rates, postsecondary enrollment, postsecondary graduation rates, and employment status than the general population (Aud et al.; 2012; Ogunwole, 2006; BLS, 2012). The use of AT or educational technology with all students with disabilities has been viewed by many professionals as an instructional approach that should be used in greater numbers.

It is evident that studies about AT use have been published over the last twenty years, but little information is available about AI/AN's with disabilities use of AT while in high school and as they transition to American Indian universities and colleges. The purpose of this study is to better understand the AT services offered to AI/AN students in American Indian universities and colleges. A survey was used to collect data from AI/AN students with disabilities enrolled in American Indian universities or colleges. The research questions were:

1. What are the AT experiences and uses of AI/AN students with disabilities enrolled in U.S. tribal colleges?

2. What were the AT experiences and uses of AI/AN students with disabilities when in high school?

3. What were the AT services offered to AI/AN students with disabilities when in high school and postsecondary settings?

It is anticipated this study will add to the paucity of research concerning AI/AN students with

disabilities.

CHAPTER THREE

Methods

This study was designed to research the assistive technology (AT) use of American Indian/Alaskan Native (AI/AN) postsecondary students with disabilities through the use of a survey. The purpose of the study was to better understand:

1. The AT experiences and uses of AI/AN students with disabilities enrolled in U.S. tribal colleges.

2. The AT experiences and uses of AI/AN students with disabilities when in high school.

3. The AT services offered to AI/AN students with disabilities when in high school and postsecondary settings?

This research will provide practicable and pertinent information to not only the disability service providers at tribal university and colleges, but to the postsecondary community as a whole.

Research Design

Shuttleworth (2008) noted that descriptive research design is a scientific method which involves observing and describing the behavior of a subject without influencing it an anyway. In this study the use of a survey has been chosen as the means for gathering variables regarding AT use among AI/AN postsecondary students with disabilities. These variables will be measured using a descriptive study design.

Sample

The focus of this study is on AI/AN postsecondary students with disabilities enrolled in U.S. tribal colleges and universities (TCU) which are listed as members with the American

Indian Higher Education Consortium (AIHEC). There are 36 tribal colleges and universities listed as members with AIHEC. All the TCUs are chartered by their respective tribal governments, with the exception of Haskell Indian Nations University and Southwestern Indian Polytechnic Institute which are operated by the U.S. Department of the Interior, Bureau of Indian Education. The AIHEC tribal colleges and universities include the ten tribes within the largest reservations in the U.S and serve more than 230 federally recognized American Indian tribes (AIHEC, 2009).

A convenience sampling method was used to recruit the sample. The directors of disability services for the 37 tribal colleges were contacted by the researcher and asked to assist with notifying the students with disabilities at their college or university about the survey. They were asked to forward an email from the researcher that gave information and instructions about taking the survey. Both Nulty (2008) and Baruch and Holton (2008) reported varied response rates to online surveys ranging from 33% to 52%. In addition, they both reported that response rates may be improved through the use of incentives and reminders. In this study the use of at least three reminders were sent out to potential survey takers in order to increase the response rate. The sample size was expected to be at least 75 (n=75) student responses.

Approval was obtained from the University of Kansas Human Subjects Committee-Lawrence (HSCL). Additionally, each TCU, whose director of disability services agreed to help with the survey, was contacted about filling out an application to their Institutional Review Board (IRB). Until IRB approval was granted by the University of Kansas' HSCL and the AIHEC college or university the survey was not administered.

Instrument

A survey was used to gather data respective to the three research questions given at the beginning of this chapter. The survey questions were adapted from two surveys developed by Fichten, Asuncion, Nguyen, Budd, and Amsel (2009) and Fichten et al. (2001). About half of the items were adapted from the 2009 survey, POSITVES Scale (Postsecondary Information Technology Initiative Scale). Fichten and colleagues surveyed 131 Canadian students from French language and 1,202 Canadian students from English language universities and community colleges with various disabilities. These students were questioned about how well their information and communication technology (ICT) needs were met at school, at home, and for online instruction (Fichten, Asuncion, Nguyen, Budd, & Amsel, 2010). The authors reported the reliability and validity of the measure's subscales to be excellent. Four-week test-retest reliabilities ranged from .72 to .84 using Cronbach's alpha, a measure of internal consistency (Fichten et al., 2010). The second half of the survey uses items from an earlier unpublished survey by Fichten et al. (2001). According to C. Fichten, the 2001 survey was developed and piloted as part of the survey construction. The authors completed a 4 week test-retest reliability analysis and threw out all items with poor reliability (C. Fichten, personal communication, November 3, 2012). The authors did not report reliability on the final survey used in the 2001 study.

The survey that was developed for this study, not including the demographics section, contains 4 sections with a total of 48 questions. The 48 questions have been broken down into 4 constructs and 8 subscales. The majority of the survey uses a 5 point Likert scale (strongly agree – strongly disagree) with a not applicable (N/A) answer choice. See Table 1 for a breakdown of the survey constructs and subscales.

The major adaptation of the survey from Fichten and colleagues' survey is the inclusion of items related to high school AT experiences and usage. Another adaptation is the inclusion of items asking about assistance with purchasing computer technology from state or tribal rehabilitative services at both the secondary and postsecondary levels. In addition, there were updated terms and types of computer technology added to the survey.

In order to help ensure that the survey would be clear and concise, the survey instrument was reviewed by the researcher's Dissertation Committee members, and especially Dr. Sean Smith, who has expertise in AT use in schools. Their suggestions were used to improve question and instruction clarity and incorporated into the survey before being administered.

Data Collection Methods

The directors of disability services for the 37 TCUs, which are listed as members of AIHEC, were identified and contacted for assistance in recruiting students to complete the survey, and to assist with any subsequent follow-up. The researcher's first contact with the directors of the TCUs was through either an email or a telephone call to introduce the researcher, give a short explanation of the study, and request their assistance with the project. The researcher also advised the directors that before the study would begin permission would be obtained from their institutional review boards (IRBs).

After obtaining IRB permission, the researcher contacted TCU directors of disability services and asked them to forward an email from the researcher to the students at their institution that have disabilities. The email that was forwarded to the students had an introduction, the purpose of the survey, and a request that the students complete the survey. Additionally, there was a link to the *Qualtrics* survey web page so that the students would have easy access to the survey.

The online survey format was chosen primarily because of the great distances involved with the study and the likelihood that the students with disabilities at these TCUs would have internet access. Fleming and Bowden (2009) cited reduced cost, increased speed, and accuracy as the positive benefits of using a web-based survey. Additionally, the *Qualtrics* software has an accessibility checker that checks the survey for Section 508 compliance with screen reader software.

Data Analysis

The survey instrument, in conjunction with *Qualtrics* software, was used to gather data from 57 items related to the AT use of American Indian/Alaskan Native (AI/AN) postsecondary students with disabilities. As individual surveys were completed, data was recorded by the *Qualtrics* database. Descriptive analysis was calculated for the demographics and the 8 subscales for all students with disabilities who completed the survey.

Summary

Through the use of a survey, this descriptive study was designed to research the AT use, experiences, and concerns of American Indian/Alaskan Native (AI/AN) postsecondary students with disabilities. Directors of disability services at 37 TCUs across the U.S. were requested to assist with the distribution of emails to students with disabilities at their institutions which give information about taking a survey about their AT use in high school and at their postsecondary institution. The survey consisted of 57 questions total with the majority of the questions being closed-ended using a 5 point Likert scale (strongly disagree – strongly agree) with a not applicable (N/A) answer choice. An online` survey was used in order to reduce cost and increase the speed, and accuracy of implementing the survey and data collection.

CHAPTER FOUR

Results

In this chapter information about the assistive technology (AT) use and experiences of American Indian/Alaskan Native (AI/AN) postsecondary students with disabilities enrolled in U.S. tribal colleges and universities (TCUs) is described. An online survey was developed to collect data regarding the target population's AT use at two points in time: (a) while in secondary school and (b) in their current postsecondary college or university. Descriptive statistics were calculated for the data collected from the survey in order to address the research questions reported below.

There are 37 tribal colleges and universities listed as members with American Indian Higher Education Consortium (AIHEC). Out of the 37 member institutions of AIHEC, 15 institutions agreed to participate with the study. Recruitment emails were sent to cooperating disability service providers for forwarding to their students with disabilities. Emails were sent on a weekly basis beginning September 1, 2013 and ending on November 16, 2013. A total of 39 responses were collected during this time period with an additional 3 more responses collected between November 17 through December 10, 2013. Data collection ended with a total of 42 responses for the study.

Characteristics of Participants

Summarized in Table 2. One hundred percent of the 42 respondents reported that they were AI or AN. The majority were female (n=33, 79%), and all respondents were 18 years of age or older (n=42, 100%). The participants were students attending one of the six TCUs listed in Table 3 with the majority attending either Haskell Indian Nations University (n=15, 36%) or Oglala Lakota College (n=14, 33%). Thirty-eight percent of the respondents reported that they

were currently pursuing a 2-year college certificate/ diploma, 14% reported pursuing a 2-year university certificate/diploma, and 38% reported that they were pursuing a 4-year degree/diploma and four respondents (10%) selected the answer choice "other." When asked what their field of study or discipline was, the three most frequent responses were, American Indian/Alaskan Native Studies (n=8), Business (n=7), and Social Sciences (n=7) (see Table 4). Respondents also reported their primary and secondary disabilities. Table 5 shows that the most prevalent primary disability listed was learning disability (n=14, 33%) followed by physical disability (n=7, 17%). The majority of the respondents (n=26, 62%) reported that they did not have a secondary disability, and for those that did report a secondary disability (see Table 6), the largest percentage reported a psychological/psychiatric secondary disability (n=6, 14%).

