

## ABSTRACT

Title of Dissertation: AN INVESTIGATION OF THE ACADEMIC  
PREPARATION OF STUDENTS WITH DISABILITIES  
PLANNING TO ATTEND A FOUR YEAR COLLEGE  
OR UNIVERSITY

Kevin O'Brien, Doctor of Education, 2011

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The purpose of this study was to examine the academic preparation of students with disabilities who plan to attend a four year college or university upon graduating from high school in the Participating School System. The study employed a measure of high school academic course rigor developed by Horn and Kojaku (2001) to measure the academic preparation of the 2008 school system's graduating class who planned to attend a four year college or university. Students were assigned one of four levels of rigor based on the courses completed for graduation. The study also examined the demographic, grade point average and time in special education for the participants. Descriptive statistics were used to describe the population.

A transcript analysis was completed on each student with an IEP (47) in the Participating School System class of 2008 who indicated plans to attend a 4 year college. The student participants were assigned a level of rigor ranging from rigorous (most challenging), to mid-level I, mid-level II, and core curriculum or below (least rigorous). The study revealed the majority of students did not meet the rigorous standard and completed courses that qualified for core curriculum or below. Six students qualified for mid-level I and four students mid-level II. One student met the rigorous standards.

Additional findings indicated that (a) there was no difference between males and females in terms of level of course rigor or cumulative GPA; (b) there was no significant difference in the level of course curriculum as a function of ethnicity (Hispanic non-Hispanic); (c) White participants and Multiracial participants had significantly higher GPAs than those in the Other racial category; (d) Black/African American participants did not differ on GPA from the other three groups; (e) Hispanic or Latino students had significantly lower GPAs than non-Hispanic or Latino students; (f) White participants and Multi-racial participants were significantly more likely to take classes at the core or higher level than Black/African American and Other race students; (g) the students in this sample were unlikely to have taken AP classes or honors classes, but likely to have taken support classes; and (h) the students in this sample spent the majority of their high school class time in general education classes rather than special education classes. The findings emphasized the need for high school counselors and special education teachers to encourage students with disabilities who are planning to attend a 4 year college or university to take a more rigorous curriculum in order to prepare them for degree attainment.

AN INVESTIGATION OF THE ACADEMIC PREPARATION OF STUDENTS  
WITH DISABILITIES PLANNING TO ATTEND A FOUR YEAR COLLEGE OR  
UNIVERSITY

by

Kevin O'Brien

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## DEDICATION

I would like to dedicate this dissertation to my children, Keeley Jean and Kerrington Jane; you were my inspiration to complete this study. I hope you make the world a better place.

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I would like to thank my family for their unconditional love and support. I would especially like to thank my Mother, Patricia, who has been one of the most inspirational people in my life.

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## **CHAPTER 1: INTRODUCTION**

The number of students with disabilities attending post-secondary institutions has tripled since the 1970s (Garza, 2005). This increase can be attributed to changes in public law, such as, the Americans with Disabilities Act of 1990 and Section 504 of the Vocational Rehabilitation Act of 1973 including recent Amendments. These laws ensure equitable access to public education for students with disabilities and prohibit discrimination on the basis of disability (Switzer, 2003). Youth with learning, hearing, and visual disabilities, as well as other health impairments, make up more than three-fourths of those with disabilities who attend post-secondary education (Cameto – et al., 2004). Although much progress has been made to assure access to higher education for students with disabilities, a significant discrepancy still exists when they are compared to their general education peers. The focus of this study was to examine the academic curricula that students with disabilities who were planning to attend a 4 year college or university were exposed to in a school system that serves the children of parents serving in the military. In the following dissertation this school system is referred to as the Participating School System.

### **Background of the Problem**

General education students are three times more likely to attend college than those with a disability (Cameto et al., 2004). Five years after enrollment in a college, 80% of youth with disabilities have not graduated (Cameto et al., 2004). After 10 years of enrollment, 56% of youth with disabilities have not graduated, compared to 32% of their peers without disabilities (Cameto et al., 2004). Post-secondary education is defined as educational activities youth engage in after leaving high school (Cameto et al., 2004).

Some examples may include 2 or 4 year college, vocational technical school, adult education, job corps, private training program, or apprenticeship program (Cameto et al., 2004). Approximately 61% of high school students with disabilities predict they will attend post-secondary education and 60% of their parents expect them to attend post-secondary education. Yet, only 30% attend some form of post-secondary education, and only 4% attend full time (Cameto et al., 2004). General education students in high school predict they will attend post-secondary education over 90% of the time, and 88% of their parents expect them to attend post-secondary education (Wagner et al., 2005) Clearly, students with disabilities continue to fall significantly behind their peers without disabilities.

The Participating School System operates schools throughout the world for military and civilian dependents. The Participating School System's Community Strategic Plan Goal One states all students will meet or exceed challenging standards in academic content so they are prepared for continuous learning (Participating School System, 2011). Strategy One of the Community Strategic Plan states the school systems will utilize data driven decision making to ensure an aligned continuous improvement process (Participating School System, 2011). For the school system to make continuous progress towards preparing students for continuous learning, data must be collected and utilized for decision making. The Participating School System's 2008 post-secondary plans reported 29% of students with disabilities, and 62% of students without disabilities plan to attend a 4 year college or university. However, the level of rigor in their high school academic curriculum is unknown.

Horn and Berktold (1999) analyzed academic preparation and performance of a nationally representative sample of students using the National Education Longitudinal Study (1988/1994) data and reported students with disabilities who attended a 4 year college or university fell significantly behind their counterparts without disabilities in high school preparation for admission to a 4 year college/university. Horn and Kojaku (2001) analyzed the persistence path, defined as maintaining uninterrupted enrollment in a 4 year institution without a break in enrollment, of undergraduates 3 years after entering a 4 year institution by analyzing their high school academic course rigor. They concluded the level of the college student's high school curricula was strongly related to persistence in post secondary education. Adelman (2006, p. 10) analyzed high school transcripts for over 13,000 students and concluded "the academic intensity of the student's high school curriculum still counts for more than anything else in pre collegiate history in providing momentum toward completing a bachelor's degree."

### **Overview of College/University Success Predictors**

A number of studies have investigated factors related to success in colleges and universities. Student demographic information plays a role in success of students at a 4 year college. More females than males attend college/university and persist to degree completion according to data published by Mortenson (2003). One reason more females are successful at post-secondary education is females outperform males on high school grades, test scores, and college prep coursework. The discrepancies of success at every academic level between race and ethnicity are stark. Large differences in academic preparation and achievement between whites and blacks, and whites and Latinos, in terms of being prepared for college, continue to exist (Braswell, 2001). For example, only 21%

of black high school graduates and 33% of Hispanics have college-level reading skills (American College Testing Program, 2006). The gender, race, and ethnicity differences in college participation and completion are amplified when aggregated by socioeconomic status. For example, in 1996 students who completed high school who were classified as having low income socioeconomic status were less likely to attend a 2 or 4 year college than peers from middle and high income families (Choy, 2000). More than 40% of the most advantaged students received a Bachelor's degree or higher within 5 years of enrollment (Gladieux & Swail, 1998).

Research on the effects of high school academic course selection and post-secondary persistence supports the more rigorous the high school curriculum, the greater the odds of persistence toward to a 4 year college degree (Adelman, 1999, 2006; Horn & Berkold, 1997; Horn & Kojaku, 2001). Pike and Saupe (2002) examined what factors predict college/university success. Among the factors, high school grades (GPA) and class rank were strong predictors of first year college grades. However, high school GPA and class rank may be misleading as predictors of success at a 4 year college (Pike & Saupe, 2002). For example, a student who completes high school taking the easiest possible course selection to meet graduation requirements could inflate their GPA and/or class rank, but not be well prepared for a 4 year college.

Taking a rigorous course of study in high school is also a strong predictor of success in college (Adelman, 1999; Horn & Kojaku, 2001; Warburton, Bugarin, & Nunez, 2001). Students who graduate from high school who are academically well prepared are best positioned to do well in college, regardless race, gender, or socioeconomic status (Florida Department of Education, 2005; Gladieux & Swain, 1998;

Horn & Kojaku, 2001; Martinez & Kloputt, 2003; Warburton et al., 2001). Though a great deal is known overall about predictors of post-secondary success, there is far less knowledge about students with disabilities who enroll in 4 year colleges and universities.

The research on youth with disabilities in post-secondary education is not current. The majority of studies were completed in the early to mid-1990s. The studies of factors that predict college enrollment or participation have produced some findings.

Participation in extracurricular activities was found to predict enrollment in post-secondary education (Miller et al., 1990). In addition, achievement, quality of instruction received in secondary schools, transition planning, parent and student satisfaction with high school, parent involvement, parent expectations, educational aspirations, and enrollment in college prep classes are all related to successful achievement of a high school diploma (Halpern, Yovanoff, Doren, & Benz, 1995; Rojewsky, 1999; Wagner et al., 1993). It is important to note there is a significant lack of research in the area of factors contributing to success or persistence in a 4 year college for setting students with disabilities. Given what is known about the importance of high school curriculum on success in a 4 year college or university in the general population, this research may provide insight and be applicable to students with disabilities.

### **Benefits of Post-Secondary Education for Students with Disabilities**

Transition requirements encourage students with disabilities to consider all possibilities after high school, including post-secondary education. Research suggests students who graduate from post-secondary education experience similar employment outcomes as their nondisabled peers (Horn & Berkold, 1999). For example, Horn and Berkold reported that nearly 70% of students with disabilities who obtained a Bachelor's

degree were working full time, compared to 73% of their peers (1999). The U.S. Census Bureau (2001) reported a college education provides significant financial returns. In the year 2000, median annual earnings for workers aged 25 and older with a high school diploma was \$24,267, compared with \$26,693 for workers with an Associate's degree (27% higher), and \$40,314 for those with a Bachelor's degree, which was 66% higher (U.S. Census Bureau, 2001) than those with no post-secondary degree. Students with disabilities who have graduated with a 4 year degree have comparable salaries as their peers without disabilities. In 1994, full time annual salaries for students with disabilities were \$25,219, compared to \$26,988 for their non-disabled peers (Horn & Berktold, 1999). Gerber, Ginsberg, and Reiff (1992) found almost all of the highly and moderately successful people with learning disabilities had completed some post-secondary education, with 89% graduating with a Bachelor's degree. The employment and salary benefits of attending post-secondary education are clear.

### **Laws Supporting Post-Secondary Education for Youth with Disabilities**

Laws and policies provide the infrastructure for students with disabilities who aspire to post-secondary education. Laws that govern services for students with disabilities in secondary schools and post-secondary schools are quite different. Section 504 and the Americans with Disabilities Act (ADA) apply in post-secondary settings while IDEA governs the secondary school system. Section 504 and the ADA are basically antidiscrimination laws designed to provide access to students with disabilities (Eckes & Ochoa, 2005).

#### **Section 504 of the Rehabilitation Act and the Americans with Disabilities**

**Act.** In 1973 the Rehabilitation Act was passed by Congress. Section 504 of the



Rehabilitation Act prohibits discrimination on the sole basis of disability by recipients of federal funds (Switzer, 2003). Almost all American colleges and universities receive some federal funds; therefore, they must comply with both the law and its regulations. Section 504 of the Rehabilitation Act requires that students disclose their disability and provide documentation for eligibility of services at post-secondary institutions. According to the law, the documentation may include a diagnosis of a student's disability, how it affects a major life activity, and how it affects academic performance (Heyward, 1998). The Americans with Disabilities Act of 1990 extended the protections of section 504 of the Rehabilitation Act of 1973 to include public and private entities (Henderson, 1995). The greatest enrollment increase of post-secondary students with disabilities can be traced to that time. Specifically, the number of students with learning disabilities attending a post-secondary institution more than doubled from 1988 to 1994 (Henderson, 1995).

**Individuals with Disabilities Education Act.** The Education of all Handicapped Children Act was reauthorized in 1990 as the Individuals with Disabilities Act (IDEA) and amended in 1997 and 2004. The major goal of IDEA is to provide a “free and appropriate public education” (FAPE) to all students with disabilities in the “least restrictive environment” (LRE) as possible (Switzer, 2003). The LRE fosters inclusion in the general education setting and inclusion strengthens post secondary educational pursuits and outcomes for youth with disabilities (Cameto et al., 2004). Students who qualify for services under IDEA are entitled to an Individualized Education Plan (IEP), which specifies the instruction and curriculum that must be offered to meet the individual

needs of the student. The IDEA requires that students be educated to the maximum extent possible in the general education setting.

### **Participating School System Reports and Recommendations**

The Participating School System Community Strategic plan Goal One states “All students will meet or exceed challenging standards in academic content so they are prepared for continuous learning” (Participating School System, 2011). The Participating School System reports on post-secondary plans and scholarships for all graduating seniors throughout the world; the data collected are used to plan instruction and to provide the public information regarding the performance of Participating School System students. The Special Education Procedural Guide (Participating School System, 2011) provides guidance and recommendations for the provisions of services to students with disabilities. It is a reference manual to aid teachers, area and district personnel, and local case study committees in performing their assigned duties. The Participating School System Post Secondary Plans and Scholarship Report, Participating School System Graduation Requirements Report, and recommendations contained in the Special Education Procedural Guide, are reviewed.

### **Post-Secondary Plans and Scholarship Report**

The Participating School System Post-Secondary Plans and Scholarship Report (Participating School System, 2011) represent the intentions of seniors the year after graduation. Students are questioned in April of their senior year on whether they plan to (a) attend a 4 year University/College, Junior/Community College, or Vocational Technical School, (b) seek Employment or an Apprenticeship/On the Job Training, and (c) enlist in the Military. Student data on scholarship monies they have been offered are

also collected. According to the 2008 Post Secondary Plans and Scholarship Report, 91% of Participating School System students had a post secondary plan. The bulk of seniors (82%) indicated they planned to continue their education after high school, including 60% at a 4 year college/university, 19% at a Junior/Community college, and 3% at a Vocational/Technical School. There was no significant relationship between post secondary plans and ethnicity; however, there was a significant relationship between the postsecondary plans of seniors and race. A smaller percentage of African-American students reported they were planning to attend a junior/community college, and fewer Asian/Pacific Islander students reported they were planning on attending a technical school (Participating School System, 2008).

There was also a significant relationship between the postsecondary plans of seniors and gender, with a larger percentage of males reporting they were planning on enlisting in the military and seeking employment than females. For the first time, the 2008 Postsecondary Plans and Scholarship Report published disaggregated data on students with and without disabilities. Of students receiving special education services, 29% planned to attend a 4 year college, 29% planned to attend a junior or community college, 4% planned to attend “other” post secondary education, 13% planned to join the military, 10% planned to attend a technical school, and 16% planned to join the world of work. How well prepared the students with disabilities were to attend a 4 year post secondary education setting is not clear.

### **Implementation of Participating School System Graduation Requirements**

Beginning in school year 2007-2008, the updated graduation requirements went into effect. These requirements mandated that all students graduating from a

Participating School System schools have a minimum cumulative grade point average of 2.0, 26 earned Carnegie units of credit, and successful completion of all required courses. The Participating School System research and evaluation department reviewed a sample of transcripts of over 300 graduates in 2008 to determine the extent to which students met graduation requirements. The study found students with disabilities were overrepresented among students who did not meet graduation standards, but were reported as graduated. This finding indicated the principal of the students' high school waived core course requirements, the 2.0 GPA requirements, or total Carnegie credits needed more frequently for students with disabilities than their non-disabled peers. Many of the transcripts of students with disabilities indicated multiple deficiencies. According to the report, the over-representation of students with disabilities among those who graduated without meeting Participating School System graduation requirements raises concern. The report recommended that students within this subgroup should expect to meet minimum graduation requirements as peers without disabilities. The report recommended further study into this subgroup (Participating School System, 2009). In addition, the Participating School System now requires a higher level of authority, the district office superintendent, to waive core courses for students to graduate.

### **Special Education Requirements and Recommendations**

It is the policy of the Participating School System that all students with disabilities shall be provided a free, appropriate education in schools where placement and services decisions are based on the individual needs of the students, in the least restrictive environment, and in accordance with the systems' guiding principles. The special education policies are consistent with the Participating School System mission to

provide a quality educational program that prepares all students for success in a global environment (Participating School System, 2009). For the purpose of this research study, the Special Education Procedural Guide recommendations are reviewed for two areas: inclusion in the general education curriculum, and transition for students planning to attend postsecondary education.

**Inclusion in the general education curriculum.** According to the Special Education Procedural Guide, embedded in the Participating School System mission and policy is the practice of inclusive education, which is defined as the participation of all students, including those with disabilities, in the general education programs as appropriate. The procedural guide states that inclusive education is grounded in the philosophy that all children can learn and should have equal access to a quality education and the opportunity to be challenged to perform at increased levels of achievement. The student IEP requires a statement of supplementary aide and services and any modifications or support for school personnel necessary for the child to be involved and progress in the general education curriculum, and to be included and participate with other children without disabilities. For students in the secondary level, modified courses in the general education program are strongly recommended over separate special education classes.

