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# An Examination of the Relationship Between Inclusion of Students with Disabilities in General Education Classrooms and Student Success as Measured by Public School District Graduation Rates, Dropout Rates, and ACT Mathematics Performance

Renee Anne Rudloff

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An Examination of the Relationship Between Inclusion of Students with Disabilities  
in General Education Classrooms and Student Success as Measured by Public School District  
Graduation Rates, Dropout Rates, and ACT Mathematics Performance

by

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Dissertation

Submitted to the Department of Leadership and Counseling

Eastern Michigan University

In partial fulfillment of the requirement

for the degree of

DOCTOR OF EDUCATION

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Ypsilanti, Michigan

## **DEDICATION**

This dissertation is dedicated to my students who daily show me the joy of learning, the power of diversity, and their amazing potential always displayed with exuberant optimism.

## ACKNOWLEDGEMENTS

I would like to take this opportunity to thank my Chair, Dr. Ronald Williamson, for his guidance, support, and encouragement throughout the dissertation process. Dr. Williamson, your direction and humor kept me going. I would also like to thank my committee members, Dr. Ella Burton, Dr. Nelson Maylone, and Dr. Gary Marx for their time, commitment, and insight. Thank you, Dr. Burton, for encouraging me early on to pursue a doctorate; Dr. Maylone, for your guidance over coffee; and Dr. Marx, for helping me see the bigger picture. A special thanks to statistician Dr. Tom Granoff, who made  $R^2$  meaningful, and editor Dr. Norma Ross, whose suggestions made writing the dissertation almost blissful.

I also thank my husband, Barry. Your practical wisdom and extraordinary patience are my strength. To my family, colleagues, neighbors, and friends whose countless words of encouragement offered support, thank you, this part of the journey is done.

Finally, I would like to express my love and deepest gratitude to my parents, Wendell and Nina, who taught us that through hard work and determination we would accomplish anything.

## ABSTRACT

The accountability of No Child Left Behind (NCLB, 2001) provided assurance that “all children (would) have a fair, equal, and significant opportunity to obtain a high quality education and reach, at a minimum, proficiency on challenging state academic achievement standards and state academic assessments” (Section 1001). According to research, subgroups such as students with disabilities have historically underperformed on state assessments (Darling-Hammond & Rustique-Forrester, 2005; Eckes & Swando, 2009). Measuring their progress holds the school district, teachers, and students accountable for the results, thereby raising expectations, improving teaching, and increasing learning.

In Michigan, students seeking a standard diploma must meet rigorous curriculum standards, which include Algebra I and Algebra II (MDE-MMC, 2012). Additionally, Michigan public school students take a battery of state-mandated assessments, including the ACT in their 11th grade school year. To provide exposure to these courses, students with disabilities are placed in general education classrooms to receive the same instruction as their non-disabled peers (IDEIA, 2004). The term *inclusion* describes this arrangement, consistent with the terminology stated in Section 612(a) (5) (a) of IDEIA (2004). With graduation tied to rigorous curriculum requirements, high-stakes testing, and greater stipulations to receive a school diploma, engaging students with disabilities at the secondary level through inclusion has become a priority (Bost & Riccomini, 2006; Christenson, & Thurlow, 2004; Johnson, Stout, & Thurlow, 2009; Mastropieri & Scruggs, 2001; Thurlow & Johnson, 2000).

The purpose of this quantitative study was to examine the relationship between the percentage of time students with disabilities spend in general education classrooms and student success. Student success was measured by a school district’s graduation rate, dropout

rate, and ACT Mathematic mean score. The theoretical foundation for this study was Vygotsky's social development theory. A Pearson product-moment analysis was used to identify relationship(s) between the percentage of time students with disabilities spend in general education classrooms and the district's graduation rate, dropout rate, and ACT mathematic mean score. Additionally, a regression analysis was used to analyze the relationship between the aggregate of factors representing Instructional Quality and the district's graduation rate, dropout rate, and ACT mathematic mean score. Finally, a paired *t*-test was used to determine if significant differences existed between 2006-2007 and 2010-2011 school years.

The Pearson product-moment findings indicated that the percentage of time students with disabilities spend in general education classrooms had a positive relationship with a district's graduation rate and ACT mathematic mean score. Additionally, the regression findings indicated that a relationship exists between factors representing Instructional Quality and the district's graduation rate, dropout rate, and ACT mathematic mean score. The paired *t*-test found a significant difference in graduation rate, dropout rate, and ACT mathematic mean score between 2006-2007 and 2010-2011. The graduation rate decreased, dropout rate decreased, and ACT mathematic mean scores increased.

The findings revealed that increasing the percentage of time students with disabilities spend in general education classrooms may result in higher ACT mathematic means and lower dropout rates. However, findings may also suggest that students with disabilities need more than four years to graduate with a standard diploma.

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## CHAPTER I–INTRODUCTION TO THE STUDY

The national trend in education has been toward high-stakes achievement testing. The accountability systems of No Child Left Behind (NCLB, 2001) provided assurance that “all children (would) have a fair, equal, and significant opportunity to obtain a high quality education and reach, at a minimum, proficiency on challenging state academic achievement standards and state academic assessments” (Section 1001). NCLB (2001) mandated that all students meet or exceed state standards in reading and mathematics by the year 2014. The means for measuring and holding the school, district, and state accountable for students’ achievement is termed Adequate Yearly Progress (AYP). One measure of AYP is student participation. For districts to make AYP, 95% of all students and all subgroups, including students with disabilities, must participate in state assessments.

According to research, subgroups have historically underperformed on state assessments (Darling-Hammond & Rustique-Forrester, 2005; Eckes & Swando, 2009). Measuring their progress holds the school district, teachers, and students accountable for the results thereby raising expectations, improving teaching, and increasing learning. The Michigan Merit Exam (MME) is the state assessment that measures the career- and college-readiness of Michigan’s eleventh graders. A component of the MME is the ACT (originally, an abbreviation for American College Testing) exam, which is used to measure the content knowledge of high school students in English, Mathematics, Reading, and Science. In accordance with NCLB (2001), all Michigan high school students, including students with disabilities, take the exam.

Nationally, in an effort to increase rigor, establish higher expectations of students across all states, and prepare high school students to be *college and career ready*, the

National Governors' Association and the Council of Chief State School Officers (NGA/CCSSO) developed a national curriculum. Included in the national curriculum are standards for Mathematics and English Language Arts, which public school districts have begun to implement. In 2010, the State of Michigan adopted the national curriculum entitled Common Core State Standards (MDE,CCSS). At the time of this writing, the State of Michigan continues its assessment battery, MME, including ACT assessments, to measure yearly student progress.

The Individuals with Disabilities Education Improvement Act (IDEIA, 2004) outlined the expectation that children with disabilities should receive their education instruction in the least restrictive environment (LRE). This has led to an inclusive movement, where students with disabilities are placed in general education settings to be instructed along with non-disabled students. Numerous studies conducted at the primary level document the benefits of inclusion; however, few studies at the secondary level have been conducted to analyze the relationship of inclusion and student achievement (Fore, Hagan-Burke, Boon, Smith, 2008; Scruggs & Mastropieri, 1996).

The National Center for Education Statistics (NCES, 2013) showed that 6.5 million children and youth (13%) of the national public school enrollment were receiving special education services, and 61% of those students spent most of their school day in general education classes. Students with specific learning disabilities accounted for 37% of students receiving special education services. Of the students with specific learning disabilities, 65% spent 80% or more of their day in the general education classroom during the 2010-2011 school year.

The Michigan Department of Education (MDE) reported that 61.6% of Michigan's students with disabilities received their education in a general education class 80% or more of the day, missing the State of Michigan's target of 63.0% during the 2010-2011 school year (MDE-OSE, 2012).

The focus of this study is to examine the relationships between an inclusionary learning environment, as measured by the percentage of the instructional day that students with disabilities spend in general education classrooms and factors representing instructional quality and student success, as measured by, graduation rates, dropout rates, and ACT mathematics performance for students with disabilities. Research has shown that factors regarding district size, finances, and socio-economic status may impact instructional quality, thereby influencing student achievement and school completion. Therefore, this study will incorporate variables that may influence instructional quality, such as district instructional expenditure, total district enrollment, students with disabilities cohort ratio, district pupil-teacher ratio, and economically disadvantaged student ratio.

The study will analyze data from the Michigan Department of Education database for school years 2006-2007 and 2010-2011. Understanding how an inclusionary learning environment may influence student success and school completion will assist educators in making appropriate decisions for students with disabilities.

### **Statement of Problem**

In Michigan, students seeking a diploma must meet rigorous curriculum standards, which include Algebra I and Algebra II (MDE-MMC, 2012). According to NCLB (2001), core subjects, such as Algebra I, are instructed by teachers who are *highly qualified* in their subject. To provide exposure to highly qualified instruction and curriculum, students with

disabilities are placed in general education classrooms to receive the same instruction as their non-disabled peers (IDEIA, 2004). The term inclusion describes this arrangement, consistent with the terminology stated in Section 612(a) (5) (a) of IDEIA (2004). Over the last two decades, inclusion has gained momentum as a method of educating special education students. With graduation tied to rigorous curriculum requirements, high-stakes testing, and greater stipulations to receive a school diploma, engaging students with disabilities at the secondary level through inclusion has become a priority (Bost & Riccomini, 2006; Christenson, & Thurlow, 2004; Johnson, Stout, & Thurlow, 2009; Mastropieri & Scruggs, 2001; Thurlow & Johnson, 2000).

The challenge to educators is to find the right balance of instruction and curricular exposure without risking disengagement and alienation of the learner, which may lead to the student dropping out of school (Bridgeland, Dilulio, & Morison, 2006; Finn, 1993; Kortering and Christenson, 2009; Rea, McLaughlin, & Walther-Thomas, 2002; Rumberger & Thomas, 2000). For students with disabilities, the economic and social implications of dropping out of high school are clear: unemployment rates exceed 40%, arrest rates are higher than 62%, and 80% of the incarcerated are high school dropouts. The path to increasing graduation rates, reducing dropout rates, and improving academic performance, leading to greater stability and success for the individual (Hanushek, 2010; NCLD, 2011; Thurlow, Sinclair, & Johnson, 2002), has been outlined by IDEIA (2004) and NCLB (2001) through exposure to the general education curriculum and increased expectations of the school and student.

### **Purpose of the Study**

Since the enactment of IDEIA (2004), school districts have increased the percentage of the instructional day that students with disabilities spend in general education classrooms.

Although studies have shown that students without a high school diploma are at risk for lower wages, higher rates of incarceration, and less postsecondary success (Kortering & Christenson, 2009, Moretti, 2005, Swanson, 2009), it is not clear what impact IDEIA (2004) and NCLB (2001) will have on school completion and student achievement for students with disabilities who struggle to meet increased graduation requirements.

Prior to school year 2006-2007, local school districts in the State of Michigan controlled curricular requirements for graduation; however, at the beginning of the 2006-2007 school year, Michigan enacted the Michigan Merit Curriculum (MMC), which required all public school students entering the eighth grade to minimally follow the same set of curricular requirements for diploma-track students. Further, 2006-2007 was also the first school year of the MME, Michigan's state assessments, which included ACT examinations for all students in the eleventh grade. Data for this study were collected from MDE's public database for the 2006-2007 school year, the first year that reflected new curricular requirements and a revised graduation formula.