High School AT Experiences

Respondents reported a level of agreement (5= Strongly Agree, 1= Strongly Disagree) regarding 13 questions related to how well their high school AT experiences met their needs (see Table 7). The questions addressed four main areas: (a) availability of AT; (b) staff support; (c) personal experience and efficacy with technology; and (d) accessibility of web and print.

When respondents were asked for their perception and attitude of the availability of AT in high school, 77% agreed or strongly agreed that access to computers met their needs ($\overline{X}$=3.8) and 61% agreed or strongly agreed that the computers were sufficiently updated with AT ($\overline{X}$=3.52). However, only about 25% of the respondents reported that the computers available to them included hardware and software for students with disabilities ($\overline{X}$=2.58). In terms of staff support, close to 60% of the respondents agreed that they had high school staff that supported them with their computer hardware and software needs ($\overline{X}$=3.56). In contrast, when asked if training in high school was provided for the use of AT software, only 40% agreed ($\overline{X}$=2.93). In

terms of personal experience and efficacy, 43% of the respondents agreed or strongly agreed that they felt comfortable using AT software during classes ($\overline{X}$=3.1). However, only 13% reported that they owned their own computer with AT software installed ($\overline{X}$=2.23). Less than 20% reported they received assistance from Tribal or State rehabilitative services for the purchase of computer AT hardware or software. Finally, with regard to accessibility close to half of the respondents felt that accessibility of their high school web pages and written material was inadequate.

High School AT Use

The respondents were asked questions about their use of AT hardware and software in high school (Table 8 summarizes these results). Over 60% reported that they never used or rarely used AT software or hardware, with the exception of AT software used for writing, 31% reported that they used the software most or all of the time. Examples of software used for help with writing included the programs: Inspiration, Read and Write, and Microsoft Word's spell check and grammar check features. Other AT software or hardware that the respondents were asked to rate was screen magnification programs, screen reading software (text-to-speech software), voice dictation software (speech-to-text software), adapted keyboard, and adapted mouse. Respondents were also asked if they used technology that they personally owned and were asked to specify the software and how often they used the software. Close to 70% of the respondents answered that they never or rarely used personal technology. Among the three respondents that reported a type of AT technology personally owned, it was a laptop. Information about the specific AT software that they used and how often they used it was not reported.

The results from the large percentage of respondents about their low level of AT use were supported by four questions about their high school AT use. With the exception of AT software that helped with writing, over 70% of the respondents reported that they were never taught to use AT software. Figure 1 illustrates the large percentage of respondents who reported that they did not use or were not taught to use AT software at the high school level.

Postsecondary AT Experiences

Respondents were asked to report a level of agreement (5= Strongly Agree, 1= Strongly Disagree) regarding how well their postsecondary AT experiences were meeting their needs. Questions regarding the respondent's postsecondary AT experiences and use were similar to the questions previously asked regarding their high school experiences and use (see Tables 9 and 10). Similarly, the questions addressed the four main areas: (a) availability of AT; (b) staff support; (c) personal experience and efficacy with technology; and (d) accessibility of web and print. When respondents were asked about the availability of AT at the postsecondary institution in which they were currently enrolled, 83% agreed or strongly agreed ($\overline{X} = 4.21$) that access to computers met their needs; and 64% reported that the computers were sufficiently updated with AT ($\overline{X} = 3.98$). Forty-three percent of the respondents reported that the computer labs available to them included hardware and software for students with disabilities.

When the respondents were asked questions regarding their personal experience and efficacy with AT at the postsecondary level, 52% of the respondents agreed or strongly agreed that they felt comfortable using AT software during classes ($\overline{X} = 4.05$) and 38% reported that they owned their own computer with AT software installed in it ($\overline{X} = 3.43$). Twelve percent of the respondents with disabilities reported that they received help from tribal and state rehabilitative services with purchasing computer technology at the postsecondary level.

For the two questions regarding accessibility, 57% of the respondents reported that they agreed or strongly agreed that their institution's web pages was accessible ($\overline{X} = 3.86$). Sixty-four percent agreed or strongly agreed that their course materials and readings were available in a digital format that was accessible to them ($\overline{X} = 3.95$).

Postsecondary AT Use

When asked about their use of AT hardware and software at the postsecondary level, Table 10 shows that 60% of the respondents never or rarely used AT hardware and software. The exception was AT software used with writing, where 40% reported that they used this software all or most of the time. Examples of AT hardware and software used with writing were the same as reported for high school and included the software programs Inspiration, Read and Write, as well as Microsoft Word's spell check and grammar check features. Other AT software or hardware that the respondents reported was screen magnification programs, screen reading software (text-to-speech software), voice dictation software (speech-to-text software), adapted keyboard, and adapted mouse. When the respondents were asked if they used technology that they personally owned, 62% of the respondents answered that they never or rarely used technology that they personally owned. Similar to the high school responses, 3 respondents identified the technology that they personally owned was a laptop, but information about specific AT software that they used was not reported.

The results from the large percentage of the respondents about their low level of AT use were similar to the high school results. Sixty percent of the respondents answered "yes" when asked if they were taught at their college or university how to use software that helped with writing. Over 60% of the respondents reported that they were not taught how to use screen

magnification, text-to-speech, and speech-to-text software. Figure 2 illustrates the respondents'

responses.

Summary

Comparisons Among High School and Postsecondary AT Experiences and Use

A comparison between high school and postsecondary responses show that a slightly

higher percentage of the respondents had more positive responses at the postsecondary level than

they did at the high school level. When asked about their high school's availability of AT, 77%

of all respondents agreed or strongly agreed that access to computers met their needs, compared

to 83% at the postsecondary level. Sixty-one percent agreed or strongly agreed that the

computers available to them in high school were sufficiently updated with AT, which was very

similar to the 64% who agreed at their current college or university. When asked if the

computers available to them included hardware and software for students with disabilities, 24%

of the respondents agreed or strongly agreed that their high school included AT with their

computers as compared to a substantially higher agreement (43%) that their college includes

computers with AT available to them.

Higher scores were also reported within postsecondary settings with regard to staff

support. Fifty-eight percent of the respondents agreed that high school staff that supported them

with their computer hardware and software needs, as compared to 62% who agreed or strongly

agreed that their needs were being met at the postsecondary level. When asked if training for the

use of AT was provided in high school level, 40% agreed or strongly agreed as compared to 62%

who agreed that AT training was being provided at their college or university.

Questions regarding personal experiences and efficacy and accessibility of web and print

also were reported at higher percentages at the postsecondary level. Forty-three percent of the

respondents agreed or strongly agreed that they felt comfortable using AT software during their high school classes, which increased to 52% in college. Likewise, 42% of the respondents agreed or strongly agreed that their high school's web sites were accessible and 50% reported that course materials were available in digital format. This compared to respondent's increased positive postsecondary experiences of 57% and 64% respectively.

When respondents were asked to report their use of AT hardware and software in high school and postsecondary, at least 60% of all respondents reported that they never or rarely used AT hardware or software in high school or their current postsecondary institution, with the exception of AT software used for help with writing. Thirty-one percent of the respondents reported that they used AT software for writing all or most of the time in high school and 40% in postsecondary.

The responses from the four questions regarding AT use (i.e., I was taught to use software that helped with writing, a screen magnifier, screen reading, and voice dictation software) also had slightly higher postsecondary scores. Forty-five percent of the respondents reported that they were taught to use software that helped with writing in high school compared to 60% at the postsecondary level. Twenty-six percent reported that they were taught how to use a screen magnifier, 24% screen reading software, and 14% were taught to use voice dictation software in high school. This compares to the postsecondary scores of 36%, 31%, and 29% respectively.

In summary, over 75% of all the respondents agreed that access to computers met their needs in high school or was meeting their needs at their postsecondary institution. About 60% of the respondents reported that the computers at their high school or college was sufficiently updated with AT. When asked if the computers available to them included hardware and

software for students with disabilities, about 70% of the respondents at both the high school and postsecondary levels agreed or strongly agreed. About 60% of the respondents reported that they had high school or postsecondary staff support for their computer hardware and software needs. A discrepancy is noted when comparing the scores regarding AT training at the high school and postsecondary levels. About 40% of the respondents agreed or strongly agreed that AT training was provided at their high school compared with about 60% at the postsecondary level. Between 38% to 52% of all respondents reported that they felt comfortable using AT software during their classes at both the high school and postsecondary levels. Accessibility of their school's web pages were reported lower at the high school level at 42% by the respondents and about 60% at the postsecondary level. Accessibility of course materials were scored no higher than 64% at both the secondary and postsecondary levels. Forty-five percent of the respondents reported that they were taught to use software that helped with writing compared to 60% at the postsecondary level. Forty percent or less of the respondents reported being taught to use AT software other than software used with writing at both the high school and postsecondary levels.