**Transition for students planning to attend postsecondary education.** In the Participating School System Special Education Procedural Guide, transition refers to preparing students to successfully move from high school to the adult world. This guide states the case study committee (CSC) is required to focus on how the student's educational program can be planned to help the student meet his or her unique needs and

prepare for post-secondary education, employment, and independent living. The special education procedural manual supports two options of graduation: regular graduation plan in which students meet the minimum academic requirements for a diploma, and the modified or individualized education graduation plan in which students meet the objectives on their IEP to receive a high school diploma. Regardless of the plan needed for graduation, the diploma is exactly the same and does not indicate if they met regular or individualized academic requirements. In addition, all students, regardless of their disability, are eligible to graduate with honors in accordance to the Participating School System Honors Diploma (Participating School System, 2008).

In the Participating School System, formal transition planning begins at 14 years of age. The IEP team, including students and parents, develop a transition plan that identifies the student's transition goals and services needs. The transition plan should focus on determining a course of study and determining whether that course of study will lead student where they want to be upon graduation. In addition, transition planning should include (a) developing literacy in reading, written language, math, and computer skills, (b) helping students identify their interest, preferences and needs, (c) identifying possible post school outcomes, (d) prepare the student and parent to assume responsibility for accessing services and requesting accommodations in the community (self-advocacy), (e) linking students and parents with opportunities and experiences outside the school, (f) linking students and parents with further education and training options, and (g) linking students and parents with adult support services providers.

Transition assessments are required as part of the student's transition plan. These assessments are designed to help students determine their interest, preferences, aptitudes,

and abilities. Assessments should also provide information about the instructional strategies, techniques, and assistive technology needed for success. When designing a transition assessment plan, the CSC should include components of (a) academic learning, (b) career/employment and vocational training, (c) financial planning, (d) living requirements, (e) leisure and recreational interest and activities, (f) social relationships, (g) self-advocacy, and (h) medical support and assistance. Assessment techniques may include the administration of formal instruments, summaries of existing educational assessment data, and appropriate interviews of students and family members.

Individualized Transition Plans (ITP) are conducted as part of the IEP. The plans require the following members be invited to attend: the student, the parents/guardians, a special educator, vocational or general educators or counselors, representatives from the community or other agencies responsible for providing or paying for transitions services, administrator or designee, and related services providers. The ITP components must include a statement of needed transition services, desired post school outcomes, student career information, direct transition services and activities, recommended goals and objectives and recommendations for the year following high school graduation. The Participating School System Special Education and Procedural Guide requires a Final Transition Plan (FTP) be completed within 3 months of graduation. The FTP is required to provide information on linkages to post-secondary agencies relevant to the student's post-graduation plan; statements of the student's post-graduation plan; and needed post-secondary services.

In addition to the recommendations and requirements listed above, the Special Education Procedural Guide lists specific recommendations for students who plan to

enter post-secondary education. According to the guide, students should begin to plan for postsecondary options early in high school so they can select the proper course work. In addition, the Participating School System recommends that students with disabilities who plan to participate in post-secondary education should (a) receive training in asking for needed accommodations and supports (self-advocacy), (b) visit or audit classes from desired schools, (c) take college entrance exams early, and (d) send appropriate applications in the final year of high school. It is clear from these requirements the Participating School System takes seriously the goal of preparing secondary students with disabilities for post-secondary education, including 4 year colleges and universities.

### **Statement of the Problem**

Given the importance of being adequately prepared for completion of post-secondary education and the relationship to course rigor, there are currently no data on the rigor of academic preparation of students with disabilities graduating from the Participating School System. The purpose of this study was to examine the academic curricula of the Participating School System relevant to students with disabilities who graduated in 2008 who were planning to attend a 4 year college or university. The study employed a measure of high school academic course rigor developed by Horn and Kojaku (2001) to measure the academic preparation of the 2008 school system's graduating class who planned to attend a 4 year college or university. Data were collected from transcripts to determine if differences existed that might lead to unequal educational success. Although transcripts reflect the student's course selection throughout their years of high school, it should be noted that the Participating School System has a high rate of transition due to the military rotation policies. The counselors in the Participating School



System must be able to convert transcripts from various school systems into the Participating School System model. Therefore, it will be assumed that transcripts reflect accurately the student's course of study and be noted that students may have attended the Participating School System for less than four years. The following research questions guided this study.

### **Research Questions**

1. What was the level of course rigor for students with disabilities in the Participating School System who graduated high school in 2008 and planned to attend a 4 year college or university?
2. What were the demographic characteristics of students with disabilities in the Participating School System who graduated high school in 2008 and planned to attend a 4 year college or university and how did the characteristics relate to course rigor?
3. What were the academic high school experiences of students with disabilities in the Participating School System who graduated high school in 2008 and how did the experiences relate to course rigor?
4. Of those students with disabilities graduating in 2008 from the Participating School System and planning to attend a 4 year college or university, what was the total balance of credits earned in special education versus general education classes?

### **Significance of the Study**

The findings of this study were designed to assist leaders in the Participating School System to develop policies and programs to support students with disabilities who

plan to attend a 4 year college or university. This study is important because it is the first of its kind to describe the academic curricula of students with disabilities in the Participating School System who indicated plans to attend a 4 year college. Few studies have described the academic preparation of students with disabilities for 4 year college/university, and none has been carried out in Participating School System. The data collected will help meet Goal One of the Community Strategic Plan and assist in developing curriculum and policy within the system to improve student success in obtaining a 4 year college degree.

### **Definition of Terms**

The following special education definitions were taken from the Participating School System *Special Education Procedural Guide* (2011), which provides guidance for the provision of services to students with disabilities. It is a reference manual to aid administrators, area, and district personnel and local Case Study Committees (CSC) in performing their assigned responsibilities. Course description definitions were taken from the Participating School System curriculum guide, which is published online and through discussions with Participating School System leadership and staff.

### **Advanced Placement Classes (AP Classes)**

Through careful analysis of the Participating School System Course selection catalog, discussion with an Advanced Ed Participating School System District Liaison who provided training to all Advanced Placement teachers throughout the Participating School System, and a Participating School System high school transition specialist, for the purpose of this study the following classes were designated AP classes: AP English Language Arts; AP Statistics; AP Biology; AP English Lit; AP Statistics DL; AP US

History; AP Calculus; AP Chemistry; AP Studio Art 2D Des+; AP Physics C+; AP Gov't Politics.

### **Case Study Committee (CSC)**

The CSC is a multidisciplinary team of special educators, general educators, related services personnel, administrators, and parents, where appropriate (Participating School System, 2011).

### **Course of Study**

A course of study is the type of educational program that a student is enrolled in including vocational education, college preparation, and apprenticeships (Participating School System, 2011).

### **Criterion A: Physical Impairment**

Physical impairment refers to students whose educational performance is adversely affected by physical impairment that requires environmental and/or academic modifications including, but not limited to, the following: visually impaired, hearing impaired, orthopedically impaired, and other health impaired (Participating School System, 2011).

### **Autism Spectrum Disorder**

This term includes Pervasive Developmental Disorder (PDD) (Participating School System, 2011).

### **Asperger's Syndrome/Autism**

These developmental disabilities significantly affect verbal and non-verbal

communication and social interaction, generally evident before age three, that adversely affect educational performance. The term does not include students with characteristics of the disability “serious emotional disturbance” (Participating School System, 2011).

### **Hearing Impairment**

Hearing impairment, whether permanent or fluctuating, is that which adversely affects a student's educational performance, but is not included under the definition of deafness (Participating School System, 2011).

### **Deaf**

Deafness is a hearing loss or deficit so severe that the student is impaired in processing linguistic information through hearing, with or without amplification, to the extent that his or her educational performance is adversely affected.

### **Deaf/Blindness**

These conditions are concomitant hearing and visual impairments. This disability causes such severe communication, developmental, and educational problems that they cannot be accommodated in special education programs solely for students with deafness or students with blindness (Participating School System, 2011).

### **Honors Classes**

Through careful analysis of the Participating School System course selection catalog, discussion with an Advanced Education Liaison for Participating School System who provided training to all Advanced Placement and Honors teachers throughout

Participating School System, and a Participating School System high school transition specialist, the following classes were designated Honors classes – Honors English 9; Honors Literature; Honors World History 10; Honors English 9; and Pre AP.

### **Mathematics Classes**

Through careful analysis of the Participating School System course selection catalog and discussion with a Participating School System high school transition teacher, the following classes were designated as mathematics classes: Algebra IR; Foundation of Algebra; Pre Algebra; Basic Algebra 1A; Algebra I, Algebra II, Geometry; Discreet Math; Math Analysis; Precalculus, calculus AB or BC; Mathematics 9, 10, 11, 12; AP Statistics; IS Math 11.

### **Other Health Impairment (OHI)**

Though not exhaustive, OHI may include limited strength, vitality, or alertness due to chronic or acute health problems that adversely affect a student's educational performance, including but not limited to heart condition, tuberculosis, rheumatic fever, nephritis, asthma, sickle cell anemia, hemophilia, epilepsy, lead poisoning, leukemia, diabetes or attention deficit disorder with or without hyperactivity (Participating School System, 2011).

### **Orthopedic Impairment**

Orthopedic impairment is a severe physical impairment that adversely affects a student's educational performance. The term includes congenital impairments, impairments caused by disease (e.g., poliomyelitis, bone tuberculosis, etc.), and impairments from other

causes such as cerebral palsy, amputations, and fractures or burns causing contractures (Participating School System, 2011).

### **Traumatic Brain Injury**

A Traumatic brain injury is an acquired injury to the brain caused by an external physical

Force resulting in total or partial functional disability or psychosocial impairment, or both, that adversely affects a student's educational performance. The term applies to open or closed head injuries resulting in impairments in one or more areas, such as (a) cognition, language, memory, attention, reasoning, abstract thinking, judgment, or problem-solving, (b) sensory, perceptual and motor abilities, (c) psychosocial behavior, (d) physical functions, (e) information processing, and (f) speech. The term does not apply to brain injuries that are congenital or degenerative, or brain injuries induced by birth trauma (Participating School System, 2011).

### **Visual Impairment; including Blindness**

Impairment in vision is that which, even with correction, adversely affects a student's

educational performance. The term includes both partial sight and blindness

(Participating School System, 2011).

### **Criterion B: Emotional Impairment**

Criterion B is a condition that has been confirmed by clinical evaluation and diagnosis and that, over a long period of time and to a marked degree, adversely affects educational performance and that exhibits one or more of the following characteristics:

1. An inability to learn that cannot be explained by intellectual, sensory, or health

factors.

2. An inability to build or maintain satisfactory interpersonal relationships with peers and teachers.

3. Inappropriate types of behavior under normal circumstances.

4. A tendency to develop physical symptoms or fears associated with personal or school problems.

5. A general pervasive mood of unhappiness or depression. This includes students who are schizophrenic, but does not include students who are socially maladjusted, unless it is determined that they are seriously emotionally disturbed (Participating School System, 2011).

### **Criterion C: Communication Impairment**

Communication impairment includes two disabilities: speech disorders, and language disorders. Students whose educational performance is adversely affected by a developmental or acquired communication disorder can include voice, fluency, articulation, receptive, and/or expressive language (Participating School System, , 2011).

### **Language/Phonological Disorders**

Language/phonological disorders are characterized by an impairment/delay in receptive and/or expressive language including semantics, morphology/syntax, phonology and/or pragmatics. This impairment does not include students whose language problems are due to English as a second language or dialect difference (Participating School System, 2011).

## **Speech Disorders**

Speech disorders have several classifications.

1. *Articulation disorder* is characterized by substitutions, distortions, and/or omissions of

phonemes that is not commensurate with expected developmental age norms, that are not the result of limited English proficiency or dialect difference, and that may cause unintelligible conversational speech (Participating School System, 2011).

2. *Fluency disorder* is characterized by atypical rate, rhythm, repetitions, and/or secondary behavior(s) that interferes with communication or is inconsistent with age/development (Participating School System, 2011).

3. *Voice disorder* is characterized by abnormal pitch, intensity, resonance, duration, and/or quality that is inappropriate for chronological age or gender (Participating School System, 2011).

## **Category D: Learning Impairment**

Category D includes two disabilities: specific learning disability, and intellectual disability (Participating School System, 2011).

### **Specific Learning Disability**

Specific learning disability is a disorder in one or more of the basic psychological processes involved in understanding or in using spoken or written language that may manifest itself as an imperfect ability to listen, think, speak, read, write, spell, remember, or do mathematical calculations. The term includes such conditions as perceptual disabilities, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia. The term does not include learning problems that are primarily the result of



visual, hearing or motor disabilities, of mental retardation or emotional disturbance or of environmental, cultural, or economic disadvantage (Participating School System, 2011).

### **Intellectual Disability**

Intellectual disability is significantly sub-average intellectual functioning existing concurrently with deficits in adaptive behavior and manifested during the developmental period that adversely affects a student's educational performance. Significant sub-average general intellectual functioning is documented by a comprehensive intelligence test score that is two or more standard deviations below the mean (Participating School System, 2011).

### **Excent**

Excent is an electronic data system used throughout the Participating School System to develop individualized education plans for students with disabilities. In addition, Excent is used to run reports at the Participating School System administrative level.

### **Foreign Language Classes**

Through analysis of the Participating School System course selection catalog and discussion with the Chief of Pupil Personnel Services/Special Education and a lead high school transition counselor, the following classes were designated as Foreign language classes: Spanish, German, French, Turkish; Italian; Korean; and Japanese.

### **Post-Secondary Education**

Educational activities youth engage in after leaving high school. There are many types of post-secondary education. Some examples include 4 year colleges and

universities, 2 year junior and community colleges, State University, private universities, trade schools, religious schools. This definition is not exhaustive.

### **Science Classes**

Through analysis of the Participating School System course selection catalog and discussion with the Chief of Pupil Personnel Services/Special Education and a lead high school transition counselor, the following classes were designated as science classes: Biology; Environmental Science; Physics/Chemistry; Chem Apps in the community; Physics Apps in the community; Chemistry; Earth and Space Science; Marine Biology; Science Research; Physics; AP Chemistry; Integrated Science; Applied Biology; Human Anatomy and Physiology; Applied Physics. Chemistry applications and physics applications do not count towards chemistry and physics classes for the level of rigor; however, they do count towards graduation requirements.

### **Social Science Classes**

Through analysis of the Participating School System course selection catalog and discussion with the Chief of Pupil Personnel Services/Special Education and a lead high school transition counselor, the following classes were designated as social science classes: World Religions, Sociology; US History; US Government; World Regions; World History; Street Law; World Geography, Oklahoma History; US Minorities; Psychology, Sociology; Contemporary Issues; Humanities; Anthropology; Religious education; Geography; 20<sup>th</sup> Century Canadian History; Model United Nations; Contemporary Issues; History of Old Testament; New Testament Church History; World geography/Cultures; Bible; Puerto Rican History; IS World regions; economics; Guam Culture; Asian Culture; British Literature; American History 1900-1960; Ghana History.

### **Special Education Classes**

Through analysis of the Participating School System course selection catalog and discussion with the Chief of Pupil Personnel Services/Special Education and a lead high school transition counselor, the following classes were designated as special education in this study: Classes with a dash, number sign, or backslash in front of the listing (e.g., -ENG 12; #ENG 12; or \Eng 12). Classes titled Learning Strategies; Learning Strat; Mathematics 9, 10, 11, or 12; Independent Living Skills, Study Skills, Transition to Post Secondary; and Daily Living. It is important to note only students eligible for special education are permitted to take special education classes.

### **Student Management System**

The student management system (SMS) is used by all schools throughout the Participating School System to electronically track student's attendance, scheduling, grades, and transcript information. In addition, SMS is used by the Participating School System administrators to run reports on enrollment characteristics.

### **Tech-Prep**

Tech-Prep is a coordinated curriculum in the final 2 years of high school with a planned transition to a post-secondary institution, usually for an additional 2 years in a technical or health field (Participating School System, 2011).

### **Transition**

Transition services are a coordinated set of activities for a student, designed within an outcome oriented process that promote movement from school to post-school activities, including postsecondary education, vocational training, integrated employment (including supported employment), continuing and adult education, adult services,

independent living, or community participation. The coordinated set of activities must be based on the individual student's needs, taking into account the student's preferences and interests, and shall include instruction, community experiences, the development of employment and other post-school adult living objectives, and when appropriate, acquisition of daily living skills and a functional vocational evaluation (Participating School System, 2011).

## **CHAPTER 2**

### **REVIEW OF THE LITERATURE**

The purpose of this study was to explore the curricula that students with disabilities are exposed to when planning to attend a 4 year college or university. A measure of high school academic course rigor developed by Horn and Kojaku (2001) was employed to measure the academic preparation of students with disabilities of the 2008 Participating School System graduating class who planned to attend a 4 year college or university. The study was intended to provide insights about the value of student's preparation

#### **Documentation**

Scholarly books, journal articles, and research documents were reviewed through the University of Maryland library. Additional databases searched included EBSCOhost, InfoTrac, and ProQuest Digital Dissertations. The online databases of Google also provided information for the search of the pertinent literature. Bibliographic and reference listings were accessed from appropriate titles discovered within the review process. Approximately fifty current scholarly articles pertaining to special education, post-secondary education, transition, college, enrollment, academic preparation, success, and course selection were reviewed.

#### **Review of the Research**

In the following section, research related to college success for students with disabilities is discussed. First, an overview of search methods is presented. Second, a review the studies will follow.

