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GRADUATE COLLEGE

**A TEN-YEAR DATA ANALYSIS FROM THE OFFICE OF DISABILITY SERVICES
AT A FOUR-YEAR COLLEGE OF MORE THAN 20,000 STUDENTS**

A Dissertation

SUBMITTED TO THE GRADUATE FACULTY

In partial fulfillment of the requirements for the

Degree of

Doctor of Philosophy

By

Sandra Kay Ludwig

Norman, Oklahoma

2002

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AT A FOUR-YEAR COLLEGE OF MORE THAN 20,000 STUDENTS**

**A Dissertation APPROVED FOR THE
DEPARTMENT OF EDUCATIONAL PSYCHOLOGY**

BY

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ABSTRACT

The purpose of this study was two-fold (a) to perform a first time records review and data analysis and (b) to create a comprehensive view of the past and present support services provided to students with disabilities at the University of Oklahoma. The research design adopted in this study used historical quantitative methods from data gathered from the University of Oklahoma, Office of Disability Services (OU/ODS) student files. Data were gathered from 867 individual files of students who requested and received services from the OU/ODS during 1991 to 2001 school years.

Demographic data collected addressed the research questions: (1) Has the student population at the OU/ODS changed over a ten-year period? (2) How do characteristics of students from OU/ODS compare with other postsecondary institutions? (3) The relationships between variables influencing students' GPA and graduation rate? (4) Do higher frequency of services from the OU/ODS affect students' GPA and graduation rate? (5) Do types of services influence students' GPA and graduation rate? (6) Do types of services change, as students remain longer at the university? (7) Do types of disabilities influence types and frequency of services requested?

Findings from this study demonstrated that while the total OU student population had increased from 1991 to 2001, the total population of OU students with disabilities receiving services had increased more significantly. Other findings included that students with learning disabilities are the largest group requesting and receiving services with the second highest group being students with attention deficit disorders. Overall male students with disabilities completing the intake process out-numbered female students with disabilities for six of the 10 years. OU students with learning disabilities requested

services at a lower rate compared to one national study for 1996-1997 academic year (AY) and about equal in the second national study compared for AY 1997-1998. Gender was the only variable that affected OU student's GPA or graduation rate. The frequency or types of services appeared to have no affect on GPA and graduation rate. The majority of OU students with disabilities did request services for only one semester or requested no changes in services. Students who requested services increased the amount of services received. Finally the type of disability and frequency of visits appeared to be significant only for OU students with hearing impairments.

CHAPTER ONE

Introduction

The number of students with disabilities graduating from high school has increased, and so too has the percentage of students with disabilities enrolling in two- and four-year colleges (HEATH 1995a; Johnson, Sharpe, & Stodden, 2000; Sabornie & deBettencourt, 1997). According to the 23rd Annual Report to Congress (U.S. Department of Education, 2001) the graduation rates for students with disabilities who received a standard diploma over the age of 14 has climbed steadily since the 1993-1994 academic year (AY) and was 149,472 students for AY 1998-1999. In 1978, the National Clearing House on Postsecondary Education for Individuals with Disabilities reported that less than 3% of incoming freshmen identified themselves as having a disability. By 1988 the number of incoming freshmen identifying themselves in a freshmen survey more than doubled to 6.5% and at its 1994 peak was 8.2% (Henderson, 2001). The number then declined to 6.0% in year 2000. The Henderson freshman survey will be discussed in greater detail in chapter two. The National Center for Education Statistics (NCES), through its Postsecondary Education Quick Information System (PEQIS) conducted a survey in 1998 and reported that the total number of students with disabilities enrolled in postsecondary colleges and universities was an estimated 428,280 students (Lewis & Farris, 1999).

The increase in the number of postsecondary students with disabilities can be attributed to several factors, including: (a) postsecondary schools are providing accommodations as required by Section 504 of the Rehabilitation Act of 1973, (b) high school students are more aware of available services as they transition from secondary to

postsecondary placement, (c) an increased number of students with disabilities are graduating from secondary programs, (d) expanded postsecondary programs to meet these students' needs have been made available as a response to the concerns of advocacy groups, (e) students are made aware of the open enrollment policies that have been established at community colleges, and (f) the remedial courses that exist for students who have difficulties making minimum scores on entrance exams. The trend of increased numbers of students with disabilities enrolling in postsecondary educational programs should continue well into the 21st century as students recognize that postsecondary educational programs continue to improve support services for students with disabilities (Nelson, Dodd, & Smith, 1990; Sabornie & deBettencourt, 1997).

This chapter will first include a general statement of purpose for this research. Second, this chapter provides a rationale for research through discussion of the issues surrounding the matriculation and education of students with disabilities. Third, this chapter describes why research in the area of postsecondary students with disabilities is relevant. Fourth, the chapter stresses the need for the study of students with disabilities past and present at the University of Oklahoma (OU) and outlines OU's current program for disability services. Finally, there will be a preview of research questions.

Despite the growing trend of enrollment at the postsecondary level of students with disabilities, the rate is still well below the enrollment rate of the general population (Johnson, Sharpe, & Stodden, 2000; Henderson, 2001; Murray, Goldstein, Nourse, & Edgar, 2000). This could be due in part to stigmatization resulting in a reluctance of students to self-identify or even to enroll. Students with disabilities graduating from secondary programs continue to experience a number of barriers that inhibit their

successful enrollment in postsecondary programs and hinder their progress once enrolled. At the American Council on Rural Special Education Conference in July 1996, HEATH Resource Associate Jade Gingerich reported that students face many barriers to enrollment in postsecondary educational programs (HEATH, 1996). These barriers include: (a) fear, low aspirations, and attitudinal barriers; (b) lack of information and counseling; (c) lack of family support; and (d) lack of financial assistance. Gingerich was addressing the needs of rural schools, but felt that many of the same barriers apply to students living in urban areas. Many students may not reach their full potential for lifelong economic opportunities if they do not pursue any postsecondary education programs.

Statement of Purpose

The purpose of this study was to analyze student data collected at the University of Oklahoma's Office of Disability, Judicial and Veterans Services, hereafter referred to as the Office of Disability Services (OU/ODS). Data were collected from files of past and present students with disabilities from 1991 to 2001. Data collected were compared to results of the recent national comprehensive investigation compiled by NCES (Lewis & Farris, 1999). The overall purpose of the study was the creation of a comprehensive view of the past and present program available to support students with disabilities at OU. Hopefully, this study will be used to enhance future programs for students at OU and elsewhere.

Rationale for the Study

As reported by Gingerich in 1996, many postsecondary students with disabilities do not realize that they have a right to accommodations under federal laws. The

enforcement of Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990 (ADA) has insured that postsecondary institutions provide needed accommodations for students with disabilities. ADA is the civil rights guarantee for individuals with disabilities. It states that no person can be discriminated against on the basis of a disability, and extends the standard for compliance set forth in Section 504. Passage of the ADA also focused renewed attention on disability access to institutions of higher education (American Council on Education, 1996). As advocacy groups have increased public awareness of legal action sought by postsecondary students with disabilities in popular media, such as the *Guckenberger v. Boston University* case (Wingert & Kantrowitz, 1997), the potential for litigation at the postsecondary level has increased. Further research could increase an institution's ability to insure compliance with the law when providing services for students with disabilities.

Matriculation does not insure that students with disabilities will complete a selected program at the same rate as their peers without disabilities. As early as 1994 the NCES reported that only 52% of students with disabilities completed their degree programs. Compared to 64% of students without disabilities who completed their degree program. Then in 2000 Murray et al. reported that five years after high school only 56% of students without disabilities had not completed degrees as compared to 80% of students with learning disabilities. An inability to complete a degree program may be due to difficulties experienced by many students with disabilities during their first year of a postsecondary education program (Brinckerhoff, 1996). These difficulties may be associated with their experiences and the education they received in high school. Noted difficulties may include, (a) lack of content offered in high school special education

courses which may be watered down and concentrate more on assignment completion rather than on how to learn from instruction (Brinckerhoff, Shaw, & McGuire, 1993); (b) an ignorance of inherent differences between high school and college (such as, limited instructional contact with the instructor); (c) students knowing how to access available college support programs; (d) lack of role models who are successful in postsecondary settings (Stodden, in press); (e) difficulties in balancing life activities such as transportation, health, and living arrangements; (f) lack of necessary skills for self advocacy, self-determination, and personal decision-making; and (g) potential students may be reluctant to disclose to officials that they are eligible for special programs (Brinckerhoff, Shaw, & McGuire, 1993; Stodden, in press). These difficulties can become overwhelming and reduce the likelihood of student success.

Even students with disabilities who are transitioning from two-year to four-year institutions can experience difficulties similar to incoming freshmen (Burgstahler, Crawford, & Acosta, in press). Difficulties experienced by transitioning students may include: (a) skills in self-advocacy, (b) differences in social life, (c) lack of skills needed in requesting educational accommodations and information about support programs, (d) poor study skills, (e) inadequate pre-college academic preparation, (f) lack of role models and mentors with disabilities, and (g) lack of preparation for addressing the differences in academic requirements. Thus, students may experience academic difficulties because of low self-advocacy skills, low academic skills, poor organization skills, and lack of social skills. Historically students with disabilities have lacked the support and advocacy by others to be successful. Legislation and litigation have mandated that students with disabilities receive the support they require for academic

success (Dukes & Shaw, 1999). Formal support for postsecondary students is still in the fledgling stage as programs interpret the laws and implement services.

Mull, Sitlington, and Alper (2001) conducted a systematic analysis and synthesis of published research on postsecondary students with learning disabilities. Their review criteria were articles containing: definition of learning disabilities, characteristics of adult learning, type of institution, special admission procedures, assessment services, program accommodations, support services, instructional adjustments, instructional staff training, direct service staff training, and program evaluation categories. The authors reported that there were only 26 published research articles that met the criteria from 1985 to 2000 as compared to the thousands of research articles published addressing younger students with disabilities. It should be noted that grade point averages and graduation rates were not one of the factors examined by Mull et al. (2001). The research of these factors appears to be even more limited. The authors also concluded that there needs to be more research in the investigation of their effectiveness of accommodations for students. Further details of the Mull et al. article will be discussed in chapter two.

Bursuck, Rose, Cowen, and Yahaya (1989) conducted one of the first nationwide surveys of postsecondary services for students with learning disabilities. They investigated service provisions in two-year and four-year postsecondary institutions. The purpose of the study was to identify and catalog options for students with learning disabilities enrolled in postsecondary educational programs. The authors summarize that, overall, the 197 schools, at a return rate of 58.7%, that responded to the surveys were in compliance with Section 504 regulations. They attribute this to the fact that the schools surveyed were members of the Association of Handicapped Student Service Programs in

Postsecondary Education (AHSSPPE), which emphasizes Section 504 compliance. The authors indicate that future research should include institutions that are not members of AHSSPPE. They also report that services might vary according to the size of the particular institution, but do not report on any of those variances.

Ten years after Bursuck et al. (1989) conducted their nationwide survey, the NCES through its PEQIS (Lewis & Farris, 1999) conducted a national survey investigating services being offered by the size and type of institution. The 1999 survey requested by the U.S. Department of Education's Office of Special Education and Rehabilitative Services collected the first nationally representative data from 1,084 two-year and four-year postsecondary institutions. This survey requested that institutions provide information about services and accommodations as designed for students as mandated in Section 504 and ADA (Lewis & Farris, 1999). The NCES authors only investigated if a service was offered; therefore, they state that there was no way for them to assess the quality of the services offered. The authors conclude that more research is needed in the area of postsecondary services for students with disabilities.

This study will increase the knowledge base about types and frequency of services being offered at a public research extensive university. By painting a picture of services and comparing the OU/ODS data with what has been reported nationally the study will provide information that may be used to guide the future development and implementation of disability support programs.

OU/Office of Disability Services

The Office of Disability Services' mission is to provide support to students with disabilities at OU (OU Auxiliary Aids Fact Book, 2001). Students must meet enrollment

and matriculation requirements as set forth by the university such as minimum high school grade point average, completion of required high school core courses, a minimum ACT score and must be enrolled at OU. Suzette Dyer, Director, University of Oklahoma's Office of Disability, Judicial and Veterans Services, reports that this is to ensure success for students (personal communication, January 3, 2002). The OU/ODS reported in August 2000 that out of an overall student population of 21,622, 212 students with disabilities were accommodated at the University of Oklahoma Norman Campus during the 1999-2000 spring semester (OU/Institutional Research and Reporting, 2000). In order to receive support services from the OU/ODS students must self-identify themselves as having a disability by requesting services from the OU/ODS. Also, faculty members are encouraged to provide students the opportunity to self-identify by including a statement regarding accommodations on their syllabi (OU Fact Book, 2001).

Once students self-identify, they must request services or accommodations by scheduling an intake meeting with the OU/ODS. The OU/ODS is located in the Goddard Health Center along with student medical, pharmaceutical and counseling/testing services. The ODS also serves veterans and addresses judicial concerns for the university. While some disabilities are verified by observing the student (e.g., use of a wheelchair), others require written documentation. Students with learning disabilities, attention deficit/hyperactivity disorders (ADD/ADHD), and psychiatric disabilities are examples of students who must provide written documentation in the form of a comprehensive psychoeducational assessment. The assessment must be conducted by a licensed psychologist, school psychologist, neuropsychologist, or licensed medical doctor who has diagnostic expertise in the disability area.

Once the proper documentation is received, accommodations are determined on an individual basis including updating requests every semester or as needed.

Accommodations may include but are not limited to: (a) notetaking assistance, (b) testing accommodations (e.g., distraction free or extended time), (c) library assistance, (d) tutoring, (e) adaptive computer labs, (f) priority enrollment, (g) faculty notification of accommodations, (h) tape recording of lectures, (i) architectural accessibility, and (j) interpreters (OU Fact Book, 2001). Dyer reports that the university strives to find a way to substitute courses on an individual basis for some of the mathematics and foreign language requirements although currently no substitutions have been approved or allowed in the area of mathematics. Each student being granted a foreign language substitution must take one linguistics course, plus two additional courses. The two additional courses must be in the study of a culture represented by the foreign language offered at OU, (see Table 1). Students are also required to take any prerequisites required for the replacement courses.