To comply with NCLB (2001) requirements, in the same school year Michigan moved to a cohort formula for tracking *on-time* graduation rates, accounting for individual students from the time they were enrolled as first-time ninth graders until graduation four years later. Prior to 2006-2007, Michigan used an estimated graduation rate derived from yearly retention rates (MDE-CEPI, 2007). Reflecting the new curricular requirements and graduation cohort formula, 2006-2007 represented a baseline of data for this study. To examine relationships between and within data sets, 2010-2011, the most recent year of data in the MDE public data base at the time of this writing, was compared to the baseline data of 2006-2007.



The purpose of this study is to understand the relationship(s) between an inclusionary learning environment and student success. An inclusionary learning environment includes the percentage of the instructional day that students with disabilities spend in general education classrooms along with factors that may influence instructional quality (district instructional expenditure, total district enrollment, students with disabilities cohort ratio, district pupil-teacher ratio, and economically disadvantaged student ratio). Student success is measured using school district graduation rate, dropout rate and ACT mathematic performance for students with disabilities from selected school years 2006-2007 and 2010-2011.

The district level of analysis was chosen over building and classroom levels for three reasons:

1. District-level indicators may reveal the extent of a district's overall commitment to student achievement and school completion.
2. A special education cohort at the building level may include fewer than 10 students and was therefore suppressed in data reporting.
3. The percentage of the instructional day that students with disabilities spend in general education classrooms is reported at the district level.

### **Research Questions and Hypotheses**

The following research questions and null hypotheses investigated at a 0.05 level of significance guided this study:

- Q 1.** What is the relationship between the percentage of the instructional day that students with disabilities spend in general education classrooms and the district graduation rate for the 2010-2011 school year?

**Null hypothesis:** There will be no relationship between the percentage of the instructional day that students with disabilities spend in general education classrooms and the graduation rate for 2010-2011 school year.

**Q 2.** What is the relationship between the percentage of the instructional day that students with disabilities spend in general education classrooms and the district dropout rate for the 2010-2011 school year?

**Null hypothesis:** There will be no relationship between the percentage of the instructional day that students with disabilities spend in general education classrooms and the dropout rate for the 2010-2011 school year.

**Q 3.** What is the relationship between the percentage of the instructional day that students with disabilities spend in general education classrooms and the district ACT mathematics performance for the 2010-2011 school year?

**Null hypothesis:** There will be no relationship between the percentage of the instructional day that students with disabilities spend in general education classrooms and the district ACT mathematics performance for the 2010-2011 school year.

**Q 4.** What is the relationship between the aggregate of factors representing Instructional Quality and ACT mathematics performance, Graduation Rate, and Dropout Rate for 2010-2011.

**Null Hypothesis:** There will be no relationship between the aggregate of factors representing Instructional Quality and ACT mathematics performance, Graduation Rate, and Dropout Rate for 2010-2011.

**Q 5.** What is the relationship between the differences in the percentage of the instructional day that students with disabilities spend in general education classrooms and

the differences in ACT mathematics performance, Graduation Rate, Dropout Rate for 2006-2007 and 2010-2011 school years?

**Null Hypothesis:** There will be no relationship between the differences in the percentage of the instructional day that students with disabilities spend in general education classrooms and the differences in ACT mathematics performance, Graduation Rate, Dropout Rate for 2006-2007 and 2010-2011 school years.

### **Significance of the Study**

Two important pieces of legislation, NCLB (2001) and IDEIA (2004), have directly altered the education of students with disabilities. NCLB (2001) established assessment expectations for sub-group populations, and IDEIA (2004) determined that students with disabilities should experience their learning in the least restrictive environment possible.

The main purpose of NCLB (2001) is “to close the achievement gap with accountability, flexibility, and choice, so that no child is left behind” (p. 1). The law “ensure(d) that all students in every public school have a fair, equal, and significant opportunity to obtain a high-quality education and reach proficiency on challenging state academic achievement standards and state academic assessments” (NCLB, Title I, Sec. 1001).

With the adoption of NCLB (2001), public policy-makers instituted the belief that test-based accountability standards, measuring and holding all subgroups to the same performance standard, was the way to raise student achievement. However, performance on state assessments by students with disabilities remains low in reading and math, resulting in 5% of all public schools failing to meet AYP based on this subgroup alone. This finding

establishes a need to further understand instruction, curriculum, and assessment for this subgroup (NCES, 2012).

Darling-Hammond & Rustique-Forrester (2005) described NCLB (2001) standards-based educational reform efforts as state accountability systems intended to “hold students, teachers, schools, and districts responsible for results” (p. 289). By setting yearly stipulations on inclusion of students with disabilities in general education classrooms, participation in state-mandated high-stakes tests, and assessment results, school districts face stiff penalties for failure to meet federal requirements termed Adequate Yearly Progress (AYP). Public perception of school, administrator, and teacher effectiveness may diminish as more districts fail to meet AYP, due to the performance of a subgroup of students with disabilities (Eckes & Swando, 2009).

For students with disabilities, the theory that mandated participation on state assessments combined with greater access to general education classrooms, curriculum, and instruction (IDEIA, 2004) would lead to improved academic outcomes (NCLB, 2001) remains contested (Darling-Hammond, 2004). In recent surveys, general and special educators have supported high-stakes assessments for students with disabilities, suggesting that “instructional changes related to improving student performance had increased since the implementation of accountability systems” (Christenson, Decker, Triezenberg, Ysseldyke, & Reschly, 2007, p. 673). Meanwhile, inclusion of students with disabilities in general education classrooms have increased from 33% in 1990-1991 to 59% in 2009-2010 (NCES, 2012). During the period of 2007-2011, the number of students with disabilities taking the Michigan ACT mathematics exam increased from 9,401 to 9,881, an increase of 4.8% (MDE-MISD, 2012). The increase in inclusion of students with disabilities in general

education classrooms and participation on assessments may have fueled aspirations of furthering education beyond high school among students with disabilities. Wagner, Newman, Cameto, Levine, and Marder (2007) found that 97% of students with disabilities said that they expected to finish high school with a regular diploma, and 86% aspired to further their education beyond high school.

Quantitative research supporting inclusion as a means to improve academic performance, specifically mathematics at the secondary level, is limited. The bulk of research is focused at the primary level (Daniel & King, 1997; Konstantopoulos, 2008; Manset & Semmel, 1997; McDonnell, Thorson, Disher, Mathot-Bucker, Mendel, Ray, 2003; McLeskey, Waldron, Redd, 2012; Nye, Hedges, & Konstantopoulos, 2002; Rea et al., 2002; Shin & Raudenbush, 2011; Waldron & McLeskey, 1998). Research at the secondary and post-secondary level has been predominately qualitative, as detailed by Scruggs & Mastropieri (1996).

Lending importance to this study, the present quantitative research conducted at the secondary level addressed the relationship of district-controlled variables, including percentage of the instructional day that students with disabilities spend in general education classrooms gaining access to general education curriculum and instruction, and the relationship of these variables with graduation rates, dropout rates, and ACT mathematics performance. Additional variables of interest included district instructional expenditure ratio, district enrollment, students with disabilities cohort ratio, pupil-teacher ratio, and economically disadvantaged student ratio. A non-district controlled variable, economically disadvantaged students, as measured by the district percentage of students eligible for free or

reduced lunch, was included in this study because students in that demographic category have historically accounted for strong correlations with student achievement.

### **Limitations and Delimitations**

Limitations are imposed by the design of the study and establish parameters that restrict or limit the researcher, whereas delimitations of the study are parameters that the researcher has established to direct the research. The limitations and delimitations regarding this study are defined as follows:

#### **Limitations of the study.**

1. The study is limited by the lack of special education categorical data, including Emotionally Impaired (EI), Cognitively Impaired (CI), and so on, within the Michigan Department of Education database as it pertains to the disability of students.
2. The study is limited by the lack of disaggregate ACT mathematics data available within the Michigan Department of Education database; for example, the demographic of gender, as it pertains to students with disabilities due to test populations under 10.

#### **Delimitations.**

1. School districts with subgroups of 10 or more students were included in this study.
2. School districts with reportable data during 2006-2007 and 2010-2011 school years were included in the study.
3. The study was limited to public school districts, excluding charter schools or public school academies, in the State of Michigan.

4. The study did not attempt to account for models of instructional delivery at the classroom level.

### **Definition of Terms**

**ACT mathematics performance.** The ACT (originally, an abbreviation for American College Testing) is a standardized test administered during the Michigan Merit Examination in the spring of the eleventh grade. There are four sections of the exam: English, Reading, Science, and Mathematics. The State of Michigan's mathematics proficiency target score is 22, which is the district average mathematics score. Student re-tests are not included in the averages (MDE-MISD, 2012).

**Cohort.** Students identified as ninth graders are placed into a specific demographic group as a cohort. Students who transfer into the public education system after ninth grade are placed into the appropriate cohort based on the grade in which the initial Michigan district places them (MDE-CEPI, 2011).

**District enrollment.** District enrollment excludes non-public, home-schooled, adult education students, and graduated or exited students. The enrollment statistic is calculated by students who exited the district on or before pupil count day 10/29/2010 and students who enrolled in the district after 10/29/2010 for the 2010-2011 school year; for the 2006-2007 school year, pupil count day was 9/27/2006 (MDE-CEPI).

**Dropout rate.** The four-year cohort dropout rate is calculated by tracking individual students who enrolled for the first time in ninth grade and left high school permanently or whose whereabouts are unknown at any time during the four-year period prior to receiving a regular diploma, GED (general education diploma), or other completion certificate (MDE-CEPI, 2011).

**Economically disadvantaged students.** Students determined to be eligible for free and reduced price meals under the National School Lunch Program must be from a household with an income at or below 130% of the federal poverty guideline; to be eligible for reduced-price lunch, a student must be from a household with an income between 130% and 185% of the federal poverty guideline.

**Economically disadvantaged ratio.** The economically disadvantaged ratio is calculated by dividing the number of students eligible for free and reduced lunch by the district's total enrollment.

**Funding per-pupil.** Revenues from local, state, federal, and intermediate units of government (e.g. county) compose the funding per-pupil statistic.

**Graduation rate.** The four-year cohort graduation rate is calculated by tracking individual students from the time they were enrolled as first-time ninth-graders, with a four-year expected completion rate (MDE-CEPI, 2011).

**Instructional expenditures.** The statistic of instructional expenditures includes the total classroom costs related to basic K-12 instructional programs, including costs related to special education pupils and the added cost for compensatory and vocational education, but not including adult education instructional expenditures.



**Instructional expenditures ratio.** The instructional expenditures ratio is calculated by dividing the district instructional expenditures per-pupil by the district's funding per-pupil.

**Least restrictive environment.** In compliance with IDEIA (2004), Michigan follows Free Appropriate Public Education (FAPE) in the Least Restrictive Environment (LRE) for indicator B5a (Educational Environment), which monitors the percentage of children aged 6 through 21 with Individual Education Plans (IEPs) who are served in the regular class 80% or more of the school day. The B5a rate is calculated as [the number of children with IEPs served in the regular class 80% or more of the school day divided by the total number of students aged 6 through 21 with IEPs] times 100 (MDE-CEPI, 2011). The State of Michigan's goal for general education classroom inclusion of students with disabilities during the 2006-2007 school year was at least 55%, and at least 63.0% for the 2010-2011 school year (MDE-SPP, 2011).