## **Search Methods**

To gather information on the academic preparation of students with disabilities who persist and attain a 4 year post-secondary education, an electronic search was conducted. The University of Maryland Research Port yielded 31 results for key words: special education, post-secondary education, transition, college, enrollment, academic preparation, success, and course selection. Key words were interchanged and multiple searches were conducted to maximize search results. In addition, reference lists from identified articles were searched for additional sources. Results were filtered for research articles that met the following criteria: they contained predictions of post-secondary persistence, success, or attainment for students with disabilities, and/or they contained an analysis of course selection or academic preparation as a factor of success or attainment of a post-secondary degree for students with disabilities. Three studies met the search criteria. Due to the small number of studies, the author did not use other common inclusion criteria such as being published in a peer-reviewed journal or having been published in the last 10 years.

The following sections are organized in the following categories: an overview of predictors of college success or persistence for students with and without disabilities, a profile of students with disabilities in post-secondary education, and a methodological analysis of the research meeting the search criteria.

### **Overview of Research for All Students With or Without Disabilities**

A common theme for success at post-secondary education is rigorous course selection in high school. Taking a rigorous course of study, defined as 4 years of English, math, and science, in high school can narrow the college persistence gap

compared to those who do not complete that coursework (Adelman, 1999; Horn & Kojaku, 2001; Warburton, Bugarin, & Nunez, 2001). Completing a high level math class in high school – algebra II, pre-calculus, trigonometry, calculus – is the single best high school predictor of performing well in college (Adelman, 1999, 2006). Students who graduate from high school who are academically well prepared, regardless race, gender, or socioeconomic status, are best positioned to do well in college (Florida Department of Education, 2005; Gladieux & Swain, 1998; Horn & Kojaku, 2001; Martinez & Kloputt, 2003; Warburton, et al., 2001). Berkner and Chavez (1997) described the qualifications needed to attend a 4year college/university. Students must meet admission requirements with measured criteria such as grade point average (GPA), standardized test scores, college admissions tests, and academic course work. Students with and without disabilities must essentially meet the same admission standards. A study by Spillane, McGuire, and Norlander (1992) suggested that academic and non- academic criteria employed by colleges and universities to make admission decisions are similar to those without disabilities.

Horn and Kojaku (2001) examined the relationship between high school academic curriculum and student's persistence path through college, approximately 3 years after enrollment. Data were used from the 1995-1996 Beginning Post-Secondary Students Survey, a longitudinal study of beginning post-secondary students who first enrolled in a 4 year college in 1995-1996. The measures of high school academic preparation were based on academic courses taken in high school as reported by students on their college entrance exams application. As the level of the high school academic curricula increased, so did the proportion of undergraduate who stayed on track for degree completion. The

vast majority of students who took a rigorous high school curriculum were still on track for a Bachelor's degree, compared to those who took mid-level or lower course curriculum

Adelman (2006) analyzed over 13,000 high school transcripts from the National Education Longitudinal Studies (88:2000) to explore the academic resources students build in high school and their relationship to college degree completion. Adelman developed a measure of academic intensity measure using forty gradients to measure the intensity of course completion in high school. Adelman concluded that the student's high school curriculum counts for more than anything else in pre-collegiate history in providing momentum toward completion of a Bachelor's degree.

### **Profile of Students with Disabilities in Post-Secondary Education**

Several research studies have profiled the number of students with disabilities who attend post-secondary institutions. The studies presented reflect the most recent picture illustrating students with disabilities attending post-secondary education. Lewis and Farris (1999) collected nationally representative data about students with disabilities from 2 and 4 year post-secondary institutions. The survey was conducted by the National Center for Education Statistics using the Post-Secondary Education Quick Information System (PEQIS). The PEQIS is designed to conduct brief surveys of post-secondary institutions or state higher education agencies on post-secondary education topics of national importance. A total of 5,353 institutions participated in the study representing each of the 50 states, as well as the District of Columbia. The response rate for this survey was 91%. The study measured or identified (a) enrollments of post-secondary students with disabilities, (b) institutions enrolling students with disabilities, (c) support



services and accommodations designed for students with disabilities, (d) education materials and activities designed to assist faculty and staff in working with students with disabilities, and (e) institutional records and reports about students with disabilities. Data collected from the study estimated 428,280 students with disabilities were enrolled at 2 and 4 year post-secondary institutions. Most of the students were enrolled at public 2 and 4 year institutions of medium to large size. Learning disability was the most frequently identified making up 195, 870 of the 428, 280 total students.

Almost 98% of the institutions that enrolled students with disabilities provided at least one accommodation or support service. The most common were alternate exam formats (88%) and tutors to assist struggling students (77%). Readers, classroom note takers, or scribes were provided by 69% of institutions and registration assistance by 62%. Institutions provided assistive technology devices, such as listening devices or talking computers (58%), and textbooks on tape (55%). In general, public institutions were more likely to have provided accommodations and supports than private institutions. Large institutions were more likely than medium and small institutions to provide accommodations. Of the institutions that enrolled students with disabilities, 98% provided some educational material or activity to their faculty on working with students with disabilities. Most (92%) provided one-on-one discussion with faculty members who requested information, and 63% provided workshops or training. Verification of student disability was required by 72% of institutions. Most institutions (93%) that required verification accepted a medical evaluation/statement as verification, and 75% accepted a referral from vocational rehabilitation. About 25% required evaluations conducted by the institution's disability support services or coordinator as verification. Information

gathered for the report was limited to those students who had identified themselves as having a disability. Students who identify themselves as having a disability make up a subset of all students with disabilities, since some students choose not to identify themselves to their institutions.

Horn and Berkold (1999) conducted a statistical analysis of four different surveys conducted by the National Center for Educational Statistic. The authors analyzed the Beginning Postsecondary Students Longitudinal Study, Baccalaureate and Beyond Longitudinal Study, National Post-Secondary Student Aide Study, and National Education Longitudinal Study. Their goal was to address (a) representation of students with disabilities enrolled in post-secondary education, (b) who among high school students gain access to higher education, (c) among those who enroll in post-secondary education, how they persist in degree attainment, and (d) among college graduates, the early market outcomes and graduate school enrollment rates for students with disabilities. The study concluded that about 6% of students enrolled in post-secondary education have a disability, with learning disability being the most common at 29%. Compared to students without disabilities, students with disabilities were more likely to be males, white, and non-Hispanic. They were less likely to be enrolled in public 4 year institutions, equally likely to be enrolled in private, not for profit institutions, and more likely to be enrolled in sub-baccalaureate institutions such as public 2 year colleges. There were no apparent differences in their choice of study when compared to their nondisabled peers. Therefore, students with disabilities are less likely to attend college than their nondisabled peers.

When ranked according to how qualified they are to attend college, students with disabilities were minimally qualified when compared to their nondisabled peers. Students with disabilities were more likely to have taken remedial classes in mathematics and English in high school and less likely to have taken Advanced Placement courses, had lower high school GPAs, and lower SAT entrance exam scores. Compared to their counterparts without disabilities, students with disabilities were more likely to have attributes associated with lower rates of degree attainment and persistence (Horn and Berkold, 1999).

For example, students with disabilities were more likely to have delayed their enrollment in post-secondary education, completed high school through a GED program, and more likely to have dependents other than a spouse. Despite their circumstances, more than 50% of students with disabilities who enrolled in postsecondary education persist and earn a certificate or degree. Those students with disabilities who persist and attain a credential have similar labor market outcomes as their counterparts without disabilities. Among college graduates who work, the annual salaries do not differ significantly. Students with disabilities, however, are more likely to be unemployed. Similar proportions of college graduates with and without disabilities enrolled in graduate school within 1 year after earning their Bachelor's degree. The statistical analysis is limited due to the small number of students with disabilities attending post-secondary education.

In 2005, the National Longitudinal Transition Study 2 (NLTS-2) involved a large nationally representative sample of students receiving special education aged 13-16 and in at least seventh grade on December 1, 2000. Information for NLTS-2 was gathered

from a variety of sources, including parents or guardians, teachers, principals, school records, and students themselves. A variety of data collection methods were used to include parent, guardian and youth interviews, teacher surveys, school program surveys, school characteristics surveys, student assessment data, and transcripts. The NLTS -2 reported that over 90% of students with disabilities used accommodations in high school, but only 40% used accommodations at the post-secondary level. Within 2 years of graduation, only 31% of students with disabilities had entered into post-secondary education, although 77% had post-secondary transition plans while in high school. Approximately one in five youth with disabilities are currently enrolled in special education, a rate less than half of their general education peers. The majority have enrolled in a 2 year college or community college than in any other post-secondary option. The report also stated that prior school related experiences have strong associations with enrollment in post-secondary education. Students who have dropped out or have been held back were much less likely to enroll in post-secondary education. Youth who have dropped out of school are 18% less likely to attend a post-secondary institution than their graduate peers. Youth who were held back are 16% less likely to attend post-secondary education. The NLTS2 study concluded there has been an increase over time in the number of students with disabilities who graduate from high school and attend post-secondary institutions. The reports published thus far from NLTS2 represent the early years of post-high school experiences for youth with disabilities. Because NLTS2 is longitudinal, it offers the opportunity to revisit questions as youth continue into adulthood. The following analysis is for the articles that contain predictions of post secondary persistence, success, or attainment for students with disabilities and/or

academic preparation as a factor of persistence, success, or attainment of post secondary degrees for students with disabilities.

### **Methodological Analysis of Empirical Studies**

A critical review of relevant literature in the field should be used to design potential research questions, variables of interest, instruments, and procedures to make a significant contribution to the field (Creswell, 2007). Therefore, the author will discuss the following elements of the three studies in this section: (a) purpose and research question, (b) designs and samples, (c) methods and instruments, (d) variables, (e) data analysis and results, and (f) findings. The three studies are:

- 1) Hicks-Coolick & Kurtz (1997) - Preparing students with learning disabilities for success in post secondary education: Needs and services.
- 2) Strasburger, R., Turner, M., Walls (1998) - Factors related to the post secondary success of students with learning disabilities.
- 3) Vogel, S.A., and Adelman, P (1992). - The success of college students with learning disabilities: Factors related to educational attainment

### **Purpose and Research Questions**

A well-written statement of the research topic represented by the purpose and research question provides the variables of interest, the relations between those variables, and a brief description of the participants in the study (Creswell, 2007; Gay, Mills, & Airasian, 2006). Two of the three studies looked at students with learning disabilities and the factors related to their success at post-secondary education by analyzing their pre-collegiate and college variables (Strasburger, Turner, & Walls, 1998; Vogel & Adelman,

2001). One study analyzed the personal characteristics that contribute to post-secondary success by surveying counselors in learning disability programs from nine institutions (Hicks-Coolick & Kurtz, 1997). The purpose of the Strasburger et al. study was to “examine secondary educational settings and their potential interactions with student aptitude as they contribute to success or failure of students with learning disabilities within the college setting” (p. 10). The participants in the study had either graduated with a 4 year degree, been dismissed, or withdrew from a 4 year liberal arts college. The purpose of the study by Vogel and Adelman (1992) was to (a) determine the educational attainment of students with learning disabilities as compared to their peers without disabilities, (b) determine the importance of ACT performance in predicting college success, (c) determine if students with LD are similar to their peers in course load per semester and length of time to complete their bachelor’s degree, and (d) delineate further the effect of LD support services on academic success of students with LD and students without LD (1992). The purpose of the Hicks-Coolick and Kurtz (1997) study was to examine the personal characteristics of successful students with learning disabilities by interviewing the college disability support counselors. Contained within each purpose is the need to examine academic preparation and coursework in high school as a measure of success in post-secondary education.

### **Design and Sample**

The design of the study is a general procedure or plan for conducting research which includes the basic structure and goals of the study, the nature of the hypothesis, the variables involved, and the real world constraints (Creswell, 2009; Gay & Mills, 2006). Sampling is the process of selecting a number of participants for a study in such a way

that they represent the larger group from which they were selected (Gay & Mills, 2006). Two of the three studies utilized quantitative designs and one used qualitative. The two quantitative will be reviewed first followed by the qualitative study.

Vogel and Adelman (1992) compared a sample of 62 college students with learning disabilities to 58 nondisabled peers matched on gender and ACT scores. Groups were compared on age, high school preparation and performance, college grades, GPA at the end of each year of study, graduation and academic failure rate, and time taken to complete degree. The samples chosen were all native speakers of English and were enrolled as degree candidates in a small, competitive, private Midwestern college between 1980 and 1988. The study identified 62 students with disabilities who had taken the ACT between the ages of 18-25 then matched them to a sample of 58 students without disabilities based on their composite ACT score (either equal or +/- 1 point) and gender. Strasburger, Turner and Walls (1997) used a sample size of 76 participants enrolled in a 4 year college of 900 students, and enrolled in the college program for students with learning disabilities. The participants were those that completed the requirements to receive a degree, and those that failed or withdrew voluntarily with a grade point average of less than 1.0 (on a 4.0 scale). There were 42 graduates and 34 non-graduates. Students who transferred to another school or requested a leave of absence were not included in the investigation.

All participants were admitted after meeting the following admissions requirements: (a) Any two of these standards - A GPA 2.0 or above, a graduation status in the top 50% of their high school graduating class, an ACT composite score of 19 or higher, or an SAT composite score of 920; (b) the recommendation of a high school

counselor; and (c) the completion of 4 years of English, 2 years of math including algebra, two years of science with one lab, and three years of history and/or social science. All of the student participants met the graduation requirements. The study carried out by Hicks-Coolick and Kurtz (1997) consisted of nine counselors of learning disabilities programs in nine separate post-secondary institutions. To maximize variation, the purposeful sample included two private colleges, two state universities, two public 4 year universities, one community college, and two vocational schools. Directors of the disability support services for each school were interviewed.

### **Methods and Instruments**

The methods section includes a description of the participants, instruments, design, procedure, assumptions, and limitations (Gay & Mills, 2006). Gay and Mills argued a qualitative study may also include a detailed description of site studied and the length and nature of the interactions with the participants. In the proposed study, the author will review the two quantitative studies first followed by the qualitative study in the next section.

Vogel and Adelman (1992) compared 62 students with disabilities to 58 students without disabilities matched by gender and ACT score. All students took three screening tests that are used by colleges nationwide. The screening tests consisted of a timed reading comprehension test (Stanford Diagnostic Reading Test – Blue Level, Subtest 1, reading Comprehension), a writing sample on an assigned topic scored holistically by four English professors, and a measure of knowledge of sentence structure (Sentence Structure Tests of Language Skills of the College Board). These screening instruments provided an indication of present functioning levels, as well as relative standing of



applicants as compared to the general college population. The matched sample (MS) group of nondisabled students had significantly better reading and written language abilities as compared to the LD group, as measured by the three college wide screenings tests. Strasburger, Turner and Walls (1997) collected information about secondary (high school) placements from an intake questionnaire completed by each participant just prior to beginning their first year in college.

The questionnaire identified the secondary setting as well as the type of services they had received in high school. The information supplied by the questionnaire indicated that the participants experienced five different types of secondary school programming: (a) Private school specializing in students with LD; (b) private school with small class sizes, but no specialized LD services; (c) public school resource room; (d) public school self-contained; and (e) public school with no specialized services. Exit status of participants was obtained from the admissions and records office of the college. Secondary school settings, relative to the five programmatic types described above, were crossed with success in the post-secondary setting for the analysis. The post-secondary outcomes were graduated versus non-graduated from college. To determine whether or not student aptitude influenced results, a second set of analysis using means of verbal IQ, and full scale IQ from Wechsler Adult Intelligence Scale, which were available for 66 participants, were analyzed.

The methods and instruments used in the qualitative study conducted by Hicks-Coolick and Kurtz (1997) are described next. A research team of a school social worker, counselor, research director, and two senior high school students from a private school for students with disabilities carried out the interviews of nine college counselors for

students with disabilities. Data were collected using a semi-structured interview guide that allowed for open-ended responses. Examples of the questions pertaining to the study include the following: (a) In your experience, what are characteristics of successful and unsuccessful students with LD; (b) how would you define self-advocacy, and (c) what are the main problems of students who are unable to advocate for themselves. The interviews were conducted in person, lasted about 45 minutes, and were audio recorded. One researcher conducted the interviews and two students observed. The researcher documented their observations and collected pamphlets and written information from each site when available.

### **Variables**

Unless variables are clearly defined, they may lack construct validity (Gay & Mills, 2006). All three studies identified in this body of research used success for students with disabilities at post-secondary education as a dependent variable. Vogel and Adelman (1992) utilized the most independent variables to determine factors related to success in post-secondary education. Their study looked at age, gender, academic preparation for college, ACT scores, course load, and time taken for degree completion, and college GPA at multiple points in time. Strasburger et al. (1997) analyzed the independent variables of high school settings and results from college aptitude tests to determine factors that influenced college success. Transcriptions from the qualitative analysis of Hick-Coolick and Kurtz (1997) were a primary source of the data analyzed. Three interrelated factors emerged from their interviews that seemed to differentiate successful from unsuccessful post-secondary students with disabilities: motivation, academic preparation, and self-advocacy.