In an August 2001 survey prepared by OU's Institutional Research and Reporting Department, the largest group of students with disabilities was students with learning disabilities. The second largest group was students with attention deficit disorder. The third largest group was students with mobility impairment and "others." All students self-identified at ODS. Gender results of students with disabilities were within 5% of the general population with 57% of students with disabilities being male. Seventy-nine percent were White and the largest group was from the College of Arts and Sciences at 41%. Students with disabilities scored lower than the general OU student population in

Table 1

College of Arts & Sciences foreign language courses sample substitutions

Foreign languages offered at OU	Cultural studies substitution courses
Chinese	Traditional China
	Modern China to 1945
Greek	Survey of Ancient Greek Culture
	Freedom in Greece
Hebrew	Hebrew Civilization in Ancient Times
	Judaism – A Religious History
Italian	Medieval Italy
	Early Renaissance Art in Italy
Japanese	History of Japanese Civilization to 1800
	People and Culture of Japan
Latin	Roman Women – Republican Period
	Vice and Virtue in Ancient Rome
Native American	Indian Peoples of Oklahoma
	Contemporary Indian Problems
Spanish	Government and Politics of Mexico
	History of Mexico, 1800-present

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the areas of average ACT scores, average SAT scores, and high school grade point average (GPA).

In a 2002 study completed by OU/Zarrow Center for Learning Enrichment students with disabilities support centers at Big 12 universities were asked how many students with disabilities they served, the number of center staff, and the student-to-staff ratio. Of the ten universities that replied, OU had the third highest student-to-staff ratio. Further details of the Martin and Duncan (2002) study will be presented in chapter two. A study of the OU/ODS compared to national data may be able to provide the university information it can use to guide future services provided to students with disabilities.

Research Questions

In this study, data were collected from the OU/ODS files of self-identified former and current students with disabilities who received services from the OU/ODS. All subjects were randomly assigned a number and at no time was identifying information reported. The research questions were as follows:

- 1. Has the student population from the OU Office of Disability, Judicial and Veterans Services changed over a ten-year period?**
- 2. How do characteristics of college students who request services from the OU Office of Disabilities, Judicial and Veterans Services compare with similar students from other public four-year postsecondary institutions of more than 20,000 students in terms of personal demographics, academic demographics, and services requested?**
- 3. Do variables such as gender, ethnic type, and disability of college students influence their GPA and graduation rate?**

- 4. Do higher frequency of services, received by college students with disabilities from the OU Office of Disability, Judicial and Veterans Services, influence their GPA and graduation rate?**
- 5. Do the types of services, received by university students with disabilities, from the OU Office of Disability, Judicial and Veterans Services, influence their GPA and graduation rate?**
- 6. Do the types of services requested change, as students remain longer at the University?**
- 7. Does the type of disability influence the types and frequency of services requested and provided?**

CHAPTER TWO

Review of Literature

Enrollment of students with disabilities has continued to rise creating a dilemma of what constitutes reasonable accommodations and services offered by postsecondary institutions. The 1999 National Joint Committee on Learning Disabilities (NJCLD) reported that the majority of U.S. colleges and universities are at various stages of development and implementation of programs for students with disabilities.

Postsecondary institutions are addressing the problems surrounding students with disabilities due to increased public attention and required accountability. This chapter discusses the federal laws addressing services for students with disabilities at the postsecondary level including two examples of litigation in the late 1990s. In addition, it provides a literature review regarding research on the increase of freshman enrollment, services and accommodations for students with disabilities at community colleges, and undergraduate and graduate programs. Research conducted on the practices and attitudes of service providers for postsecondary students with disabilities will be discussed.

Federal Laws

Many postsecondary students with disabilities do not realize that federal laws provide them with accommodations since there is a scarcity of information to guide postsecondary students in seeking services. Section 504 of the Rehabilitation Act of 1973 states that: “No otherwise qualified person with a disability in the United States shall, solely by reason of disability, be denied the benefits of, be excluded from participation in, or be subjected to discrimination under any program or activity receiving federal financial assistance.” Under the provisions of Section 504, subpart E

postsecondary education programs are addressed and any institution may not: (a) limit the number of students with disabilities admitted, (b) make pre-admission inquiries as to disabilities, (c) use admissions tests that inadequately measure the academic qualifications of students with disabilities, (d) exclude a qualified student with a disability from any course of study, (e) limit eligibility to a student with a disability, (f) counsel a student with a disability toward a more restrictive career, (g) measure student achievement using modes that adversely discriminate against a student with a disability, or (h) establish rules that may adversely effect students with disabilities (American Council on Education, 1996). Postsecondary programs are required to modify academic methods of evaluation that are discriminatory to students with disabilities (Rehabilitation Act of 1973). The intent of Section 504 is not to compromise the academic integrity of institutions. It is to insure that no person should be denied benefits, be excluded from any program, or not be able to meet program requirements when provided with reasonable accommodations because of a disability (Rothstein, 1994; Thomas, 2000).

The Americans with Disabilities Act of 1990 (ADA) is the civil rights guarantee for individuals with disabilities. It reinforces the mandates of Section 504 by stating that no person can be discriminated against on the basis of a disability, and extends the standard for compliance set forth in Section 504. Passage of the ADA also focused renewed attention on disability access to institutions of higher education (American Council on Education, 1996). As advocacy groups and current researchers have heightened public awareness of postsecondary students with disabilities in popular media,

such as *Newsweek* (Wingert & Kantrowitz, 1997), the potential for litigation at the postsecondary level has increased.

Litigation

Boston University. One of the first cases regarding postsecondary students with disabilities brought to the attention of the public was the 1997 *Guckenberger v. Boston University* case. In 1995, Jon Westling, President of Boston University's (BU) College of Arts and Sciences, discovered that approximately 12 students a year, each identified as having learning disabilities, were taking alternative classes to fulfill the mathematics and foreign language requirements (Elswit, Geeter, & Goldberg, 1999; Wolinsky & Whelan, 1999). In his opinion, BU had a responsibility to ensure that the degrees it granted were valid and consistent with documented standards. As a result, Westling restricted the BU's Learning Disabilities Support Services Department from making student eligibility decisions, halted course substitutions, and personally reviewed the files of all students. He also declared that BU would not accept any documentation of a learning disability if it were over three years old. Retesting for learning disabilities, at students' expense, became a requirement. He stated he was trying to discourage "draft dodgers" who abused the system. Students were angered and humiliated when Westling stated that something had to be done about the "learning disability advocates who were fashioning fugitive impairments that were not supported in the scientific and medical literature" (Wolinsky & Whelan, 1999, p. 287). Westling's actions prompted students with learning disabilities to file suit against BU contending that they were not given proper notice of policy change, and that the University had violated federal Section 504 laws, by denying or delaying reasonable accommodations.

In 1997, Federal Judge Saris ruled that BU had violated federal disability laws when it bowed to “uninformed stereotypes:” unfairly tightening rules on accommodating students with learning disabilities. Boston University was ordered to pay a total of nearly \$30,000 to six of the students who filed the lawsuit. The University was also ordered to re-examine some of its policies. The University was given until January 1998 to explain why its foreign language requirement was reasonable. Before the ruling, BU had already dropped the requirement of recertification every three years; however, BU claimed a victory since the judge upheld the right of the University to require specific mathematics courses (Selingo, 1997; Wingert & Kantrowitz, 1997; Wolinsky & Whelan, 1999). The lawyers for BU acknowledged that even though the University had won several points, they had suffered a loss of public trust due to President Westling’s public speeches against the learning disability movement. As of July 1999, BU had changed policies and procedures to comply with the court’s order (Elswit, Geeter, & Goldberg, 1999; Wolinsky & Whelan, 1999).

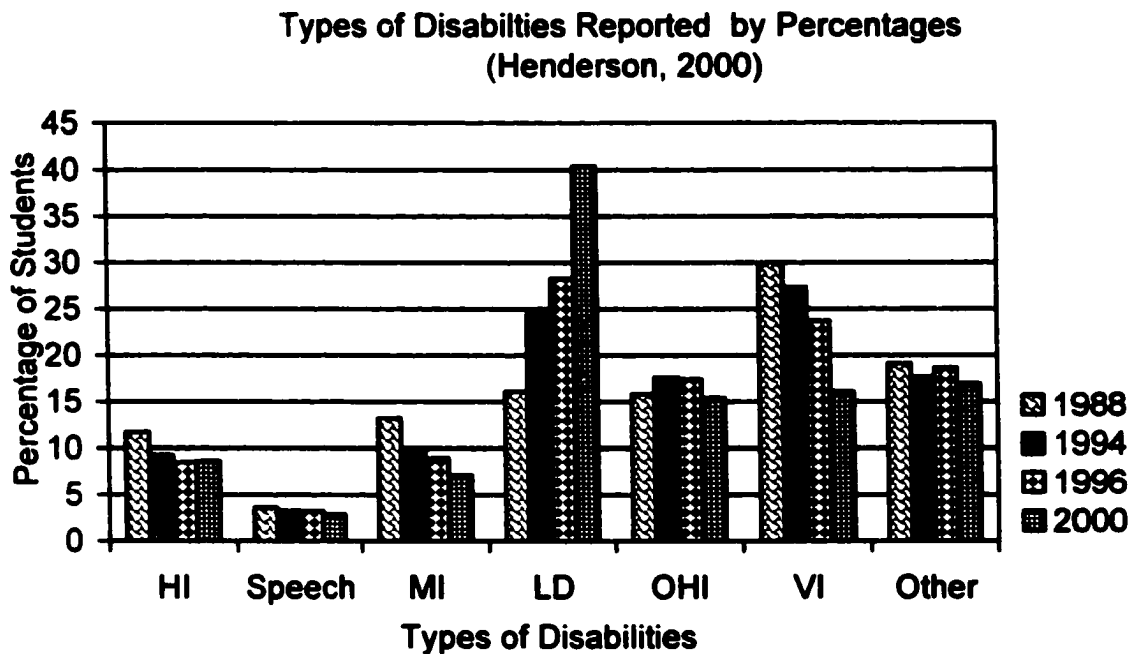
National Collegiate Athletic Association. The National Collegiate Athletic Association (NCAA) is not immune to controversy over the issue of services and accommodations for students with learning disabilities. In 1995, the Civil Rights Division of the U.S. Department of Justice sent a letter to the NCAA accusing it of violating the Federal Americans with Disabilities Act after receiving legal complaints from five students. The letter stated, “The NCAA uses a rigid approach that does not take into consideration how students with disabilities obtain knowledge and skills. We do not seek a lowering of the academic standards for students with learning disabilities, but that the NCAA modify the method it uses to assess whether these students meet the standards

(p. C1). ” The Justice Department provided three recommendations to the NCAA:
(1) that the NCAA provide monetary compensation and a change in eligibility status for the five students who filed complaints with the department; (2) that all students with learning disabilities who were granted partial “qualifies status” in 1996-97 be awarded a fourth season of eligibility; and (3) that the NCAA should amend their current regulations to more directly accommodate students with learning disabilities. As of July 1999, the NCAA had voluntarily complied with all suggestions made by the Department of Justice (Hishinuma, 1999).

Freshmen Enrollment

Since 1966 the Cooperative Institutional Research Program (CIRP) has conducted a survey of incoming freshmen nationwide (Henderson, 2001). Co-sponsored by the American Council on Education (ACE) and the University of California at Los Angeles (UCLA), the survey attempts to provide yearly profiles of first time freshmen entering baccalaureate colleges and universities. The survey collects data on students’ background, secondary experiences, and goals and also gives them an opportunity to identify as having a disability. Students self-identified by marking all that applied for disability: none, hearing, speech, orthopedic, learning disabled, health related, partially sighted or blind, or other. No other disability information was requested. Figure 1 illustrates the information from the surveys which reported 7.8% students with disabilities of the total freshmen enrollment in 1991, to a 8.2% in 1994, 8.1% in 1996 and a decline to 6% in the year 2000. The year 2000 did not include two-year colleges. The survey revealed of the self-identified students a difference of 45% of the male students

Figure 1 Full-Time Freshmen with Disabilities



reported having disabilities, while 55% females reported having disabilities. For the year 2000, the majority of students with disabilities were U.S. citizens, spoke English as their native language, and at least 7 of 10 were living with both parents. Ninety-eight percent had graduated high school in the year 2000 and 70% were attending their first choice college. Even though the overall population of students with disabilities remained stable, 6 to 8 percent, from 1988 to 2000, students with learning disabilities continued to steadily increase.

Accommodations and Services

Mull, Sitlington & Alper (2001) conducted an analysis and synthesis of published research on postsecondary students with learning disabilities. The criteria used for review

of the articles included program factors such as: definition of learning disabilities, characteristics of adult learning, type of institution, special admission procedures, assessment services, program accommodation, support services, instruction adjustments, instructional staff training, direct service staff training, and program evaluation. The authors reported that there were 26 articles that met the criteria from 1985-2000. Of the 26 articles reviewed 10 were before the enactment of ADA and the authors found no differences in the articles except for the use of the term assistive technology.

Of all the articles reviewed by Mull et al. (2001), accommodations and services were reported to some extent in 100%, but only 50% of the articles addressed the recommendation in Section 504 that institutions provide program modifications, substitutions or waivers of courses on an individual basis. Other accommodations not addressed frequently were increasing the frequency of testing or alternative forms of assessment. Sixty-five percent of the articles discussed accommodations for tests such as time increases or providing distraction free environment. Seventy-seven percent of the articles discussed the use of technology and software programs. The authors stated that this was due to intervention and availability of technology in the past 15 years.

The authors cautioned readers that the analysis did have limitations. There are many other programs that have never been published in journals. Even with the use of inter-observer reliability checks there were inconsistencies in the article evaluations. Mull et al. (2001) stated that the findings of the review did offer some implications for practice in the field. Implications such as the need for secondary students to be made more aware of the accommodations available at the postsecondary level and equipped to succeed with those accommodations students should be trained in the use of technology as early as

available. The postsecondary staff that provides services needs to be trained in working with postsecondary students with learning disabilities. The authors also stated that, as a field there is the need for more studies investigating types of accommodations/modifications and services available for students with disabilities and their effectiveness.

In 1996 Keim, McWirtter and Bernstein investigated the influences of three variables on cumulative GPA for students with disabilities at a large Southwestern university. Independent variables included: (a) advisement to students with disabilities; (b) computer utilization; (c) tutoring by the number of hours per semester from support services; and (d) test accommodations of additional time, use of a tape-recorded exam, use of a calculator, and a distraction free room. Using information from the files of students who had requested services over a four year period and met the DSM-III-R diagnostic criterion for having an academic skills disorder the average amount of service students received per semester for each variable was calculated. The authors removed the first semester from the calculation since that was for intake and the students were given a chance to familiarize themselves with the available services.