CHAPTER FIVE

Discussion

Is assistive technology (AT) playing as large of a role in helping students with mild disabilities in their transition from secondary to postsecondary education, and if not-why? This is the overarching question of this study. The number of students with mild disabilities in the United States' K-12 and postsecondary schools, which includes specific learning disabilities (LD), emotional/behavioral disorders (ED), and mild mental retardation (MR), has increased over the last two decades (NCES, 2011; U.S. Dept. of Ed., Office of Special Ed. Programs, 2011). When comparing the transition into adulthood of students with disabilities to their peers without disabilities, students with disabilities have lower high school graduation rates, postsecondary enrollment and completion rates, and employment status (Aud et al., 2012; Newman et al., 2011; Bureau of Labor Statistics, 2012). Similarly, statistics concerning American Indian and Alaskan Native (AI/AN) students with and without disabilities indicate that they will encounter educational and employment obstacles as they transition into adulthood. The use of AT with students with disabilities has been viewed by many professionals as an instructional approach that should be used in greater numbers. Rose, Hasselbring, Stahl, and Zabala (2005) advised that "the enormous power of such computer-based technologies to assist individuals with disabilities in overcoming barriers to educational access, participation, and progress is evident in the research base" (p. 507).`

The purpose of this study was to examine the assistive technology (AT) experiences and use among American Indian/Alaskan Native (AI/AN) postsecondary students with disabilities. Through the use of an online survey, AI/AN postsecondary students with disabilities were asked questions regarding their perceived experiences and actual use of AT at two points in time- high

school and in their current college or university. The AI/AN postsecondary students with disabilities who participated in this study reported that they use AT software minimally. Potential reasons for why this is so are offered subsequent to a summary of the survey results.

Summary of Results

Thirty-three percent of the respondents reported that their primary disability was a learning disability with physical disability (17%) and ADD.ADHD (14%) being the second and third most reported primary disabilities. All respondents were AI/AN enrolled in a American Indian college or university that is a member of the American Indian Higher Education Consortium (AIHEC). Out of the 42 respondents, 79% (n=33) reported that they were female and 21% male (n=9). The median age was 26.5 years. The majority of the respondents (n=15, 36%) reported that they were enrolled at Haskell Indian Nations University or Oglala Lakota College (n=14, 33%). Thirty-eight percent of the respondents reported that they were currently pursuing a 2-year college certificate/ diploma, 14% reported pursuing a 2-year university certificate/diploma, and 38% reported that they were pursuing a 4-year degree/diploma and four respondents (10%) selected the answer choice "other." The most frequently reported field of study for the respondents was American Indian/Alaskan Native Studies (n=8, 19%). Liberal Arts (n=7, 17%) and Social Sciences (n=7, 17%) were the second and third most frequently reported fields of study.

Comparison of high school and postsecondary AT experiences. The survey's 48 questions were collapsed into 4 constructs and 8 subscales (see Table 1). The four constructs were:

1. My high school AT experiences met my needs
2. Use of AT in high school

3. My university or college AT experiences meets my needs

4. Use of AT at my university or college

A comparison of the respondents with disabilities experiences in high school and at their college or university yields interesting data. The respondents reported that AT was slightly more available at their postsecondary institutions as compared to their high schools (see Table 11). Access to updated AT was essentially equal between high school (77%) and postsecondary (83%). When asked if the computers available to them included hardware and software for students with disabilities, 24% of the respondents agreed or strongly agreed, whereas a slightly larger percent (43%) reported that their college had computers with sufficient AT. For the two questions about staff support, a slightly larger percentage of respondents (62%) indicated postsecondary staff support than in high school (58%). Training for the use of AT seemed to be stronger at the postsecondary level, with 40% that agreed or strongly agreed in high school, compared to 62% who agreed or strongly agreed that AT training was being provided at their college or university. For questions regarding personal experiences and efficacy and accessibility of web and print, respondents were more likely to agree that their postsecondary experiences were more positive. For example, 52% reported that they felt more comfortable with AT in postsecondary than they did in high school (43%). Respondents also were more likely to agree (64%) that course materials were available in digital format than in high school (50%).

Comparison of high school and postsecondary AT use. There were very few differences between high school and postsecondary AT use (see Table 12). About 36 % of the respondents reported that they didn't use AT software with writing in high school and (19%) reported such use in postsecondary. When asked about their high school and postsecondary use

of screen magnification programs, screen readers, voice dictation software, adapted keyboards, adapted mouse, and their use of technology that they personally owned, 60% or more of the respondents reported that they never or rarely used this software or devices at the high school or postsecondary levels (see Tables 8 and 10). The results of four factual based questions regarding AT use are illustrated by Figures 1 and 2. The graphs visually depict the large percentage of respondents who said that they didn't use AT software at either the high school or postsecondary levels.

Specific conclusions. Survey results indicate that the students with disabilities of this study felt that their high school and postsecondary AT experiences met their needs. Close to 80% of the respondents agreed or strongly agreed about this. About 60% felt that their high school and postsecondary school's computers were sufficiently updated with AT. Around 60% reported that both their high school and their postsecondary schools had staff that supported them with their computer hardware and software needs. However, when asked specific questions about high school AT the respondent's answers were less positive. For example, when asked if training for the use of AT was provided in high school 40% agreed or strongly agreed compared to 62% at the postsecondary level. Questions regarding personal experiences and efficacy and accessibility of web and print had lower agreement. Fewer respondents (43%) agreed or strongly agreed that they felt comfortable using AT software in high school than when in postsecondary level (52%). Websites and course materials accessibility were very different between high school and postsecondary (42% vs. 57% comparing high school to postsecondary) for website accessibility and 50% vs. 64% for course materials. With the exception of software used with writing, for which at least 60% of the respondents reported using both in high school and

postsecondary levels, most respondents reported that they didn't use screen magnifiers, screen reading software, or voice dictation software at their high school or postsecondary institutions.

The results of the survey indicate that the large majority of the respondents feel that their high school and postsecondary AT experiences are meeting their needs. However, only around 40% reported using AT software during high school or at their postsecondary institution. Additionally, a large majority of the respondents reported that they never or rarely use AT software and hardware when they were in high school or at their present postsecondary institution.

The overarching question of why assistive technology (AT) has not played a large role in supporting students with mild disabilities in their transition from secondary to postsecondary education as one would it expect has three facets. First, many of the students with disabilities may not self-disclose that they have a mild disability at postsecondary level (Getzel & Thoma, 2008; Newman et al., 2011). Second, AT is not used very often at the secondary level, students with mild disabilities do not have experience with it when they enter postsecondary school (Kleiner & Farris, 2002; NLTS2, 2003; NLTS2, 2007; Marino, Marino, & Shaw, 2006; Bausch & Hasselbring, 2004; Parette & Peterson-Karlan, 2007) and therefore many of these students do not request AT as an accommodation (Newman et al., 2011). Third, there is the issue of equipment abandonment. Mull and Sitlington (2003) identified equipment abandonment as a barrier to the use of AT in postsecondary settings. One of the reasons given was that the equipment made the individual stand out in a group.

At the postsecondary level, the responsibility for arranging for accommodations and supports shifts from the school to the student. In addition, a student may elect to not self-disclose to their postsecondary institution that he or she has a disability (Getzel & Thoma, 2008).

From one report, the post-high school outcomes of young adults with disabilities up to 8 years after high school, Newman et al. (2011), reported that 63% of postsecondary students who were identified by their secondary schools as having a disability did not consider themselves as having a disability by the time they had transitioned to postsecondary school and did not disclose their disability to the postsecondary institution. An additional 9% considered themselves as having a disability but chose not to disclose it to their postsecondary schools. Out of the 28% of the postsecondary students who did self-disclose as having a disability, approximately 70% reported that they had received accommodations and supports from their postsecondary institution. However, among these accommodations, only 37% used technology aids, such as computer software designed for students with disabilities.

In a data file titled, Parent/Youth Survey, *Services for Youth in-Secondary School in the Last Year* (NLTS2, 2003) the NLTS reported limited use of AT when students are in high school. Between 2001 and 2003, 4.5% of all of the youth with disabilities in their study received assistive technology services during their last year of secondary schooling. In a subsequent survey conducted by the National Longitudinal Transition Study-2 Wave 4 (2007), Parent/Youth Survey, *Services for Youth in-Secondary School in the Last Year* this estimate increased to 5.7% for 2007 (NLTS2, 2007). However, the percentage of students with mild disabilities who received assistive technology services fell to 0% for students with learning disabilities and emotional disturbance and 4.6% for students with mental retardation (NLTS2, 2007).

At the postsecondary level, White, Wepner, and Wetzel (2003) surveyed representatives from a cross section of U.S. public and private universities and colleges about AT initiatives. The results of the survey indicated that, with rare exception, there were no set policies in place concerning AT use at most of the responding universities and colleges. Fichten et al., (2010)

surveyed over 1,300 students from Canadian universities and junior/community colleges and found that the most problematic area of concern was the access to training on how to use computer technologies. An additional problem was the availability computers with adaptive software in general use and specialized computer laboratories.

Many students with disabilities feel uncomfortable using AT around their peers. The stigma of being labeled as a special education student is not forgotten as they graduate from high school and enters postsecondary school. The attrition of the number of students who self-identify as having a disability or request accommodations at the postsecondary level attest to this (Mull and Sitlington, 2003; Parette et al., 2005; Newman et al., 2011). Mull and Sitlington (2003) identified equipment abandonment as a barrier to the general use of technological accommodations by students at both the secondary and postsecondary levels. They found that nearly 1/3 of all purchased AT devices were abandoned by students. One of the reasons given for this abandonment was that the equipment made the individual stand out in a group. This was because a student may have the perception that using certain AT devices would not allow social acceptance by his or her peers. Additionally, only 52% of the students with disabilities of this study reported feeling comfortable using AT during their classes at the postsecondary level.