## Data Analysis and Results

Data analysis involves the application of one or more statistical techniques; data are analyzed in a way that permits the researcher to test the hypothesis or answer the research questions (Gay & Mills, 2006). Data analysis in this body of research will follow. Vogel and Adelman (1992) compared data on students with and without attending college on six independent variables. There were no reported differences in age ( $x=20$ ) for both groups of students. The average age for each group was calculated and a mean was determined. The variable of high school academic course work and performance were compared on the number of core courses taken (English, math, science, and social studies), electives, developmental courses completed with a C or better, the number of D and failing grades, and high school GPA. High school students with disabilities took significantly more developmental math courses than the MS group. The best predictor of college exit GPA for students with learning disabilities was the number of general English courses completed with a C or better in high school, but that was not the case with the MS group. College performance was measured by their GPA at the end of each academic year and at the exit from college, and on the number of D, F, incomplete, Passing (p), and withdraw (w) grades. There was no significant difference in GPA at the end of the freshman, sophomore, junior, or senior year of college; however, the mean GPA of students with learning disabilities was slightly ( $p<.059$ ) higher than the MS group. The groups also differed on the number of passing grades received, with the LD group taking significantly more pass/fail (p/f) grades than the MS group.

With regard to course load and time taken to complete degree, the LD group took lighter course loads and one year longer to graduate. Strasburger et al. (1997) utilized

planned comparisons to compare each of the five types of high school settings to compare graduated versus non-graduated. Each comparison involved a two by two table with two setting types on one dimension and two college outcomes on the other dimension. A Fisher Exact Probability Test was used to balance the frequencies. A traditional alpha level of  $p < .05$  was used. In these comparisons, public school self-contained showed a significantly lower graduation rate compared to all other settings. Private school with learning disability services showed lower graduation rates than public school with no services; public school resource room; and public school no services. To determine whether student aptitude influenced these results a second set of analysis was conducted. The means of verbal IQ, performance IQ, and full scale IQ were available for 66 of the participants. An analysis of variance for full scale IQ, and performance IQ yielded no significant results in graduation outcomes. However, verbal IQ indicated a significantly higher graduation rate than performance or full scale IQ.

A follow-up Duncan Multiple Range Test indicated significantly higher verbal IQ for public school no services than for public high school resource services, private learning disability school, and public school self-contained, and significantly higher verbal IQ for private school no services than for public school self-contained.

Transcriptions of the taped interviews were the primary data source for Hicks-Coolick and Kurtz (1997). Inductive content analysis was used to determine a set of categories to provide a meaningful framework for summarizing this raw data. Each of the three researchers independently read the interview transcriptions and documents and identified categories of responses within questions and themes across questions. Data triangulation and researcher triangulation were used to establish reliability. Peer debriefing was used

to obtain feedback from other colleagues regarding logical consistency and soundness of findings. In addition, the nine participants were sent copies of the findings to check credibility. Final categories, themes, and interpretations were the result of negotiation process among the professional researchers. None of the three studies presented in the literature discussed the limitations of transcript studies; however, it should be noted that a transcript may have errors.

### **Findings**

The analysis of this body of research includes significant findings with one common theme: high school course selection may significantly improve college success rates for students with disabilities. Vogel and Adelman (1992) reported high school preparation and performance, as measured by the number of Ds and Fs in high school grades, the higher the college exit GPA. Based on their findings, the authors recommended that admissions officer weigh high the high school preparation and performance (as reflected in high school courses, GPA, and grades) significantly more heavily than admission test scores. They stated that for students with LD, extremely low entrance exam scores are not reliable indicators of future academic progress. The two best predictors of college success in this study were high school preparation and overall GPA. If the number of overall courses taken in high school reflected that of non LD students, it was a good predictor of college success.

The results of the comparisons in Strasburger et al. (1997) indicated students having more inclusive, less structured programs were more successful in graduating college. Success in a self-contained high school setting may lead to high school graduation, but not necessarily college. It was also noted that the more intensive the

support received in high school, the more severe may have been the level of disability. The present findings indicate that students who were in a self-contained public school setting or a private school for students with learning disabilities, the less likely they were to graduate from college. Based on the results, high school settings can make a difference in graduation rates at college. The findings from Hicks-Coolick and Kurtz (1997) indicated a familiar theme. Successful students with learning disabilities benefited from sound educational preparation, like college prep and rigorous course selection, just like general education students.

### **Summary**

Research in both general education and special education on predictors of success or attainment of a postsecondary degree has shown academic preparation is paramount to success in post-secondary education for students with disabilities. There are many factors that may influence the success of students with disabilities in post-secondary education, such as socioeconomic, gender, and race; however, the most compelling, and the factor that students seem to be able to control the most is their high school academic course work. The IDEA, with its least restrictive environment provision and the Participating School System procedural guide requires that students be included in general education to the maximum extent possible.

The primary result reported in all studies was the recommendation that students take the most rigorous course load possible. Researchers also recommend that admission counselors weigh heavily student high school course selection as an admission criterion. The research literature examined and reported in this review underscored the need to explore the academic preparation of students with disabilities planning to attend a 4 year

college or university. A well founded technique for conducting research would involve analyzing high school transcripts using a measure of academic course rigor, as well as high school GPA, gender, race, and ethnicity, and percentage of time educating in the general education curriculum. This study was designed to build on this research by investigating and documenting the academic preparation of students with disabilities in the Participating School System, utilizing the findings of previous research as a guide in determining the key factors that contribute to success in a 4 year college or university.

### CHAPTER 3: METHODOLOGY

The Participating School System operates schools throughout the world for military and civilian dependents. The system's Community Strategic Plan Goal One states all students will meet or exceed challenging standards in academic content so they are prepared for continuous learning (Participating School System, 2011). Strategy One of the Community Strategic Plan states the school systems will utilize data driven decision making to ensure an aligned continuous improvement process. For the school system to make continuous progress towards preparing students for continuous learning, data must be collected and utilized for decision making.

The Participating School System's 2008 post-secondary plans report indicated 29% (47) of students with disabilities, and 62% (1611) of students without disabilities, plan to attend a 4 year college or university. However, the level of rigor in their high school academic curriculum was unknown for the students with disabilities. Numerous studies have concluded the level of the college student's high school curricula is strongly related to persistence in post-secondary education. Adelman (2006) analyzed high school transcripts for over 13,000 students and concluded "the academic intensity of the student's high school curriculum still counts for more than anything else in pre collegiate history in providing momentum toward completing a bachelor's degree."

The research evidence presented in Chapter 2 provides a sound knowledge base for the importance of course rigor in post-secondary education degree attainment. However, the majority of research is dated - mostly conducted in the 1990s. Additionally, the research was conducted on students without disabilities who attended a U.S. public school. Due to the lack of research on course rigor for students with



disabilities who graduate from the Participating School System and are planning to attend a 4 year college or university, results of this study are designed to address research on this critical population of students.

### **Post-Secondary Plans Report**

Each school in the Participating School System is required to report their students' post secondary plans to district headquarters. District headquarters then compiles a post secondary plans report based on this information. This study was conducted, beginning with an analysis of the 2008 Participating School System's Post-Secondary Plans report. The Participating School System graduated a total of 2993 students during the 2008 school year. For the first time in the Participating School System's history, the 2008 post-secondary plans report aggregated the post-secondary plans of each graduate by special education and general education; there were a total of 163 students with disabilities in the report. This study focused specifically on the 47 students in special education who were planning to attend a 4 year post-secondary institution. The participants for the study consisted of the 47 Participating School System students with disabilities who graduated in June 2008 and indicated on the post-secondary plans report they planned to attend a 4 year college or university. Transcripts of the students who indicated they plan to enroll in a 4 year college were accessed from the electronic database, Student Management System (SMS). Demographic data were taken from information from the high school transcripts and information provided by the Participating School System research division. The information taken from the transcript includes gender, age, race, ethnicity, cumulative GPA, total credits earned at graduation, and time in special/general education. Students selected to participate in the study

indicated to their counselor during the late April/early May time of their senior year they planned to attend a 4 year post-secondary college or university. This information was collected by the Participating School System and published in their post-secondary plans and scholarship report in 2008. According to the Participating School System post-secondary plans report, about 29% ( $n = 47$ ) of all graduating students with disabilities planned to attend a 4 year college.

### **Methodology**

The researcher was provided a copy of each of the 47 transcripts of students with disabilities who graduated in 2008 and planned to attend a 4 year post-secondary college or university. The transcripts were sent in five separate PDF files. Student names and personal identifying information, such as name of school and home address, were redacted with black marker by personnel in the research and data division of the Participating School System. Each transcript was printed into a hard copy and sorted numerically by their identifying numbers 1-47.

The researcher was provided a report indicating the race and ethnicity category for each of the 47 students. The research and data division at the Participating School System provided an Excel spreadsheet numbered 1-47 which matched the student transcripts so the transcript for participant number 1 -47 matched the race and ethnicity for participants 1-47. The researcher consolidated the PDF student transcript information and the excel spreadsheet of race, ethnicity into a new excel spreadsheet, so the categories could be manipulated.

The new excel spread sheet contained the categories necessary to conduct an analysis which included student number, gender, course name, cumulative GPA,

cumulative credits earned, level of rigor, race, and ethnicity. The categories were listed across the top row and each student was assigned a separate tab, 1-47, across the bottom of the excel file. Initially, the researcher entered all of the information except the level of rigor which required a more detailed analysis.

Table 1

*Definitions Used for Each Level of Course Rigor*

Course Rigor	English	Social Sciences	Math	Science	Foreign language	AP or honors classes
Core or lower	4 years or less	3 years	3 years	3 years		
Mid level 1	4 years		3 years	3 years including at least two of biology, chemistry, and physics	1 year	
Mid level 2	4 years		3 years including Algebra II	3 years including biology, chemistry, and physics	2 years	
Rigorous	4 years	3 years	4 years including precalculus or higher	3 years including biology, chemistry, and physics	3 years	1 class

To calculate the level of course rigor of each student the following analysis was carried out. Student transcripts were printed and placed in order from 1-47. Students were categorized into four levels based on their course completion history. Horn and Kojaku did not describe how they categorized courses into the four levels, so the researcher used professionals in the Participating School System and our Participating School System course description catalogue to determine the appropriate course levels. Each class listed on the transcript was assigned the appropriate level using the following definitions: Advanced Placement Classes; Honors Classes; Mathematics Classes; Foreign Language Classes; Science Classes; Social Science Classes; and Special Education Classes. Authors Horn and Kojaku described the method for determining which level of rigor students should be placed; the researcher followed their described method exactly. The author's state: "Each successive curriculum level includes students who took at least the specified number of years of subjects and courses but did not meet the parameters of the next higher level" (Horn and Kojaku, Pg. 4).

The students were categorized by level as follows: Core or below, Mid Level I, Mid Level II, or Rigorous .

- Core curriculum includes 4 years of English, 3 years of social studies, 3 years of mathematics, and 3 years of science.
- Mid level I include 4 years of English, 1 year of foreign language, 3 years each of mathematics and science including two of the following science courses: biology, chemistry, and physics.
- Mid level II includes 4 years of English, 2 years of foreign language, 3 years each of mathematics (including Algebra II) and science including

biology, chemistry, and physics, but not physics applications or chemistry applications.

- Rigorous includes 4 years of English and mathematics (including pre-calculus, math analysis, or higher), 3 years each of a foreign language, science (including biology, chemistry, and physics) social studies, and 1 year of AP or honors classes.

All student transcript data were collected on the same Data Collection Sheet (Appendix A) and coded from data collected on the high school transcript and information from the Participating School System research division.

The first level analysis involved placing the transcripts into two groups. The first group consisted of transcripts for students who had taken an AP or honors level class, the second group consisted of transcripts for students who had never taken an AP class. With these two categories, the researcher could determine how many students met the rigorous standard which requires at least one honors or AP course. Following this initial sorting, the researcher examined the group of students who took an Honors or AP course followed by an analysis of the math classes taken. To meet the rigorous standard, students needed to have taken 4 years of math, including pre-calculus (called math analysis in the Participating School System). Next analyzed within the group were the transcripts for three years of foreign language and three years of science including Biology, Chemistry, and Physics. From this initial analysis, it was determined which students met the rigorous standard. After this level of analysis, it was determined which students met the rigorous category ( $n = 1$ ). After this level of analysis it was possible to determine which students had met the rigorous category.

The researcher then began to analyze each transcript for students who met the mid-level II criteria. To carry out the analysis, students were sorted according to their science classes. To meet the mid-level II criteria, students needed 3 years of science including biology, chemistry, and physics. The remaining students were sorted into two groups: those who met the 3 years of science and those who did not. The researcher further analyzed the student transcripts meeting the science requirements to see if they also met the math (3 years of math including Algebra II) and foreign language (2 years of foreign language) requirements. After this level of analysis, it was determined which students met the mid-level II criteria ( $N = 4$ )

To categorize the mid-level I and core curriculum or below category, the remaining transcripts were sorted again into two groups: one for students who met the 1 year of foreign language requirements needed for mid-level I and the other who had no foreign language credits. They were then sorted according to those students who met the foreign language requirements and those who met the English (4 years), math (3 years), and science (3 years including two of the following courses: biology, chemistry, and physics). After this level of analysis, it was determined which students met the mid-level I criteria ( $n = 6$ ). The remaining students fit into the category of core curriculum or below ( $n = 36$ ).

### **Analyses of Results**

Descriptive statistics were used to describe students with disabilities who plan attend a 4 year college or university. Student demographic data are displayed using graphs. The level of course rigor for all students with disabilities is displayed and then

aggregate by (a) race/ethnicity, (b) gender, (c) cumulative GPA, and (d) time in general education versus special education. Each is discussed in further detail in the next section.

### **Description of Variables**

The variables chosen for this research study were based on information from the high school transcripts and data sent by the Participating School System on race and ethnicity. Each variable was analyzed using the known predictors of success for students with disabilities outlined in Chapter 2 of this study. A further clarification of each independent will follow.

**Gender.** Student gender was coded from data gleaned on the high school transcripts; it is clearly stated.

**Race.** Student race information was derived from data provided by Participating School System research division. The information on race was sent via electronic excel file and was transcribed onto the data collection sheet. Race categories used by Participating School System and applied to this study included: white, African American, multiracial, Asian, American Indian, and Hawaiian.

**Ethnicity.** Student ethnicity information was gleaned from data provided by the Participating School System research division. The information on ethnicity was sent via electronic excel file and then transcribed onto the data collection sheet. Ethnicity categories used by Participating School System and applied to this study include: Hispanic or Latino or Non Hispanic/Latino.

**Level of course rigor.** Based on the analysis of student course completion documented in the high school transcripts, students were categorized in one of the

following levels first used by Horn and Kojaku (2001) and using the methods presented above: Rigorous, Mid Level II, Mid Level I, and Core or lower.

**Cumulative GPA.** Cumulative high school GPA was calculated on the final high school transcripts and clearly listed. The high school GPA is based on a 4.0 scale. It was recorded as a raw score.

**Credits in special/general education.** The total number of credits earned was recorded as raw scores; then as a percentage determined for each general and special education class.

**Course selection in honors and/or support classes.** The total number of credits was aggregated by course selection in honors courses, advanced placement courses, and non-special education support courses.

### **Research Questions**

The SPSS computer program, Version 19.0, was used for all statistical analyses, while Microsoft Excel was used to create all graphs and charts. As discussed below, SPSS was used to compute (a) frequencies and percentages for categorical variables; (b) ranges, means, and standard deviations for continuous variables; (c) cross tabulations for pairs of categorical variables with associated chi-square tests of independence; (d) independent samples *t* tests for comparing two groups on a continuous dependent variable; and (e) a oneway ANOVA for comparing more than two groups on a continuous dependent variable. For all inferential analyses, two-tailed tests and an alpha level of .05 were used. The following provides the methods used to answer the questions.

The first research question of this study was: What was the level of course rigor for students with disabilities in the Participating School System who graduated high



school in 2008 and planned to attend a 4 year college or university? To answer the first research question, the Excel file which contained relevant information was created by the researcher and converted to an SPSS file. The SPSS program was used to compute the frequency (i.e., number) of participants with each level of course rigor and the percentage of participants with each level of course rigor. The FREQUENCIES procedure in SPSS was used to compute both the frequency within each level of course rigor and the percentage of participants within each level of course rigor. The frequency of participants with each level of course rigor and the percentage of participants with each level of course rigor were displayed in a pie chart which was constructed in Excel.

The second research question was: What were the demographic characteristics of students with disabilities in the Participating School System who graduated high school in 2008 and planned to attend a 4 year college or university and how did the characteristics relate to course rigor? To answer the second research question, the data on students were sorted by gender, ethnicity, and race to display a total distribution in percentages for each category of gender, race, and ethnicity. The results are displayed in graphs. To further examine and analyze the data, a chi square test was used to examine differences in the level of course rigor based on the participants' race, ethnicity, and gender. Each of these chi-square tests were performed using the CROSSTABS procedure in SPSS which provides both the number and percentage of participants in each subcategory. The CROSSTABS procedure also provides the results of a chi-square test of independence and the associated p value which is used to determine if the two variables are independent or related. First, a chi-square test was performed between race and level of course rigor. To calculate the distribution of level of course rigor based on

race, the racial groups were combined into Black/African American, White, and Other. Second, a chi-square test was performed between ethnicity and level of course rigor. Third, a chi-square test was performed between gender and level of course rigor. In these analyses, each of the independent variables (race, ethnicity, and gender) were categorical. The dependent variable (level of rigor) is technically ordinal rather than categorical. However, the method of creating the groups based on level of course rigor is based on qualitative differences in the number and types of courses taken by each participant, and therefore level of course rigor was considered a categorical variable for the purposes of the statistical analyses. When two categorical variables are compared, the chi square test of independence is the correct test used to determine if the two variables are independent or related (Howell, 2009, p. 145). There were small numbers of participants with non-core levels of course rigor, and therefore for the statistical comparison of gender, ethnicity, and race with level of course rigor, level of course rigor was dichotomized into two groups: core curriculum and all other curricula.