The authors reported that computer utilization was the only independent variable that had any influence on students' GPAs. Students with disabilities who had high utilization rates had the highest GPA. The authors also stated that even though neither tutoring nor test accommodations were significantly related to GPA, one major factor must be considered--students with disabilities chose tutoring and test accommodations only for courses where performance was affected by their disability. Also, computer use and advisement can be utilized in almost all classes. Thus test accommodation use and tutoring is more course specific.

Keim et al. (1996) do state that motivation may have influenced GPAs to varying degrees. Students must be motivated to seek services and to follow through with suggested services. According to the authors motivation of students with disabilities should be future research consideration. The authors concluded with the suggestion that other future research should investigate more fully the impact certain accommodations have on GPA's of students with disabilities and overall academic achievement.

Undergraduate Programs. Many institutions have policies in place for addressing accommodation and service requests made by students with disabilities. Such accommodations and services are matched to an individual's needs and may include, but are not limited to: (a) early syllabus provision, (b) taped textbooks, (c) tape recording of lectures, (d) notetakers, (e) calculators, (f) proofreaders, (g) exam modifications, (h) advocacy, (i) course assignment modifications, (j) sign language and oral interpreters/tranliterations, (k) adaptive equipment and technology, (l) paratransit for on-campus mobility, and (m) tutors to assist with ongoing coursework (American Council on Education, 1996; Brinkerhoff, 1991; Brinkerhoff, Shaw, & McGuire, 1992; CEC, 1997; HEATH, 1995b; Lewis & Farris, 1999).

In 1999, Hock, Deshler, and Shumaker conducted a review of literature that investigated tutoring as an effective tool for use with college students with learning disabilities. The term tutoring encompasses everything from being a form of formal instruction to an informal assignment assistance service. Formal instructional tutors (a) analyze assignments, (b) determine current levels of skill and strategic knowledge, (c) instruct students on use of strategies to acquire skills needed, (d) provide feedback, and (e) provide support for assignments (Hock et al., 1999). Assignment assistance tutors

meet in small groups, or one-on-one, provide homework assistance, and brief feedback, but make little or no attempt to teach skills or strategies. After reviewing several studies, Hock et al. came to the conclusion that tutoring programs, which provide formal instruction, would seem to assist students in becoming independent learners more so than assignment assistance programs. As with many areas of postsecondary research, the authors stated there is a need for more research on the effectiveness of tutoring programs.

Runyon (1992) reported that when students with learning disabilities were provided with extra time on the Nelson-Denny Reading Comprehension and Reading Rate Test, there were no significant differences in test performance between students with learning disabilities and students without learning disabilities. The Nelson-Denny Reading Test consists of a vocabulary and silent reading section that is completed in 20 minutes. In Runyon's study while the other students were held to 20 minutes, students with learning disabilities were allowed unlimited time to complete the test. Runyon reports that the paired t-test results show a significantly higher mean percentile for students with learning disabilities answering comprehension questions when they were given extra time as compared to when no extra time was given. The authors list two limitations of the study. First, the study involved a small number of students and second, all of the students attended the University of California on a single campus. Even with the limitations, the authors conclude that providing a simple accommodation of additional time when requested will result in significantly higher test scores.

Bursuck et al. (1989) conducted a nationwide survey of postsecondary services for students with learning disabilities. They investigated service provisions in two- and four-year postsecondary institutions. The purpose of the study was to identify and catalog

accommodations and services available for students with learning disabilities enrolled in postsecondary educational programs. Table 2 shows the services that were provided by the 197 schools that completed the survey (a return rate of 58.6%). The authors summarize, that overall, the schools that responded to the surveys were in compliance with Section 504 regulations. They attribute this to the fact that the schools surveyed were members of the Association of Handicapped Student Service Programs in Postsecondary Education (AHSSPPE), which emphasizes Section 504 compliance. In addition to providing accommodations as mandated in Section 504, many of the schools were also providing additional special and remedial services. They also concluded that many of the provided services varied according to the size of a particular institution. It appeared that smaller colleges and community colleges offered the greater use of IEPs, service monitoring, and more individualized tutoring and counseling. Two concerns stated by the authors were peer tutors with very limited training and content area specialists teaching remedial courses with little or no training in working with students with disabilities. The authors made no statement about how much of a resource drain an accommodation may be or if the less demanding accommodations were provided more frequently. They also report that services might vary according to the size of the particular institution, but did not report on any of those variances. The authors indicate that future research should include institutions that are not members of AHSSPPE.

Table 2

Percentage of Postsecondary Schools Providing Special Services to Students With Learning Disabilities

Service	Percent as reported by those Surveyed
Tape Recording of Lectures	95
Academic Advisement	93
Taped Textbooks	93
Notetakers	90
Advocacy	86
Progress Monitored	80
Word Processing Programs	71
Supplementary Recorded Materials	66
Calculators	65
Exam Modifications	65
Proofreaders	64
Early Syllabus	52
Course Assignment Modifications	48
IEPs for Each Student	41
Counseling	07

Bursuck, Rose, Cowen, and Yahaya, (1989)

In two separate recent reports compiled by The National Center for Education Statistics (NCES) through its Postsecondary Education Quick Information System (PEQIS) (1999), learning disabilities were the most frequently identified disability among students with disabilities. Horn and Berktd (1999) compiled reports using four different surveys and concluded that 29% of students with disabilities were students with learning disabilities. Lewis and Farris (1999) used data collected by survey from the Office of Special Education and Rehabilitative Services and the U.S. Department of Education, and reported that 45% of students with disabilities were students with learning disabilities. Students with orthopedic disabilities were the next highest group at 14.6% while students with health impairments or health problems had the third highest population at 11.1%. Even with some discrepancy in the reports it is still evident that students with learning disabilities make up the majority of students with disabilities at the postsecondary level (Horn & Berktd, 1999 and Lewis & Farris, 1999).

Lewis & Farris conducted a 1998 survey where the authors investigated services being offered by the size and type of institution. Questionnaires were distributed nationally to 1,084 two- and four-year postsecondary institutions. The survey requested that institutions provide information about services and accommodations designed for students with disabilities as mandated in Section 504 and ADA (Lewis and Farris, 1999). The institutions were divided by public and private two- and four-year institutions, geographical region, and size of institution. Ninety-one percent of the surveys were returned. Lewis and Farris reported that 98% of the institutions completing the questionnaires did provide at least one support service to students with disabilities. The authors only investigated if a service was offered. They state that there was no way for

them to assess the quality of the services offered. Table 3 shows the services that were provided by the 986 institutions that answered the survey. Alternative exam formats or additional time was the most frequently provided service at 88%.

Postdegree Programs. In 1985 a survey of programs and services for students with disabilities in graduate and professional schools was conducted by Parks, Antonoff, Drake, Skiba, and Soberman (1987). Six hundred and eighty two graduate, dental, medical, and law schools received surveys. Even with repeated contacts to the schools the return rate was a low 30%. The survey was divided into ten parts: general program information, support-type programs, diagnostic evaluations, program accommodations, services, counseling, relationship with the institution's special education program, and program interface with special education, dissemination and evaluation. In view of the responses they received, the authors claim that there are many instances of noncompliance with Section 504 of the Rehabilitation Act of 1973. The authors also report that although there were some attempts to comply with Section 504 there were not specific programs at the graduate level for students with learning disabilities. If the obtained data truly reflects services for students with learning disabilities, higher education has a long way to go to meet the needs of students with learning disabilities at the graduate level. The authors predicted that the lack of Section 504 compliances would lead to more litigation and loss of income to professional schools as students with learning disabilities become more aware of their rights. Finally, Parks et al. urged professional schools to be aware of the needs of students with learning disabilities and respond accordingly. It should be kept in mind that this survey was conducted in 1985 and much may have changed.

Table 3

Percentage of Postsecondary Schools Providing Special Services to Students with Disabilities During AY 1996-97 or AY 1997-98

Service	Percent as Reported by Those Surveyed
Alternative exam formats or additional time	88
Readers, classroom notetakers, or scribes	69
Registration assistance or priority class choice	62
Adaptive equipment and technology	58
Sign language interpreters/transliterators	45
Course substitution or waiver	42
Disability benefits counseling	33
Special orientation	32
Disability resource handbook	24
Oral interpreters/transliterators	22
Special career or placement services targeted for disabled students	22
Adaptive physical education courses or sports	21
Paratransit for on-campus mobility	13
Lewis & Farris, (1999)	

In 1995 Ganschow, Coyne, Parks, and Antonoff (1999) conducted a follow-up study of the Parks et al. 1985 study. Surveys were sent to the same graduate, dental, medical, and law schools and yielded a similar low response rate of 30.6%. The 1995

survey was divided into the same eight parts as the 1985 survey. Table 4 is a comparison of the three largest categories from the 1987 survey results with the 1995 survey results. Items not reported in the table (e.g., mandatory tutoring and on-site testing) were deleted since they were not questions related to these items.

A comparison of results from both surveys, Parks et al. (1987) and Ganschow et al. (1999), shows a significant increase in services offered such as, diagnostic evaluation reports used in determining eligibility, written plans that describe how services are to be provided, teaching of notetaking skills taught, and the use of microcomputers. The authors also reported that there was no decrease in any accommodations or services offered between 1985 and 1995. Ganschow et al. (1999) concluded that although substantial improvements have been made in providing services for students with learning disabilities in graduate programs, there is still a need for more publicizing of available services. The authors recommend that graduate colleges begin advertising what is available for graduate students in their programs. They further recommend that service providers increase awareness and advocacy for students with learning disabilities on their campuses if graduate and professional schools are going to be prepared to meet the needs of students with learning disabilities.

Practices and Attitudes

Community Colleges. Since the 1970s community colleges have had the largest increase of students with learning disabilities attending postsecondary educational schools (McCarthy & Campbell, 1993 as reported by Yocom & Coll, 1995). This can be attributed to community colleges' open enrollment policies, smaller campuses, smaller teacher-student ratio in classes, addition of remedial courses, degree program completion

Table 4***Comparisons of Availability of Services*****Ganschow, Coyne, Parks, & Antonoff (1999)**

General Program Information	1987	1995
Written plan that describes how services are to be provided	24.7%	63%
There is a coordinator or director of LD services	30.9%	71.3%
<u>Support Type Programs</u>		
Specialized services available for existing students	46.2%	77%
Institution pays for part of the services.	35.9%	66.7%
Specific entry requirements?	27.8%	46.3%
Diagnostic evaluation reports used	23.3%	80.9%
<u>Program Accommodations and Services Provided</u>		
Extra time for exams allowed	65%	95.7%
Oral exams allowed	17%	46.9%
Voluntary tutoring available	58.3%	73.2%
Audio/video resources vs. print	41.7%	57.1%
Development of writing skills	48.9%	67.3%
Wordprocessing	30.9%	47.8%
Use of calculators	28.3%	41.4%
Notetaking skills taught	46.6%	70.6%
Extra preparation for exams	46.2%	68.8%
Exam taking skills taught	49.8%	70.4%
Techniques for planning research papers	35.4%	52.8%
Library skills taught	51.6%	79.5%
Use of microcomputers	34.1%	67.7%

in only two years and lower financial obligations than traditional four-year colleges. Yocom and Coll (1995) conducted a survey of 116 community colleges across the nation. The intent of their study was to investigate what perceptions educators held and how knowledgeable developmental educators were about the needs of postsecondary students with learning disabilities. With a return rate of 66% and with 77% holding master's degrees, 48% of educators came into initial contact with students who had self-identified as having a learning disability. Only half of those surveyed indicated that their colleges had a formalized procedure for identification and services for students with learning disabilities. Of those surveyed, low self-esteem (29%) and academic problems (26%), were listed as the most problematic behavior they perceived to be exhibited by students. Thirty-seven (37%) of the students with learning disabilities stayed in college until the completion of their chosen program. Yocom and Coll (1995) concluded that as long as community colleges have open-door policies the number of students with learning disabilities will continue to increase.

Four-Year Universities and Colleges. Yost, Shaw, Cullen, and Bigaj (1994) conducted a United States and Canada survey of 510 postsecondary two- and four-year college service providers to determine the types of interventions they utilize and the attitudes towards students with disabilities at their respective institutions. The survey was developed to determine the intervention practices of the personnel who were primarily responsible for providing services to students with learning disabilities. A total of 694 surveys were mailed and 510 were returned, a total return rate of 73.5%. The sample included 48 states, nine Canadian provinces, two U.S. territories, and the District of Columbia. Forty-two percent were two-year colleges and 55.5% were four-year colleges.

Student body size of the institutions varied from 100 to 20,000 students and 77.8% were public institutions. The survey asked respondents to rate 34 items on a five-point Likert-type scale, which addressed service delivery practices and attitudes of the providers towards service delivery goals. The practice most used by a majority of the providers was tutoring (73%) in specific subject areas. Also used were instruction in advocacy skills (68%), organizational skills (62%), test-taking strategies (62%), time management skills (61%), and study skills (60%). Notetaking modifications were more common than actual instruction in notetaking skills.

The questions addressing the attitudes of the providers were divided into two sections. Section One asked the practitioners to state what skills students at the postsecondary level should be able to execute, such as, describing needed accommodations and describing a learning disability. The area upon which practitioners most strongly agreed (95%) in Section One was that the students should be able to describe their needed accommodation or service. Section Two asked the practitioners what postsecondary service providers should offer to the students: advocate for untimed tests, request a conference with students when it is believed that credit load is inappropriate, provide lists of students with learning disabilities to faculty, correct papers for students, expect to meet all instructional needs, and/or be accountable for the products and grades of their students. The practitioners strongly agreed (82%) that providers should advocate for untimed tests. They strongly disagreed (85%) that providers should be accountable for students' products and grades. The most frequently used strategy noted in specific subject areas was tutoring. The authors suggest that the use of strategy training might enable students to be more independent of the service providers. Yost et al.

(1994), note that development of services must reflect the mission statements of colleges and/or universities. Thus, two- and four-year colleges might need to indicate a different focus on how services are delivered. The authors question what the providers were actually accomplishing. They state that there was considerable ambiguity among service providers regarding attitudes and practices. The authors acknowledge that their study raises many more questions than it answers. They feel that qualitative research would help pinpoint other important variables such as parental pressure, competencies of entering students, and the academic demands of a particular university.