Limitations

Every study has limitations. This was what Barzun and Graff (1992) had in mind when they wrote that "facts rarely occur pure, free from interpretation or ideas" (p. 134). A limitation of this study is the number of respondents to the survey. The survey was descriptive in nature and reflect a small sample of postsecondary students with disabilities who are AI/AN. However,

given the extremely limited research related to postsecondary AI/AN students with disabilities, this study sheds light on an unknown issue.

The use of an online survey has potential disadvantages. These include the inability to control for participants' range of reading ability and computer knowledge needed to complete the survey. The survey questions were adapted from a previously published survey with a reported reliability and validity. However, further clarification of survey questions would have provided more reliable data. For example, respondents were asked if they and used technology that they personally owned and required that they specify the software. Only four respondents attempted to answer this question. In general, the respondents did not specify the AT software, but wrote that they used their "laptop", "N/A", or "to take notes and keep track of my homework." In addition, there was a large discrepancy between AT use with writing and that of all other AT software (see Figures 1 & 2). Further questions regarding the particular types of AT software used with writing would have been informative and provided valuable data.

An important limitation of a descriptive study is that it is not recognized as being appropriate for drawing conclusions about causal inferences. According to Grimes and Schulz (2002), a "dangerous pitfall" (p. 147) with using data obtained through the descriptive study method is that associations between causes and effects might be unclear. The intention of this study was not to draw causal inferences, but to better understand AT use among AI/AN students with mild disabilities in postsecondary settings.

Implications and Future Research

The literature supports my personal observations as a postsecondary disability service provider that the use of AT at the high school and postsecondary levels is minimal for students with mild disabilities, although its potential for helping students is high (Rose et al., 2005;

Morrison, 2007; Martinez-Marrero & Estrada-Hernández, 2008; King-Sears et al., 2011) . AT software is seldom requested by students with disabilities as an accommodation at the postsecondary level (Kleiner & Farris, 2002; NLTS2 wave 2, 2003; NLTS2 wave 4, 2007). It is logical to think that if a student has not been offered the training or use of AT at the high school level it is not likely they will use it when they enter postsecondary education. When the Individuals with Disabilities Education Improvement Act of 2004 (IDEIA) became effective there was a heightened emphasis placed on the inclusion of students with disabilities in the general curriculum. AT was seen as a necessary consideration to ensure a free appropriate public education (FAPE) and to promote education in the least restrictive environment (Bausch, Stegall, Chung, Ault, & Behrmann, 2009). However, most school districts have failed to implement systemic screening processes to identify students who could benefit from assistive technology (Edyburn, 2009; Jones & Hinesmon-Matthews, 2014). Further, Edyburn wrote that that only 3-5% of students with disabilities have assistive technology written on the IEP (p. 15). Additionally, Mull and Sitlington (2003) found that nearly one-third of all purchased AT devices were abandoned by students.

The overarching question of this study asks why AT is not playing as large of a role in supporting students with mild disabilities in their transition from secondary to postsecondary education as one would it expect it to? Given the large percentage of students who do not self-disclose their disability at the postsecondary level, combined with the limited AT use in high school, and the emotional concerns of being perceived by as being in special education it is not surprising that students have cause to reject the use of AT (Kleiner & Farris, 2002; Mull & Sitlington, 2003; NLTS2, wave 2, 2003; NLTS2, wave 4, 2007; Bausch & Hasselbring, 2004; Marino et al., 2006; Parette & Peterson-Karlan, 2007; Getzel & Thoma, 2008; Newman et al.,

2011). In order to overcome these obstacles to AT use a paradigm shift regarding the use of AT

will need to occur. The use of universal design for learning at the primary, secondary, and

postsecondary levels, especially with regard, to AT use, would most likely increase AT use at the

postsecondary level (Messinger-Willman & Marino, 2010; Rose et al., 2005). If all students,

with or without a disability, have experiences with technology to support learning, beginning in

elementary school, it would be more likely that AT use would continue into postsecondary

settings. Additionally, if all students have had experience in its use, it would be more likely that

students with mild disabilities would feel comfortable using AT and not abandon its use.

Due to the fact that American Indian/Alaskan Native (AI/AN) students comprise a small

percentage of the total population of postsecondary students in the U.S. (Ogunwole, 2006), there

is a paucity of research available concerning them. Research about AI/AN students with

disabilities is even less prevalent. There is a need for future research regarding AI/AN with

disabilities in order to fill this void. The number of computers and the use of technology in

schools at all levels has been increasing rapidly in the field of education including among

institutions that serve American Indian/Alaskan Native (AI/AN) students. Therefore, future

research involving technology use with AI/AN students with disabilities promises to be more

obtainable for future researchers.

Conclusion

Few studies have been published concerning AI/AN students, and even fewer concerning

those with disabilities and their AT use. However, research reported over the last three decades

concerning the transition into adulthood for AI/AN students indicate the difficulty and obstacles

these students encounter. The use of AT or classroom technology with students with mild

disabilities has been viewed by many professionals as an instructional approach that should be

used in greater numbers, However, my review of the literature indicate that AT use is negligible. The overarching question this study was aiming to answer is "Why isn't AT used more extensively by AI/AN students with mild disabilities in postsecondary education?" In order to answer this question, this descriptive study examined the AT use of AI/AN postsecondary students with disabilities. Survey results indicated that the large majority of the respondents were satisfied that their AT experiences were met in high school and are meeting their current postsecondary needs. Additionally, a large majority of the respondents reported that they never or rarely use AT software and hardware when they were in high school or at their present postsecondary institution. It would seem from both past research and the results of this study that because a large percentage of student do not self-disclose that they have a mild disability at the postsecondary level, combined with little experience in the use of AT, and adding the emotional concerns of being perceived by their peers as being different may cause many to reject the use of AT.

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Table 1

*AT Survey of NA Students with Disabilities in Postsecondary Education
Constructs and Subscales*

Construct	Survey Section	Subscale	Questions
N/A	I. Demographics	N/A	1, 2, 3, 4, 5, 6, 7, 8, 9
Construct 1: My high school AT experiences met my needs	II. High School AT Experiences	<u>Perception & Attitudes</u> 1. How well did my H.S. AT experiences meet my needs?	10, 11, 14, 17
		<u>Factual Based Questions</u> 2. How well did my high school AT needs get met?	12, 13, 15, 16, 18, 19, 20, 21, 22
Construct 2: Use of AT in high school	III. High School AT Use	<u>Perception & Attitudes</u> 3. Level of accessibility of AT hardware or software used in high school.	23, 24, 25, 26, 27, 28, 29, 36, 38
		<u>Factual Based Questions</u> 4. At hardware or software used in high school.	30, 31, 32, 33
Construct 3: My university or college AT experiences meets my needs	IV. Postsecondary AT Experiences	<u>Perception & Attitudes</u> 5. How well has my postsecondary institution met my AT needs?	34, 35, 38, 41
		<u>Factual Based Questions</u> 6. How well has my postsecondary AT needs been met?	36, 37, 39, 40, 42, 43, 44, 45, 46,
Construct 4: Use of AT at my university or college	V. Postsecondary AT Use	<u>Perception & Attitudes</u> 7. Level of accessibility of AT hardware or software used at my postsecondary institution.	47, 48, 49, 50, 51, 52, 53,
		<u>Factual Based Questions</u> 8. AT hardware or software used at my postsecondary institution.	54, 55, 56, 57

Table 2

Demographics

American Indian/Alaskan Native	Sex	Age
(n=42) 100%	Female (n=33) 79%	18 years or older (n=42) 100%
	Male (n= 9) 21%	Mean- 30.6 years
		Median- 26.5 years
		Mode- 18 years

Note. All participants were American Indian/Alaskan Native and 18 years of age or older.

Table 3

Number of Participants by TCUs

Name of College or University	Number of Participants	Percent of Participants
Haskell Indian Nations University, Lawrence, KS	15	36%
Oglala Lakota College, Kyle, SD	14	33%
Nebraska Indian CC, Macy, NE	4	9.5%
Illisagvik College, Barrow, AK	4	9.5%
Southwestern Indian Polytechnic Institute, Albuquerque, NM	3	7%
Navajo Technical College, Crownpoint, NM	2	5%

Note. Fifteen institutions agreed to participate in the study. Survey responses were collected from six of these institutions.