The third research question was: What were the academic high school experiences of students with disabilities in the Participating School System who graduated high school in 2008 and how did the experiences relate to course rigor? In order to determine the average GPA of the participants in this study, the SPSS DESCRIPTIVES procedure was used. This procedure provides the range (highest and lowest scores), mean (the average of all the scores), and standard deviation (a measure of the variability of the scores) for a set of scores. The set of scores in this case was the participants' GPAs.

After computing descriptive statistics for GPA for the entire sample, potential GPA differences between subgroups of participants were examined. Differences in the

mean GPA for subgroups of participants were examined for gender, ethnicity, and race. Specifically, the MEANS procedure in SPSS was used to compute mean and standard deviation of GPAs for males and females, for Black/African American, White, and Other ethnic group participants, and for Hispanic/Latino and non-Hispanic/Latino students. In order to determine if males and females differed in terms of mean GPAs, an independent samples *t* test was performed. This test was performed using the T TEST procedure in SPSS. An independent samples *t* test was used to compare the mean GPA for males and females because the independent samples *t* test is the correct test to use (Howell, 2009, p. 203) when comparing two groups (males and females) on a continuous variable (GPA). In addition to reporting the *t* statistic, degrees of freedom, and *p* value from this test computed in SPSS, the results were also displayed graphically using a bar chart created in Excel.

The mean GPA's for Hispanic/Latino and non-Hispanic/Latino students were compared using an independent samples *t* test. This test was performed using the T TEST procedure in SPSS. An independent samples *t* test was used to compare the mean GPA for Hispanic/Latino and non-Hispanic/Latino students because the independent samples *t* test is the correct test to use when comparing two groups (Hispanic/Latino students and non-Hispanic/Latino students) on a continuous variable (GPA). In addition to reporting the *t* statistic, degrees of freedom, and *p* value from this test computed in SPSS, the results were also displayed graphically using a bar chart created in Excel.

The mean GPA for students in the Black/African American, White, and Other ethnic groups were compared using a one way ANOVA. A one way ANOVA was used because the independent variable, race, is nominal (i.e., a categorical variable that has

more than two possible categories) and the dependent variable (GPA) is continuous (Howell, 2009, p. 317). The ONEWAY procedure in SPSS was used to compute the  $F$  statistic, the degrees of freedom, and the  $p$  value for this test. Post hoc tests were performed using the Tukey honestly significant difference test to compare each pair of groups for a statistically significant oneway ANOVA. The Tukey honestly significant test is appropriate to compare each pair of groups because it controls the overall Type I error rate (Howell, 2009, p. 389).

After examining the participant's GPAs using the methods presented above, descriptive statistics were computed for the types of classes: AP, support, and honors classes. The descriptive statistics for these variables consisted of the number and percentage of participants taking each type of course. The number and percentage of participants taking each type of course was computed using the FREQUENCIES procedure in SPSS. The results from this procedure were displayed graphically in bar charts and pie charts created in Excel.

The fourth research question was: Of those students with disabilities graduating in 2008 from the Participating School System and planning to attend a 4 year college or university, what was the total balance of credits earned in special education versus general education classes? The number of credits each student earned in special education and general education was calculated and displayed in graphs. To calculate time in special education, the researcher analyzed each transcript and highlighted classes that met the definition for special education. The researcher then calculated the total credits in special education classes and the total cumulative credits earned by each participant. These two values (the total credits in special education and the total credits

earned) for each participant were entered into the SPSS database. The number of general education credits was computed by subtracting the total number of special education credits from the total credits earned. The percentage of general education credits was computed using the SPSS FREQUENCIES procedure. Results were displayed in bar charts and pie charts created in Excel.

### **Interrater Reliability**

To ensure inter-rater reliability for assigning a level of rigor, a 20% random sample was reviewed for accuracy by a Participating School System high school transition coordinator who was familiar with student transcripts. The researcher used the list generator feature on the online service, [www.random.org](http://www.random.org) to generate a  $\geq 20\%$  (10) random number between 1 and 47. The list generator assigned the following numbers: 14, 22, 37, 39, 47, 8, 42, 36, 40, and 19. The transition coordinator was given the corresponding transcripts for the random assigned numbers and a blank data collection sheet, see Appendix B for the directions given to the rater.

To test interrater reliability, the transition coordinator first matched student numbers on the transcript with student numbers in the excel file. The rater then checked for race, ethnicity and gender. The next step, the rater matched course completion and assigned each student a level of rigor. The researcher and the rater had discussions about the inclusion of chemistry applications and physics applications for physics and chemistry. The researcher polled four teachers of physics, physics applications, chemistry and chemistry applications, and one high school department chair from the Participating School System. The teachers were asked: In terms of rigor, are chemistry/physics equal to chemistry applications and physics applications? The teachers

unanimously agreed that chemistry applications and physics applications were less rigorous. The researcher and interrater transition coordinator therefore did not substitute for chemistry and physics. Interrater reliability achieved 100% accuracy. The rater was trained by the researcher and written directions were provided (Appendix B).

The data analysis statistic reports also had a reliability check completed by an advanced placement statistics teacher employed by the Participating School System. The advanced placement statistics teacher was given a copy of the aggregated data statistics and tables and graphs derived from the data collection tool and the results obtained by the researcher. The statistics rater reviewed the graphs and averages to check for accuracy. After discussion, agreement on the use of statistics, graphs, and tables was 100% on this section as well.

### **IRB and Confidentiality**

Permission to conduct the study was obtained following University of Maryland and Participating School System IRB procedures. Confidentiality was maintained by the researcher by storing records in a locked file cabinet at all times. Records were and continue to be stored in a file cabinet only accessible by the author. At the end of 3 years, data will be shredded. Interrater confidentiality agreements were unnecessary since the data collection instruments did not use student names. Both interrater reliability persons were Participating School System employees who routinely saw student IEP and race and gender reports; however, since student names were not used an agreement form was not developed for them to sign and agree to not disclose confidential information.

## **CHAPTER 4: RESULTS**

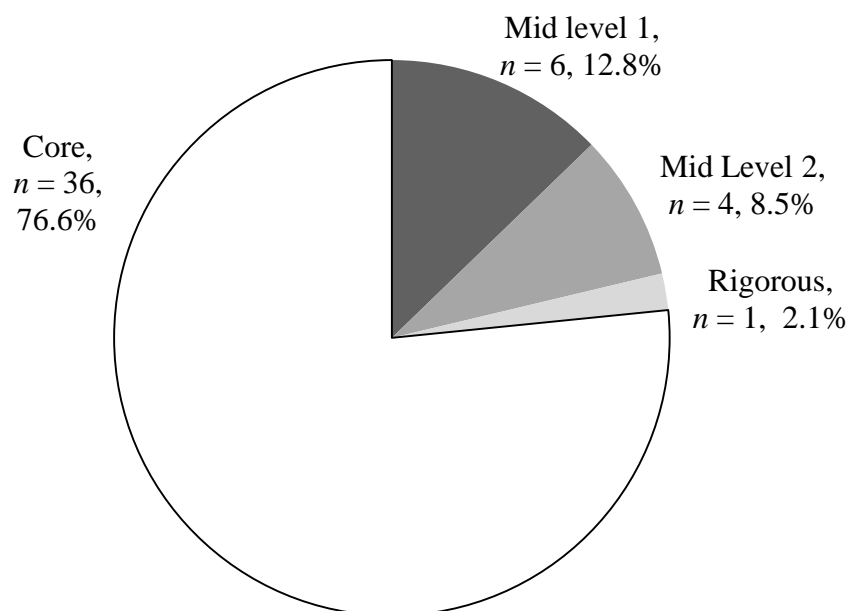
The purpose of this study was to examine the academic curricula of the Participating School System relevant to students with disabilities who were planning to attend a 4 year college or university. The study employed a measure of high school academic course rigor developed by Horn and Kojaku (2001) to measure the academic preparation of the 2008 school system's graduating class who planned to attend a 4 year college or university. Data were collected to determine if differences existed that might lead to unequal educational success. The following research questions guided this study. In this chapter, the results of the analyses performed to address each of these four research questions are presented.

### **Research Question 1**

The first research question of this study was: What was the level of course rigor for students with disabilities in the Participating School System who graduated high school in 2008 and planned to attend a 4 year college or university? The courses completed by the 47 student participants in this study were examined to answer this question. Each student was assigned a level of rigor based on the scale developed by Horn and Kojaku (2001). Students were assigned one of four levels of rigor based on their final transcripts.

Figure 1 shows the distribution of students in terms of the level of course rigor. Of the Participating School System students with disabilities who graduated high school in 2008 and planned to attend a 4 year post-secondary institution, one student (2.1%) met the rigorous standard, four students (8.5%) met the mid-level II standard, six students

(12.8%) met the mid-level I standard, and 36 (76.6%) met only the core curriculum or below standard.



*Figure 1.* Distribution of level of course rigor by percentages.

### **Research Question 2**

The second research question was: What were the demographic characteristics of students with disabilities in the Participating School System who graduated high school in 2008 and planned to attend a 4 year college or university and how did the characteristics relate to course rigor? To answer this question, the gender, race, and ethnicity of the participants were examined. The researcher analyzed the demographic characteristics of the 47 students with disabilities who graduated from the Participating School System and indicated they planned to attend a 4 year post-secondary institution.



The researcher used demographic information from two sources: Individual student transcripts and information provided by the research and data division of the Participating School System. Gender criterion was gleaned from their individual transcripts; each transcript describes students as male or female. However, one participant did not have a gender listed on the transcript or available from the research and data division of Participating School System, and was coded as “unlisted.” The research and data division of Participating School System provide race and ethnicity information on the 47 student participants for the study.

Figure 2 shows the gender distribution of the participants. Most of the participants, 34, were male (72.3%), with 12 females (25.5%) and 1 (2.1%) unlisted. Ethnically, 33 of the participants (70.2%) indicated that they were not of Hispanic or Latino origin, 11 indicated that they were (23.4%), and 3 (6.4%) declined to state their ethnicity, as shown in Figure 3. Figure 4 shows the racial distribution of the participants. The most common racial groups were White ( $n = 21$ ; 44.7%), Black/African American ( $n = 10$ ; 21.3%), and multiracial ( $n = 6$ ; 12.8%).

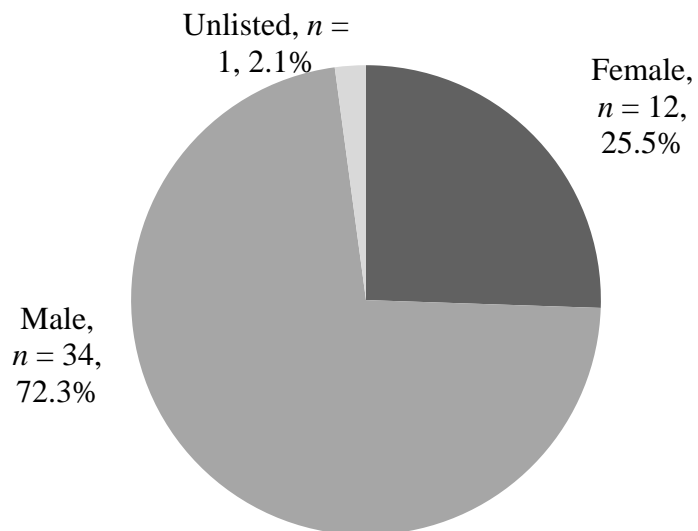


Figure 2. Percentage of total participants by gender.

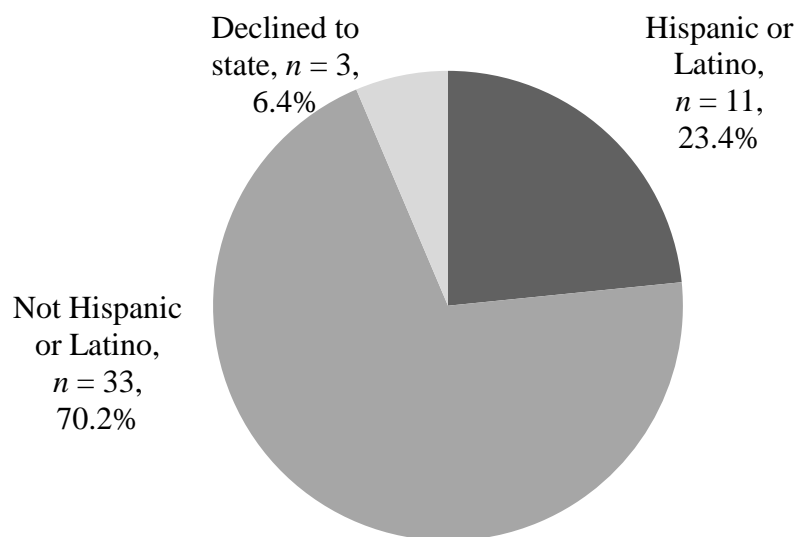


Figure 3. Percentage of total participants by ethnicity.

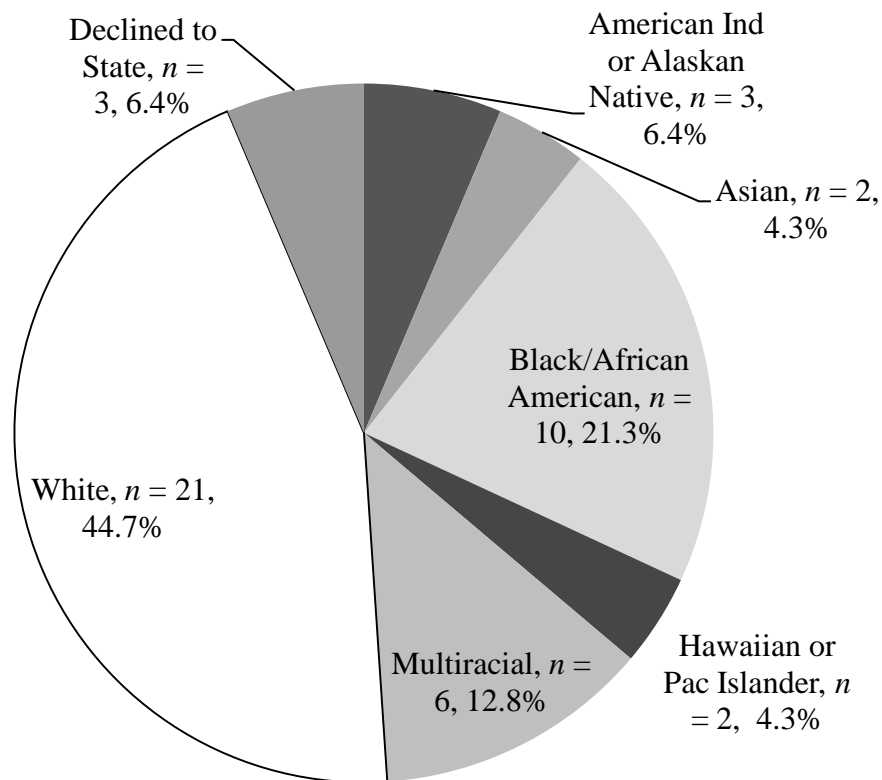


Figure 4. Percentage of total participants by race.

Additional analyses were performed to examine the level of rigor as a function of gender, ethnicity, and race. Figure 5 and Table 2 show the level of course rigor as a function of gender. This figure shows the percentage of students at each level of course rigor was similar for males and females. Given the small number of participants with non-core levels of course rigor, for the comparison of gender and level of course rigor, level of course rigor was dichotomized into two groups: core curriculum and all other curricula. A chi-square test of independence confirmed that gender and dichotomized level of course rigor were independent,  $\chi^2(1, N = 46) = .01, p = .918$ .