Nelson, Dodd, and Smith (1990) conducted a survey of the faculty members at a northwestern university. The questionnaire was devised to assess faculty willingness to provide students with learning disabilities instructional, assignment, and examination accommodations. One hundred and forty-one questionnaires were sent to teaching faculty in the divisions of Arts and Sciences, Education, and Business, with a 75% return rate. The questions were divided into four categories: (a) assignment modifications, (b) instructional modifications, (c) examination modifications, and (d) special assistance. Table 5 shows how all surveyed faculty responded to the items on the questionnaire. When the three colleges were compared, the College of Education faculty responded more positively to all items, (e.g., 85.7% of the College of Education faculty was willing to provide students assignments in advance, while only 15.8% of the College of Business faculty was willing to provide students with the same accommodations and services. Even with differences such as these, overall, it appears that the faculties were willing to accommodate students with learning disabilities. Close examination of the ratings demonstrated that there were certain accommodations that the faculties were not as

willing to provide for students with disabilities. For example, overall, and copies of lecture notes. The authors stated that the comments section of the questionnaire produced a variety of responses. Although the faculty were willing to accommodate students with learning disabilities they were concerned about maintaining academic integrity. Also, a number of faculty indicated they would be interested in learning new methods to help meet the needs of students with learning disabilities. Finally, some faculty members commented that each student's case would have to be considered individually, and that student attitude would influence whether or not they would provide academic accommodations and or services. The authors also indicated the need for further research since neither the validity nor the reliability of the questionnaire was assessed and the survey was conducted at only one college.

Discussion

Despite the passage of Section 504 (1973) and the Americans with Disabilities Act (1990) there is still controversy over both the concept and implementation of reasonable accommodations and services. This was reported in Runyan (1991), NJCLD (1999) and in litigation such as *Guckenberger v. Boston University* in 1996.

Accommodations and services vary greatly throughout colleges in the United States. As more studies are conducted on the perplexing question of what are reasonable accommodations and services for students with learning disabilities, institutions must begin to come to a consensus of what is reasonable and not rely on minimum established law but rather the intent of the law.

Table 5

Overall Positive Responses of Faculty Willingness to Make Accommodations

Service	Total %
Tape recording of lectures	98.66
Use of proofreaders in spelling and grammar	94.63
Allow students to respond orally to essays	86.45
Allow students to dictate answers	86.40
Allow extra time to complete tests	85.23
Provide students with a detailed syllabus	81.66
Use of basic calculator during tests	76.86
Give student partial credit for process	73.33
Extend deadlines for completion of assignments	71.70
Allow students to replace written assignments with oral reports	67.50
Use of proofreaders to substitute higher level of vocabulary	67.45
Provide students with copies of lecture notes	56.23
Allow alternative forms of exams	53.80
Allow students to complete alternative assignments	50.13
Allow misspellings without penalizing	46.90
Allow students to do extra credit when option is not available to other students	32.56
Allow proctor to rephrase test questions	5.13

Nelson, Dodd, & Smith, (1990)

This literature review examines both the accommodations and services being offered to postsecondary students with learning disabilities as well as practiced and attitudes of the institutions providing the services. Surveys conducted by Nelson et al. (1990) and Bursuck et al. (1989) both presented data that alternative assignment modifications seemed less favored by faculties, while tape recording of lectures appears to be the most favored. Is this because taping of lectures requires the least amount of difficulty for the instructor or because taping of lectures makes the least change to the content or both? While Hock et al. (1999) investigated tutoring as a way to assist postsecondary students with learning disabilities, Ganschow et al. (1999); Nelson et al. (1999); and Bursuck et al. (1989) did not include tutoring as a possible service. Keim et al. (1996) investigated the influences that certain accommodations had on students' cumulative GPAs. They concluded that tutoring and test accommodations had no influence on students' cumulative GPA. Also evident in the research is a lack of strategy instruction for postsecondary students with disabilities (Ganschow et al., 1999). It is assumed that students who enroll in a postsecondary program have the tools to learn (DeBettencourt, 1987). As seen in many high school courses, tutoring, assignment alteration, and extra time on tests, is often not sufficient for students with disabilities to be academically successful. This could be due to an institutions' unwillingness to offer any accommodations that exceed requirements set forth in Section 504 and ADA. It appears that small colleges and community colleges offer more personalized services, as shown by the increase in the development of IEPs, service monitoring, open enrollment, and individualized tutoring and counseling.

All authors cited in this review agree that more research needs to be conducted on the most effective services for postsecondary students with learning disabilities. Future research in different parts of the country should include faculty surveys of willingness to accommodate students with disabilities. Results could be combined with student surveys of the success of accommodations to create a model program. Community colleges and vocational programs should be included since the largest numbers of students with disabilities are enrolling in these programs. Research should be conducted to include data on retention and graduation rates as well as follow-up on postsecondary graduate data to assess the effectiveness of service providers for graduate students with disabilities. As institutions struggle to meet the demands of postsecondary students with disabilities, they must continue to develop effective programs. Postsecondary settings will continue to be compelled to improve and expand service delivery due to federal regulations and the increasing number of students with disabilities who are seeking higher education degrees.

CHAPTER THREE

Methods and Procedures

Chapter one provided a rationale for research of postsecondary students with disabilities, a description of why research in the area is relevant, and an outline of The University of Oklahoma's Office of Disability Services (OU/ODS) program. The literature reviewed in chapter two examined the historical background of postsecondary students with disabilities including federal legislation, litigation, types of accommodations, and attitudes of providers. Chapter two also presented methodologies used in previous studies along with advantages and disadvantages of each.

This chapter will explore: (a) population characteristics, (b) previous studies conducted at The University of Oklahoma (OU), (c) research designs used for archival research, (d) strengths and weaknesses of the various research designs, and (e) the procedure used to collect and analyze data for each question.

Population Characteristics

The primary researcher collected the data for this study for the most part at the OU/ODS. Archival and active files of students with disabilities who requested services of the OU/ODS from fall semester 1991 until fall semester 2001 were included in the study. The OU/ODS provided accommodations and/or services on an individual basis to students who had self-identified as students with disabilities. For future reference, the term services will also include accommodations. Determining factors to receive services from the OU/ODS included: reports from diagnostic services, medical reports, previous academic accommodations, previous academic performance, nature of classes being taken, and requests made from the students. Students with disabilities make requests at

the time of enrollment or during initial contact with the OU/ODS. Students must then proceed through an intake meeting with the OU/ODS personnel and services are then determined. Students must request services every semester after attending the first week of classes. Services may change depending on any changes in the determining factors previously stated (S. Dyer, personal communication, July 1, 2002). Students have to traverse their way through the medical complex to find the OU/ODS. The OU/ODS consists of four offices and one testing room that can accommodate approximately 16 students. The OU/ODS student staff ratio is also well above the average of public institutions of higher education which was a 114 students with disabilities to staff ratio.

Students With Learning Disabilities

Students with learning disabilities (LD) are the most prevalent population being served in postsecondary two- and four-year colleges (Lewis & Farris, 1999). Students with LD may have experienced academic and social difficulties, school failure, and ever-present frustrations in previous educational settings (Vogel & Reder, 1998). The 1997 Reauthorization of Individuals with Disabilities Education Act define learning disabilities as follows:

- (1) General. The term means a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, that may manifest itself in an imperfect ability to listen, think, speak, read, write, spell, or do mathematical calculations, including conditions such as perceptual disabilities, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia. (2) Disorders not included. The term does not include learning problems that are primarily the result of visual, hearing, or motor disabilities, of mental retardation, of emotional disturbance or of environmental, cultural, or economic disadvantage (CFR 300.7, p.14).

Services for students in this category include but are not limited to: distraction free testing, priority enrollment, extra time on tests or assignment, notetakers and readers.

Students With Other Disabilities

Students with emotional, psychological, brain or developmental disabilities are categorized as “Other” by the OU/ODS. Many students in the “Other” category manifest characteristics not falling in any of the traditional disability categories or demonstrate characteristics from multiple disabilities. Services for students in this category can range from priority scheduling to test modifications.

Students with Attention Deficit Disorder/Attention Hyperactivity Disorder

Although attention deficit disorders/attention deficit hyperactivity disorder (ADD/ADHD) is not a disability category recognized by IDEA, these students can be eligible for services under Section 504 of the Rehabilitation Act. ADD/ADHD is not a category in the Lewis and Farris (1999) or Horn and Berkold (1999) surveys although this is a growing population. Students with ADD/ADHD demonstrate a persistent pattern of inattention and/or hyperactivity with an impulsiveness that is more frequent and severe than is typically observed in individuals without an attention deficit disorder. Services for students with ADD/ADHD may include but are not limited to: distraction free testing, extended time on tests and assignments, notetakers, and counseling for organizational skills.

Students with Learning Disabilities/Attention Deficit Disorder/Hyperactivity Disorder

A category serviced by the OU/ODS but not recognized by the Lewis and Farris (1999) or Horn and Berkold (1999) surveys is students with Learning Disabilities and Attention Deficit Disorder/Attention Deficit Hyperactivity Disorder (LD/ADD). Students

with LD/ADD demonstrate many of the same characteristics as students with LD and ADD/ADHD and could easily be classified in either category. Because of the nature of the multiple disabilities, students with LD/ADD may require even more services than students with LD or ADD/ADHD.

Students with Mobility Impairments

Students with mobility impairments have physical disabilities, which inhibit their ability to move effectively around or to campus without the use of aids such as: wheelchair, cane, or walker. The OU/ODS assists students with mobility impairments in a variety of ways. This includes but is not limited to priority enrollment to increase mobility between classes, coordination of transportation on and off campus, housing considerations, parking, and needed furniture for optimum learning in classrooms.

Students with Other Health Impairments

Students with chronic health or other health impairments (OHI) can be eligible to receive services from the OU/ODS. These are students with a wide range of chronic ailments, which can affect learning. Services for students with OHI can range from priority enrollment to test and assignment assistance depending on the individual needs of the student with OHI.

Students with Sensory Impairments

Students with visual and hearing sensory impairments may require readers, enlarged texts, interpreters, notetakers, extended time for exams, distraction free environments for exams and adaptive computer technology. As with all students with disabilities they receive any services deemed necessary on an individual basis.

University of Oklahoma Previous Studies

Summary of Students Receiving Services, Spring 2000 and Spring 2001. The University of Oklahoma Institutional Research and Reporting Department (2000 & 2001) summarized numbers received from the OU/ODS for the academic years 1999 – 2000 and 2000 – 2001. Summaries were reported in spring semesters of 2000 and 2001 for the entire academic years. They reported on students that received services on an individual basis from the OU/ODS. A summary of each disability and the number receiving services as reported in spring semesters 2000 and 2001 is presented in Table 6.

Table 6

Summary of Students With Disabilities Spring 2000 and Spring 2001 University of Oklahoma, Norman Campus

Year	ADD/ADHD	OHI	VI	HI	MI	LD	LD/ADD	Other	Total
2000	28	19	18	9	26	71	15	26	212
2001	27	24	21	15	27	105	37	28	284

OU's Institutional Research and Reporting Department, 2000 & 2001

Note: Numbers may differ slightly from data collected from files due to files being used, worked on, not in file drawer etc. at the time of data collection. ADD refers to attention deficit disorder/attention deficit hyperactivity disorder. HI refers to hearing impaired. LD refers to learning disabilities. LD/ADD refers to learning disabilities and attention deficit disorder. MI refers to mobility impairment. OHI refers to other health impairment. VI refers to visual impairment.

The OU/ODS provided services to 105 students with learning disabilities for the 2000-2001 academic year (AY); an increase from the 71 students for the previous academic year (OU's Institutional Research and Reporting Department, 2001). Thus, students with learning disabilities were the largest population provided services by the OU/ODS. This was an increase of 34 students from the spring 2000 semester (OU's Institutional Research and Reporting Department, 2000). The second largest group who were provided accommodations by the OU/ODS was identified as students with "other" disabilities. This included students with emotional, psychological, neurological or developmental disabilities. The OU/ODS provided accommodations to 28 students in the other category according to the spring 2001 report. Over the past three years this category has been steadily on the rise (S. Dyer, personal communication, July 1, 2002). Students with learning disabilities and attention deficit disorders (LD/ADD) were the third largest population provided with accommodations according to the spring 2001 report (OU's Institutional Research, 2001). This was an increase from 15 students to 37 students from the previous year.

The OU/ODS also provided accommodations to 27 students with attention deficit disorder (ADD or ADHD) according to the spring 2001 semester report (OU's Institutional Research and Reporting Department, 2001). This showed a decrease of one student from the spring 2001 semester report (OU's Institutional Research and Reporting Department, 2000). Although ADD/ADHD is not a disability category recognized by IDEA, these students can be eligible for services under Section 504 of the Rehabilitation Act. The OU/ODS serviced 24 students in this category according to the spring 2001 report. This was an increase of 5 students from the spring 2000 report. ADD is a growing

population (S. Dyer, personal communication, July 1, 2002) and is tied as the fourth largest group served by the OU/ODS. Also tied as the fourth largest group receiving services from the OU/ODS are student who are mobility impaired. The OU/ODS provided services for 26 students during the AY 1999-2000 and 27 during the AY 2000-2001.

The smallest groups of students being provided with accommodation according to the spring 2001 semester report were students with visual and hearing sensory impairments (OU's Institutional Research and Reporting Department, 2001). There were 18 students with visual impairments who received services during the AY 1999-2000 and 21 for the AY 2000-2001. Nine students with hearing impairments received services during the AY 1999-2000 while 15 received services during the AY 2000-2001.

Method

The study consisted of a quantitative research design to address research questions previously stated in chapter one. Quantitative research is described as a method that studies populations or samples of populations (Gall, Borg, & Gall, 1996). The study was a historical research design that was descriptive in nature answering questions such as, "what is" or how was something done"? Since the purpose of this study was the creation of a comprehensive view of the past and present program available to support students with disabilities at OU, a historical design was considered the most appropriate. Synthesizing the data into a thematic pattern thus painting a picture of the past is the purpose of a historical design (Gall et al., 1996). By conducting a historical study the University of Oklahoma and other postsecondary institutions may be able to better design and evaluate future programs.

Data Collection/Procedure

The primary researcher collected data in the OU/ODS. Inactive student files were stored in a secure closet, alphabetized in cardboard boxes. Active files were in a secure file cabinet in the director's office. Archival and active files of students who requested services of the OU/ODS from fall semester 1991 until fall semester 2001 were reviewed. Data were collected from primary sources of written and electronic records. Data were collected anonymously in the privacy of the OU/ODS and the Zarrow Center. Intake forms, request for accommodation memos, case study charts, and test-taking logs comprised the historical data used for tabulation. Data obtained from students' transcripts provided grade point average and degree information. Historical data included personal demographics, types of services received, type of disability, GPA, and graduation rates (see Appendix A).