**Pupil-teacher ratio.** The fall pupil count, excluding adult education participants, divided by the total K-12 teachers is the pupil-teacher ratio.

**Students with disabilities cohort ratio.** The number of special education students divided by the total number of all students in the 4-year cohort is calculated to determine the cohort ratio of students with disabilities.

## **Summary**

Two important pieces of legislation, No Child Left Behind (NCLB, 2001) and Individuals with Disabilities Education Act (IDEIA, 2004), have changed how and where students with disabilities receive their education. The purpose of this study was to understand the relationship(s) between an inclusionary learning environment and student success. An

inclusionary learning environment includes the percentage of the instructional day that students with disabilities spend in general education classrooms and factors that may influence instructional quality (district instructional expenditure, total district enrollment, students with disabilities cohort ratio, district pupil-teacher ratio, and economically disadvantaged student ratio). Student success was measured using school district ACT mathematic performance, graduation rate, and dropout rate for students with disabilities from selected school years 2006-2007 and 2010-2011.

Although studies have linked academic performance to inclusionary learning environments, the majority of the studies have been at the primary level, opening the need for additional quantitative research at the secondary level. Exploring the relationships between an inclusionary learning environment and student success, this study added to the body of research providing insight regarding the effectiveness of inclusion at the secondary level. In Chapter II, a review of literature delves into the social and academic aspects of inclusionary learning environments. Research methods are presented in Chapter III, and the analysis of data, summary of findings, and recommendations are discussed in Chapters IV and V.

## CHAPTER II—REVIEW OF LITERATURE

The enactment of NCLB (2001) affected the educational system with the inclusion of students with disabilities in general education classrooms. High-stakes testing mandated by NCLB (2001) ushered in a new era of accountability wherein school districts, teachers, and students are required to meet high-proficiency standards. The purpose of this study was to understand the relationship(s) between an inclusionary learning environment and student success. An inclusionary learning environment includes the percentage of the instructional day that students with disabilities spend in general education classrooms and factors that may influence instructional quality (district instructional expenditure, total district enrollment, students with disabilities cohort ratio, district pupil-teacher ratio, and economically disadvantaged student ratio). Student success is measured by graduation rate, dropout rate, and school district ACT mathematic performance for students with disabilities from selected school years 2006-2007 and 2010-2011.

An overview of the legislation and movement that led to the instruction of students with disabilities in general education settings is included in this chapter as well as critical research pertaining to the variables under study in the following research questions and null hypotheses:

**Q 1.** What is the relationship between the percentage of the instructional day that students with disabilities spend in general education classrooms and the district graduation rate for the 2010-2011 school year?

**Null hypothesis:** There will be no relationship between the percentage of the instructional day that students with disabilities spend in general education classrooms and the graduation rate for 2010-2011 school year.

**Q 2.** What is the relationship between the percentage of the instructional day that students with disabilities spend in general education classrooms and the district dropout rate for the 2010-2011 school year?

**Null hypothesis:** There will be no relationship between the percentage of the instructional day that students with disabilities spend in general education classrooms and the dropout rate for the 2010-2011 school year.

**Q 3.** What is the relationship between the percentage of the instructional day that students with disabilities spend in general education classrooms and the district ACT mathematics performance for the 2010-2011 school year?

**Null hypothesis:** There will be no relationship between the percentage of the instructional day that students with disabilities spend in general education classrooms and the district ACT mathematics performance for the 2010-2011 school year.

**Q 4.** What is the relationship between the aggregate of factors representing Graduation Rate, Dropout Rate, and Instructional Quality and ACT mathematics performance for 2010-2011.

**Null Hypothesis:** There will be no relationship between the aggregate of factors representing Graduation Rate, Dropout Rate, and Instructional Quality and ACT mathematics performance for 2010-2011.

**Q 5.** What is the relationship between the differences in the percentage of the instructional day that students with disabilities spend in general education classrooms and the differences in Graduation Rate, Dropout Rate, and ACT mathematics performance, for 2006-2007 and 2010-2011 school years?

**Null Hypothesis:** There will be no relationship between the differences in the percentage of the instructional day that students with disabilities spend in general education classrooms and the differences in Graduation Rate, Dropout Rate, and ACT mathematics performance for 2006-2007 and 2010-2011 school years.

### **Historical Perspective**

To gain a fundamental understanding of inclusion, it is first important to understand the development of special education in the United States prior to implementation in 1975 of Public Law (PL) 94-142, the Education of Children with Disabilities Act. Before this legislation, students with disabilities were generally segregated from general education classes and educated in state institutions or separate facilities. Today, about 96% of students with disabilities learn in regular schools with non-disabled children (USDE, 2007). In the 1950s, parent groups began to advocate for a change in the way that individuals with disabilities were educated. Professional organizations such as the National Association for Retarded Children (NARC) formed in 1950, with the goal of promoting the welfare of mentally retarded persons of all ages and to prevent mental retardation. At the time, exclusion from school and lack of community services for retarded persons was widespread (Segal, 2012). Congress responded in 1958 with the passage of Public Law 85-926, which encouraged the expansion of teaching the mentally retarded through grants to institutions of higher learning.

Gaining strength from the civil rights movement of the 1960s, parents and other advocates began to demand rights for individuals with disabilities. During the 1960s the federal government took several steps to improve educational opportunity for students with disabilities through mandates. In 1961, President John F. Kennedy appointed the President's

Panel on Mental Retardation with a mandate to develop a national plan to combat mental retardation. Congress followed by appropriating funds to support preparation of teachers (PL 88-164) and to set aside funding for the construction of centers for research and community mental health. The Elementary and Secondary Education Act of 1965 (ESEA) provided federal support of programs and services to disadvantaged children through Title I funding, which established free and appropriate public education (FAPE) to students with disabilities.

Two federal cases dealt with the issue of discrimination against students with disabilities in 1972: *Pennsylvania Association for Retarded Children (PARC) v. Pennsylvania*, and *Mills v. District of Columbia Board of Education (Mills)*. The U.S. Supreme Court ruled that the responsibility of providing special education students access to public education was the duty of the states and the exclusion of disabled students from regular education or regular education classrooms unconstitutional (*PARC*, 1972). The outcome was a *mainstreaming* of students with disabilities into general education classrooms; however, the integration was not fully academic. Dunn (as cited by Zigmond, Kloo, and Volonino, 2009) described this model of education as special education teachers providing prescriptive or consultative instruction, guiding the work of general education teachers. Starting with The Education for All Handicapped Children Act of 1975 (Public Law 94-142), the federal government recognized the legislative need to promote the academic achievement for all children. With the renaming of PL 94-142 in 1990 to Individuals with Disabilities Education Act (IDEA), the government sharpened its focus on special needs. Ferguson (1996) envisioned the intent of PL 94-142 as educating students with and without disabilities in neighborhood schools in lieu of separate education facilities for students with disabilities. The model would provide an opportunity for all special education students,

regardless of disability, to learn with their peers, thus expanding educational opportunities through exposure to general education curriculum and instruction.

The Individuals with Disabilities Education Improvement Act (IDEIA, 2004) expanded the expectation that children with disabilities receive their education instruction in the least restrictive environment (LRE) as possible, and legislated the inclusion of students with disabilities in general education settings to receive curriculum and instruction with non-disabled students.

### **The Learning Disability Construct**

As long ago as the late 1800s physicians described perplexity about children with average and superior intelligence who were unable to master academic concepts. Many different words were used to describe the phenomena of unexpected underachievement including dyslexia and word blindness. It was not until 1962 when Samuel Kirk, a psychologist at the University of Illinois, used the term *learning disability* to describe the condition (Lyon et al., 2001).

Rutter and Yule (1975) compared *low achievers* against those labeled as *underachievers*. As a group, the low achievers were defined as students with well-below-average intelligence, whereas the underachieving students had a mean I.Q. similar to that of the general population. After following the students for five years, the researchers found that the underachievers had made significantly less progress in reading compared to the low achievers. However, the underachievers made greater progress in mathematics, suggesting that the underachievers were learning disabled, having a disorder that involved basic psychological processes involved in understanding or in using language.

Three years after Rutter and Yule (1975) published their findings, public law 94-142 recognized specific learning disabilities as a category within special education. Today, the number of students identified with *specific learning disabilities* accounts for over 37% of all students receiving special education services (NCES, 2013).

### **A Call for Change**

The number of students with disabilities increased from 3.7 million to 5.3 million between 1977 and 1994, while overall public school enrollment remained constant over the same time period (Hanushek, Kain, & Rivkin, 2002). This increase was due mainly to the number of students classified as Learning Disabled (LD). As per-student spending increased during the 1980s, a call to rethink the manner in which special education students were educated was led by Madeline Will, Assistant Secretary of Education in the Office of Special Education and Rehabilitation Services under President Reagan.

Will (1986) described the language of special education as full of separation resulting in a system that produced lower academic and social expectations for students and teachers. Calling for reform at the building level, Will suggested that special and regular education collectively carry out educational plans based on individualized needs beyond the special education classroom.

Responding to this call, Reynolds (1989) proposed that special education teachers move into general education as co-teachers with general education staff, where both groups share the responsibility of instruction, and the special education teachers offer the general education teacher individualized instructional support to struggling students. This movement became known as the *regular education initiative* (REI) redefining the role of special educators. REI supporters, including Will (1986), viewed learning disabled students who



exhibited mild forms of disability as the most capable among students with disabilities to make the adjustment to mainstream education (Fuchs, Fuchs, Mathes, Lipsey, & Holley, 2001). While researchers were debating who should be included in mainstream education, a new era of accountability was emerging.

### **Educational Policy Frameworks Leading Up to NCLB**

Mazzeo (2001) identified three educational policy frameworks in the history of education in the United States. The first, which emerged during the 19<sup>th</sup> century and lasted through the 1930s, was a period of examination, wherein test results at the end of the eighth grade determined students' readiness to advance to secondary school education. The underlying theory was that examination would identify only motivated students ready to continue their education. This policy often favored the *elite urban* student over the rural student.

The guidance era followed from the 1920s through the late 1960s. This framework targeted all students, identifying their capabilities and interests. Through diagnostic testing, educators identified learning problems and *guided* students toward proper course placement. The underlying theory was that students' capacity determined what and how much students should learn.

The most recent policy framework is that of accountability. The accountability framework, which first appeared in the early 1970s and exists today, targets all students with the core notion that *all children can learn*. The underlying theory is that standard state testing motivates students and teachers and ensures that important subject matter is taught in schools.

## **No Child Left Behind**

During the era of accountability, the passage of No Child Left Behind (NCLB, 2001) raised expectations for student performance and state accountability. Through the use of standardized state achievement testing, the act mandated that all students meet or exceed state standards in reading and mathematics by the year 2014. All states measure progress towards NCLB using a measurement termed Adequate Yearly Progress (AYP).

In addition to aggregate data, school districts must report disaggregate data on four subgroups: students with disabilities, economically disadvantaged, race and ethnicity, and Limited English Proficiency (LEP). This effort of disaggregate reporting draws attention to underrepresented groups and forces districts to provide the same curriculum opportunities as afforded non-minority groups (Eckes & Swando, 2009).

One measure of AYP is student participation. For schools to make AYP, 95% of all students and all subgroups must participate in state assessments. Each subgroup's results are reported separately. Schools not meeting AYP face stiff penalties and must choose from four intervention models that range from closing the school to restricting the leadership (NCLB, 2001).