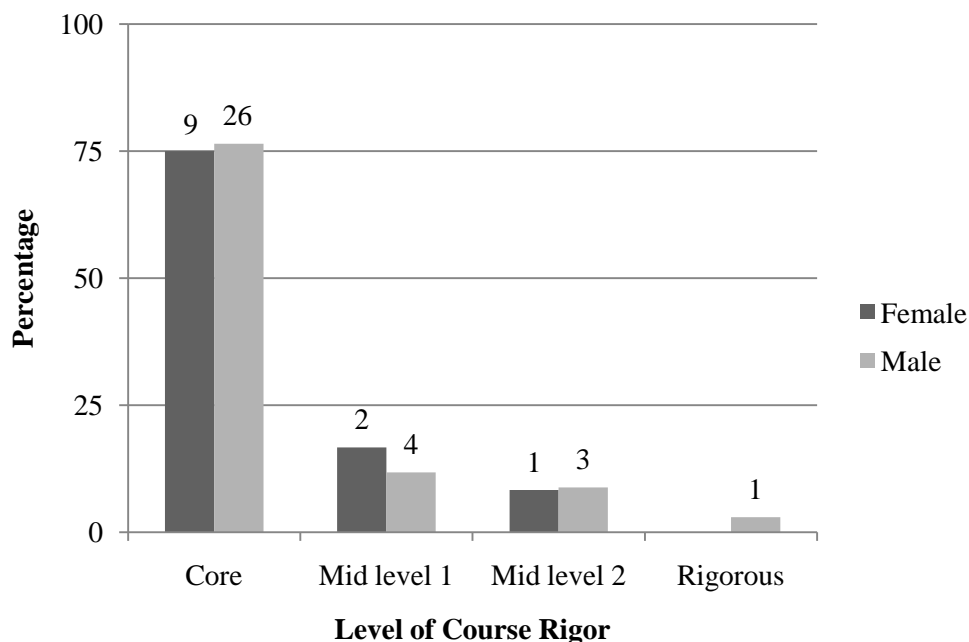


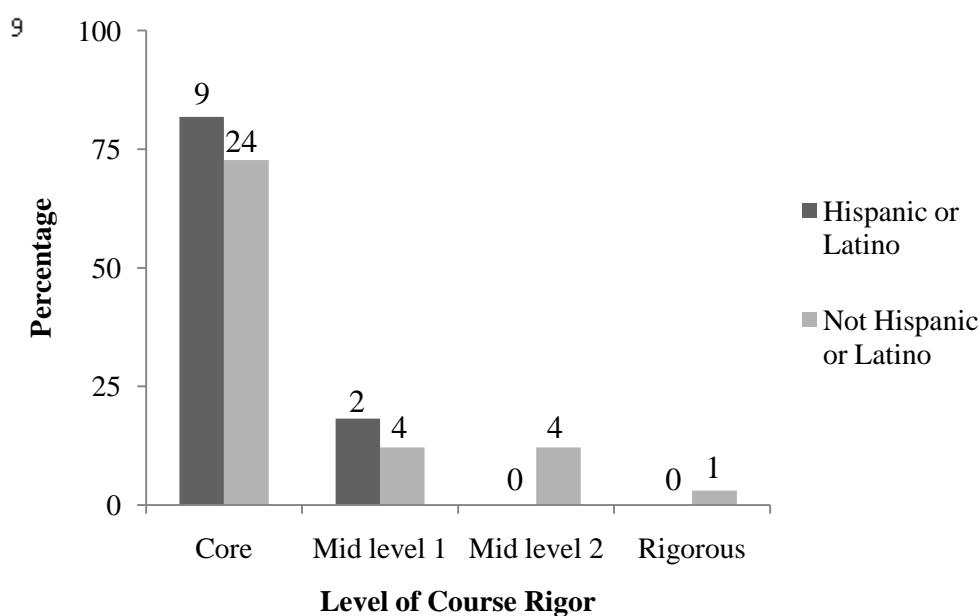
Figure 5. Distribution of level of course rigor as a function of gender. Differences in the dichotomized level of course rigor for males and females were not statistically significant using an alpha level of .05,  $\chi^2(1, N = 46) = .01, p = .918$ .

Table 2

Course Rigor as a Function of Gender (N = 46)

Course Rigor	Male	Female	Total	$\chi^2$	<i>df</i>	<i>p</i>
Core curriculum	9 (75.0%)	26 (76.5%)	35 (76.1%)	.01	1	.918
Other	3 (25.0%)	8 (23.5%)	11 (23.9%)			
Total	12 (100.0%)	24 (100.0%)	46 (100.0%)			

Figure 6 and Table 3 show the distribution of level of course rigor as a function of ethnicity. Hispanic and Latino participants were slightly more likely to have completed only the core curriculum than non-Hispanic or Latino participants (81.8% compared to 72.7%, respectively), while non-Hispanic or Latino participants were slightly more likely to have completed the Mid-level 2 curriculum than Hispanic or Latino participants (12.1% compared to 0.0%, respectively). However, a chi-square test of independence indicated there was no statistically significant difference in dichotomized level of course curriculum between the two ethnic groups,  $\chi^2(1, N = 44) = .36, p = .546$ .



*Figure 6.* Distribution of level of course rigor as a function of ethnicity. Differences in dichotomized level of course rigor for Hispanic/Latino students and non-Hispanic Latino students were not statistically significant using an alpha level of .05,  $\chi^2(1, N = 44) = .36, p = .546$ .

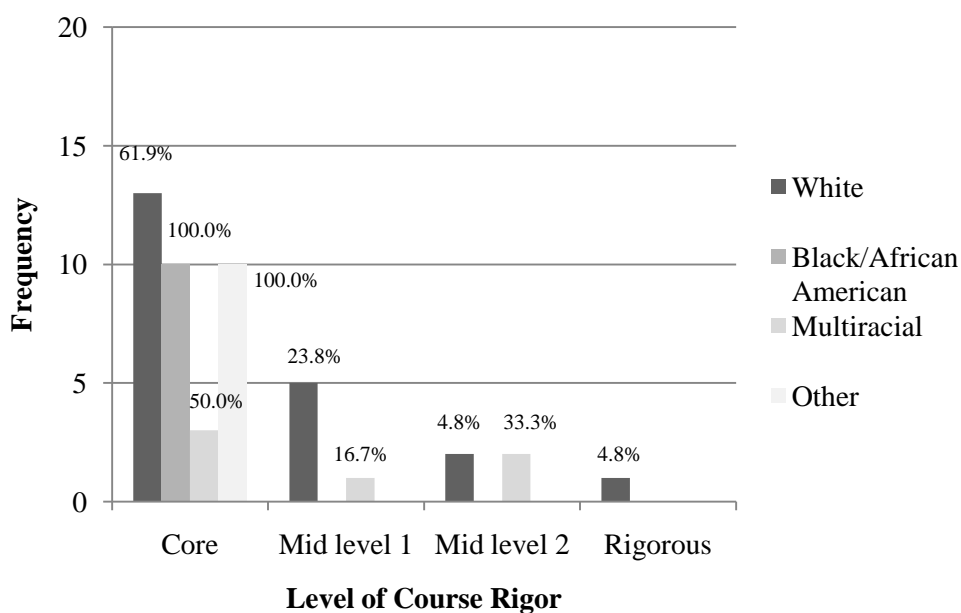
Table 3

*Course Rigor as a Function of Ethnicity (N = 44)*

Course Rigor	Hispanic/Latino	Not Hispanic/Latino	Total	$\chi^2$	<i>df</i>	<i>p</i>
Core curriculum	9 (81.8%)	24 (72.7%)	24 (72.7%)	.36	1	.546
Other	2 (18.2%)	9 (27.3%)	9 (27.3%)			
Total	11 (100.0%)	33 (100.0%)	44 (100.0%)			

Figure 7 shows the distribution of level of course rigor as a function of race. For this analysis, all racial groups except White, Black/African Americans, and multiracial were combined due to the small number of participants of the other individual ethnic categories. Figure 7 shows that all 10 of those in the Black/African American category and all 10 of those in the Other racial category completed only the core curriculum. For the White participants, 13 (61.9%) had completed only the core curriculum, 5 (23.8%) had completed the Mid-level 1 curriculum, 2 (9.5%) had completed the Mid-level 2 curriculum, and 1 (4.8%) had completed the rigorous curriculum. For the multiracial participants, 3 (50.0%) had completed the core curriculum, 1 (16.7%) had completed the Mid-level 1 curriculum, and 2 (33.3%) had completed the Mid-level 2 curriculum. Although these comparisons indicate the Black/African American and Other racial category participants failed to complete the more advanced curricula, a chi-square test of

independence indicated that there was a statistically significant difference between the racial groups in terms of dichotomized level of course rigor,  $\chi^2(3, N = 47) = 11.01, p = .012$ . Table 4 shows these results. Based on this analysis, it was concluded that the difference between the racial groups in terms of level of course rigor was statistically significant. For Caucasian participants, 38.1% had some level of course rigor higher than core, and for multiracial participants, 50.0% had some level of course rigor higher than core. By contrast, none of the Black/African American students or the students in the Other racial category had some level of course rigor higher than core.



*Figure 7.* Distribution of level of course rigor as a function of race. Differences in dichotomized level of course rigor for Hispanic/Latino students and non-Hispanic Latino students were not statistically significant using an alpha level of .05,  $\chi^2(3, N = 47) = 11.01, p = .012$ .

Table 4

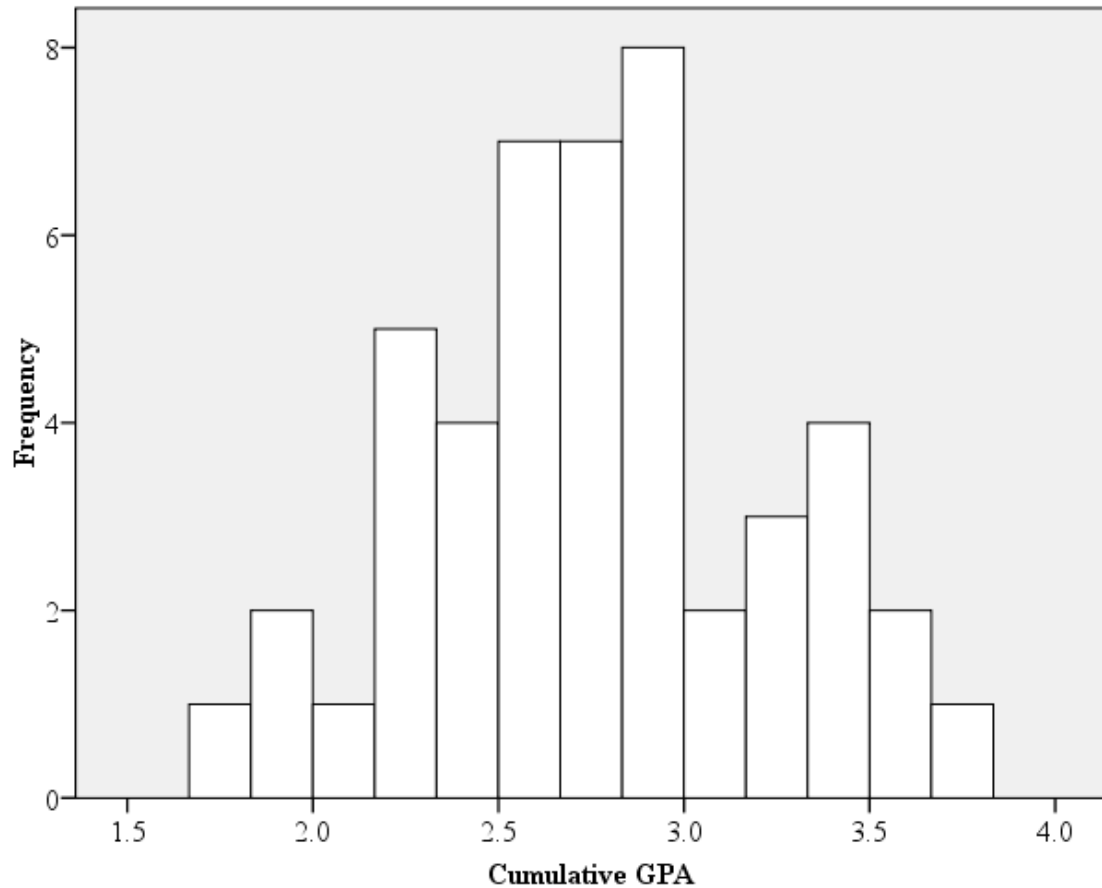
*Course Rigor as a Function of Race (N = 47)*

Course Rigor	White	African American	Multi-racial	Other	Total	$\chi^2$	df	p
Core curriculum	13 (61.9%)	10 (100.0%)	3 (50.0%)	10 (100.0%)	36 (76.6%)	11.01	3	.012
Other	8 (38.1%)	0 (0.0%)	3 (50.0%)	0 (0.0%)	11 (23.4%)			
Total	21 (100.0%)	10 (100.0%)	6 (100.0%)	10 (100.0%)	47 (100.0%)			

### Research Question 3

The third research question of this study was: What were the academic high school experiences of students with disabilities in the Participating School System who graduated high school in 2008 and how did the experiences relate to course rigor? Several components of the academic high school experience were examined, including GPA and the percentage of students enrolled in AP, honors, and support classes. Figure 8 shows the distribution of GPAs for the participants. The GPAs ranged from 1.71 to 3.68 with a mean of 2.75 ( $SD = .47$ ).





*Figure 8.* Distribution of GPAs.

Figure 9 and Table 5 show the average GPA as a function of gender. The average female GPA was 2.94 ( $SD = .49$ ), while the average male GPA was 2.69 ( $SD = .46$ ). An independent samples  $t$  test was performed and indicated there was no statistically significant difference in the mean GPA for males and females,  $t(44) = 1.57, p = .124$ .

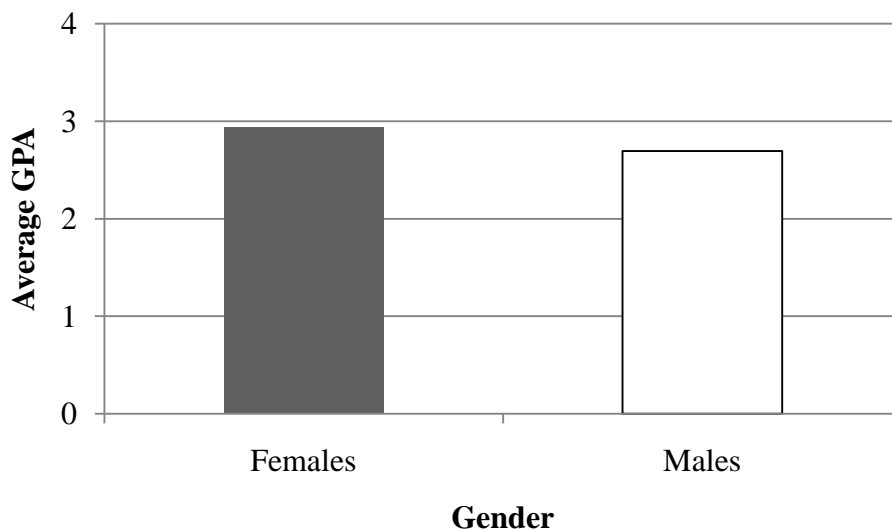


Figure 9. Average GPA as a function of gender. The difference in GPAs for male and female students was not statistically significant using an alpha level of .05,  $t(44) = 1.57$ ,  $p = .124$ .

Table 5

*Average GPA as a Function of Gender (N = 46)*

Gender	<i>M</i>	<i>SD</i>	<i>t</i>	<i>df</i>	<i>p</i>
Male ( $n = 34$ )	2.69	.46	1.57	44	.124
Female ( $n = 12$ )	2.94	.49			

The average GPAs for the Hispanic or Latino and the non-Hispanic or Latino participants are shown in Figure 10 and Table 6. The average GPA for Hispanic or Latino students was 2.49 ( $SD = .55$ ), the average GPA for non-Hispanic or Latino students was 2.88 ( $SD = .41$ ), and the average GPA for the students who declined to state their ethnicity was 2.35 ( $SD = .09$ ). An independent samples  $t$  test indicated there was a statistically significant difference between the two groups,  $t(42) = 2.49$ ,  $p = .017$ .

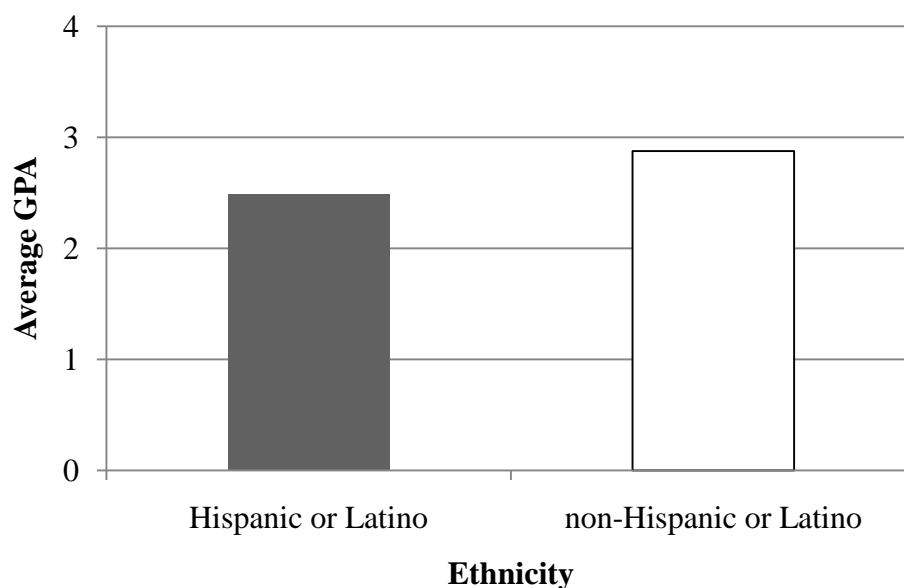


Figure 10. Average GPA as a function of ethnicity. The difference in GPAs for Hispanic or Latino and non-Hispanic or Latino students was statistically significant using an alpha level of .05,  $t(42) = 2.49$ ,  $p = .017$ .