The University of Oklahoma's Office of Research Administration, Institutional Review Board (IRB) approved the research proposal for this study on September 5, 2001. The proposal included an agreement by the principal researcher and OU to protect all FERPA rights for all students whose files were reviewed. The proposal also included an agreement by the secondary researcher and OU to protect all FERPA rights for all files reviewed.

Data collection from each file met a 3-prong criterion. First, the student's intake date could not be prior to the fall 1991 semester. Second, the student had to have qualified for services from the OU/ODS. Finally, sufficient identifying information had to be present to obtain transcript information such as social security number or proper name.

Development of each student's demographic information completed an overview for the proposed study. A subject number was assigned for each student and the information was tallied. Initially the demographics form was used and information was handwritten. Information including, name, intake date, social security number, disability category, gender, hometown and college. Also, written was any request for accommodation information by semester and services requested. Information transferred to a spreadsheet made the data more accessible. Using the University of Oklahoma's CICS program, students with disabilities transcripts were compiled. Each piece of demographic information was categorized into a variable form and entered onto spreadsheet using SPSS Base 10.0 (1999) statistics program.

Inter-observer Reliability

To insure inter-observer reliability a separate qualified person also collected data from twenty-five percent of the files analyzed. Inter-observer reliability is the extent to which more than one observer agrees with data collected from the same files (Gall et al., 1996). This insures the validity of the information the primary researcher gathered from the files reviewed. The inter-observer observation results will be reported in chapter four.

Data Analysis

The type of data analysis was determined by two major factors. One, the research questions being addressed and two, the information that was found in the files. The following section will identify the research question asked, and the type of analysis used in each.

Research Question 1. Research question 1 asked if and how has the student population and types of services from the OU/ODS changed over a ten-year period? A

descriptive analysis included the following demographic characteristics: disability type, age, gender, ethnicity, and number of semesters requested services. The comparison was tabulated and tallied using crosstabulation information with SPSS. The count also tabulated how many students had initial intake in each semester and of the total number of students requesting services in each semester. Total enrollment for the university with gender and ethnic information was acquired. This was compared to gender and ethnic information obtained from the OU/ODS.

Research Question 2. Research question 2 asked how do the characteristics of students who request services from the OU/ODS compare with similar students from other similarly sized schools. After the characteristics of OU's students were tallied and totaled they were compared with the studies completed by Lewis and Farris (1998) and Horn and Berktold (1999).

Research Question 3. Research question 3 investigated if variables such as gender, ethnicity, and disability influenced students' with disabilities GPA or graduation rate. With GPA as the dependent variable a 2 (gender) by 6 (ethnicity) by 9 (disability) ANOVA was conducted to test main effects. The influence of a variable by itself on the dependent variable equals the main effects (Gall et al., 1996).

Since graduation rate is a dichotomous variable, either students graduated or they did not, a 2 X 2 k table was used to test conditional odds ratios and homogeneity of odds ratios. There was no distinction between undergraduate and graduate students for this study. Since two sets of variables were obtained, gender and disability, the test for homogeneity of odds compared the differences between the variances obtained from the independent variables. Since there were limited individuals from each ethnicity type with

each disability only the two-way interactions involving gender were tested. A Breslow-Day statistics tested for odds ratio for each gender across the levels of disability. An association among gender and graduation rate would be indicated if the odds ratios were not the same across the levels of disabilities.

Research Question 4. Research question 4 asked if higher frequency of services received by college students with disabilities influenced their GPA and graduation rate. A Pearson correlation coefficient was run to describe the relationship between number of visits and GPA. A Pearson correlation coefficient correlates the degree of relationship between two quantitative variables (Jaeger, 1993). Since graduation was a binary variable, yes or no, and number of visits was a quantitative variable, a Spearman correlation coefficient was conducted. Both correlations for GPA and graduation rate were run in two different ways. First, the number of visits after intake with both dependent variables was conducted. Then, the average number of visits for the entire number of semesters the student was at the University of Oklahoma was also used for both dependent variables.

Research Question 5. Research question 5 investigated if the types of services received by university students with disabilities influenced their GPA or graduation rate. A stepwise regression technique was used since there was no prior research on which variables would have an effect. A stepwise regression procedure is exploratory in nature and is constructed by alternately adding and deleting independent variables one at a time to determine any significance with the dependent variable (Jaeger, 1993). Caution must be taken when reporting stepwise regression data since it is exploratory data analysis that can capitalize on chance, so control over alpha, the probability of a type 1 error is not

fixed at .05. A type 1 error is the rejection of the null hypothesis when it is true (Gall et al., 1996). A model summary was then generated that predicted the three strongest types of services. For the strongest types of services coefficients were run to see if any of the three were more statistically significant than any of the others.

Since graduation rate is a dichotomous variable the regression function was a logistic model of prediction. The logistic model predicts the probability of graduating divided by the probability of not graduating. Assessing the same three predictors as with GPA a stepwise logistic regression was conducted. Using a likelihood ratio test criterion a final model Chi-square was then run to determine the probability of degree attainment. As with GPA the results reported are exploratory in nature since in stepwise logistic regression alpha is not controlled well.

Research Question 6. Research question 6 explored whether types of services requested change as a student remains at the university. This is reported descriptively as a simple frequency tally of requests made to the OU/ODS by each individual student. Also reported will be if students requested a decrease or increase of services and examples of the specific changes requested.

Research Question 7. Research question 7 was a comparison between the type of disability and the frequency of services requested and provided. An ANOVA was conducted testing for differences in the means for each disability category with the dependent variable of number of visits to the OU/ODS including intake and only students who had multiple visits. Then an ANOVA was conducted testing for differences in the means for average number of visits for the entire number of semesters the student was enrolled at the University of Oklahoma.

CHAPTER FOUR

Results and Data Analysis

The purpose of this study is to analyze historical demographical data collected for the past ten years at the University of Oklahoma's Office of Disability, Judicial and Veterans Services the (OU/ODS). Data were collected from past and present students with disabilities who self-identified and requested services. Creation of a comprehensive view of OU's program for students with disabilities is a major goal of this study. Using a variable assignment system the primary researcher categorized each piece of data entered into SPSS Base 10.0 (1999) software. Data were collected from 867 individual student files located at the OU/ODS. The primary researcher calculated data demographics using 852 of the 867 available students with disabilities student files. Not all student files were calculated due to missing data, files being outdated or inaccurate file information. In this chapter results and data analysis are reported in accord with the research questions.

Results of Research Questions

Student Population Demographics 1991-2001

Research question 1 asked if and how the student population from the OU/ODS changed over a ten-year period. Table 7 shows a summary by year of the total student population at the University of Oklahoma, compared to the total population of OU students with disabilities served by the OU/ODS. While the total student population of OU increased 18% over the ten-year period, the total population of students with disabilities receiving services from the OU/ODS increased 809%. Also, the total OU student population decreased between the 1993-1994 academic year (AY) and the AY

Table 7

Comparison of Total Population of University of Oklahoma with Students Receiving Services from The Office of Disability Services, University of Oklahoma, Norman Campus

Year	OU Student Population	Percentage of Change by Year	OU/ODS Student Population	Percentage of Change by Year	OU/ODS Percentage of Total Population
1991-1992	19,153	---	22	---	.11
1992-1993	19,353	+1	42	90.9	.21
1993-1994	19,402	+ .25	44	+4.7	.23
1994-1995	19,166	-1.2	99	+125	.51
1995-1996	19,349	+ .9	136	+37.3	.70
1996-1997	19,360	+ .05	156	+14.7	.80
1997-1998	19,843	+2.4	170	+8.9	.86
1998-1999	20,365	+2.6	201	+18.2	.99
1999-2000	20,579	+1.1	212	+8.7	1.03
2000-2001	20,963	+1.9	280	+32.1	1.3

Note: Total for OU was determined by calculating the average of the fall and spring semesters. The OU/ODS totals were accrual numbers for the fall and spring semesters of students requesting services. Summer semesters and fall 2001 semester were not calculated.

1994-1995 while the number of students receiving services from the OU/ODS during those academic years never decreased. As shown in Table 7 the percentage of OU students with disabilities receiving services increased from .11 percent of the total student population to 1.3 percent of the total population at OU over the ten-year period.

For every disability category there were multiple specific diagnoses. Table 8 is a summary of the disability categories and examples of specific diagnoses.

Table 8

Disability Categories and Sample Specific Certifications of Students Receiving Services From The Office of Disability Services, University of Oklahoma, Norman Campus

Disability Category	Specific Certification
Attention Deficit Disorder/ Attention Deficit Hyperactivity Disorder	ADD or ADHD
Hearing Impairment	Deaf Moderate Bilateral Sensorineural Hearing Loss
Learning Disability	Disgraphia Dyslexia

Table 8 – continued

Mobility Impairment	Amputee
	Cerebral Palsy
	Reflux Sympathetic Dystrophy
	Myelomeningocele/Paraplegic
	Prosthetics Arm/Leg
	Spinal Bifida
	Spinal Cord Injury
Other Health Impairments	Crohn's Decease
	Cystic Fibrosis
	Lupus
	Migraines
	Osteoarthritis
	Seizures
Visual Impairment	Anaridia
	Blind
	Poor
	Binocular Vision

Table 9 and Figure 2 illustrates a summary of students with disabilities by year of intake as students first self-identified. Returning students who were receiving services and had completed intake in previous academic years were not included in Table 9 or

Table 9

Summary of Students with Disabilities By Year of Intake, Office of Disability

Services, University of Oklahoma, Norman Campus

Academic year	ADD	ED	HI	LD	LD/ADD	MI	OHI	VI	Other	Total
1991-1992	2	3	1	8	1	7	3	3	0	28
1992-1993	4	0	1	13	1	4	2	3	1	29
1993-1994	5	2	7	27	1	10	4	5	1	62
1994-1995	8	7	2	28	3	11	12	7	0	78
1995-1996	23	6	3	17	5	8	15	9	0	86
1996-1997	11	10	3	22	9	12	8	10	3	88
1997-1998	15	9	1	27	3	11	14	5	1	86
1998-1999	21	5	4	30	4	9	11	5	1	90
1999-2000	16	14	6	29	8	12	21	3	2	111
2000-2001	16	17	6	34	8	8	13	9	0	111
Fall 2001	17	5	5	32	7	4	8	4	1	83*

Note: ADD refers to attention deficit disorder/attention deficit hyperactivity disorder.

Table 9 - continued

ED refers to emotional disorder. HI refers to hearing impaired. LD refers to learning disabilities. LD/ADD refers to learning disabilities and attention deficit disorder. MI refers to mobility impairment. OHI refers to other health impairment. VI refers to visual impairment.

*Fall 2001 represents only half of the academic year.

Figure 2 Summary of Students with Disabilities by Year

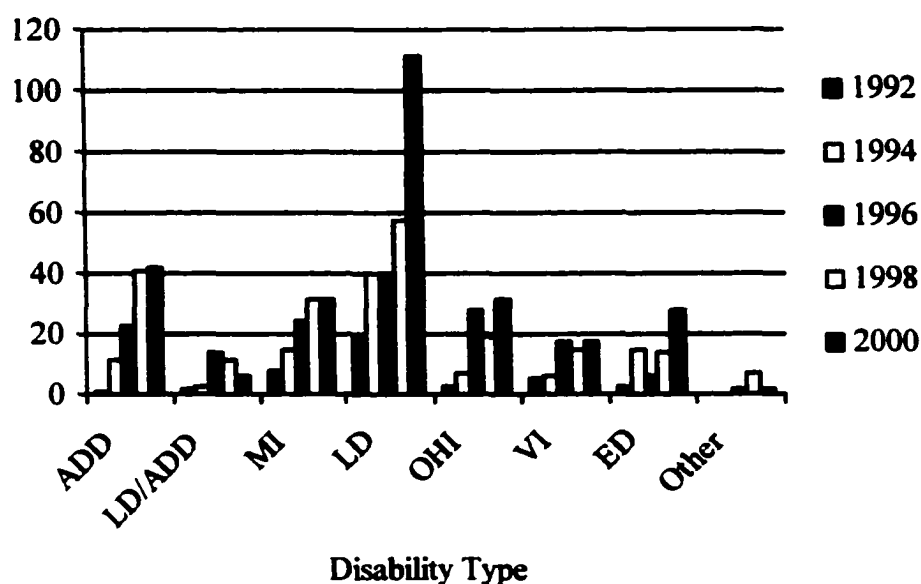


Figure 2. Over the ten-year period the total number of students who completed the intake process increased from 28 in AY 1991-1992 to 111 in AY 2000-2001, an increase of 296%. Two of the ten years showed no increase in number of intakes, the AY 1996-1997 and the AY 1997-1998 from 88 to 86 students respectively, and AY 1999-2000 to AY 2000-2001 remained the same at 111 students. Table 10 shows a summary total of

Table 10

Summary of Students with Disabilities by Year, Receiving Services From The Office of Disability Services, University of Oklahoma, Norman Campus

Year	ADD	ED	HI	LD	LD/ADD	MI	OHI	VI	Other	Total
1991-1992	3	1	2	7	1	2	2	4	0	22
1992-1993	1	3	0	20	2	8	3	5	0	42
1993-1994	3	4	1	24	2	9	5	5	0	44
1994-1995	11	15	2	40	3	15	7	6	0	99
1995-1996	21	13	3	32	10	22	22	12	0	136
1996-1997	23	6	2	40	14	24	28	17	2	156
1997-1998	34	10	1	43	15	25	25	16	1	170
1998-1999	41	14	6	57	11	31	19	15	7	201
1999-2000	40	19	4	74	4	25	31	9	6	212
2000-2001	42	28	20	111	6	31	31	17	2	285
*Fall 01	37	21	12	71	7	11	29	11	1	200
Total	256	133	53	519	75	203	202	117	19	1577

Note: ADD refers to attention deficit disorder/attention deficit hyperactivity disorder. ED refers to emotional disorder. HI refers to hearing impaired. LD refers to learning disabilities. LD/ADD refers to learning disabilities and attention deficit disorder. MI refers to mobility impairment. OHI refers to other health impairment. VI refers to visual impairment. *Fall 2001 represents only half of an academic year.

students requesting accommodations by year and disabilities. This number increased from 22 students in AY 1991-1992 to 280 students in AY 2000-2001, an increase of 1,190%.