## **Inclusive Movement**

During the mid-1980s to 1990s, the Regular Education Initiative (REI) called for the integration of special needs students into the general education system. Researchers, Walberg and Wang (1988), called for school reform, proposing that REI would lead to the integration of students with disabilities into the mainstream. This was met with protest by Fuchs and Fuchs (1994), who suggested that more research was needed before mainstreaming students. Even with a call for more research, the integration continued, and as of 2010-2011 school

year, 6.5 million children and youth with disabilities, 13% of public school enrollment, were placed in general education classrooms (NCES, 2013).

As the numbers increased, concern grew over the rising cost of instructional support for students labeled learning disabled (Will, 1986). In response, educators sought an instructional model that would meet the requirements of IDEIA (2004) while providing access to highly qualified, general education teachers. Inclusion gained momentum as a model to reduce the cost of special education; thereby, creating one system that would meet the needs of NCLB (2001) and IDEIA (2004) by integrating students with disabilities into general education classrooms.

### **The Case Against Inclusion**

As more special education students were placed in general education classrooms, researchers began to question the effectiveness of full inclusion as a service delivery model for all students with disabilities. Although recognizing that some students may benefit from inclusion, Hocutt (1996) suggested that the best outcomes were attained by means of pull-out programs, case-by-case reintegration into general education, and in-depth individualized instruction and assessment. Zigmond and Baker (1996) questioned full inclusion as the sole model for delivery of special education services. They contended that access should not come at the expense of eliminating focused, intense, individualized instruction, stating that although inclusion is good; full inclusion could be too much of a good thing. More recent research by Fore, Hagan-Burke, Burke, Boon, and Smith (2008), suggested that students with disabilities, who require specialized instruction, may not achieve at optimal levels when placed in inclusive settings; whereas others in specialized settings may fall short of their

academic potential because they lack access to the general curriculum and instruction by highly qualified teachers in the content areas.

### **The Case for Inclusion**

Researchers who supported inclusion centered their case on social and academic benefits for students with disabilities. Advocates argued that academic achievement is enhanced when students with disabilities are expected to adhere to the same standards as their non-disabled peers. Researchers believed that holding students with disabilities to the same standards was necessary because, traditionally, students with disabilities were less likely to graduate from high school and successfully maintain employment (Kortering & Christenson, 2009; O’Neil, 1993; Swanson, 2009).

Socially, researchers suggested that the social aspects of school may contribute to successful educational outcomes. Goodenow (1993) suggested that the quality of school social relationships may influence educational outcomes in addition to classroom engagement or effort. Sailor (1989) suggested that integrating students with disabilities would result in behavior patterns suggestive of less disabled students later on. Criticizing the two systems of education, Sailor called for the reintegration of children into regular schools and classrooms through a “coordinated local school delivery system” (p. 71). Recently, studies have provided support for earlier calls for integration of students with disabilities, suggesting that inclusion may provide an increase in self-confidence and self-esteem resulting in improved academic performance and social skills (Hang & Rabren, 2009; Thousand, Nevin, & Villa, 2007).

The increased numbers of special education students in the general education setting created a greater need to understand the role and responsibilities that special educators and general educators would have in the new paradigm.

### **Inclusive Instructional Models**

The integration of special education students in general education classrooms resulted in a greater need for collaborative models. Cooperative teaching, as an inclusive model, met the aforementioned needs of educators, integrating general education teachers with special education teachers in an inclusive setting. As defined by Bauwens, Hourcade, and Friend (1989), “Cooperative teaching (or co-teaching) refers to an educational approach in which general and special educators work in a coactive and coordinated fashion to jointly teach academically and behaviorally heterogeneous groups” (p. 18).

Cook and Friend (1995) further defined co-teaching as, “two or more professionals delivering substantive instruction to a diverse, or blended, group of students in a single physical space” (p. 2). The general educator would bring knowledge of curriculum and instruction, classroom management, knowledge of typical students, and pacing to the planning; whereas, the special educator would bring the process of learning, individualization, paperwork, and emphasis on mastery versus coverage. Friend (2009) believed that this model of instruction would provide “heated discussion, lively arguments, and a classroom in which instruction reflects the blended best of each perspective” (p. 16). McLeskey et al. (2012), researching highly effective inclusive elementary schools, found a theme of student support and instructional quality, as provided via cooperative or co-teaching, to be an important contributor in meeting the needs of all students by providing

broader opportunity for instructional differentiation and smaller pupil-teacher ratios to monitor student progress.

At the secondary level, challenges to the co-teaching model have included a faster pace of instruction and content, high-stakes testing, less positive attitudes toward inclusion, a deep emphasis on content knowledge, and the need for independent study skills (Mastropieri & Scruggs, 2001). However, advocates believed that the benefits outweigh the challenges by an increase in self-confidence and self-esteem, improved academic and social skills performance, and enriched peer relations (Hang & Rabren, 2009; Nevin, Cramer, Voigt, Salazar, 2008; Thousand, Nevin, & Villa 2007; Walther-Thomas, 1997).

### **Primary Variables of Interest**

**Inclusion of students with disabilities in general education classrooms and student achievement.** The increasing numbers of students with disabilities placed in general education classrooms (McLeskey, Landers, Williamson, & Hoppey, 2012) reinforced the importance of understanding the relationship between the percentage of the instructional day that students with disabilities spend in general education classrooms and student achievement. Research of Waldron and McLeskey (1998) regarding inclusion and student achievement found that students with specific learning disabilities such as reading and mathematics who were placed in inclusive programs at the primary level showed greater academic results than those placed only in resource rooms. Research at the middle school level revealed that students with specific learning disabilities had higher grades in inclusive programs than those in pull-out programs (Rea et al., 2002).

Although both of these studies supported the conceptual model of inclusion, other researchers, such as Manset and Semmel (1997), did not find support. The research conducted at the primary level, did not offer support for inclusion at the secondary level.

At the secondary level, Hang and Rabren (2009) found significant differences in standardized reading and math scores of students with disabilities when comparing a year of inclusion (co-teaching) with the year before inclusion. Fore et al. (2008), found no statistical difference between students with specific learning disabilities who were placed in inclusive versus non-inclusive classrooms.

McLesky, Henry, and Axlerod (1999) stated that research regarding student achievement in the field of special education produced mixed results resulting in conflicting opinions as to inclusive models of instruction. Blackorby, Edgar, and Kortering (1991) provided a plausible explanation for differing results. In researching differences between special education students who completed school versus those who dropped out, the researchers found no significant relationship based on academic performance, which suggested that due to the restricted range of data within a variable, such as achievement scores, there may be little variance between groups. For example, “All special education students tend to have depressed achievement levels; therefore, there may be little variance in achievement levels between graduates and non-graduates” (p. 110).

Whereas school districts report the percentage of the instructional day that students with disabilities spend in general education settings, they do not report the delivery model of special education instruction. Research exploring relationships of instructional models, such as co-teaching (Bauwens et al., 1989; Bickel & Bickel, 1986; Hang & Rabren, 2009; Kavale, 2005; McLeskey et al., 2012) and teacher/student efficacy (Bandura, 2006; Brophy & Good,

1984; Brownell & Pajares, 1999; Guskey, 1988; Pajares, 1996; Tschannen-Moran, & Barr, 2004), as they relate to student achievement, is numerous throughout the literature and is deemed critical in promoting student growth for students with disabilities.

Relevant to the discussion of test result reports, students with disabilities are allowed accommodations when taking state assessments; however, a breakdown of results per accommodation are not made available at the state or district level of public reporting, and therefore, are not a part of this study. The research on inclusion helped to shape the focus of this study to mathematics performance at the secondary level. District-level reports of mathematics performance on the ACT for students with disabilities was used as a dependent variable.

**Inclusion of students with disabilities in general education classrooms and school completion.** According to the NCES (2008), more than half (56.5%) of students with disabilities graduated with a regular high school diploma during the 2005-2006 school year, up from 43.1% in 1996-1997. Despite the gain in graduation rates, students with disabilities continued to drop out at more than twice the rate (15.5% vs. 7.8%) of their peers without disabilities in the 2009 school year (NCES, 2011). For those who drop out, the result is fewer post-secondary career options (Christenson & Thurlow, 2004; Kortering & Christenson, 2009). Kortering and Christenson (2009), in examining U.S. Census Bureau data from 2006, found that the average employed dropout (with or without disability) could expect to earn about \$19,200 per year, compared to \$28,600 for a high school graduate; \$32,000 for some college; and over \$51,600 for a bachelor's degree. When extended over the course of 40 years of employment, this would result in a difference in expected earnings of \$376,000 for the high school graduate compared to \$1,296,000 for the college graduate.



With the advent of exit exams, state mandated standardized testing, and rigorous curriculum, students with disabilities may graduate with a certificate of completion in lieu of a standard diploma (Erickson & Morningstar, 2009; Johnson, Stout, Thurlow, 2009; Johnson, Thurlow, & Schuelka, 2012). Findings by Zhang, Katsiyannis, and Kortering (2007) suggested that students with disabilities have a passing rate on end-of-course exams at one-third to one-half of their peers, making school completion with a regular diploma insurmountable. Johnson et al. (2012) found that an unintended consequence of multiple diploma options for students with disabilities was that employers were confused as to the meaning of multiple diplomas and how to gauge the depth of a student's skills and abilities.

Johnson et al. (2012) questioned the rationale of testing students with disabilities along with their non-disabled peers, stating that "many of the high-stakes assessments and graduation requirements were developed in general education, without much consideration for students with disabilities" (p. 55). Requiring all students to take the same test created achievement gaps between disabled and non-disabled students. Failing to close the gap puts districts at risk for federal funding. In Michigan, a school with achievement gaps is identified as a priority school, one ranking in the bottom 5% of all schools. These schools are at risk of losing federal funding, such as Title I funds, if they are unable to improve student performance (MDE-CEPI, 2012).

Researching the effect of inclusion on graduation rates, Goodman, Hazelkorn, Bucholz, Duffy, and Kitta (2011) suggested that whereas student achievement was important, graduation rates are the critical measure of effective educational policy, as graduating from high school has great implications for society and the individual (Kortering & Christenson, 2009; Swanson, 2009). Swanson examined income levels from 1975 to 2006 and found that,

as of 2007, individuals without a high school education accounted for 13% of the adult population but only six percent of its collective income. Of those who had not completed high school, earnings declined by 10%, while those with college education rose from 10 to 31%.

As the research indicated, dropping out of school has implications for both the individual and society. Understanding the factors behind the decision may help educators to prevent a student from dropping out of school. Research regarding dropout rates for students with disabilities included studies by Rumberger (1995) and Thurlow et al. (2002), who found disengagement to explain why students with disabilities drop out of school. Common reasons contributing to a student's sense of disengagement include poor relationships with teachers and peers, lack of a sense of belonging, and boring and irrelevant content (Dynarski et al., 2008; Guterman, 1995; Kortering & Braziel, 1999, Rumberger & Lim, 2008). Citing multiple studies of youth with learning disabilities who had dropped out of school, Cobb, Sample, Alwell, and Johns (2006) found a common theme of social alienation among students who reported a lack of situational knowledge or lack of competence under stressful social conditions. A perception of alienation is often preceded by poor academic achievement, retention, absenteeism, behavior problems, and transfers from one school to another (Christenson & Thurlow, 2004; Christle, Jolivette, Nelson, 2007; Finn & Rock, 1997; Rumberger, 1995, Rumberger & Lim, 2008).