Table 6

*Average GPA as a Function of Ethnicity (N = 44)*

Ethnicity	<i>M</i>	<i>SD</i>	<i>t</i>	<i>df</i>	<i>p</i>
Hispanic/Latino ( $n = 11$ )	2.49	.55	2.49	42	.017
Not Hispanic/Latino ( $n = 33$ )	2.88	.41			

Figure 11 and Table 7 show the average GPA as a function of race, the same racial groupings examined in Figure 7 (i.e., White, Black/African American, multiracial, other). A one way ANOVA was performed comparing the four racial groups in terms of average GPA, and this test was statistically significant,  $F(3, 43) = 5.17$ ,  $p = .004$ .

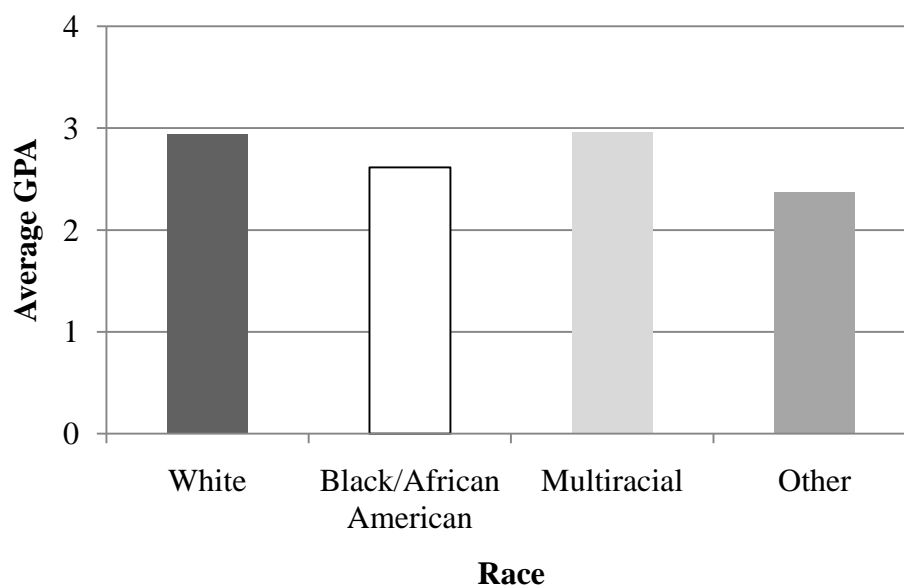


Figure 11. Average GPA as a function of race. The difference in GPAs for participants in groups defined by race was statistically significant using an alpha level of .05,  $F(3, 43) = 5.17$ ,  $p = .004$ . Tukey's honestly significant difference post hoc tests indicated that both White participants and multiracial participants had higher average GPAs than those in the Other racial category using an alpha level of .05.

Table 7

Average GPA as a Function of Race (N = 47)

Race	<i>M</i>	<i>SD</i>	<i>F</i>	<i>df</i>	<i>p</i>
White ( $n = 21$ )	2.94	.37	5.17	3, 43	.004
African American ( $n = 10$ )	2.61	.29			
Multiracial ( $n = 6$ )	2.96	.46			
Other ( $n = 10$ )	2.37	.57			

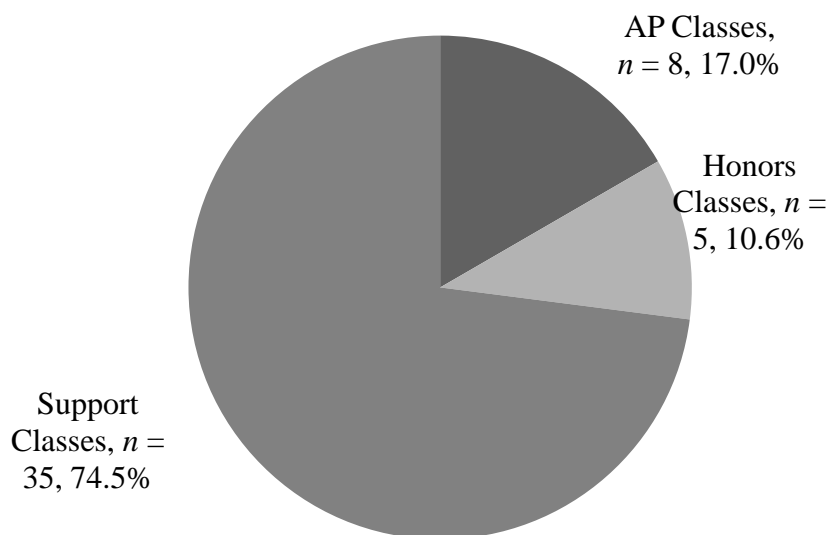
Follow up Tukey tests were used to compare each pair of groups and indicated that both White participants ( $M = 2.94$ ,  $SD = .37$ ) and multiracial participants ( $M = 2.96$ ,  $SD = .46$ ) had higher average GPAs than those in the Other racial category ( $M = 2.37$ ,  $SD = .57$ ),  $ps < .05$ . Black/African American participants ( $M = 2.61$ ,  $SD = .29$ ) did not differ statistically from the other three groups. Table 8 shows the results from the Tukey tests.

Table 8

*Results from Tukey HSD Tests Comparing GPAs as a Function of Race (N = 47)*

Group 1	Group 2	$M_1 - M_2$	$SE_{diff}$	$p$
White	African American	.33	.169	.184
White	Multiracial	-.01	.19	1.000
White	Other	.57	.16	.004
African American	White	-.33	-.16	.184
African American	Multiracial	-.34	.21	.391
African American	Other	.25	.19	.553
Multiracial	White	.01	.19	1.000
Multiracial	African American	.34	.21	.391
Multiracial	Other	.59	.21	.042
Other	White	-.57	.16	.004
Other	African American	-.25	.19	.553
Other	Multiracial	-.59	.21	.042

Figure 12 shows the frequency with which the participants took three types of classes: AP classes, honors classes, and support classes. The most common type of class was support classes, which were taken by 74.5% of the participants. AP classes (17.0%) and honors classes (10.6%) were taken less frequently. For those participants who took honors classes, the most common honors class was English, world history literature, and world history (each taken by 6.4% of the participants), as shown in Figure 13. Figure 14 shows that for AP classes, the most common were English language (10.6%), statistics (6.4%), U.S. history (10.6%), and calculus (4.3%). Finally, for support classes taken, the most common were algebra lab (40.4%), geometry lab (23.4%), and reading lab in the 9th grade (19.1%), as shown in Figure 15.



*Figure 12.* Distribution of AP, Honors, and support classes taken by participants.

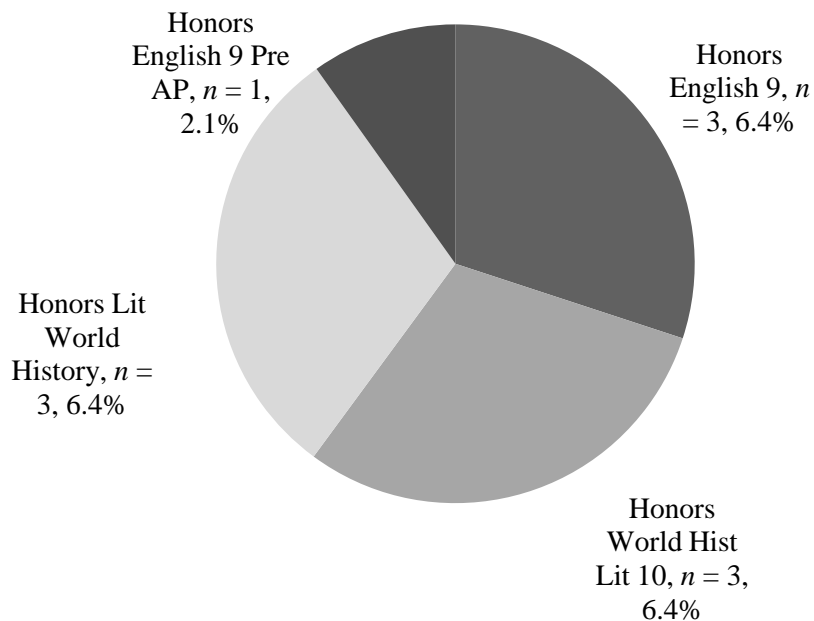


Figure 13. Distribution of types of honors classes taken by participants.

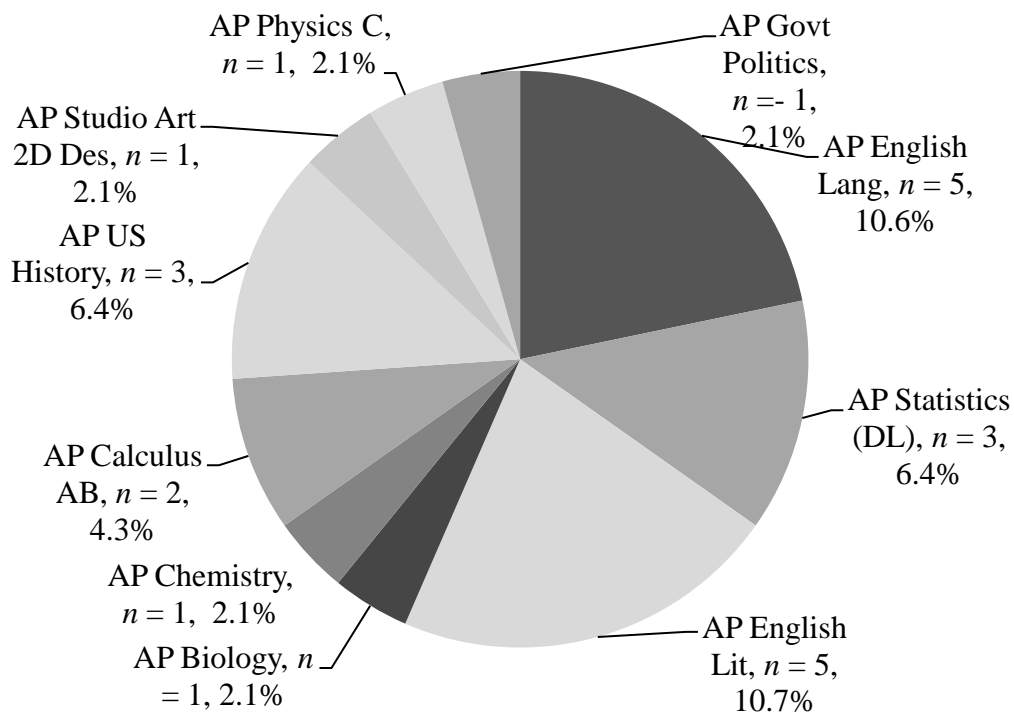


Figure 14. Distribution of types of AP classes taken by participants.

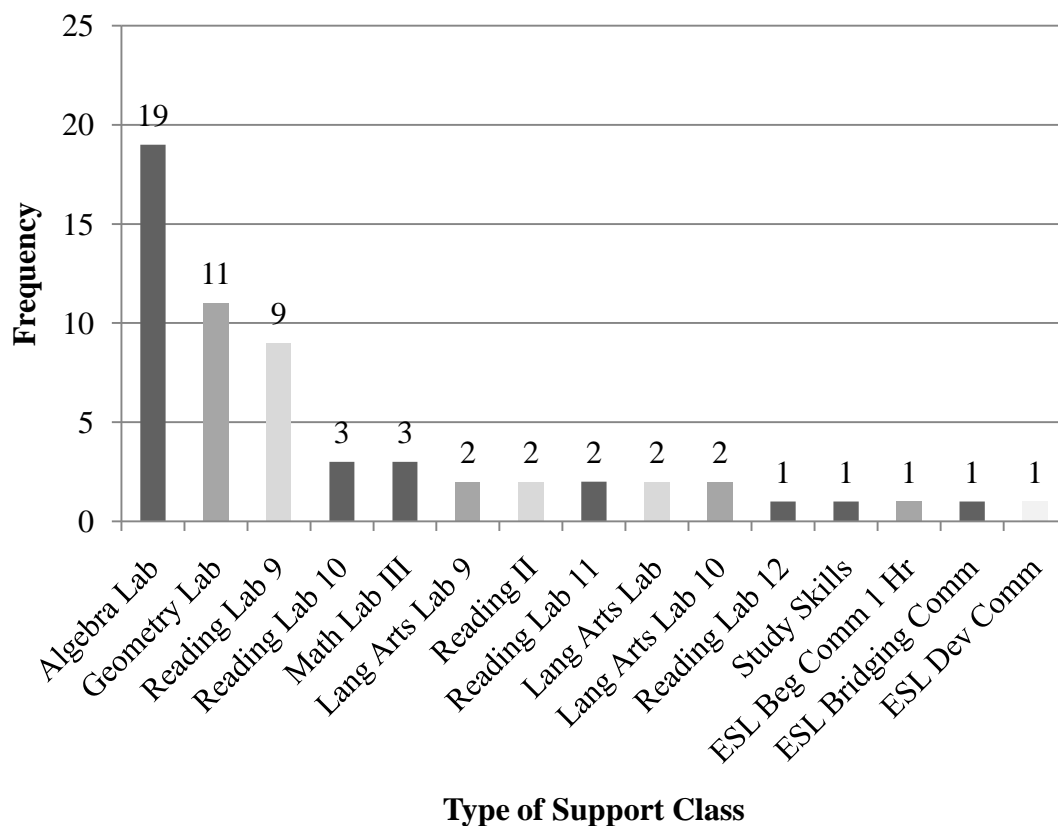
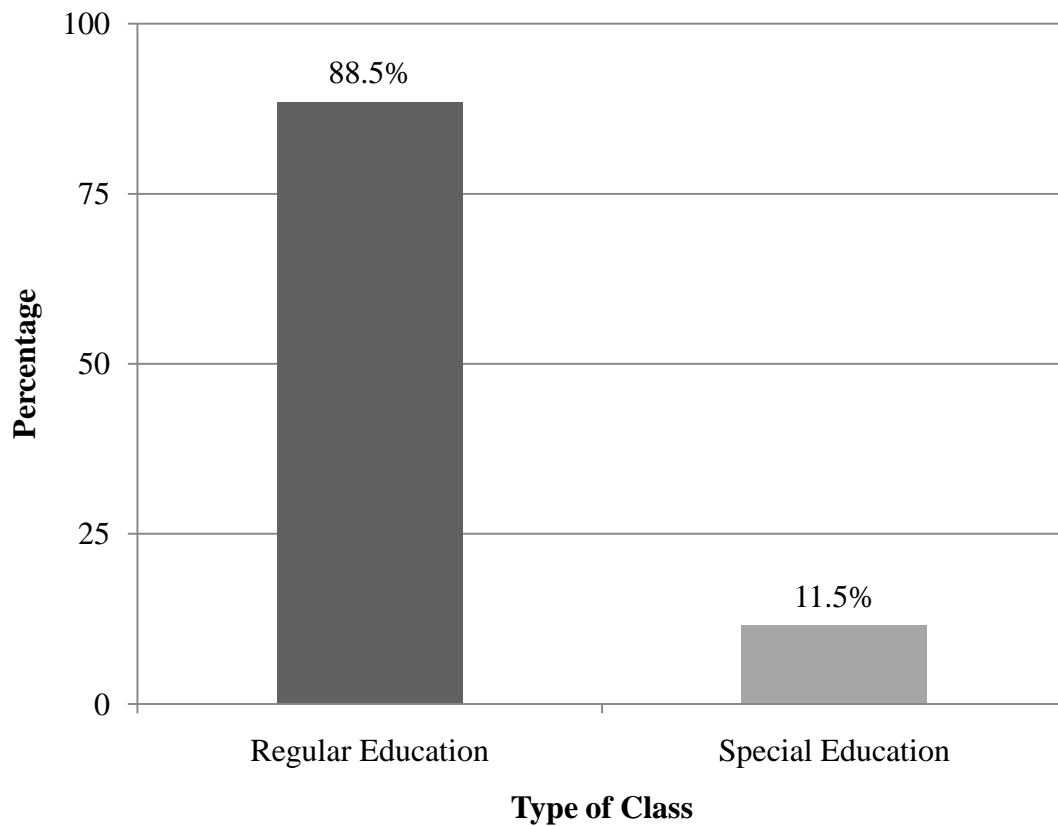


Figure 15. Distribution of types of support classes taken by participants.

#### Research Question 4

The fourth research question of this study was: Of those students with disabilities graduating in 2008 from the Participating School System and planning to attend a 4 year college or university, what was the total balance of credits in special education versus general education classes? Figure 16 shows that the participants earned most of their credits (88.5%) in general education classes, compared to only 11.5% of their credits in special education classes.





*Figure 16.* Distribution of time spent in general education and special education classes.

## **CHAPTER 5**

### **DISCUSSION**

To determine the academic preparation of students with disabilities graduating in 2008 from the Participating School System, the records of all students with disabilities indicating they planned to enroll in a 4 year post-secondary college or university were examined. This study utilized 47 transcripts of the Participating School System High School class of 2008 students with disabilities who planned on attending a 4 year post-secondary institution. The participants for the study were selected using the post-secondary plans report published by Participating School System. In this study, each participant was assigned a level of rigor based on the system designed by Horn and Kojaku (2001). In addition, the participants' demographic characteristics based on the information available on student transcripts and information on gender, race, and ethnicity were examined.