As shown in Table 9, Table 10 and Figure 2, students with learning disabilities were the largest group requesting and receiving services. For the entire ten-year period, 31% of all students who completed the intake process were students with learning disabilities. The total that received services, 32.7%, were students with learning disabilities. The number of students in both groups increased every year except the AY 1995-1996 when the number of students with learning disabilities dropped in both intake and those requesting services.

Academic year 1995-1996 was the only year that students with attention deficit disorders outnumbered students with learning disabilities for intake during the entire ten-year period. Students with attention deficit disorders were the second highest group in both initial intake and students requesting services for the ten-year period. Students with attention deficit disorders were 15% of the total for initial intake and 16.5% of the total requesting accommodations and/or services. Years that total students with attention deficit disorders decreased in intake were years that students with learning disabilities increased.

The overall male student population at the University of Oklahoma outnumbered the female student population in all ten years from 1991 to 2001 as illustrated in Table 11. What should be noted is that the differences decreased as the decade continued. In the fall 1991 semester the male student population outnumbered the female student

Table 11

University Enrollment by Gender Fall Semesters, University of Oklahoma, Norman Campus.

Year	University of Oklahoma			Male/Female
	Male	Female	Total	Percentages
Fall 1991	10,790	8,859	19,655	55/45
Fall 1992	10,835	9,180	20,015	54/46
Fall 1993	10,714	8,966	19,680	58/42
Fall 1994	10,679	9,004	19,683	54/46
Fall 1995	10,810	9,154	19,964	54/46
Fall 1996	10,815	9,211	20,026	54/46
Fall 1997	10,869	9,640	20,509	53/47
Fall 1998	10,994	10,074	21,068	52/48
Fall 1999	11,173	10,166	21,339	52/48
Fall 2000	11,200	10,422	21,622	52/48
Fall 2001	11,645	11,016	22,661	51/49

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population by a total of 1,931 male students. By the fall 2001 semester the male student population only outnumbered the female student population by a total of 629 male students.

Overall male students with disabilities completing the intake process at the OU/ODS outnumbered female students with disabilities 417 to 352 for the entire ten-year period. For two of the 10 years, fall 1999 and fall 2000, male students with disabilities outnumbered female students with disabilities by 10% or more. Table 12 illustrates the number of students completing the intake process at the OU/ODS for the same ten fall semesters. Figure 3 illustrates intake by gender for the entire academic year over the ten-year period. As illustrated in Figure 3, male students outnumbered female students all of the ten years except for the AY 1997-1998. In that year female students outnumbered male students 48 to 38. The following AY 1998-1999, male students and female students completed the intake process at an equal rate of 45 students.

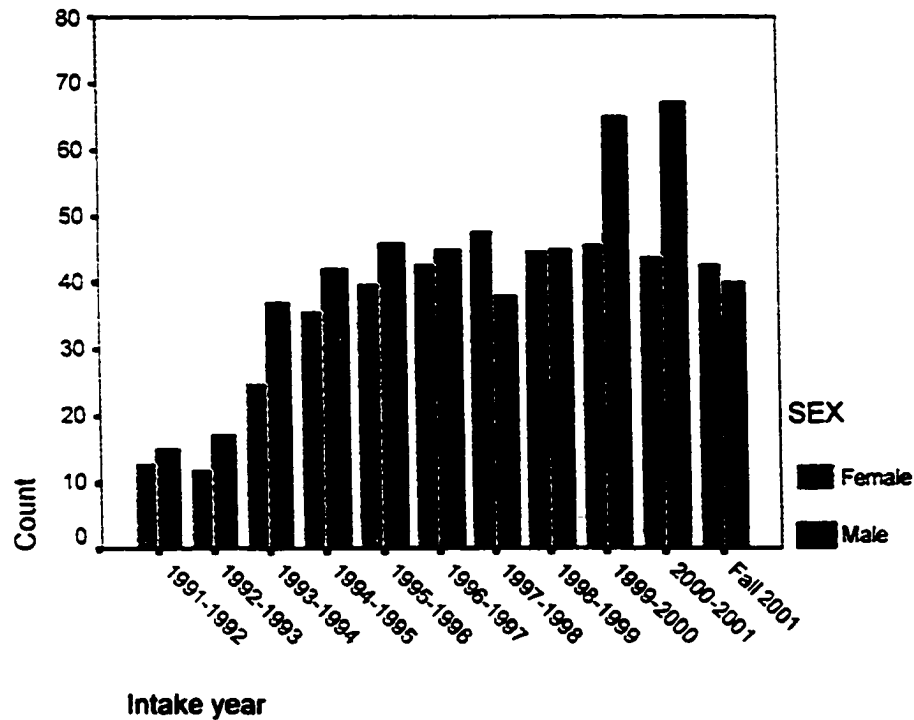
When comparing gender rates to disability types female students with other health impairments outnumbered males 8 of the 11 years. Table 12 shows that the second largest female student group appears to be females with hearing impairments. Male students outnumbered female students for 9 of the 11 years among students with learning disabilities and mobility impairments. Table 13 illustrates a cross tabulation distribution by year, disability and gender of students completing the intake process from the OU/ODS.

Table 12

***Office of Disability Services Intake by Gender Fall Semesters, University of Oklahoma,
Norman Campus***

Year	Office of Disability Services			Male/Female
	Male	Female	Total	Percentages
Fall 1991	10	9	17	53/47
Fall 1992	13	8	21	62/38
Fall 1993	18	13	31	58/42
Fall 1994	18	21	39	46/54
Fall 1995	29	27	56	52/48
Fall 1996	25	23	48	52/48
Fall 1997	18	22	40	45/55
Fall 1998	23	28	51	45/55
Fall 1999	43	28	71	61/39
Fall 2000	35	29	64	55/45
Fall 2001	40	43	83	48/52

Figure 3 OU/ODS Intake By Gender 1991-2001



Percentages of the ethnic backgrounds of total student population are represented in Table 14. Percentages of the ethnic backgrounds of total students with disabilities requesting services from the OU/ODS are represented in Table 15. White students were the majority (70%) in overall enrollment, as well as students completing intake at the OU/ODS, also overall above 70% and as high as 84.3% in AY 1997-1998. The percentage of White students enrolled at OU decreased steadily over the ten-year period dropping from 78% in AY 1991-1992 to 71% in fall semester 2001. During the

Table 13

Cross Tabulation Distribution by Year, Disability and Gender of Students Completing Intake Process From The Office of Disability Services, University of Oklahoma, Norman Campus

Year	ADD		ED		HI		LD		MI		OHI		VI		Other	
	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M
1991-1992	2	0	1	2	0	1	5	4	2	5	2	1	1	2	0	0
1992-1993	0	0	3	1	0	1	6	8	2	2	1	1	0	3	0	1
1993-1994	1	4	0	2	5	2	11	17	3	7	0	4	4	1	1	0
1994-1995	1	7	4	3	2	0	15	16	3	8	8	4	3	4	0	0
1995-1996	4	19	5	1	1	2	8	14	5	3	11	4	6	3	0	0
1996-1997	3	8	7	3	3	0	16	15	4	8	4	4	4	6	2	1
1997-1998	8	7	4	5	1	0	15	15	6	5	10	4	4	1	0	1
1998-1999	11	10	0	5	2	2	10	27	4	8	13	8	2	1	2	0
1999-2000	6	10	6	8	3	3	10	27	4	8	13	8	2	1	2	0
2000-2001	6	10	9	8	4	2	11	31	4	4	7	6	3	6	0	0
Fall 2001	8	9	2	3	4	1	19	20	2	2	6	2	2	2	0	1

Note: ADD refers to attention deficit disorder/attention deficit hyperactivity disorder.

ED refers to emotional disability. HI refers to hearing impaired. LD refers to learning

disabilities. LD/ADD refers to learning disabilities and attention deficit disorder. MI

refers to mobility impairment. OHI refers to other health impairment. VI refers to visual

impairment. *Fall 2001 represents only half of an academic year.

Table 14***Ethnic Background Percentages of the University Of Oklahoma Total Enrollment******Norman Campus***

Year	White	Black	Hispanic	Asian	American Indian	Other
1991-1992	78.0	5.5	2.0	3.1	3.7	7.3
1992-1993	75.7	6.1	2.3	3.5	4.6	7.5
1993-1994	73.8	6.0	2.4	3.8	5	8.6
1994-1995	72.1	6.2	2.5	4.2	5.8	8.8
1995-1996	71.4	6.2	2.8	4.3	6.4	8.6
1996-1997	71.0	6.1	3	4.6	6.7	8.4
1997-1998	71.2	6.4	3.2	4.8	6.7	7.7
1998-1999	70.8	6.6	3.4	4.9	6.6	7.6
1999-2000	70.4	6.6	3.6	5.0	6.9	7.5
2000-2001	70.7	6.6	3.5	5.0	6.9	7.3
*Fall 01	71.3	6.1	3.4	4.8	7.2	7.1

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same time period the percentage of White students completing intake at the OU/ODS fluctuated from as high as 84.3% for the AY 1997-1998 to a low of 70.3% for the AY 1991-1992. The second highest ethnic group completing the intake process at the OU/ODS changed from year to year while for total enrollment at OU the “Other” category was the second highest group for every year except the fall 2001 semester. The

Table 15***Ethnic Background of Students with Disabilities, University of Oklahoma, Norman******Campus***

Year	White	Black	Hispanic	Asian	American Indian	Other
1991-1992	70.3	3.7	3.7	3.7	14.8	3.7
1992-1993	79.3	6.8	3.4	3.0	6.8	3.4
1993-1994	74.6	5.1	1.6	1.6	10.1	6.7
1994-1995	79.2	3.8	5.2	1.2	7.7	2.5
1995-1996	80.9	1.2	1.2	0	10.7	6.0
1996-1997	82.7	3.4	0	0	6.8	6.8
1997-1998	84.3	6.0	0	1.2	4.8	3.6
1998-1999	78.3	6.0	2.4	0	1.2	12.0
1999-2000	72.3	11.4	1.9	4.7	6.6	2.8
2000-2001	80.5	5.8	2.9	.97	6.7	2.9
*Fall 01	83.8	7.5	2.5	0	2.5	3.8

OU Fact Book 2001

“Other” category ranged from 8.8% of the total enrollment at OU during the AY 1994-1995 to 7.1% during the fall semester 2001. The second highest ethnic group for students completing intake at the OU/ODS fluctuated between the “Other” category ranging from 12% during the AY 1998-1999 to 3.8% for the fall semester 2001, and American Indian ranging from 10.7% during the AY 1995-1996 and 4.8% during the AY 1997-1998.

Comparison of the OU/ODS with Two National Studies

Research question 2 queried how do characteristics of college students who request services from the OU/ODS compare with similar students from other public four-year postsecondary institutions of more than 20,000 students? For the purpose of comparison demographic information reported in question 1 will be used and discussed in chapter five.

Independent Variables and Their Influence on GPA and Graduation Rate

Gender, Ethnicity Type and Disability Category. Research question 3 asked do variables such as gender, ethnicity type, and disability influence GPA and graduation rate for students with disabilities? Differences were tested by conducting a 2 (gender) by 6 (ethnicity type) by 9 (disability) ANOVA model that tested main effects and the two interactions involving gender with the dependent variable of GPA. A full factorial model was not run because some of the ethnic groups had no entries in the disability category. The gender effect was $F = 8.189$, $p = .004$. The ethnicity type effect was $F = 2.102$, $p = .063$ and the disability effect was $f = .965$, $p = .462$. Since the gender effect was the only variable to reach significance, a second ANOVA was run to determine significance between the male students with disabilities and the female students with disabilities on the dependent variable GPA. Table 16 shows the means for both types of students. The female students GPA mean was at 2.621 while male students were at 2.396.

The second part of research question 3 investigates the influence of gender, disability and ethnicity type using a different dependent measure of graduation rate. Since there were not enough individuals from each ethnic group with each disability the tests of

Table 16

Means for Each Gender with Dependent Variable Grade Point Average

Gender	Mean
Female	2.621
Male	2.396

interaction were limited to two-way interactions involving gender with disabilities and gender with ethnic groups. First, a Breslow-Day statistics test was run to see whether the odds ratio for each gender is the same across all levels of disabilities. The Breslow-Day statistic was $p < .526$ appearing to imply no interaction between gender and disability in terms of graduation rate.

Frequency of Services Received and Their Influence on GPA and Graduation Rate. Research question 4 asked do higher frequency of services, received by college students with disabilities from the OU Office of Disability Services, influence their GPA and graduation rate? A Pearson correlation coefficient was used to describe the relationship between the numbers of total visits a student made to the OU/ODS and their GPA. For the purpose of analysis the number of visits were counted after intake. Students who never requested services after intake were outliers removed from the analysis. Table 17 shows the correlation between the total number of visits after intake and GPA for the remaining 386 cases. The Pearson-product correlation coefficient for GPA and number of visits was non-significant. It was not significantly different from 0, $r = .081$, $p = .112$. Table 17 also shows a correlation that was then conducted using the Spearman rho

Table 17

Correlation Between Total Number of Visits After Intake and Grade Point Average

	Grade Point Average
Total Visits to OU/ODS Not Counting Intake	$r = .081a$
Sig. (2-tailed) p	$p = .112$
Number of Subjects	$N = 386$

Note: r = Pearson Product-Moment correlation coefficient.

Correlation Between Total Number of Visits After Intake and Graduation Rate

	Graduation Rate
Total Visits to OU/ODS Not Counting Intake	$r = .067$
Sig. (2-tailed) p	$p = .189$
Number of Subjects	$N = 386$

Note: r = Spearman's rho correlation coefficient.

correlation coefficient for graduation rate and number of visits. This was also nonsignificant, $r = .002$, $p = .96$. The same correlation coefficients were conducted using the number of visits students make to the OU/ODS after intake. The number of visits was then divided by the number of semesters requesting services. Table 18 illustrates that there was no significance between number of visits, GPA or graduation rate. The Pearson-product correlation coefficient for GPA and number of visits was nonsignificant, $r = .002$ and $p = .981$. The Spearman rho correlation coefficient for the graduation rate and number of visits was also nonsignificant at $r = .017$ and $p = .800$.

Table 18

Correlation Between Total Average Number of Visits per Semester After Intake and Grade Point Average

Grade Point Average	
Average Number of Visits Per Semester After Intake	r= .002
Sig. (2-tailed) p	p = .981
Number of Subjects	N = 386

Note: r = Pearson Product-Moment correlation coefficient.