Researchers suggested that dropping out of school is the final stage in a dynamic and cumulative process of disengagement asserting that students must experience success early and often while engaged in school activities (Bridgeland et al., 2006; Finn, 1993). Engaging students in the academic and social aspects of school life, promoting school completion, and

building perceptions of academic and social competence is a call to educators (Kortering and Christenson, 2009).

The research illustrated that promoting student engagement through inclusion in general education classrooms is critical to school completion. Research on dropout rates has shown that students with specific learning disabilities disproportionately drop out of school (Kortering & Christenson, 2009). Identifying whether a specific category of students with disabilities are more prone to dropping out of school or more responsive to inclusion in general education classrooms would benefit educators. However, a breakdown of categorical special education descriptions, such as Speech and Language Impairment (SLI), Emotional Impairment (EI), Hearing Impairment (HI), or Physical Impairment (PI), are not available via the anonymous public database; therefore, greater depth of this variable was not included in this study. This study added to the research base by examining the relationship between an inclusionary learning environment and school completion using cohort data that may provide insight regarding this phenomenon.

### **Research Outside the Field of Special Education**

Researchers outside the field of special education have linked the level of instruction and curriculum to student achievement. Using data from the Second International Mathematics Study (SIMS), Payne and Biddle (1999) developed a data set of 67 school districts from 32 states correlating the level of exposure to mathematic curriculum, student achievement, and poverty. Finding support for Westbury's (1992) conclusion that curricular level and mathematic achievement are strongly correlated, Payne and Biddle (1999) determined that the level of mathematic curriculum exposure (remedial, typical, pre-algebra, algebra, and advanced algebra), when combined with child poverty and school funding,

contributed to 33% of the variance of mathematic achievement differences among school districts. The ACT mathematics assessment, one dependent variable in this study, comprises Algebra I, Algebra II, and Geometry. As the researchers have shown, the level of exposure to mathematic curriculum and instruction is essential for mathematic achievement on standardized assessments. This finding leads to the question: if students without disabilities perform better on standardized assessments after exposure to higher-level curriculum and instruction, could it be hypothesized that students with disabilities may also perform better in the same academic environment?

### **Other Variables of Interest**

Although inclusion of students with disabilities in general education classrooms has shown to be correlated to some extent with student achievement and school completion, several other factors may also contribute and are explored in the following literature review.

**District enrollment.** District enrollment has been shown to play a role in program and service development for school districts. Researchers have found a relationship between district enrollment and the offering of special programs and services. In theory, larger school districts have the financial ability to develop programs and services that meet the needs of various subgroups, whereas smaller schools must target their spending on core programs and services (Monk & Haller, 1993). Research by Lee and Smith (1997) found support for this theory, finding achievement gains in mathematics were greatest in schools with 600-900 students, whereas smaller schools had lower average gains. Werblow and Duesbery (2009) suggested that larger institutions can benefit from efficiencies not feasible in smaller districts; thereby, offering higher level courses and curriculum diversity. In examining data from 752 school districts representing 16,081 students, the researchers found a curvilinear relationship

between mathematic achievement and district size. Students attending very small < 674 or very large > 2592 school districts had the largest mathematic gains. Although the researchers suggested economies of scale may contribute to mathematic gains in larger schools, they did not comment on the relationship between small schools size and mathematic gains. The researchers noted, that the relationship between school size and mathematic gain while significant,  $t = 2.47$ ,  $p < .001$ , in effect was small, about 5% of the variance in mathematic gains were attributable to differences in school size.

Other researchers have not found significant relationships between size and mathematic achievement. Weiss, Carolan, and Baker-Smith (2010), in examining over 750 high schools, did not find a significant relationship between math achievement and district size. Instead, they found significant relationships between student engagement and district size, which, as Lee and Loeb (2000) explained, may indirectly influence student achievement. Lee and Loeb found in small schools with fewer than 400 students, teachers have more positive attitudes about their responsibility for student learning, thereby indirectly influencing student achievement. The researchers found that teachers interact more often, know their students better, and provide more help leading to greater investment in improving the whole school.

Research into the relationship between dropout rates and district size continued with Lee and Burkam (2003), using data from the High School Effectiveness Supplement of the National Educational Longitudinal Study of 1988 (NELS:88). The researchers found that students attending school districts with fewer than 1,500 students are less likely to dropout compared to larger school districts. This coincides with findings from Werblow and Duesbery (2009), who examined data from the Education Longitudinal Study of 2002

(ELS:2002), which suggested that, “A quintile increase in school size is associated with a 12% increase in average student dropout rate” (p. 19). The ELS:2002 study, sponsored by the United States Department of Education’s National Center for Educational Statistics (NCES) monitored 752 schools representing 16,081 high school students during the students’ sophomore (2002) and senior years (2004). It should be noted that Werblow and Duesbery (2009) found “With every 10% increase in students on free and reduced lunch, schools experience a small but significant increase in student dropout rate” (p. 19); thus tying in the importance of school demographics such as socio-economic background as an important variable in explaining the relationship between size and dropout rates.

**Class size.** Conflicting results regarding the impact of class size on student achievement were found in the literature. Hanushek (1999), a critic of school funding, found no significant correlation between class size and student achievement. The researcher argued that the pupil-teacher ratio has decreased over the past century with little impact on student achievement. Research examining achievement gaps has found little evidence to support smaller class sizes. Using a within-school model, Nye, Hedges, and Konstantopoulos (2002) examined the effects of small class size over three lower-elementary grade levels and found no statistical difference in achievement gaps between smaller and regular-sized classes. Additionally, small class size had a smaller effect for low-achieving students in mathematics than those for higher-achieving students. In a later study, Konstantopoulos (2008) confirmed that “Higher-achieving students benefited more from being in small classes in early grades than other students” (p. 275). Hoxby (2000) examined the effects of class size on student achievement from 649 elementary schools and found no evidence to support smaller classes.

Hoxby also found no evidence to suggest that smaller classes are more effective in schools that comprise high concentrations of low-income students.

Although some research showed little or no impact on student achievement, other researchers such as Finn and Achilles (1999), Konstantopoulos and Chung (2009), and Shin and Raudenbush (2011) found evidence from Tennessee's class size study, Student Teacher Achievement Ratio (STAR), to suggest that smaller class size was linked to student achievement. More than 11,000 students and 325 teachers, representing 79 schools and 46 districts, over the course of four years, were randomly assigned to one of three class types: small class (13-17 students), regular class (22-25 students), or a regular class with an aide (22-25 students). The results from Shin and Raudenbush (2011) revealed that reducing class sizes improves reading, mathematics, listening, and word recognition test scores in grades kindergarten to third and, according to Konstantopoulos and Chung (2009), the cumulative effect of students spending longer periods in small classes in early grades may reduce the achievement gap in reading and science in later grades. In an earlier study, Achilles (1996) studied the longitudinal effects of reduced class size during the early primary grades and found that students from small classes performed significantly better in the eighth grade than those who were in regular-sized classrooms.

Rationale offered by Achilles, Finn, and Pate-Bain (2002) suggested that smaller class sizes enhance the teacher's ability to ensure success for all students and found that students in smaller class settings spent more time on task, misbehaved less, and performed at a higher level on assessments. In a continued examination of the classroom environment, Finn, Pannozzo, and Achilles (2003) suggested that small classes have positive effects on student achievement due to increased student engagement. Finn et al., (2003), highlighting

the success of programs such as Project STAR in Tennessee and SAGE of Wisconsin, where small class size was linked to student achievement, hypothesized that small class sizes are more likely to exert more influence on each student to become and remain engaged, thereby creating a sense of belonging and identity with the class. Fostering student engagement through smaller class sizes was a recurring theme found in interviews conducted by Bridgeland et al. (2006). Students who had dropped out of the educational system responded that smaller class sizes would have provided more individual attention, better controlled classrooms, and more one on one teaching, thereby promoting the likelihood of student engagement. In a follow up study, Bridgeland et al. (2009) interviewed teachers and principals regarding the dropout problem and confirmed their belief that smaller class sizes would be an effective way to decrease the dropout rate.

Finn, Gerber, and Boyd-Zaharias (2005) examined the dropout phenomenon and found demographic differences relating to class size and graduation. Economically disadvantaged students who attended smaller classes for three or more years in elementary school were more likely to graduate from high school than those who attended larger classes. This was also supported by researchers, Howley, Strange, and Bickel (2000), who found that “The influence of size varied by socio-economic level, with size exerting a negative influence on achievement in impoverished schools, but a positive influence on achievement in affluent schools” (p. 4).

Although district enrollment and class size were not the main focus of this study, as secondary variables they may have a contributing effect on student achievement and school completion. Additionally, the researcher has chosen to draw upon class size research to see if



a relationship may exist between students with disabilities cohort ratio and student achievement; and students with disabilities cohort ratio and school completion.

**District funding, instructional expenditures, and economically disadvantaged students.** School funding and its relationship to student achievement has been under study since the Coleman report of 1966. In *Equality of Educational Opportunity*, Coleman found per-pupil expenditures had little influence on student achievement, citing instead socio-economic factors such as low-income levels, family background, and neighborhood and peer environments predominately influencing student achievement. Studies examining the relationship between funding and student achievement have produced mixed results.

Ellinger, Wright, and Hirlinger (1995) examined school funding and student achievement in Oklahoma in 1989-1990 and 1990-1991 school years. A multiple regression analysis was used with student achievement as the dependent variable and six independent variables, including per-pupil revenue, percentage of students eligible for free lunch, percentage of minority students, teacher salary, experience of teachers, and percentage of teachers with advanced degrees. The only statistically significant positive predictor of test scores was per-pupil revenue.

Hanushek (1995) found that from the 1970s to the 1990s, the average level of reading achievement, as measured by the National Assessment of Educational Progress (NAEP), made essentially no improvement while the mathematic average rose slightly. During this time, the pupil-teacher ratios fell from 1-26 in 1960 to 1-17 in 1990, and the per-pupil expenditures more than doubled. Additionally, the percentage of teachers earning advanced degrees more than doubled from 23% to 56%. With a 70% increase in school funding for public education from 1970 through 1995, the researcher argued that there was little evidence

to support an increase in per-pupil spending to achieve an increase in student achievement (Hanushek, 1997).

The public policy debate continued with a focus on educational organization, performance-based incentives, and improving the evaluation process (Odden & Clune, 1998). Recent data (NCES, 2012) support Hanushek's (1997) findings; during the 2000-2001 to 2007-2008 time period, mathematic achievement showed a slight gain, while public school revenue for public elementary and secondary schools grew more than 20% from \$496.8 billion to \$598.6 billion, and public school expenditures on instruction increased more than 35% (including salaries).

Regarding the relationship between funding and economically disadvantaged students, Biddle (1997), using data from the Second International Mathematics Study (SIMS), found that district-level differences in school funding and child poverty explained more than 25% of the variance in mathematic achievement. Biddle extended his research to differences between state-level funding and poverty data as they pertain to national data on student achievement. Using the mathematic achievement results from the 1996 NAEP, Biddle found that funding and poverty as predictors of student achievement accounted for 55% of the variance of state differences in average mathematic achievement, indicating that the "impact of child poverty is stronger at the state level than at the district level" (p. 13).