Overall, the findings from this study revealed there was very limited preparation for a successful post high school experience in a 4 year college or university for the students with disabilities graduating in 2008 from the Participating School System. Only one of the 47 students (2.1%) took a rigorous curriculum in high school, four students (8.5%) met mid-level II standards, six (12.8%) met mid-level I. The majority of students, 36 (76.6%) met the basic core standard. The research on the effects of high school academic course selection and postsecondary persistence supports that the more rigorous the high school curriculum, the greater the odds of persistence toward to a 4 year college degree (Adelman, 1999, 2006; Horn & Berktold, 1997; Horn & Kojaku, 2001). In the study by Horn and Berktold (1999), college students with disabilities were compared to

students without disabilities in their academic preparation and the findings were similar, but not as stark: 31% of students without disabilities and 15% of students with disabilities were found to be highly qualified for college. The Participating School System students with disabilities planning to attend a 4 year post-secondary institution need to take a more rigorous course load in secondary school.

Additional analysis examined the level of rigor as a function of gender, ethnicity, and race. The percentage of students at each level of course rigor was similar for males and females, and a chi square tests comparing gender and dichotomized level of course rigor (core versus all higher levels) indicated that there was no statistically significant difference. The body of research shows that women outperform men on high school grades, test scores, and college prep coursework. In this study, women represented only 26% of students with disabilities planning to attend a four year postsecondary institution. The Participating School System should examine the overall performance of adolescent women to determine if they are underrepresented in students planning attend a four year college.

There were no statistically significant differences in the (dichotomized) level of course rigor between the two ethnic groups (Hispanic or Latino/Non-Hispanic Latino). Racial groups were combined into White, Black/African American, multiracial, and other. A chi square test of independence confirmed there was a significant difference between the racial groups in terms of dichotomized level of course rigor. White students (38.1%, N=8) and multiracial students (50.0%, N=3) were more likely to have a level of course rigor higher than core than Black/African American students (0.0%) or students in the Other racial group (0.0%). Further research and policy recommendations should

focus on all students who plan to attend a four year college or university; specifically, students of Black/African American or Other racial categories should be encouraged to take more rigorous courses.

Analysis of GPA revealed the average GPA for the group was 2.75. The average female GPA was 2.94 and the average male GPA was 2.69. An independent sample t test was performed and indicated that there was no difference in the GPA of males versus females. The average GPA for Hispanic or Latino students was 2.48, the average for non-Hispanic Latino 2.88, and the average for students who declined to state was 2.35. An independent t test indicated that non-Hispanic or Latino students had higher GPAs than the Hispanic or Latino students. A one-way ANOVA and Tukey test indicated that both white participants and multiracial participants had higher GPAs than those in the Other racial category. Black/African American participants did not differ from the other three groups. The high school GPA is a strong predictor of post-secondary GPAs and success. The Participating School System should continue to encourage students to achieve high grades and to take rigorous courses. In addition, students of Hispanic ethnicity and Other racial category should be encouraged to improve their overall grade point averages to improve their chance of success at a 4 year college.

The most common type of class taken by the participants was support classes which were taken by 74.5% of the participants. AP classes (17%) and honors classes (10.6%) were taken less frequently. In a similar study by Horn and Kojaku, students with disabilities were more likely to have taken remedial classes in mathematics and English in high school and less likely to have taken advanced placement courses (2001), so this finding was not surprising. Many post-secondary universities offer remedial courses as

well and students with disabilities may choose to enroll to assist with degree completion. Given the high rate of this population of students enrolled in support classes, Participating School System guidance counselors and case managers should be mindful of this finding when providing guidance in post high school selection of post-secondary institutions.

The participants in the study took 88.5% of their credits in general education, compared to only 11.5% in special education classes. Students with disabilities planning to attend a 4 year post secondary institution are spending the majority of their time in general education classes which is supported by the special education procedural guide and the recommendations of the transition component. The high percentage of time in general education classes is encouraging.

The results of the study indicated a need for special education teachers and guidance counselors to encourage students with disabilities to take a more rigorous course load while in secondary school to improve chances for success at postsecondary institutions.

### **Implications for Policy, Practice, and Research**

The findings of this study suggest policy implications as well as future needs. However both the findings and policy implications of this study should be considered with an understanding of the limitations of the study. Due to the limited amount of research on predictors of success and degree attainment for students with disabilities at 4 year colleges, the Participating School System should proceed with caution in considering the findings of this study when making changes to the curriculum for students with disabilities. However, administrators in the Participating School System

should consider carefully the academic preparation of students with disabilities as revealed in their course selection and overall rigor with respect to their post-secondary plans. The findings of this study indicated students with disabilities graduating in 2008 from the Participating School System planning to attend a 4 year postsecondary institution were not prepared for success, based upon an examination of the rigor of their coursework. Perhaps a better implementation of the policies in place could improve outcomes for students with disabilities. For example, the special education procedural guide recommends students take classes commensurate with their post-secondary plans. Case managers and guidance counselors should work carefully with students to ensure their course selection, with respect to students who plan to attend a four year college or university, includes more rigorous classes. The implementation of professional development experiences for guidance counselors and case managers on policies already in place for transition to ensure there is sensitivity and a knowledge base concerning adequate academic preparation for students with disabilities planning to attend a 4 year institution would appear to be appropriate and justified given the findings of this study.

### **Scope, Limitations, and Assumptions**

The study took place in the Participating School System and only students with disabilities graduating in 2008 and planning to attend a 4 year post-secondary institution were included in this study. Creswell (2007) indicated limitations of a study determine inherent exceptions, reservations, and qualifications of the research. Recognized limitations identify potential weaknesses of a study (Creswell, 2007). Several limitations are outlined below. The data from the proposed study may not be characteristic of all other school districts statewide, nationwide, or worldwide. The study focused on

examining the high school transcript records of students with disabilities planning to attend a 4 year post-secondary institution in an effort to gain a deeper understanding of the course rigor of this population of students in the Participating School System. The study is confined to student transcripts and data provided by the Participating School System data and research center. The accuracy of the transcripts rests on the high school counselor correctly converting credits from various American, foreign and international school systems into transcripts for the Participating School System. Students in the Participating School System have frequent moves due to their parent's military rotations. The higher rate of transitions could mean that fewer students are beginning at the Participating School System as a freshman and therefore the Participating School System has not had the opportunity to ensure the students are taking a rigorous course load or have been offered a rigorous course load at their previous duty location. A second limitation of this study was the small sample size. Of the 3,125 graduates during the 2008 school year, only 47 were included in the current study. Thus, conclusions regarding the remaining students with or without disabilities cannot be drawn based on the limited sample size. The Participating School System should consider a more intensive review of the post high school plans of graduating students with disabilities to determine more carefully their post high school plans for education and employment.

Leedy and Ormrod (2001) defined assumptions as self-evident truths. Several assumptions were made in this research study. It was not possible to track and categorize academic preparation by category of disability due to lack of data in the final sample. Though it would have been of limited significance in the overall findings, it would have been desirable to determine if there were differences in the academic preparation of

students by disability category. It was assumed that student participants who are listed as having a disability on this study meet special education criteria for the Participating School System. The researcher requested disability type information for each participant; however, due to a change in system accountability procedures the disability type information is unavailable. An analysis of course selection revealed that 40 of the 47 participants had taken at least one class during their high school career that was only available to students in special education. It was assumed the other seven students were students with disabilities based on the research report published by Participating School System. The validity of the study was predicated on the assumption that the exceptional student participants reported to their high school guidance counselor their true post-secondary intentions. Furthermore, the study was predicated on the assumption that school guidance counselors entered the participant post-secondary plans information correctly into the database. The Participating School System guidance counselors are state certified as well as certified in the Participating School System. It was assumed that student participants answered honestly about their future post-secondary plans. It was assumed that the researcher was unbiased. It was also assumed the transcript information analyzed for this study is valuable to leadership in Participating School System to make decisions about policy and practice. It is important to be cautious when interpreting the results of this study since the schools served by the Participating School System do not reflect the general population of American schools in the US. In addition, assumptions were made concerning the true intent of the participants and their type of disability.



### **Future Research**

The limitations and findings of this study suggest that more research into the academic preparation of students with and without disabilities for postsecondary education should be undertaken. The model in this study was derived from Horn and Kojaku (2001) which is heavily weighted on specific science and math classes to move into a higher category of rigor. The researcher recommends a more comprehensive science criteria be developed to define level of course rigor. For example, students who finish human anatomy and physiology, plus two of chemistry, physics, and biology have taken a rigorous curriculum perhaps the equal of that taken by students who took all three chemistry, physics, and biology courses; yet the level of rigor designations in the current study did not reflect this. Students who have completed Algebra II and AP Statistics instead of Algebra II, math analysis and/or calculus have taken just as rigorous a course load, but not according to the system developed by Horn and Kojaku used in the current study.

Having student disability category would have enhanced understanding of this population. Disability category information is available for inclusion for participants beginning in 2009. Therefore, it is recommended that future researchers replicate the current study but include the disability information. In addition, future researchers should include a stratified random sample of students without disabilities for comparison. A study that includes a stratified random sample that matches student race, gender, and ethnicity of students without disabilities would represent a powerful comparison of the academic preparation of both student samples.

It would be a most interesting study if the Participating School System followed all 47 of the students in this study who indicated they were planning to attend a 4 year college or university to determine their success. The foundation laid in this study could then provide very useful information and possibly insights into the most reliable predictors of success in post-secondary experiences for students with disabilities.

### **Summary**

The purpose of this study was to examine the academic preparation of students with disabilities graduating in 2008 from the Participating School System who were planning to attend a 4 year college or university. The study found the level of course rigor reflected in student transcripts did not meet a rigorous standard in the vast majority of cases. Additional findings indicated that (a) there was no difference between males and females in terms of level of course rigor or cumulative GPA; (b) there was no significant difference in the level of course curriculum as a function of ethnicity (Hispanic non-Hispanic); (c) White participants and Multiracial participants had significantly higher GPAs than those in the Other racial category; (d) Black/African American participants did not differ on GPA from the other three groups; (e) Hispanic or Latino students had significantly lower GPAs than non-Hispanic or Latino students; (f) White participants and Multi-racial participants were significantly more likely to take classes at the core or higher level than Black/African American and Other race students; (g) the students in this sample were unlikely to have taken AP classes or honors classes, but likely to have taken support classes; and (h) the students in this sample spent the majority of their high school class time in general education classes rather than special education classes.

**APPENDICES**

## Appendix A: Data Collection Sheet

Participant Number \_\_\_\_\_

Gender        Male    Female

Race    White    African American        Multiracial        Asian    American Indian  
         Hawaiian

Ethnicity        Hispanic or Latino        NonHispanic/Latino

Level of Course Rigor – Years equal to credits.

Rigorous

- 4 years of English
- 4 years of mathematics including precalculus (math analysis) or higher (Advanced Placement Calculus AB or BC)
- 3 years of any foreign language
- 3 years of science: this includes biology, chemistry, and physics.
- 3 years of social science
- 1 Honors or AP Course

Mid Level II

- 4 years of English
- 2 years of any foreign language
- 3 years of math including algebra II
- 3 years of science including biology, chemistry, and physics

Mid Level I

- 4 years of English
- 1 year of any foreign language
- 3 years of mathematics
- 3 years of science including two of the following: Biology, chemistry, and physics.

Core curriculum or lower

- 4 years of English
- 3 years of social science
- 3 years of mathematics
- 3 years of science

Cumulative GPA        \_\_\_\_\_

Total Credits Earned \_\_\_\_\_

Credits in SPED classes (indicated by a backslash / on the transcript for Participating School System or learning strategies) \_\_\_\_\_

Credits in General classes

\_\_\_\_\_

Percentage in general classes (credits in general class/credits in SPED classes)

\_\_\_\_\_ %

**Appendix B: Directions for interrater reliability**

Greetings Mrs. B.,

Thank you for agreeing to help me test the reliability of data collection for my dissertation. You are being given a 20% random sample (10) of student transcripts and 10 blank data collection sheets. Please complete a data collection sheet for each student by following the directions below.

Complete each section as follows. Directions are written in italics.

Respectfully,

Kevin O'Brien

## Data Collection Sheet Directions

Participant Number

*Handwritten at the top of the transcript*

Gender      Male    Female

*Located on the transcript next to Sex; listed as M or F. Please circle the matching Male or Female.*

Race    White    African American      Multiracial      Asian    American Indian  
            Hawaiian.

*Located on attached spreadsheet; circle the correct race by matching the participant numbers.*

Ethnicity      Hispanic or Latino      NonHispanic/Latino

*Located on attached spreadsheet; circle the correct Ethnicity by matching the participant numbers.*

Level of Course Rigor – Years equal to credits. *Analyze each transcript using the following definitions:*

### **Advanced Placement Classes (AP Classes)**

Through careful analysis of the Participating School System Course selection catalog, discussion with an advanced Ed Participating School System district liaison who provides training to all AP teachers through Participating School System, and a Participating School System high school transition specialist, the following classes were designated AP classes: AP English Language Arts; AP Statistics; AP Biology; AP English Lit; AP Statistics DL; AP US History; AP Calculus; AP Chemistry; AP Studio Art 2D Des+; AP Physics C+; AP Gov't Politics;

Analyze each transcript and assign a level of rigor. Indicate your choice by circling.

### **Foreign Language Classes**

Through analysis of the Participating School System course selection catalog and discussion with the Chief of Pupil Personnel Services/Special Education and a lead high

school transition counselor, the following classes were designated as Foreign language classes: Spanish, German, French, Turkish; Italian; Japanese; Korean;

### **Honors Classes –**

Through careful analysis of the Participating School System course selection catalog, discussion with an Advanced Ed Liaison for Participating School System District who provided training to all AP and Honors teachers throughout Participating School System, and a Participating School System high school transition specialist, the following classes were designated Honors classes – Honors English 9; Honors Lit World Hst 10; English 9 PreAp;

### **Mathematics Classes**

Through careful analysis of the Participating School System course selection catalog and discussion with a Participating School System high school transition teacher, the following classes were designated as mathematics classes: Algebra IR; Foundation of Algebra; Pre Algebra; Basic Algebra 1A; Algebra I, Algebra II, Geometry; Discreet Math; Math Analysis; Precalculus, calculus AB or BC; Mathematics 9,10,11,12; AP Statistics; IS Math 11

### **Science Classes**

Through analysis of the Participating School System course selection catalog and discussion with the Chief of Pupil Personnel Services/Special Education and a lead high school transition counselor, the following classes were designated as social science classes: Biology; Environmental Science; Physics/Chemistry; Chem Apps in the community; Physics Apps in the community; Chemistry; Earth and Space Science;



Marine Biology; Sci Research; Physics; AP Chemistry; Integrated Science; Applied Biology; Human Anatomy and Physiology; Applied Physics.

### **Social Science Classes**

Through analysis of the Participating School System course selection catalog and discussion with the Chief of Pupil Personnel Services/Special Education and a lead high school transition counselor, the following classes were designated as social science classes: World Religions, Sociology; US History; US Government; World Regions; World History; Street Law; World Geography, Oklahoma History; US Minorities; Psychology, Sociology; Contemporary Issues; Humanities; Anthropology; Religious education; Geography; 20<sup>th</sup> Century Canadian History; Model United Nations; Contemporary Issues; History of Old Testament; New Testament Church History; World geography/Cultures; Bible; Puerto Rican History; IS World regions; economics; Guam Culture; Asian Culture; British Literature; American History 1900-1960;

### **Special Education Classes**

Through analysis of the Participating School System course selection catalog and discussion with the Chief of Pupil Personnel Services/Special Education and a lead high school transition counselor, the following classes were designated as special education in this study: Classes with a dash, number sign, or backslash in front of the listing, e.g. - ENG 12; #ENG 12; or \Eng 12. Classes titled Learning Strategies; Learning Strat; Mathematics 9, 10, 11, or 12; Independent Living Skills, Study Skills, Transition to Post Secondary; and Daily Living.

*Based on the course completion record on the transcript, circle the level of rigor that matches the student transcript.*

**Rigorous**

- 4 years of English
- 4 years of mathematics including precalculus (math analysis) or higher (Advanced Placement Calculus AB or BC)
- 3 years of any foreign language
- 3 years of science: this includes biology, chemistry, and physics.
- 3 years of social science
- 1 Honors or AP Course

**Mid Level II**

- 4 years of English
- 2 years of any foreign language
- 3 years of math including algebra II
- 3 years of science including biology, chemistry, and physics

**Mid Level I**

- 4 years of English
- 1 year of any foreign language
- 3 years of mathematics
- 3 years of science including two of the following: Biology, chemistry, and physics.

**Core curriculum or lower**

- 4 years of English
- 3 years of social science
- 3 years of mathematics
- 3 years of science

**Cumulative GPA**     *Cumulative GPA is listed under the cumulative summary on page two of the transcript.*

**Total Credits Earned**     *Total Credits Earned is listed under Commulative summary on page two of the transcript.*

**Credits in SPED classes**

---

*Use the definition of SPED classes above to determine which classes fall within the category.*

Credits in General classes

---

*Subtract sped class credits from total class credits*

Percentage in general classes (credits in general class/credits in SPED classes)

\_\_\_\_\_ %

*Divide the number of general class credits by the total number of credits to determine this percentage*

Final Comments:

*Please add questions or comments to the bottom of each data collection sheet.*

## References

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