Table 4

Field of Study/Discipline

Study/Discipline	Number of Responses	Percent of Responses
American Indian/Alaskan Native Studies	8	19%
Business	7	17%
Social Sciences	7	17%
Liberal Arts	6	14%
Social Work	5	12%
Natural Sciences	3	7%
Not sure	3	7%
Information Technology	2	5%
Vocational- Automotive Mechanics	1	2%

Table 5

Primary Disability

Disability Category	Number of Responses	Percent of Responses
Learning Disability	14	33%
Physical Disability	7	17%
ADD/ADHD	6	14%
Health Impairment	6	14%
Psychological/Psychiatric Disability	6	14%
Visual Impairment	4	10%
Speech or Language Impairment	2	5%
Deaf/Hearing Impairment	1	2%
Blind	0	0%

Table 6

Secondary Disability

Disability Category	Number of Responses	Percent of Responses
Psychological/Psychiatric Disability	6	14%
Learning Disability	3	7%
Deaf/Hearing Impairment	2	5%
ADD/ADHD	2	5%
Physical Disability	2	5%
Visual Impairment	1	2%
Speech/Language Impairment	1	2%
Health Impairment	0	0%
Blind	0	0%
I do not have a secondary disability	26	62%

Table 7

High School AT Experiences

Question	No. of Responses	$\bar{X}$	Strongly Disagree- Disagree (1-2 pts.)	Neither Agree Nor Disagree (3 pts.)	Agree- Strongly Agree (4-5 pts.)
10. Access to computers at my high school met my needs	35	3.80	17%	6%	77%
11. At my high school, computers were sufficiently updated with AT (e.g., grammar check, adaptive mouse, screen reader, speech-to-text software)	33	3.52	27%	12%	61%
12. Computer labs in my high school included specialized or adapted computers for students with disabilities	33	2.58	49%	27%	24%
13. In my high school I could check-out a computer with AT software (e.g., Read and Write, OpenBook, and Dragon Naturally Speaking)	32	2.59	53%	22%	25%
14. When I approached staff at my high school about computer accessibility they acted quickly to resolve my issues (e.g. cannot see the PowerPoint presentation, cannot hear a video clip, need a grammar checker to write an essay)	31	3.26	32%	10%	58%
15. There was at least one person on staff at my high school who had expertise in AT hardware and software (e.g., software that reads what is on the screen)	32	3.56	19%	19%	62%
16. Training was provided to me on how to use the AT software in high school	30	2.93	40%	20%	40%
17. I felt comfortable using accessible software and AT during classes	30	3.10	33%	23%	43%
18. In high school I owned my own desktop or laptop computer that had AT installed in it	30	2.23	63%	23%	13%
19. My high school's web pages were accessible (e.g., could be read with a screen reader, provided text descriptions of images)	31	3.23	23%	35%	42%
20. The course materials and readings in high school were available in a digital format that was accessible to me via a computer (e.g., Word, PDF, MP3)	32	3.16	37%	13%	50%
21. I used State Rehabilitative Services to purchase computer hardware and/or software while in high school	26	2.19	69%	12%	19%
22. I used Tribal Rehabilitative Services to purchase computer hardware and/or software while in high school	26	2.08	73%	15%	12%

Note. In order to determine an average score for each question the responses were assigned a value (i.e., strongly disagree= 1, disagree= 2, neither agree nor disagree= 3, agree= 4, and strongly agree= 5).

Table 8

High School AT Use

Question	No. of Responses	$\bar{X}$	Never (0)	I Rarely Used This (1)	Sometimes (2)	About Half the Time (3)	Most of the Time (4)	All of the Time (5)
23. In high school I used software that helped with Writing (e.g., Inspiration, Read and Write, Microsoft Word's spell check & grammar check)	42	2.02	36%	5%	16%	12%	26%	5%
24. In high school I used software that magnified what was on the screen	42	1.31	47%	17%	12%	12%	5%	7%
25. In high school I used software that read what was on the screen (e.g., Read and Write, Read Please, OpenBook)	42	0.95	62%	10%	14%	2%	10%	2%
26. In high school I used voice dictation software (e.g. Dragon Naturally Speaking, Read and Write, Microsoft Word's dictation feature	42	0.90	71%	2%	10%	2%	10%	5%
27. In high school I used an adapted keyboard	42	0.95	69%	7%	2%	7%	10%	5%
28. In high school I used an adapted mouse	42	1.00	69%	5%	5%	5%	12%	5%
29. In high school I used technology I personally owned- (please specify the software and indicate amount of usage on the scale below)	42	1.14	64%	5%	7%	7%	10%	7%

Note. In order to determine an average score for each question the responses were assigned a value (i.e., Never= 0, I rarely used this= 1, sometimes= 2, about half the time= 3, most of the time= 4, and all of the time= 5).

Table 9

Postsecondary AT Experiences

Question	No. of Responses	$\bar{X}$	Strongly Disagree- Disagree (1-2 pts.)	Neither Agree Nor Disagree (3 pts.)	Agree- Strongly Agree (4-5 pts.)
34. Access to computers at my university or college meets my needs.	42	4.21	7%	7%	83%
35. At my university or college, computers are sufficiently updated with AT (e.g., grammar check, adaptive mouse, screen reader, speech-to-text software)	42	3.98	12%	17%	64%
36. Computer labs at my university or college includes specialized or adapted computers for students with disabilities	42	3.67	26%	33%	43%
37. I am able to sign-out computer s or AT through the disability services program (e.g., Read and Write, OpenBook, and Dragon Naturally Speaking)	42	3.26	26%	38%	26%
38. When I approached staff at my university or college about computer accessibility they acted quickly to resolve my issues (e.g. cannot see the PowerPoint presentation, cannot hear a video clip, need a grammar checker to write an essay)	42	4.02	12%	14%	62%
39. There is at least one person on staff who has expertise in AT hardware and software (e.g., software that reads what is on the screen)	42	4.26	5%	57%	36%
40. Training is available to me on how to use the computers in my university or college	42	4.17	1%	26%	62%
41. I feel comfortable using accessible software and AT during classes	42	4.05	7%	29%	52%
42. I own my own desktop or laptop computer that has AT installed in it	42	3.43	26%	26%	38%
43. My university or college's web pages are accessible (e.g., can be read with a screen reader, provides text descriptions of images)	42	3.86	12%	24%	57%
44. The course materials and readings are available in a digital format that is accessible to me via a computer (e.g., Word, PDF, MP3)	42	3.95	14%	12%	64%
45. I have used State Rehabilitative Services to purchase computer technology for use at my university or college	42	3.38	48%	12%	12%
46. I have used Tribal Rehabilitative Services to purchase computer technology at my university or college	42	3.38	45%	14%	12%

Note. In order to determine an average score for each question the responses were assigned a value (i.e., strongly disagree= 1, disagree= 2, neither agree nor disagree= 3, agree= 4, and strongly agree= 5).

Table 10

Postsecondary AT Use

Question	No. of Responses	$\bar{X}$	Never (0)	I Rarely Used This (1)	Sometimes (2)	About Half the Time (3)	Most of the Time (4)	All of the Time (5)
47. At my college or university I use software that helps with writing (e.g., Inspiration, Red and Write, Microsoft Word's spell check & grammar check)	42	2.71	19%	4%	24%	12%	19%	21%
48. I effectively use software that magnifies what is on the screen	42	1.33	40%	21%	14%	14%	7%	2%
49. I effectively use software that reads what is on the screen (e.g., Read and Write, Read Please, OpenBook)	42	1.26	50%	10%	14%	2%	10%	2%
50. I use voice dictation software (e.g., Dragon Naturally Speaking, Read and Write, Read Please, OpenBook)	42	0.76	62%	17%	7%	12%	2%	0%
51. At my college or university I use an adapted keyboard	39	1.13	59%	8%	10%	13%	5%	5%
52. At my college or university I use an adapted mouse	39	1.03	64%	8%	5%	13%	5%	5%
53. I use technology that I personally own- (please specify the software and indicate amount of usage on the scale below)	42	1.36	57%	5%	12%	5%	15%	7%

Note. In order to determine an average score for each question the responses were assigned a value (i.e., Never= 0, I rarely used this=1, sometimes= 2, about half the time= 3, most of the time= 4, and all of the time= 5).

Table 11

Comparisons Among High School and Postsecondary AT Experiences and Use

Question	High School No. of Responses	High School $\bar{X}$	Postsecondary Education No. of Responses	Postsecondary Education $\bar{X}$	Change in $\bar{X}$
10. Access to computers at my high school met my needs	35	3.80	42	4.21	+0.41
11. At my high school, computers were sufficiently updated with AT (e.g., grammar check, adaptive mouse, screen reader, speech-to-text software)	33	3.52	42	3.98	+0.46
12. Computer labs in my high school included specialized or adapted computers for students with disabilities	33	2.58	42	3.67	+1.09
13. In my high school I could check-out a computer with AT software (e.g., Read and Write, OpenBook, and Dragon Naturally Speaking)	32	2.59	42	3.26	+0.67
14. When I approached staff at my high school about computer accessibility they acted quickly to resolve my issues (e.g. cannot see the PowerPoint presentation, cannot hear a video clip, need a grammar checker to write an essay)	31	3.26	42	4.02	+0.76
15. There was at least one person on staff at my high school who had expertise in AT hardware and software (e.g., software that reads what is on the screen)	32	3.56	42	4.26	+0.70
16. Training was provided to me on how to use the AT software in high school	30	2.93	42	4.17	+1.24
17. I felt comfortable using accessible software and AT during classes	30	3.10	42	4.05	+0.95
18. In high school I owned my own desktop or laptop computer that had AT installed in it	30	2.23	42	3.43	+1.2
19. My high school's web pages were accessible (e.g., could be read with a screen reader, provided text descriptions of images)	31	3.23	42	3.86	+0.63
20. The course materials and readings in high school were available in a digital format that was accessible to me via a computer (e.g., Word, PDF, MP3)	32	3.16	42	3.95	+0.79
21. I used State Rehabilitative Services to purchase computer hardware and/or software while in high school	26	2.19	42	3.38	+1.19
22. I used Tribal Rehabilitative Services to purchase computer hardware and/or software while in high school	26	2.08	42	3.38	+1.30