National studies provided by the U.S. Department of Education have shown that high levels of poverty continue to be strong predictors of low student test scores (NCES, 2011). Although slight gains have been made in mathematic achievement, approximately 15 scale points, the gap between low-poverty schools and high-poverty schools remained consistent over the 2000-2001 to 2008-2009 period. For example, low-poverty schools, with 0-25% F/R

(free and/or reduced lunch eligibility), out-performed high-poverty schools (76-100% F/R eligibility) every year on the fourth and eighth grade NAEP mathematic exam during the same time frame. For the 2009 school year, the low-income achievement gap on the twelfth grade mathematics section of the National Assessment of Educational Progress (NAEP) was -36 points; eighth grade, -38 points; and fourth grade, -31 points.

Payne and Biddle (1999) researched the impact of child poverty on student mathematic achievement, and suggested that the children of poverty face greater challenges than the children of middle-class or affluent parents. More than likely, children of poverty attend inadequately funded schools in crime-ridden environments and are raised in homes without books, writing materials, or computers. They tend to live in communities that are afflicted with gangs and drug problems and must face additional problems in their personal lives because older siblings or parents have died or have been incarcerated. Refuting Hanushek's (1997) claim that funding does not matter, Payne and Biddle (1999) found that both funding and child poverty have a substantial effect on student achievement.

Recent research by Zhang et al. (2007) confirmed that students from "low-SES schools were less likely to pass end-of-course tests and had rates comparable to that of students with disabilities" (p. 55). Additionally, the authors noted that since most students take Algebra I in ninth or tenth grade, failing an end-of-year course test jeopardizes the student's opportunity to graduate on time with their peers. Researchers, Socias, Dunn, Parrish, Muraki, and Woods (2007) suggested that high-stakes testing has created a culture of high expectations with increased accountability, which may lead to some schools transferring under-achieving students out. Unfortunately, Bridgeland et al. (2006) suggested that overcoming perceived notions of student's abilities may be a challenge for educators. The

authors found that school personnel may have reduced expectations of economically disadvantaged students and believe the students do not have the ability or resources to overcome family or social issues.

As shown in previous research findings and the Coleman Report of 1966, one of the strongest predictors of student achievement has been poverty. In addition to district-level funding and instructional expenditures, the socio-economic factor of poverty, as measured by the percentage of students eligible for free and reduced lunch in the district, has been chosen as a factor to consider in this research.

### **Theoretical Framework**

**Vygotsky's social learning theory.** Vygotsky's (1978) theory of social development, shown in Figure 1, provided the framework to examine the effectiveness of an inclusionary learning environment and its relationship to student success. The framework promotes learning in inclusive classrooms, where students with disabilities are exposed to the same curriculum and instruction as their non-disabled peers. Vygotsky supported inclusion for students with disabilities. His theory promoted inclusion of students with disabilities alongside nondisabled peers enabling social interaction and learning.

Vygotsky (1978) argued that social interaction preceded development and suggested that learning was the end product of socialization and social behavior, in contrast to Piaget and Inhelder (1969), who believed development preceded learning. Vygotsky (1978) stated: "Every function in the child's cultural development appears twice: first, on the social level, and later, on the individual level; first, between people (interpsychological) and then inside the child (intrapsychological)" (p. 57).

Gindis (1999) reviewed *The Collected Works of L.S. Vygotsky* (Vygotsky, 1987-1998) and *The Vygotsky Reader* (Valsiner & Vanderveer, 1994), outlining Vygotsky’s approach to special education through socio-cultural immersion. According to Gindis (1999), Vygotsky believed that the primary disability (biological) was not the main obstruction to learning. Instead, secondary disabilities brought on by societal expectations and attitudes limit access to knowledge, experiences, and opportunities, which contributes to distortions or delays in learning.

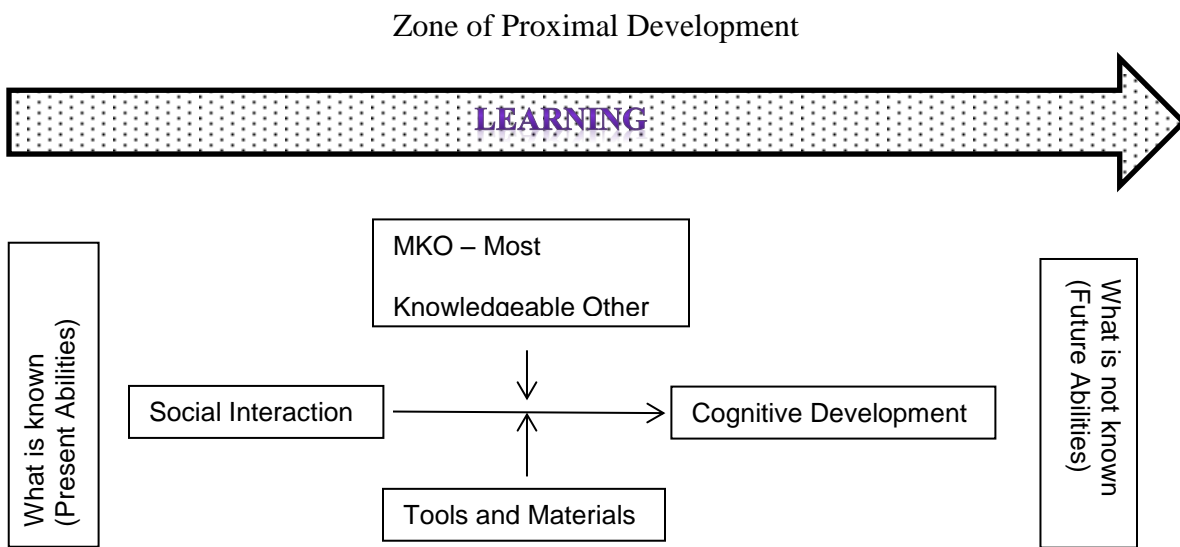


Figure 1. Vygotsky’s Social Learning Theory

When children with disabilities are excluded from traditional educational environments due to primary disorders, such as visual and hearing, language and speech-related, secondary social disabilities develop. Only through a socio-cultural environment facilitated through social interaction with peers and guided by adults would the student have an opportunity to embrace psychological tools and situational norms necessary for engagement and learning (Gindis, 1999).

Using the term *positive differentiation*, Vygotsky (1978) believed that a deferential approach to curriculum and instruction based on a student's strength versus weakness would provide the best environment for learning (Gindis, 2003). Additionally, by working under the guidance of an adult, or *more knowledgeable other* (MKO), the student experiences active problem-solving with others, then gradually functions independently and internalizes the concept. This enables a student with disabilities to extend his or her zone of *proximal development* (ZPD), what Vygotsky (1978) defined as the area between what a child can do on their own and what they can do with adult help. Vygotsky, as cited by Brown and Ferrara (1985), argued that "All higher psychological processes are originally social processes, shared between people, particularly between children and adults" (p. 281). Gindis (2003) reported Vygotsky's call for "integration based on positive differentiation" provided a framework for students with disabilities to be included in general education classrooms (p. 211).

Cobb (1994) described the theoretical debate of mathematic learning as primarily split between two views, socio-cultural perspectives, such as Vygotsky (1978), who viewed the development of meaning or learning as taking place externally or socially before it is internalized, and Piagetian constructivist views that learning takes place internally as a process of active cognitive reorganization (Piaget & Inhelder, 1969). Rogoff (1990) attempted to reconcile the two views by defining mathematical learning as a process of active construction that occurs when children engage in classroom mathematical practices while interacting with others.

Believing that a child should have significant interactions with others to extend the zone of proximal development, the Vygotskian (1978) framework suggest an integrated

approach to learning, using hands on and interactive experiences within the general education classroom. The National Council of Teachers of Mathematics (2012) supported this perspective in their vision statement:

All students (should) have access to the highest quality mathematics teaching and learning...excellence in mathematics education requires equity - high expectations and strong support for all students. All students, regardless of their personal characteristics, backgrounds, or physical challenges, can learn mathematics when they have access to high-quality mathematics instruction. (p. 2)

Vygotsky's (1978) emphasis on social immersion as a precursor to learning provided a broad interactionist framework in which to examine the relationship between inclusion of students with disabilities in general education classrooms and student success. Vygotsky's perspective supports inclusionary practices of cooperative learning, providing opportunities for significant peer interaction, and exposure to high-quality mathematic instruction called for by the National Council of Teachers of Mathematics (2012).

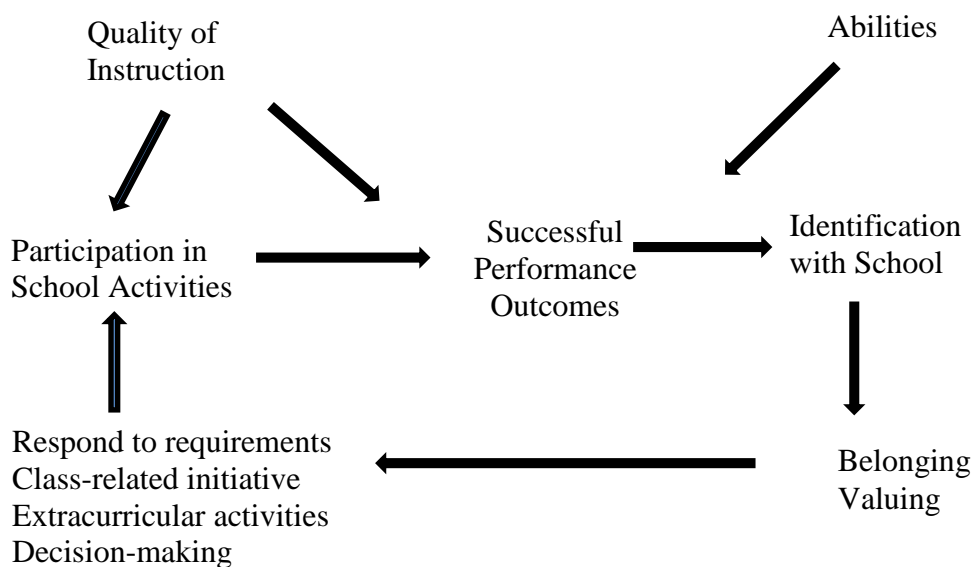
Two important pieces of legislation promoted Vygotsky's (1978) inclusive model of education. NCLB (2001) asserted that the educational progress of students with disabilities had been limited by low academic expectations due to restricted access to the general curriculum. This circumstance was rectified by mandating participation on state assessments for students with disabilities, theorizing that students who participated on state assessments would gain exposure to the general education curriculum and thus, benefit from higher academic expectations. When IDEIA (2004) supported the notion that a student's education be provided in the least restrictive environment (LRE) as possible, students' with disabilities exposure to general education curriculum increased. The social interaction that Vygotsky

outlined was supported by Finn (1993), who conceptualized a participation-identification model based on school engagement.

**Finn's participation-engagement theory.** Starting school is a milestone for youth, with graduation representing the capstone of achievement after many years of schooling. Successful students engage in all aspects of schooling, participating in academic and non-academic activities and establishing a sense of belonging or identity with the school. Finn (1993) found that when students do not share this sense of belonging, they risk disengagement with the educational process, may withdraw from school activities, and eventually dropout of school.