Correlation Between Total Average Number of Visits per Semester After Intake and Graduation Rate

Graduation Rate	
Average Number of Visits Per Semester After Intake	r= .017
Sig. (2-tailed) p	p = .800
Number of Subjects	N = 386

Note: r = Spearman's rho correlation coefficient

Types of Services Received and Their Influence on GPA and Graduation Rate.

Research question 5 investigated if the types of services received by university students with disabilities influence their GPA or graduation rate. From 1991 to 2001, 511 students with disabilities received extended time on tests and assignments, while 448 students received distraction free testing. Notetakers for class were the third most popular service with 127 students receiving that service. All other types of services were requested by

less than ten percent of the students with disabilities. First, for GPA a model summary was conducted which reported the three “best” predictors of GPA. The three predictors: notetakers, extended time on test and assignments, and use of equipment was then calculated as an ANOVA and predicted 2.3% of the total variance in GPA, with $F = 6.139$ and $p < .05$. The coefficients for the three predictors were notetakers $-.294$, extended time on tests $.200$ and equipment $.719$. Table 19 illustrates the coefficients for the three predictors. Table 20 illustrates the means and standard deviation for each of the best three predictors: “Yes” meaning that the N number of students requested the service and “No” meaning that the N number of students did not request the service. The total mean is the total average of all students with disabilities who requested and received services. This analysis was completed with only 808 of the 852 student files since not all

Table 19

Coefficients and Significance of Notetakers, Extended Time, and Equipment Services with Dependent Variable Grade Point Average

Predictors	Unstandardized		t	Sig.	95% Confidence	
	Coefficients				Interval	
	B	Std. Error			Lower Bound	Upper Bound
Notetakers	-.294	.100	-2.95	.003	-.49	-.098
Extended Time	.200	.074	2.702	.007	.055	.346
Equipment	.719	.308	2.34	.02	.115	1.323

Table 20

***Means of Notetakers, Extended Time, and Equipment Services with Dependent Variable
Grade Point Average***

Notetakers for Class	Mean	N	Standard Deviation
Yes	2.34	124	.8794
No	2.59	684	1.03
Total	2.5526	808	1.02

Extended Time Tests and Assignments	Mean	N	Standard Deviation
Yes	2.61	491	.8748
No	2.46	317	1.19
Total	2.55	808	1.02

Equipment Use	Mean	N	Standard Deviation
Yes	3.18	11	.756
No	2.54	797	1.02
Total	2.55	808	1.02

students returned after intake or there was not complete available data or services rendered, which were requested and received during the students' academic career at the

university. The second part of research question 5 investigated the types of services received by university students with disabilities and the influences on graduation rate--whether or not the student graduates. Exploring the probability of a student with disabilities graduating was conducted using a logistic model utilizing a forward stepwise progression to analyze the graduation rate of students getting a degree and students not getting a degree. Since the chi-square had more than one degree of freedom an omnibus test evaluated the significance of the overall question of graduation. The chi-square equaled 21.968 with $p < .05$ and degree of freedom being 4. These results suggest that the overall model predicts the probability of graduation better than by chance. The four best predictors in the model are notetaking, use of word processing, foreign language substitution and the use of large print. The Exp (B), which is the exponential of e raised to the beta power for notetaking is .505; beta being the regression coefficient. This means that students who receive notetaking services are half as likely to graduate than those not receiving notetaking services. Students receiving word processing services for testing and assignments have odds that are twice as likely to graduate as students who do not receive word processing help with an Exp (B) of 1.999. Students receiving foreign language substitution classes have odds that are also twice as likely to graduate at 2.8 and students receiving large print texts and tests have odds three times likely to graduate at 3.203.

The graduation rate is coded as 1 = degree and 0 = no degree. Table 21 illustrates the means for all of the model services with the graduation rate as the dependent variable. For students with disabilities receiving notetaking accommodations in class the probability of getting a degree is .1935. This means that the odds of getting a degree is $.1935/(1 - .1935) = .24$. The probability for students with disabilities who did not receive

Table 21

Means and Odds of Notetakers for Class, Word Processor Use on Exams, and Foreign Language Substitution with Dependent Variable Graduation Rate

Notetakers in	Mean	Odds =	N	Standard
Class		Mean/(1 – Mean)		Deviation
No Degree	.3236	.48	686	.4682
Degree Earned	.1935	.24	124	.3967
Total	.3037	--	810	.4601

Word Processor	Mean	Odds =	N	Standard
for Exams		Mean/(1 – Mean)		Deviation
No Degree	.2967	.42	765	.4571
Degree Earned	.4222	.73	45	.4995
Total	.3037	--	810	.4601

Foreign Language	Mean	Odds =	N	Standard
Substitution		Mean/(1 – Mean)		Deviation
No Degree	.2975	.42	790	.4574
Degree Earned	.5500	1.2	20	.5104
Total	.3037	--	810	.4601

Table 21 - continued

Large Print Texts and Tests	Mean	Odds = Mean/(1 – Mean)	N	Standard Deviation
No Degree	.2995	.42	798	.4583
Degree Earned	.5833	1.4	12	.5149
Total	.3037	--	810	.4601

notetaking in class is .3236 so the odds become .48. The difference in the two reported odds was determined to be significant by the logistic model.

Types of Service Changes Made From Semester to Semester

Research question 6 examined the types of service changes made by students the longer they remained at OU. By completing a tally of the types of services requested or not requested for each student it was summarized that of the 852 individual student files reviewed, 162 or 19% requested no services after intake, 334 or 39.2% requested services for only one semester, 224 or 26.3% requested the same type of services for two or more semesters, and 132 or 15.5% requested changes in services. Of the 132 students with disabilities that requested changes in services, 16 or 12.12% changed, but requested the same amount, 83 or 32.88% requested additions. Ten or 7.57% requested additions and decreases 23 or 17.42% requested less services. Examples of additions included: adding extra time on exams and assignments; addition of readers and large print texts; addition of tape recorders in the classroom and copies of notes to name a few. Examples of decreases in services included: distraction free testing and extra time on test to extra time

on test only; extra time on tests and notetakers to extra time on tests; and scribes, notetakers and medical information letter to use of scribes only.

Type of Disability and the Frequency of Services

Research question 7 was a comparison between the type of disability and the frequency of services requested and provided. In other words, does the type of disability influence the number of visits? First an ANOVA model was conducted testing for differences in the means for each disability category for all students with disabilities with one or more visits to the OU/ODS during their entire time at OU. The test was non-significant, $F = 1.688$, $p = .098$ so a Games-Howell multiple comparison was conducted. Students with hearing impairments were the only group that showed significance with $p = 0$. Table 22 shows the means and confidence intervals for all disabilities. The students with hearing impairments had a mean number of visits at 1.56, significantly lower than other students with disabilities. Student's with visual impairments had the highest number of visits with a mean of 9.48. Students with learning disabilities, attention deficit disorders, and a combination of learning disabilities and attention deficit disorders all had mean visits of eight or more.

Inter-observer Reliability

A second researcher independently reviewed data from 25% of randomly selected individual student files, 219 files from a total of 867, originally reviewed by the primary researcher. The secondary researcher recorded miscoded variables directly on the spreadsheet created by the primary researcher. Each file contained eight variables making

Table 22

Significance Level, and Means For All Disability Types with One or More Visits to the University of Oklahoma's Office of Disability Services

Disability Type	Mean	Standard Error	95% Confidence Interval	
			Lower	Upper
ADD/ADHD	8.58	1.26	6.364	10.786
ED	6.57	1.44	3.74	9.39
HI	1.56	2.088	-2.53	5.66
LD	8.026	.799	6.46	9.59
LD/ADD	8.5	1.84	4.88	12.12
MI	6.53	1.33	3.92	9.14
OHI	6.44	1.24	4.01	8.87
VI	9.48	1.64	6.25	12.7
Other	4.0	4.12	-4.09	12.09

Note: ADD refers to attention deficit disorder/attention deficit hyperactivity disorder. ED refers to emotional disability. HI refers to hearing impaired. LD refers to learning disabilities. LD/ADD refers to learning disabilities and attention deficit disorder. MI refers to mobility impairment. OHI refers to other health impairment. VI refers to visual impairment.

a total of 1,728 variables to be verified. Of the 1,728 variables within the student files reviewed the second researcher found 33 differences. The number of agreements divided by the total number of variables times 100 set the overall inter-observer reliability at 98.09%.

CHAPTER FIVE

Discussion

The purpose of this study was two-fold (a) to perform a first time records review and data analysis, and (b) to create a comprehensive view of the past and present support services to students with disabilities at the University of Oklahoma. The research design adopted in this study used historical quantitative methods from data gathered from the University of Oklahoma, Office of Disability Services (OU/ODS) student files over a ten-year period of time. Data were gathered from 867 individual files of students who requested and received services from the OU/ODS during 1991 to 2001 academic years.

Collected demographic data addressed the research questions: (1) Has the student population at the OU/ODS changed over a ten-year period? (2) How do characteristics of students from OU/ODS compare with other postsecondary institutions? (3) What variables influence students' GPA and graduation rate? (4) Do higher frequency of services from the OU/ODS influence students' GPA and graduation rate? (5) Do types of services influence students' GPA and graduation rate? (6) Do types of services change as students remain longer at the university? (7) Do types of disabilities influence types and frequency of services requested?

Findings from this study demonstrated that while the total OU student population had increased from 1991 to 2001, the total population of OU students with disabilities receiving services had increased substantially. Other findings included that students with learning disabilities were the largest group requesting and receiving services from the OU/ODS while the second highest group was students with attention deficit disorders. Overall, male students with disabilities who completed the intake process outnumbered

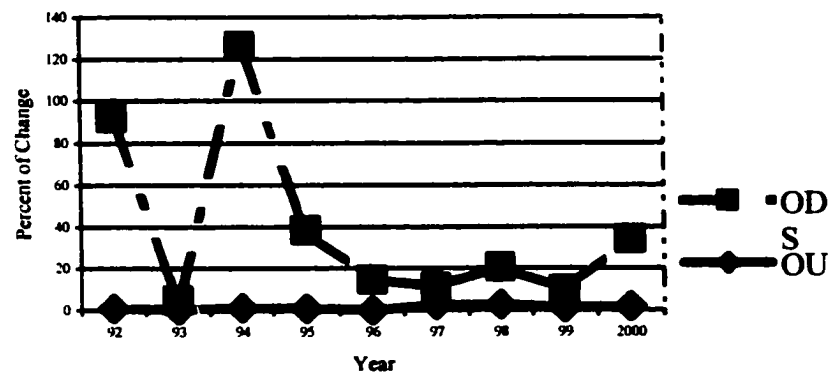
female students with disabilities for six of the ten years. OU students with learning disabilities requested services at a lower rate compared to one national study for the AY 1996-1997 and at about an equal rate in the second national study compared for the AY 1997-1998. Gender was the only variable that influenced OU students' with disabilities GPA or graduation rate. The frequency or types of services appeared to have no influence on GPA and graduation rate. The majority of OU students with disabilities did request services for only one semester or requested no changes in services. Students who requested services increased the amount of services received. Finally, the type of disability and frequency of visits appeared to be significant only for OU students with hearing impairments.

Discussion of Findings to Student Population Demographics 1991-2001

Research Question 1. Has the student population from the OU/ODS changed over a ten-year period?

Demographic information such as gender, ethnicity and disability type was compared between the total population of OU students and OU students with disabilities. While the total student population of OU only increased 18% between the 1991 and 2001 ten-year period, the total population of students with disabilities receiving services from the OU/ODS increased 809%. Figure 4 illustrates the greater increase of students with disabilities as compared to the total student population. Total OU student population did decrease in two of the ten years with no decreases in OU students with disabilities population. For OU students with disabilities the AY 1994-1995 and the AY 1992-1993 had the largest increases with 125% and 90.9% respectfully. The average increase in the first half of the 1990's was 64.23%, while the last half of the decade was 17.78%. One

Figure 4 Comparison OU Population to The ODS Population by Percentages



might predict that increases in the OU students with disabilities population are decreasing except that the AY 2000-2001 had the fourth largest increase over the ten-year period at 32.1%. The percentage of OU students with disabilities requesting and receiving services from the OU/ODS as compared to the total population of OU increased every year over the ten-year period from .11% to 1.3%. This trend continued into the AY 2001-2002 as reported by Martin and Duncan (2002) with OU students with disabilities being 1.5% of the total population of OU students.

Overall, OU students with learning disabilities were the largest growing population of OU students with disabilities for the entire ten-year period. OU students with learning disabilities increased every year except for the 1995-1996 and the 1999-2000 academic years. The decreased years were the same for students completing the intake process, but not for total students with learning disabilities requesting and

receiving services. During the AY 1999-2000 students with learning disabilities requesting and receiving services increased by 22.9%. For the second half of the decade the number of OU students with learning disabilities continued to increase.

Discussion of the Comparison of the OU/ODS with Two National Studies

Research Question 2. How do characteristics of college students who request services from the OU/ODS compare with similar students from other public four-year postsecondary institutions of more than 20,000 students.

Three national studies were used to compare the number of students with disabilities at OU with the general population, and the characteristics of college students who requested services from the OU/ODS.

Martin and Duncan (2002) conducted a survey of research extensive universities to determine the average student-to-staff ratio at the Offices of Disability Services; and the average percent of students with disabilities at 151 national research extensive universities. Of the 151 universities contacted over 105 replied. The authors reported that the OU/ODS has the third highest student to staff ratio for the Big. OU reported a student-to-staff ratio of 217 to one being the third highest of the six Big 12 universities surveyed as illustrated in Table 23. This was also well above the average of public schools which was a 130.36 students with disabilities to one staff ratio. Eleven of the Big 12 universities are research extensive universities and all 11 responded to the survey. The University of Nebraska reported a ratio of 80 to 1, The University of Colorado at Boulder a ratio of 72-1, The University of Texas at Austin a ratio of 177-1, The Iowa State a ratio of 147-1 and the University of Kansas a ratio of 235-1. Only four other

Table 23

***Student to Staff Ratios and Percentages of Students with Disabilities to Total Student
Population at Big XII Universities***

University	Student/Staff Ratio	Percent of Students with Disabilities to Total Student Population
University of Missouri	52	1.4
University of Colorado	72	2.2
Texas A&M University	80	.09
University of Nebraska	80	1.1
Iowa State University	147	1.6
Oklahoma State University	152	1.7
Kansas State University	152	2.2
University of Texas-Austin	177	1.8
University of Oklahoma	217	1.5
University of Kansas	235	2.5
Texas Tech University	261	3.1

Martin & Duncan (2002)

Universities reported higher student to staff ratios than OU.