Note. Survey questions for high school and postsecondary education mirror each other. Table 11 only shows the high school questions. See Table 9 for the postsecondary questions which Table 11 refers to.
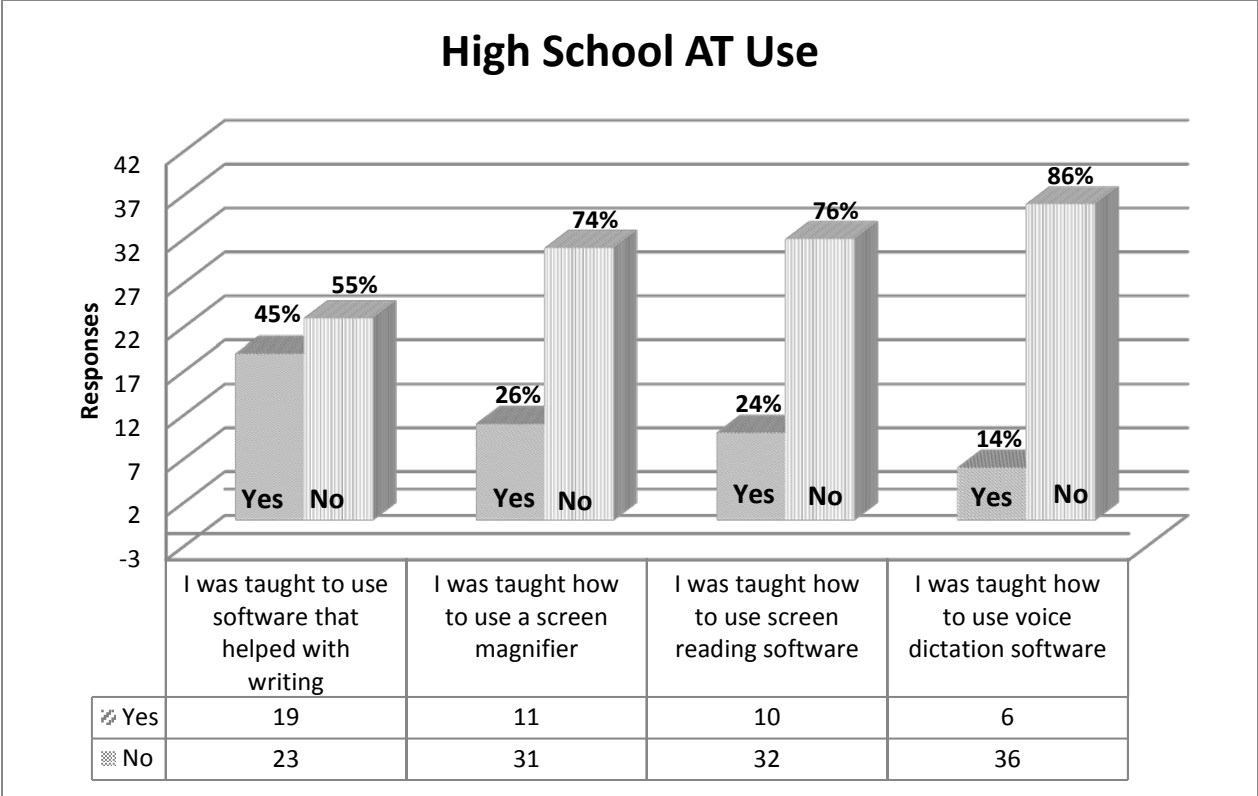
Table 11 (continued)

Comparisons Among High School and Postsecondary AT Experiences and Use

Question	High School No. of Responses	High School $\bar{X}$	Postsecondary Education No. of Responses	Postsecondary Education $\bar{X}$	Change in $\bar{X}$
23. In high school I used software that helped with Writing (e.g., Inspiration, Read and Write, Microsoft Word's spell check & grammar check)	42	2.02	42	2.71	+0.69
24. In high school I used software that magnified what was on the screen	42	1.31	42	1.33	+0.02
25. In high school I used software that read what was on the screen (e.g., Read and Write, Read Please, OpenBook)	42	0.95	42	1.26	+0.31
26. In high school I used voice dictation software (e.g. Dragon Naturally Speaking, Read and Write, Microsoft Word's dictation feature	42	0.90	42	0.76	-0.14
27. In high school I used an adapted keyboard	42	0.95	39	1.13	+0.18
28. In high school I used an adapted mouse	42	1.00	39	1.03	+0.03
29. In high school I used technology I personally owned- (please specify the software and indicate amount of usage on the scale below)	42	1.14	42	1.36	+0.22

Note. Survey questions for high school and postsecondary education mirror each other. Table 12 only shows the high school questions. See Table 10 for the postsecondary questions which Table 12 refers to.

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High School AT Use

	I was taught to use software that helped with writing	I was taught how to use a screen magnifier	I was taught how to use screen reading software	I was taught how to use voice dictation software
Yes	19	11	10	6
No	23	31	32	36

Chart values (Responses axis, percentages above bars):
- I was taught to use software that helped with writing: Yes 45%, No 55%
- I was taught how to use a screen magnifier: Yes 26%, No 74%
- I was taught how to use screen reading software: Yes 24%, No 76%
- I was taught how to use voice dictation software: Yes 14%, No 86%

Figure 1. High School AT Use. This figure illustrates the responses of four factual based questions regarding the respondent's AT use.

Postsecondary AT Use

	I was taught how to use software that helps with writing	I was taught how to use a screen magnifier	I was taught how to use screen reading software	I was taught how to use voice dictation software
yes	25	15	13	12
No	17	27	29	30
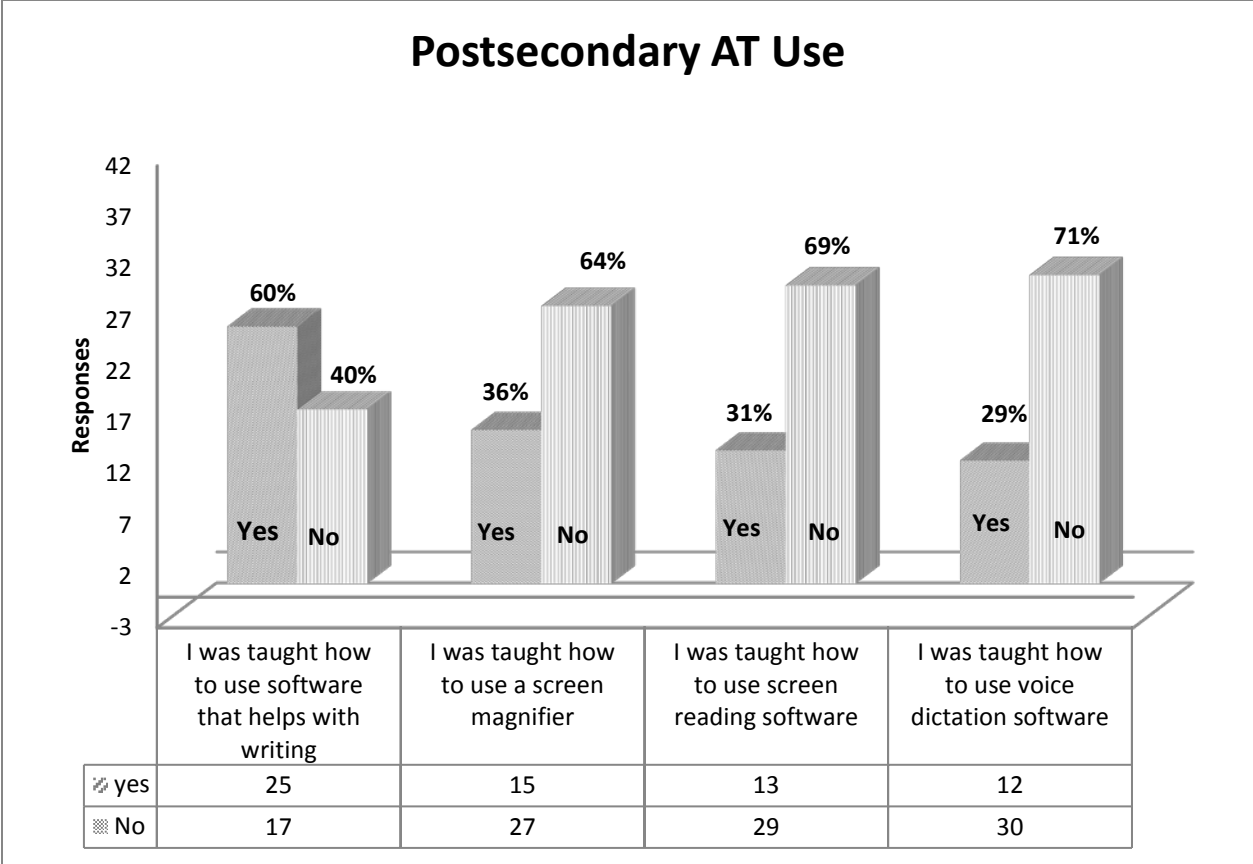
Figure 2. Postsecondary AT Use. This figure illustrates the responses of four factual based questions regarding the respondent's AT use.

Appendix List

Appendix A

Human Subjects Committee Lawrence Campus Approval Letter

4/26/2013
HSCL #20765

Perry Graves
1005 New Jersey St.
Lawrence, KS 66044

The Human Subjects Committee Lawrence Campus (HSCL) has received your response to its expedited review of your research project

20765 Graves/Morningstar (SPED) AT Survey of Native American Students with Mild Disabilities in Postsecondary Education

and approved this project under the expedited procedure provided in 45 CFR 46.110 (f) (7) Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies. As described, the project complies with all the requirements and policies established by the University for protection of human subjects in research. Unless renewed, approval lapses one year after approval date.