Finn's (1993) model of student engagement shown in Figure 2 has two features. The first, participation, is the extent to which a student participates in the classroom; the second, identification, is an internalized belief that they are an integral part of the school. Finn's model illustrated how participation in school activities, when accompanied by success, leads to an internalized sense of belonging or identification with the school. This internalization results in greater participation and, therefore, reduces the potential for disengagement or alienation both contributing factors in school dropout decisions.





*Figure 2.* Finn's Participation-Identification Model

Finn's (1993) Participation-Identification Theory is one cornerstone of this study, providing the conceptual framework to understand both the academic and social aspects of school that are integral for student success. By identifying a strong association between participation and academic achievement, Finn extrapolated that a student who does not remain an active participant in school activities may not identify with the school and, therefore, be at risk for school failure or dropping out.

Finn's (1993) linear model suggested that a lack of participation leads to poor academic performance and then to alienation from school resulting in school dropout. However, students who feel encouraged by others, including teachers and or peer support, and view themselves as part of the classroom, experience a sense of belonging (Bridgeland et al., 2006; Fletcher, (2009); Goodenow, 1993; Osterman, 2000), and are more likely to attend school, participate, and experience success. This finding offered support for the suggestion by Finn and Rock (1997), Bridgeland, Dilulio, and Balfanz (2009) and Kortering and

Christenson, (2009) that educators may be able to encourage participation thereby increasing the likelihood of school completion.

Finn's (1993) theme contributed to the conceptual model used in this research, which suggested that the participation or inclusion of special education students in general education classrooms may influence student achievement and ultimately school completion.

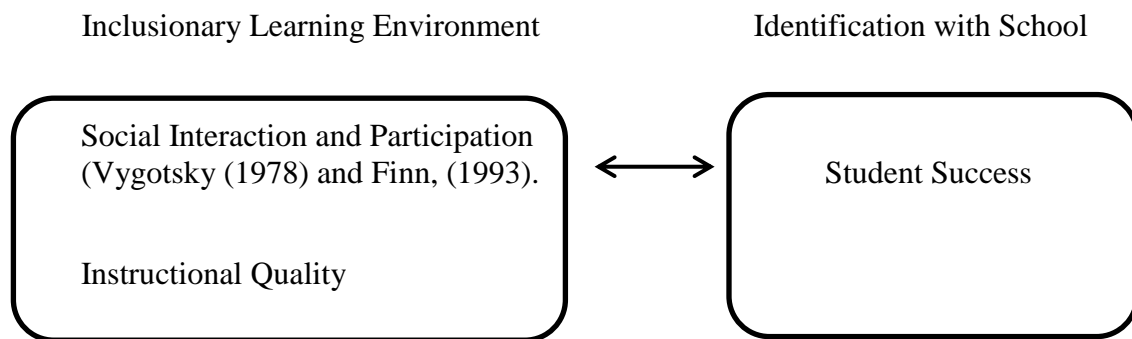
### **Conceptual Model**

This study of the relationship between an inclusionary learning environment for students with disabilities and student success was constructed upon Vygotsky's (1978) theory of inclusion as an educational model for educating students with disabilities and Finn's (1993) participation-engagement model of reinforcement. Social constructive learning as postulated by Vygotsky (1978) and Finn (1993) suggested that learning precedes development through social interaction compared to developmental theorists such as Piaget and Inhelder (1969), who suggested that development precedes learning. The population under study, students with disabilities, has developmentally disabled or delayed learning; therefore, it would be illogical to apply developmental learning theory. Other learning theories such as behaviorism focus on short-term results using external reinforcement or repetition to advance motivation or learning. In the present study, successful student outcomes are at the end of the educational process, requiring a long-term perspective that is found in social constructivism.

The overarching principles in the present study reflect an inclusionary learning environment and identification with school. Social interaction/participation and instructional quality are two elements found in the inclusionary learning environment. The element of student success is found in the principle of identification with school. This study sought to

understand what relationship, if any, exists between the overarching principles and the elements within each.

As Finn (1993) and Vygotsky (1978) suggested, social interaction and participation combined with instructional quality leads to student success. In the conceptual model, shown in Figure 3, the theoretical concept of social interaction and participation, as described by Vygotsky(1978) and Finn (1993) is operationally defined as the percentage of the instructional day that students with disabilities spend in general education classrooms as one proxy of the inclusionary learning environment. The other proxy, instructional quality, represents factors that may influence instruction and student learning. The model suggests that the inclusionary learning environment may be related to identification with school through student success. Additionally, the model suggests that identification with school as achieved through student success provides feedback to the inclusionary learning environment.



*Figure 3.* Conceptual Model

Within the inclusionary learning environment and under the auspice of social constructivism, social interaction and participation, as part of daily activities in school, permit students with disabilities to experience success. The rationale behind this concept is that students experience success socially, emotionally, and academically when interacting with their peers rather than being isolated. Special education students who are included in the

educational process along with their peers are exposed to high levels of curriculum, instruction, and social experiences that lead to student success. If a school district limits inclusionary opportunities, student success is negatively impacted. This study contributed to the existing research on student success (Rea et al., 2002; Waldron & McLeskey, 1998) by examining the relationship between inclusion and student achievement using the dependent variable, ACT mathematics performance as one operational definition for student success.

Instructional quality, recognized by Vygotsky (1978) and Finn (1993), is other element within the inclusionary learning environment that may influence student success. Finn and Vygotsky referred to instructional quality as a critical component of the learning process. Vygotsky (1978) likened this to a person, a most knowledgeable other, and Finn (1993) referred to it as an ancillary component contributing to successful performance outcomes. Hanushek (2010) estimated the impact of instructional quality on a student's future earnings to be \$10,000 over a lifetime of work. When instructional quality is extended to a class size of 20 students, a teacher who is one standard deviation above the mean, (84<sup>th</sup> percentile) may produce over \$400,000 in lifetime earnings for a class size of 20 students. Given the limitations of the database available for the present study, the data set is an opportunity sample limited in terms of instructional quality variables, and knowing that instructional quality is critical to successful student outcomes, it was vital that factors representing instructional quality be examined in the study. Therefore, in terms of identifying district priorities in regard to instructional quality, this study addressed factors that may impact the instructional environment; variables that research have shown to have an impact on student success. If a relationship is found, future researchers may wish to further examine the relationship(s).

In the conceptual model, the theoretical concept of instructional quality as described by Vygotsky (1978) and Finn (1993), were another proxy for the inclusionary learning environment and were operationally defined using the following variables: instructional expenditure as a ratio of total funding; total district enrollment; special education cohort as a ratio of total students in the cohort; pupil-teacher ratio; and economically disadvantaged student ratio, as measured by the district percentage of students eligible for free or reduced lunch. This study contributed to the knowledge base by examining the relationships between school finances, size, and socio-economic status as measures of instructional quality and their relationship to student success. While size and finances may have a contributing effect on student achievement and school completion (Lee & Loeb, 2000; Lee & Smith, 1997; Monk & Haller, 1993), the majority of research has shown that socio-economic status (percent of economically disadvantaged students) has the greatest impact on student success (Biddle, 1997; Coleman, 1966; Payne & Biddle, 1999).

The principle, identification with school, as described by Finn (1993), suggested that students identify with school after experiencing success. In his study of eight grade students, Finn determined that a student develops a sense of belonging and identification to school as an outcome of student success, thereby reinforcing classroom participation. Building upon Finn's student motivational model, the conceptual model used for this study focused on the education of students with disabilities at the district level, hypothesizing that identification with school develops in relation to the inclusionary learning environment. The interaction between social interaction/participation and quality instruction within the inclusionary learning environment aggregately impacts student success, thereby providing feedback to the inclusionary learning environment. As previously stated, Finn (1993), Rumberger (1995),

and Thurlow et al. (2002) found that students who do not feel that they belong risk educational disengagement and may drop out of school. Their findings indicated a process or pattern of social isolation resulting in the decision to drop out of school. Increasing time spent in general education classrooms may influence the perception of alienation or isolation, thereby promoting school completion and student success. The present study contributed to the existing research that showed a strong relationship between inclusion and dropout rates (Cobb et al., 2006; Finn, 1993; Finn & Rock, 1997; Kortering & Braziel, 1999; Rea et al, 2002; Rumberger, 1995; Thurlow et al., 2002). As a proxy for identification with school, student success is operationally defined as graduation rate, dropout rate, and ACT mathematics performance, variables found at the end of a student's educational Pre-K through twelfth grade experience.

Unique to the present study is the examination of district level cohort data, graduation and dropout rates, and ACT mathematics performance as they relate to time spent in general education classrooms for students with disabilities. Although researchers Rea et al. (2002) and Waldron and McLeskey (1998) established a relationship regarding inclusion and academic achievement, others, including Fore et al. (2008) and Manset and Semmel (1997) did not.

An operational model, shown in Figure 4, illustrates the variable relationships as described in the conceptual model.

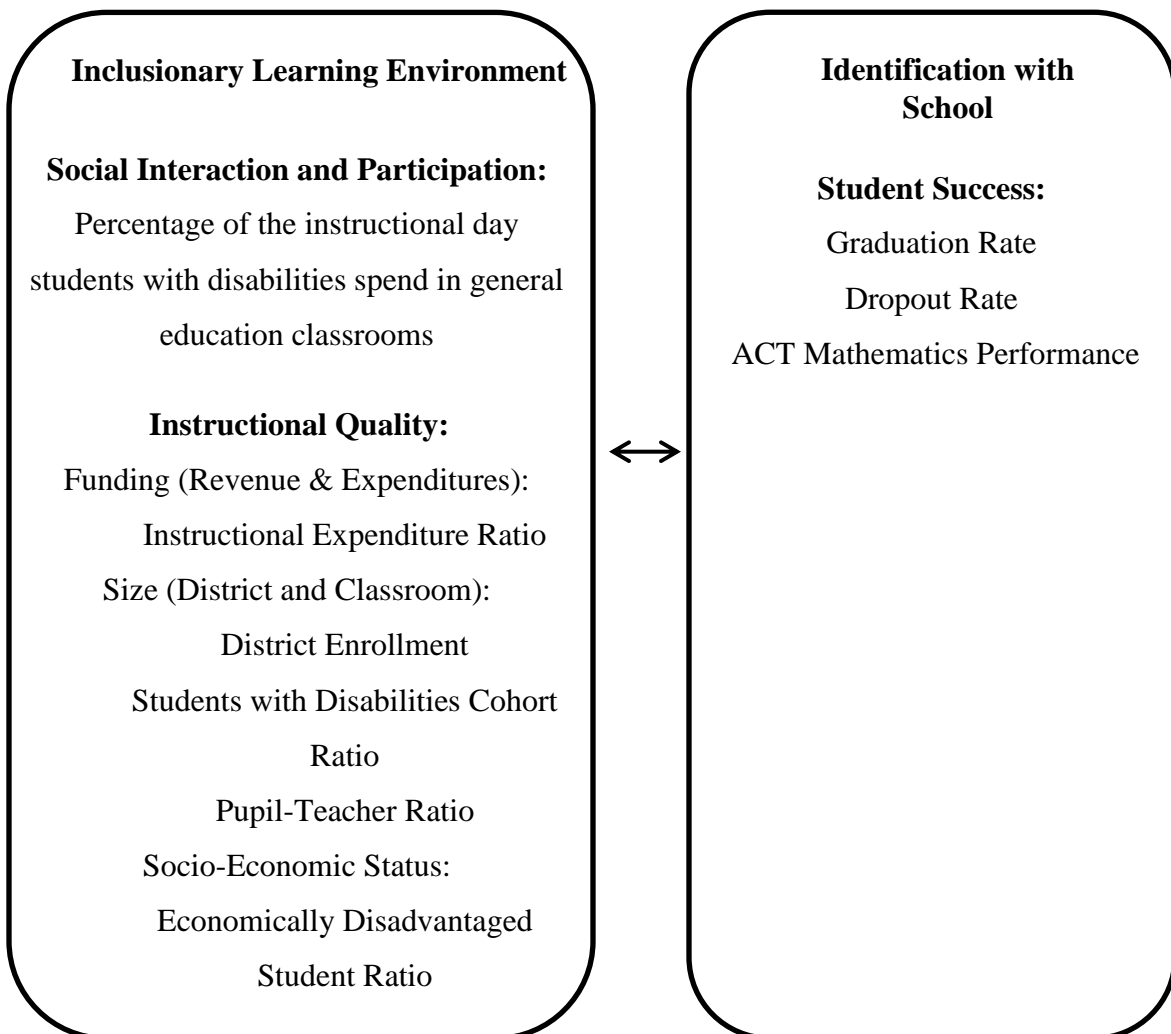


Figure 4. Operational Model

### Summary

The history of special education and specifically the events leading up to inclusion were reviewed in this chapter. The relevant literature indicated mixed results regarding the inclusion of students with disabilities in general education classrooms, student achievement at the primary level, and little research at the secondary level. Studies on inclusionary learning environments regarded social alienation as a significant contributor to student