The national average percent of students with disabilities at research extensive public universities compared to total student population was 2.2 percent. Big 12 research

extensive universities averaged 2.03% of total student population being students with disabilities. OU was 8th of the 11 Big 12 universities at 1.5% with Texas Tech University being the highest at 3.19% and Texas A&M University being the lowest at .99%.

Comparison of students with disabilities from OU and two other national studies resulted in some differences and similarities. Students with attention deficit disorders were not included since studies by Lewis and Farris (1999) and Horn and Berktd (1999) did not identify students with attention deficit disorders. Students with emotional disabilities are not categorized at OU separately, but were counted for the purpose of this study. It should be noted that the two studies collected data from different populations. Lewis and Farris (1999) surveyed institutions for the AY 1996-1997, while Horn and Berktd (1999) surveyed incoming freshman for the AY 1995-1996. Even with the differences between the two surveys both were compared to the data collected for separate years.

Table 24 compares the percents by disabilities of total students requesting services from the OU/ODS with percents as reported in Lewis and Farris (1999) for the year 1996-1997. Students with mobility impairments were the only category that OU was equal with the national averages. Students with learning disabilities, emotional disabilities, hearing impairments and other health impairments were all at a lower percent of total population served than the Lewis and Farris study. The largest discrepancy was students with learning disabilities; there were 16.7% less students with learning disabilities at OU for the AY 1996-1997.

Table 24

Percent by Disability of Total Students Requesting Services From the University of Oklahoma Office of Disability Services as Compared with Percents Reported in Lewis and Farris (1999) for the AY 1996-1997

Disability	Lewis & Farris (1999) Data From AY 1996-1997	University of Oklahoma Data From AY 1996-1997
ADD/ADHD	NA	14.7
ED	6.9	3.8
HI	4.6	1.2
LD	51.3	34.6
MI	14.6	15.3
OHI	11.1	32.6
VI	5.1	10.8
Other	6.3	1.2

Note: ADD refers to attention deficit disorder/attention deficit hyperactivity disorder.

ED refers to emotional disability. HI refers to hearing impaired. LD refers to learning disabilities. LD/ADD refers to learning disabilities and attention deficit disorder. MI refers to mobility impairment. OHI refers to other health impairment. VI refers to visual impairment.

Horn and Berktd (1999) reported numbers from the AY 1995-1996 as shown in Table 25. When percentages were compared with the intake numbers from the OU/ODS for the same year students with learning disabilities comprised 29.2% of the population from the Horn and Berktd survey and almost equal at 30.8% of the population from this study. The largest discrepancy was for students with hearing impairments. Horn and Berktd reported students with hearing impairments as 16.3% of the total population with disabilities while only 2.2% of students completing the intake process at the OU/ODS were students with hearing impairments. Table 24 also shows an equal distribution nationally for gender while at OU for the same year males outnumbered females 51% to 49%.

For the AY 1996-1997, OU students with all disabilities except mobility impairment were at a lower percent of total population served than the Lewis and Farris (1999) national study. Of the 14 services, which Lewis and Farris listed as being provided to students with disabilities, OU/ODS students received 11. Services not received were, special orientation, special career or placement services or personal attendants.

Lewis and Farris (1999) only reported the percent of schools that provided specific services, not the total percent of students who used a particular service. It should be noted that additional time alternative exam was the service that 88% of the surveyed schools offered and that was the service most requested and received by the OU/ODS students.

The Horn and Berktd (1999) report was generated from student surveys and the Lewis and Farris (1999) report was generated from institution surveys. More of OU's

Table 25

Percent by Disability and Gender of Total Students Requesting Services from the University of Oklahoma Office of Disability Services as Compared with Percents Reported in Horn and Berkold (1999) for AY 1995-1996

Disability	*Horn & Berkold (1999)	University of Oklahoma
	Data From	OU/ODS Intake Data From
	AY 1995-1996	AY 1995-1996
ADD	NA	15.4
ED	NA	9.5
HI	16.3	2.2
LD	29.2	30.8
MI	22.9	16.1
OHI	21.2	16.2
VI	16.3	8.8
Other	NA	0
Gender		
Male	50	51
Female	50	49

Note: ADD refers to attention deficit disorder/attention deficit hyperactivity disorder.

ED refers to emotional disability. HI refers to hearing impaired. LD refers to learning disabilities. LD/ADD refers to learning disabilities and attention deficit disorder. MI refers to mobility impairment. OHI refers to other health impairment. VI refers to visual impairment.

students with learning disabilities may be self-identifying and seeking services could be why the OU/ODS percentages of students with learning disabilities receiving services matches more closely the Horn and Berkold study.

Discussion of Independent Variables and Their Influence on GPA and Graduation Rate

Research Question 3. Do variables such as gender, ethnicity, and disability of college students influence their GPA and graduation rate?

An ANOVA tested for effectiveness of the variables, gender, ethnicity, disability and GPA. When testing for main effects of the three variables only the gender effect had significance at $p = .004$. The ethnic type effect was close to significance at $p = .63$. By using the Games-Howell procedure for unequal sample size it was determined that even without disability in the model ethnic type remained close to significance at $p = .052$. It appears that overall for the ten-year period gender was the only variable that had an influence on GPA with ethnic type being close to significance. This was evident in the mean GPAs. Female students with disabilities had GPA's of 2.621, while male students with disabilities had GPAs of 2.396.

The influences of gender, ethnicity and disability on graduation rate followed a different route from the influences of those variables on GPA. Since graduation rate is a dichotomous variable a different type of ANOVA was conducted with similar results. Since there were not enough individuals from each ethnic type with each disability the tests were only two-way interactions involving gender and disability type. This demonstrated if the variables were independent. An odds ratio for gender was run given all types of disabilities and was nonsignificant at $p < .526$. Therefore, we cannot reject the

null hypothesis that gender, graduation rate, and disability are independent. There appears to be no statistical significance between the variable gender and graduation rate.

Discussion of Findings for Frequency of Services Received

Research Question 4. Do higher frequencies of services received by college students with disabilities from the OU/ODS influence their GPA and graduation rate?

To determine if number of visits to the OU/ODS influence GPA and graduation rate two different correlations were conducted: (a) total number of visits after intake, and (b) total average number of visits for the student with disabilities over the entire university career. There was no significance or difference in GPA and graduation rate. All correlations were $p > .05$.

Discussion of Findings for Types of Services Received

Research Question 5. Do the types of services received by university students with disabilities from the OU/ODS influence their GPA and graduation rate?

Extended time on tests and distraction free testing were the two most frequently requested services by students with disabilities at OU. Yet a linear model regression function predicting GPA was conducted and the best predictors of GPA of services were notetakers, extended time, and use of equipment. The coefficients for the three predictors were, notetakers $-.294$, extended time on tests $.200$, and equipment $.719$. This implies that the GPA of those requesting notetakers is 2.94 units lower than those not requesting notetakers. While those requesting extended time on tests and equipment use was slightly higher. Since a stepwise regression method was used to determine the influences a cautionary note is necessary. Stepwise regression methods are exploratory techniques that can capitalize on chance so the results are speculative in nature.

The results were similar for graduation rate predicting that the mean graduation rate of a student with disabilities getting a degree when not using notetakers is .3236 while the mean graduation rate of a student with disabilities getting a degree and using notetakers is .1935. For students with disabilities using word processors on exams, foreign language substitutions and large print on texts and tests, the graduation rate was higher for those who used these services than those who did not.

Discussion of Findings for Comparisons Between the Type of Disability and Frequency of Services

Research Question 6. Do the types of services requested change as students remain longer at the university?

Of the 852 individual students with disabilities files reviewed, 19% requested no services, 39.2% requested services for only one semester, 26.3% requested no change for 2 or more semesters and 15.5% requested changes in services. Of the 15.5% who requested change, 7.57% requested additions and decreases; 12.2% requested the same amount but a different service; 17.42% requested fewer services; and 32.88% requested additions. While only 15.5% of the total population of students with disabilities receiving services from the OU/ODS did not request changes the largest number that did requested additions. This could be due to increasing difficulty as students progress at the university or an awareness of more services being made available to them.

Discussion of the Types of Disabilities and the Frequency of Services

Research Question 7. Does type of disability influence the types and frequency of services requested and provided?

The only group that showed significance with $p = 0$ was students with hearing impairments. This group had a mean number of visits 1.56 significantly lower than other students with disabilities. Students with hearing impairments visits to OU/ODS were lower since they use classroom interpreters, notetakers, or scribes. Students with visual impairments had the highest number of visits with a mean of 9.48. The equipment for taking test that many students with visual disabilities used are located in the OU/ODS thus increasing their need for visits to the OU/ODS. The mean number of visits for all other categories was similar and significantly higher than students with hearing impairments.

Limitations of the Study and Future Research Implications

The overall purpose of this study was the creation of a comprehensive view of the past and present services available to support students with disabilities at OU. As with any historical study there were a couple of limitations: (a) data may be inaccurate, and (b) data were not generalizable beyond OU. Question 2 is not truly answerable with all three of the studies used in the comparison. The information gathered from Martin and Duncan (2002) was the only national study that investigated staff-to-student ratios and recent percents of students with disabilities as compared to general populations. The categorizing of students with disabilities is not standardized at the postsecondary level, as it is with students with disabilities at the K-12 level. Practitioners as well as researchers should strive to develop a uniform definition of all disabilities to be used when working with postsecondary students with disabilities at postsecondary institutions or for the world of work.

Specific limitations for this study were: (a) student files were stored in deteriorating cardboard boxes in an unorganized manner due to lack of space, (b) incomplete student files or files which were difficult to read due to age, use of pencil instead of pen and/or storage methods, (c) lack of available information on students' grades in the classes that students with disabilities had received services, (d) no evidence of follow-up data for students with disabilities that ceased to request services, (e) inconsistencies in ways of identifying students with disabilities and terminology over the ten-year period, (f) lack of qualitative data asking students what services they felt were the most beneficial, and (g) lack of consistency of how data were recorded with little or no use of technology to collect data.

Several questions remain unanswered in respect to services that students with disabilities receive at the University of Oklahoma. Additional studies should investigate the reasons why the large increase in students with disabilities self-identifying and requesting services. Even though it appears that students who requested notetaking services had lower GPAs and graduation rates than students who did not request notetakeing, future studies should also reinvestigate this by disability and gender.

Since this study had such a large subject base, future studies should investigate the growing population of students with learning disabilities over a shorter period of time, utilizing only the past five years. Not only are students with learning disabilities the fastest growing population of students with disabilities, they are the most likely to request services for multiple times throughout subsequent semesters. Since the majority of students with disabilities (84.5%) did not request changes in services, a qualitative study should query students with disabilities as to the reason why a change in services was not

requested or if they knew that they could request service changes. Students should also be queried about services received, why they request certain services and what the OU/ODS could do to better provide services. Future studies should investigate the retention rate and graduation rate of students who completed the intake process but never requested any type of services. Since test accommodations can be course specific as stated in Kleim et al. (1996) the influences of test accommodations for GPAs in specific courses taken by OU students with disabilities should be investigated. As Kleim et al. (1996) also stated, since student motivation in requesting services could be a factor in determining effectiveness of a service there should be future research in that area.

Conclusion

Federal laws have mandated that services be made available to students with disabilities for postsecondary success. Postsecondary institutions such as the University of Oklahoma have offered such services with no standardized way to label how students are categorized and little or no evidence on the most influential service to increase or assist in student success. The majority of the research conducted to this point has been on the need for services and what is being offered. There has been no consistency of definition in the field of postsecondary education when categorizing students with definitions. There has been a lack of qualitative information from students with disabilities asking for information such as, are students with disabilities self-identifying and requesting services because of lack of stigma compared to past years or are they more aware of what is available at the postsecondary level, and what has or has not assisted students with disabilities in achieving academic success.

The University of Oklahoma's Office of Disability Services has experienced an increased number of students with disabilities requesting and receiving services at a substantial amount over the past ten years. It can be concluded that growth will continue, thus increasing the need for expanded services to meet the needs of the increased numbers of students with disabilities. Even though the staff conducts business in a professional and friendly manner with students, as the growth continues, it will become more difficult to offer affective services. This need includes increased personnel as well as facilities. Through increased knowledge regarding effective services, more students with disabilities at the postsecondary level will succeed in their collegiate educational experiences.

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APPENDICES

Appendix A

STUDENT DEOMOGRAPHICS

UNIVERSITY OF OKLAHOMA

OFFICE OF DISABILITY SERVICES

Name: _____ **Intake Date:** _____

Date File Reviewed: _____

SS# _____ **Gender:** ____ **Disability Category:** _____ **Permanent Home**

Town _____

Number of semesters at OU to date: ____ **Year Graduated from HS or GED:** _____

Major: _____

SEMESTER/YEAR	TYPES OF SERVICES	NUMBER OF VISITS	GPA	Credit Hours Per Semester

Appendix B
Institutional Review Board Acceptance Letter



The University of Oklahoma

OFFICE OF RESEARCH ADMINISTRATION

September 5, 2001

Ms. Sandra Ludwig
1801 Brandie Street
Tuttle OK 73089

Dear Ms. Ludwig:

The Institutional Review Board-Norman Campus, has reviewed your proposal, "Data Analysis from the Office of Disability Services at a 4-year College of More than 20,000 Students." The Board found that this research would not constitute a risk to participants beyond those of normal, everyday life except in the area of privacy which is adequately protected by the confidentiality procedures. Therefore, the Board has approved the use of human subjects in this research.

This approval is for a period of 12 months from this date, provided that the research procedures are not changed significantly from those described in your "Summary of Research Involving Human Subjects" and attachments. Should you wish to deviate significantly from the described subject procedures, you must notify me and obtain prior approval from the Board for the changes.

At the end of the research, you must submit a short report describing your use of human subjects in the research and the results obtained. Should the research extend beyond 12 months, a progress report must be submitted with the request for re-approval, and a final report must be submitted at the end of the research.

If you have any questions, please contact me.

Sincerely yours,

A handwritten signature in cursive script that reads "Susan Wyatt Sedwick".

Susan Wyatt Sedwick, Ph.D.
Administrative Officer
Institutional Review Board

SWS:lk
FY02-11

cc: Dr. E. Laurette Taylor, Chair, Institutional Review Board
Dr. David Lovett, Educational Psychology