The Office for Human Research Protections requires that your consent form must include the note of HSCL approval and expiration date, which has been entered on the consent form(s) sent back to you with this approval.

1. At designated intervals until the project is completed, a Project Status Report must be returned to the HSCL office.
2. Any significant change in the experimental procedure as described should be reviewed by this Committee prior to altering the project.
3. Notify HSCL about any new investigators not named in original application. Note that new investigators must take the online tutorial at https://rgs.drupal.ku.edu/human_subjects_compliance_training.
4. Any injury to a subject because of the research procedure must be reported to the Committee immediately.
5. When signed consent documents are required, the primary investigator must retain the signed consent documents for at least three years past completion of the research activity. If you use a signed consent form, provide a copy of the consent form to subjects at the time of consent.
6. If this is a funded project, keep a copy of this approval letter with your proposal/grant file.

Please inform HSCL when this project is terminated. You must also provide HSCL with an annual status report to maintain HSCL approval. Unless renewed, approval lapses one year after approval date. If your project receives funding which requests an annual update approval, you must request this from HSCL one month prior to the annual update. Thanks for your cooperation. If you have any questions, please contact me.

Sincerely,

Christopher Griffith, J.D.
Assistant Coordinator
Human Subjects Committee- Lawrence

cc: Mary Morningstar

Human Subjects Committee Lawrence
Youngberg Hall | 2385 Irving Hill Road | Lawrence, KS 66045 | (785) 864-7429 | HSCL@ku.edu | research.ku.edu

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Appendix B

Recruitment Flyer

Are you Native American or Alaskan Native, have a disability, and 18 years of age or older?

Yes!

Help research by sharing your experiences with assistive technology in high school and college

Join my online survey

- This study is designed to research the assistive technology (AT) use of American Indian/Alaskan Native (AI/AN) postsecondary students with mild disabilities

- Native American/Alaskan Natives with a disability, aged 18 year or more, and enrolled in a Tribal College or University (TCU) are eligible to participate

- Help increase the amount of research that is available about NA/AN education

The online survey may be accessed by: Your college's disability service provider will send you an email giving a link to the survey.

Want more info? Contact:

Send a message

Perry Graves
pgraves5@ku.edu
(785) 832-6607

Mary E. Morningstar, Ph.D
mmoringstar@ku.edu
(785) 864-0682

University of Kansas

Appendix C

1st Recruitment Email

Dear Student,

You have been identified as a key person to be a participant in an online survey I am conducting as part of my doctoral studies at the University of Kansas. The purpose of the survey is to research the assistive technology (AT) use of American Indian/Alaskan Native (AI/AN) postsecondary students with mild disabilities enrolled in U.S. tribal colleges and universities (TCU) which are listed as members with the American Indian Higher Education Consortium (AIHEC).

I am seeking your feedback about your computer technology experiences and concerns and the types of AT services that were offered to you while in high school and the Native American/ Alaskan Native university or college in which you are enrolled.

Below is a link to the online survey. Your responses will be kept completely confidential. No personal-identifiable information will be asked for or collected. The survey is web-based and utilizes the Qualtrics software which is offered through the University of Kansas. The survey is user-friendly and consists of 55 questions total you should be able to complete it within 15-20 minutes or less.

I appreciate your willingness to participate and value your feedback. Please remember that your feedback helps! My hope is that this process will help add to the availability of Native American/Alaskan Native research.

If you have any questions, please feel free to contact me. In order to recruit as many participants as possible I'll be asking that the recruiter at your institution sends out at least three requests for students to take the survey. Please only take the survey once.

To begin, please click-on the survey URL below:

Survey URL:
https://kansasedu.qualtrics.com/SE/?SID=SV_4HDQJF2IXBZ5Rgp&Preview=Survey&BrandID=kansasedu

Thank you for your participation
Perry Graves
(785) 832-6607
pgraves@haskell.edu
University of Kansas

Appendix D

1st Reminder Recruitment Email

Dear Student,

You were sent an online survey I am conducting as part of my doctoral studies at the University of Kansas. The purpose of the survey is to research the assistive technology (AT) use of American Indian/Alaskan Native (AI/AN) postsecondary students with mild disabilities enrolled in U.S. tribal colleges and universities (TCU) which are listed as members with the American Indian Higher Education Consortium (AIHEC).

I am seeking your feedback about your computer technology experiences and concerns and the types of AT services that were offered to you while in high school and the Native American/ Alaskan Native university or college in which you are enrolled.

Below is a link to the online survey. Your responses will be kept completely confidential. No personal-identifiable information will be asked for or collected. The survey is web-based and utilizes the Qualtrics software which is offered through the University of Kansas. The survey is user-friendly and consists of 55 questions total you should be able to complete it within 15-20 minutes or less.

I appreciate your willingness to participate and value your feedback. Please remember that your feedback helps! My hope is that this process will help add to the availability of Native American/Alaskan Native research.

If you have any questions, please feel free to contact me. In order to recruit as many participants as possible I'll be asking that the recruiter at your institution sends out at least three requests for students to take the survey. Please only take the survey once.

To begin, please click on the survey URL below:

Survey URL:
https://kansasedu.qualtrics.com/SE/?SID=SV_4HDQJF2IXBZ5Rgp&Preview=Survey&BrandID=kansasedu

Thank you for your participation
Perry Graves
(785) 832-6607
pgraves@haskell.edu
University of Kansas

Appendix E

On-line Consent Form (first page of survey)

**AT Survey of Native American Students with Mild Disabilities
in Postsecondary Education Informed Consent Form**

Eligibility Requirements
The eligibility requirements for this study necessitate that participants are 18 years or older, American Indian or Alaskan Native, have a disability, and are currently enrolled in an U.S. tribal college or university (TCU) which is listed as a member with the American Indian Higher Education Consortium (AIHEC).

Purpose of the Study:
The purpose of this study is to better understand:
1.   The computer technology experiences and concerns of American Indian/Alaskan Native students with mild disabilities enrolled in Native American university and colleges.
2.   What types of AT services were offered to the students while in high school and the Native American university or college in which they are currently enrolled.

What will be done:
You will complete a survey, which will take 15-20 minutes or less to complete. The survey includes questions about your high school and college assistive technology use and experiences.

Benefits of this Study:
You will be contributing to research that will provide practicable and pertinent information to not only the disability service providers at tribal university and colleges, but to the postsecondary community as a whole.

Risks or discomforts:
No risks or discomforts are anticipated from taking part in this study. If you feel uncomfortable with a question, you can skip that question or withdraw from the study altogether. If you decide to quit at any time before you have finished the questionnaire, your answers will NOT be recorded.

Confidentiality:
Your responses will be kept completely confidential. We will not ask for any personal identifiable information. We will NOT know your IP address when you respond to the Internet survey. Only the researchers will have access to your individual survey responses. It is possible, however, with internet communications, that through intent or accident someone other than the intended recipient may see your response.

Decision to quit at any time:
Your participation is voluntary; you are free to withdraw your participation from this study at any time. If you do not want to continue, you can simply leave this website. If you do not click on the "submit" button at the end of the survey, your answers and participation will not be recorded. Your relationship with the University of Kansas or your own institution will in no way be affected by your decision on whether or not to participate.

How the findings will be used:
The results of the study will be used for scholarly purposes only. The results from the study will be presented in educational settings and possibly at professional conferences. The results might also be published in a professional journal in the field of special or postsecondary education.

Contact information:
If you have concerns or questions about this study, please contact Perry Graves at (785) 832-6607 or pgraves5@ku.edu or Dr. Mary E. Morningstar at 785-864-0682 or mmorningstar@ku.edu. If you have any questions about your rights as a participant in this study or any concerns or complaints, please contact the University of Kansas Human Subjects Committee Lawrence (HSCL) at 785-864-7429 or irb@ku.edu

By beginning the survey, you acknowledge that you are at least 18 years of age or older, have read this information and agree to participate in this research, with the knowledge that you are free to withdraw your participation at any time without penalty.

Approved by the Human Subjects Committee University of
Kansas, Lawrence Campus (HSCL). Approval expires one
year from 4/26/2013   HSCL # 20765

Appendix F

**AT Survey of Native American Students with Mild Disabilities
in Postsecondary Education**

Sex (select one)

_____

Are you 18 or older?
- ○ Yes
- ○ No

_____

How old are you?

_____

Are you Native American or Alaskan Native? (select one)

_____

What is the name of the post-secondary institution where you study?

_____

What degree or certificate are you currently pursuing? (select one)

- ○ 2-Year College certificate/diploma   ○ 4-University degree/diploma
- ○ 2-Year University certificate/diploma   ○ Other (specify)

What is your field of study/discipline?

_____

What is your primary disability?
- ☐ Blind
- ☐ Visual impairment
- ☐ Deaf/Hearing impairment
- ☐ Speech or language impairment
- ☐ Learning disability
- ☐ ADD/ADHD
- ☐ Physical disability
- ☐ Health impairment
- ☐ Psychological/psychiatric disability

Do you have secondary disabilities? Please check all that apply

- ☐ Blind
- ☐ Visual Impairment
- ☐ Deaf/Hearing Impairment
- ☐ Speech or language impairment
- ☐ Learning disability
- ☐ ADD/ADHD
- ☐ Physical disability
- ☐ Health Impairment
- ☐ Psychological/psychiatric disability
- ☐ I do not have a secondary disability

Section 2 High School Assistive Technology (AT) Experiences

Definition of AT use: For the purpose of this study, AT use refers to the use of computer technology used by individuals with disabilities in order to perform functions that might otherwise be difficult. AT includes hardware, software, and peripherals that assist people with disabilities in accessing computers and increases, maintains, or improves the functional capabilities of individuals with disabilities (e.g., keyboards with large letters, software that reads what is on the screen, or an adaptive mouse).

In this section, rate your level of agreement with each statement using the following scale:

Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree	Not Applicable

Do not spend too much time on any one statement. Simply give the answer which best describes the general situation. Answer all items. If an item is not applicable to you, respond with not applicable.

High School AT Experiences

Instructions: Please rate these statements thinking about when you were in high school. We are interested in your assistive technology (AT) experiences in high school.

Please note: In order to turn off background color after choosing an answer try clicking the left mouse button outside of the survey area.

	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly agree	[N/A] Not Applicable
Access to computers at my high school met my needs	○	○	○	○	○	○
At my high school, computers were sufficiently updated with AT (e.g., grammar check, adaptive mouse, screen reader, speech-to-text software)	☐	☐	☐	☐	☐	☐
Computer labs in my high school included specialized or adapted computers for students with disabilities	○	○	○	○	○	○
In my high school I could check-out a computer with AT software (e.g., Read and Write, OpenBook, and Dragon Naturally Speaking)	☐	☐	☐	☐	☐	☐
When I approached staff at my high school about computer accessibility they acted quickly to resolve my issues (e.g., cannot see the PowerPoint presentations, cannot hear a video clip, need a grammar checker to write an essay)	○	○	○	○	○	○

	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly agree	[N/A] Not Applicable
There was at least one person on staff at my high school who had expertise in AT hardware and software (e.g., software that reads what is on the screen)	○	○	○	○	○	○
Training was provided to me on how to use the AT software in high school	☐	☐	☐	☐	☐	☐
I felt comfortable using accessible software and AT during classes	○	○	○	○	○	○
In high school I owned my own desktop or laptop computer that had AT on it	☐	☐	☐	☐	☐	☐
My high school's web pages were accessible (e.g., could be read with a screen reader, provided text descriptions of images)	○	○	○	○	○	○

	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly agree	[N/A] Not Applicable
The course materials and readings in high school were available in a digital format that was accessible to me via a computer (e.g., Word, PDF, MP3)	○	○	○	○	○	○
I used State Rehabilitative Services to purchase computer hardware and/or software while in high school	☐	☐	☐	☐	☐	☐
I used Tribal Rehabilitative Services to purchase computer						

Section 3 High School Assistive Technology (AT) Use

Considering your experiences, rate your high school AT use.

Never	I rarely used this	Sometimes	About half of the time	I used this most of the time	I used this all of the time

Do not spend too much time on any one statement. Simply give the answer which best describes the general situation. Answer all items. If you have not used an item respond with I did not use the technology.

<u>High School AT Use</u>

Instructions: Please rate these statements thinking about when you were in high school. We are interested in your assistive technology (AT) use in high school.

Please note: In order to turn off background color after choosing an answer try clicking the left mouse button outside of the survey area

	Never	I rarely used this	Sometimes	About half the time	I used this most of the time	I used this all of the time
In high school I used software that helped with writing (e.g., Inspiration, Read and Write, Microsoft Word's spell check and grammar check)	○	○	○	○	○	○
In high school I used software that magnified what was on the screen	☐	☐	☐	☐	☐	☐
In high school I used software that read what was on the screen (e.g., Read and Write, Read Please, OpenBook)	○	○	○	○	○	○
In high school I used voice dictation software (e.g., Dragon Naturally Speaking, Read and Write, Microsoft Word's dictation feature)	☐	☐	☐	☐	☐	☐
In high school I used an adapted keyboard	○	○	○	○	○	○
In high school I used an adapted mouse	☐	☐	☐	☐	☐	☐
In high school I used technology I personally owned (please specify below and indicate amount of usage on scale to the right)	○	○	○	○	○	○

<u>High school AT Use</u>

Instructions: Please rate these statements thinking about when you were in high school. We are interested in your assistive technology (AT) experiences in high school.

In high school, I was taught how to use software that helped with writing (e.g Inspiration, Read and Write, Microsoft Word's spell check & grammar check)

In high school, I was taught how to use software that magnified what was on the screen

In high school, I was taught how to use software that read what was on the screen (e.g., Read and Write, Read Please, OpenBook)

In high school, I was taught how to use voice dictation software (e.g., Dragon Naturally Speaking, Read and Write, Microsoft Word's dictation feature)

Section 4 Postsecondary Assistive Technology (AT) Experiences

Definition of AT use: For the purpses of this study, AT use refers to the use of computer technology used by individuals with disabilities in order to perform functions that might otherwise be difficult or impossible. AT includes computer hardware, software, and peripherals that assist people with disabilities in accessing computers and increases, maintains, or improves the functional capabilities of individuals with disabilitites (e.g., keyboards with large letters, software that reads what is on the screen, or an adaptive mouse).

In this section, rate your level of agreement with each statement using the following scale.

Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree	Not Applicable

Postsecondary AT Experiences

Instructions: Please answer these statements thinking about your current college or university you are enrolled in. We are interested in your assistive technology (AT) experiences at your college or university.

Please note: In order to turn off background color after choosing an answer try clicking the left mouse button outside of the survey area

	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree	Not Applicable
Access to computers at my university or college meets my needs	○	○	○	○	○	○
At my university or college, computers are sufficiently updated with AT (e.g., grammar checking, adaptive mouse, screen reader, speech-to-text software)	☐	☐	☐	☐	☐	☐
Computers at my university or college includes specialized or adapted ones for students with disabilities	○	○	○	○	○	○
I am able to sign out computers or AT through the disability services program (e.g., Read and Write, OpenBook, and Dragon naturally Speaking)	☐	☐	☐	☐	☐	☐
When I approach staff at my university or college about computer accessibility they act quickly to resolve my issues (e.g., cannot see the PowerPoint presentation, cannot hear a video clip, need a grammar checker to write an essay)	○	○	○	○	○	○

	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree	Not Applicable
There is at least one person on staff who has expertise in AT hardware and software (e.g., software that reads what is on the screen)	○	○	○	○	○	○
Training is available to me on how to use the computers in my university or college	☐	☐	☐	☐	☐	☐
I feel comfortable using accessible software and AT during classes	○	○	○	○	○	○
I own my own desktop or laptop computer that has AT on it	☐	☐	☐	☐	☐	☐
My university or college's web pages are accessible (e.g., can be read with a screen reader, provides texts descriptions of images)	○	○	○	○	○	○

	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree	Not Applicable
The course materials and readings are available in a digital format that is accessible to me via a computer (e.g., Word, PDF, MP3)	○	○	○	○	○	○
I have used State Rehabilitative Services to purchase computer technology for use at my university or college	☐	☐	☐	☐	☐	☐
I have used Tribal Rehabilitative						

Section 5 Postsecondary Assistive Technology (AT) Use

In this section, rate your level of agreement with each statement using the following scale.

Never	I rarely use this	Sometimes	About half of the time	I use this most of the time	I use this all of the time

Postsecondary AT Use

Instructions: Please rate these statements thinking about your current college or university you are enrolled in. We are interested in your assistive technology (AT) use at your college or university.

Please note: In order to turn off background color after choosing an answer try clicking the left mouse button outside of the survey area

	Never	I rarely use this	Sometimes	About half of the time	I use this most of the time	I use this all the time
At my college or university I use software that helps with writing (e.g., Inspiration, Read and Write, Microsoft Word's spell check & grammar check)	○	○	○	○	○	○
I effectively use software that magnifies what is on the screen	☐	☐	☐	☐	☐	☐
I effectively use software that reads what is on the screen (e.g., Read and Write, Read Please, OpenBook)	○	○	○	○	○	○
I use voice dictation software (e.g., Dragon Naturally Speaking, Read and Write, Microsoft Word's dictation feature)	☐	☐	☐	☐	☐	☐
At my college or university I use an adapted keyboard	○	○	○	○	○	○
At my college or university I use an adapted mouse	☐	☐	☐	☐	☐	☐
I use technology I personally own (please specify below and indicate amount of usage in the matrix to the right)	○	○	○	○	○	○

Postsecondary AT Use

Instructions: Please answer these statements thinking about your current college or university you are enrolled in. We are interested in your assistive technology (AT) use at your college or university.

I was taught at my college or university on how to use software that helps with writing (e.g., Inspiration, Read and Write, Microsoft Word's spell check & grammar check)

At my college or university I was taught how to use software that magnified what is on the screen

I was taught at my college or university on how to use software that reads what is on the screen (e.g., Read and Write, Read Please, OpenBook)

I was taught at my college or university how to use voice dictation software (e.g., Dragon Naturally Speaking, Read and Write, Microsoft Word's dictation feature)

Survey adapted from:

Fichten, C.S., Asuncion, J.V., Nguyen, M.N., Budd, J., & Amsel, R. (2009). POSITIVES Scale (Postsecondary Information Technolody Initiative Scale) Print Version. Montreal. Adaptech Research Network http://www /adaptech.org

Fichten, C.S., Asuncion, J., Barile, M., Genereux, C., Fossey, M., Judd, D., Robillard, C., De Simone, C., & Wells, D. (2001). eLearning in Postsecondary Education: Questions for Students with Disabilities. Unpublished measure.