dropout rates. The review of literature suggested that inclusionary learning environments may mediate the impact of social alienation, while providing exposure to curriculum and instruction reserved for general education students; it remains unclear if this exposure will lead to academic success at the secondary level.

The research questions were aligned with a conceptual framework rooted in Vygotsky's (1978) social learning theory and guided by Finn's (1993) participation-engagement model. The conceptual framework provided the foundation to examine the relationship between an inclusionary learning environment and student success. The research design and methods, findings of data gathered, conclusions, implications of the study, and recommendations for further research compose the remaining chapters of this study.



### **CHAPTER III—RESEARCH DESIGN AND METHODS**

Although there is research supporting inclusion as a means to improve academic performance at the primary level (Rea et al., 2002; Waldron & McLeskey, 1998), quantitative research at the secondary level regarding student achievement, graduation rates, and dropout rates has shown mixed results (Fore et al., 2008; Bear, Kortering, & Braziel, 2006; Thurlow et al., 2002). Thus, the purpose of this study was to understand the relationship(s) between an inclusionary learning environment and student success. An inclusionary learning environment includes the percentage of the instructional day that students with disabilities spend in general education classrooms along with factors that may influence instructional quality (district instructional expenditure, total district enrollment, students with disabilities cohort ratio, district pupil-teacher ratio, and economically disadvantaged student ratio). Student success is measured using graduation rate, dropout rate, and school district ACT mathematic performance for students with disabilities from selected school years 2006-2007 and 2010-2011.

Over the last two decades, inclusion has gained momentum as a method of educating special education students. Vygotsky (as cited in Gindis, 1999) believed that inclusion supported a student's need to belong, creating a psychological membership in the school environment. Researchers Goodenow (1993) and Finn (1993) found that a sense of belonging developed motivation leading to engagement in school activities, characteristics that have been linked to student achievement and graduation (Christle et al., 2007; Finn, 1993). Other researchers confirmed that social alienation preceded a student's decision to drop out of school (Bridgeland, Dilulio, and Morison, 2006).

Sections are included in this chapter that address research design, instrumentation, population and selection of participants, limitations and delimitations, data collection, data analysis, and validity and reliability. Further, methods used to examine the following research questions are described.

### **Research Questions**

**Q 1.** What is the relationship between the percentage of the instructional day that students with disabilities spend in general education classrooms and the district graduation rate for the 2010-2011 school year?

**Null hypothesis:** There will be no relationship between the percentage of the instructional day that students with disabilities spend in general education classrooms and the graduation rate for 2010-2011 school year.

**Q 2.** What is the relationship between the percentage of the instructional day that students with disabilities spend in general education classrooms and the district dropout rate for the 2010-2011 school year?

**Null hypothesis:** There will be no relationship between the percentage of the instructional day that students with disabilities spend in general education classrooms and the district dropout rate for the 2010-2011 school year?

**Q 3.** What is the relationship between the percentage of the instructional day that students with disabilities spend in general education classrooms and the district ACT mathematics performance for the 2010-2011 school year?

**Null hypothesis:** There will be no relationship between the percentage of the instructional day that students with disabilities spend in general education classrooms and the district ACT mathematics performance for the 2010-2011 school year?

**Q 4.** What is the relationship between the aggregate of factors representing instructional quality, graduation rate, dropout rate, and ACT mathematics performance for 2010-2011?

**Null Hypothesis:** There will be no relationship between the aggregate of factors representing instructional quality, graduation rate, dropout rate, and ACT mathematics performance for 2010-2011.

**Q 5.** What is the relationship between the differences in the percentage of the instructional day that students with disabilities spend in general education classrooms and the differences in graduation rate, dropout rate, and ACT mathematics performance for 2006-2007 and 2010-2011 school years?

**Null Hypothesis:** There will be no relationship between the differences in the percentage of the instructional day that students with disabilities spend in general education classrooms and the differences in graduation rate, dropout rate, and ACT mathematics performance for 2006-2007 and 2010-2011 school years.

### **Study Design**

Descriptive statistics provided a comprehensive account of the population, which was public school districts in Michigan that reported eleventh grade students' with disabilities graduation rates and dropout rates, ACT mathematic results, and the percentage of the instructional day that students with disabilities spent in general education classrooms during the 2006-2007 and 2010-2011 school years. Data were analyzed to obtain means and standard deviations. A further analysis of the means were conducted on graduation and dropout rates, the ACT mathematic averages, and the percentage of the instructional day that students with disabilities spent in general education classrooms during 2006-2007 and 2010-2011 school years.

Using a nonexperimental within-group correlational design, the researcher examined the relationship of an inclusionary learning environment (the percentage of the instructional day that students with disabilities spend in general education classrooms, students with disabilities cohort ratio, pupil-teacher ratio, district enrollment, instructional expenditure ratio, economically disadvantaged student ratio) and student success (graduation and dropout rates, and ACT mathematics performance) for the 2010-2011 school year. Further, the relationships, if any, between the aggregate of factors representing instructional quality (district instructional expenditure ratio, total district enrollment, students with disabilities cohort ratio, district pupil-teacher ratio, and economically disadvantaged student ratio) and student success (graduation and dropout rates, and ACT mathematics performance) for 2010-2011 were explored. According to Johnson (2001), the purpose of correlational research is to examine relationships and make predictions. In the present study, the researcher used anonymous public data available from the Michigan Department of Education (available online at <http://www.michigan.gov/mde>).

A between group correlational design was used to analyze the relationship between the differences in the percentage of the instructional day that students with disabilities spend in general education classrooms and the differences in student success (graduation rates, dropout rates, and ACT mathematics performance) for the 2006-2007 and 2010-2011 school years. The results of the statistical analysis for both school years are discussed in Chapter IV.

Inherently, a correlational design does not determine cause and effect, only relationship. According to Gay and Airasian (2000), as cited in Johnson (2001), “Causal-comparative studies involve comparison, whereas correlational studies involve relationships” (p. 3). Another limitation of this study is that other school variables, such as specific learning

disabilities in reading, writing, or mathematics, are unknown. Other special education categories, such as emotionally impaired, vision, and speech, are also unavailable through the public database. Therefore, ACT mathematic results as reported in the public database may include a variety of categories of students with disability. One exception is students with disabilities whose cognitive function were deemed too great to take the test. Federal law enables states to allow 1% of all students being tested (those with the most significant cognitive disabilities, such as Down Syndrome students) to take alternative assessments (U.S. Department of Education, 2005).

### **Instrumentation**

A review of the literature suggested that inclusion of students with disabilities in general education classrooms may influence student achievement and school completion (Rea et al., 2002; Thurlow et al., 2002; Waldron & McLeskey, 1998). District level variables that represent the inclusionary learning environment were available from the Michigan Department of Education (available online at <http://www.michigan.gov/mde>). These variables included the percentage of the instructional day that students with disabilities spend in general education classrooms; variables that represent instructional quality (district instructional expenditure, total district enrollment, students with disabilities cohort ratio, district pupil-teacher ratio, and economically disadvantaged student ratio); and variables that represent student success (graduation and dropout rates and ACT mathematic performance, for students with disabilities).

The purpose of this study was to understand the relationship(s) between an inclusionary learning environment and student success. The study examined district-level data regarding the inclusionary learning environment and student success. The reliability of

using ACT mathematics performance as a predictor of college success has been established (Bettinger, Evans, and Pope, 2011). The validity of the public data is recognized by the federal government in the submittal of Michigan's state performance plan (MDE-SPP, 2012). The manner of using public anonymous data warehouses for research is supported as a valid approach by educational institutions.

A Pearson product-moment correlation was used to determine the strength of relationship of the independent variable(s)—the percentage of the instructional day that students with disabilities spend in general education classrooms, special education cohort, pupil-teacher ratio, district enrollment, instructional expenditure, economically disadvantaged student ratio—and the dependent variable(s) of student success (graduation and dropout rates and ACT mathematic average). The strength of the relationship were determined by the correlation coefficient; the higher the correlation coefficient, the stronger the relationship between variables. McMillan (1992) stated that a positive correlation between .10 and .30 is a weak relationship; .40 to .60, a moderate relationship, and .70 and above is considered strong positive relationships. For the purpose of this study, a Pearson product-moment correlation ( $r$ ) of 0.5, positive or negative, will be considered to have a strong relationship to the dependent variable.

A multiple regression analysis was conducted to determine if a combination of independent variable(s) is more predictive of the dependent variable(s) than any single factor (correlation analysis). Additionally, the multiple regression analysis provided the percentage of the variance due to the influence of the combined independent variable(s) on the dependent variable(s).

## **Research Methods**

The literature review suggested that inclusion of students with disabilities in general education classrooms may have an impact on student achievement and school completion. Variable data representing the inclusionary learning environment and identification with school were collected using anonymous public data available from the Michigan Department of Education.

Collected data were entered into a spreadsheet and adjusted for purposes of this study. Data from public school academies (charter schools) and regional education centers were not included in this study. Further, data of subgroup populations under 10 were not included. Data reported as < 5% will be reported as .0250 and greater than > 95% will be reported as .9750. The selected data were exported to SPSS, v. 21 for Windows (IBM, 2011). Statistical analysis including correlational analysis, regression analysis, and *t*-test were used to examine the data.

## **Population**

The population in this research study included school districts in Michigan that reported data for the special education subgroup for the 2006-2007 and 2010-2011 school year in the Michigan Department of Education database for graduation and dropout rates, percentage of the instructional day that students with disabilities spent in general education classrooms, and the ACT mathematic portion of the Michigan Merit Examination.

Anonymous public data available from the Michigan Department of Education was used (available online at <http://www.michigan.gov/mde>). An advantage of using anonymous public data is that it is readily available and stripped of personal student identifiers. Public school academies, charter schools, and regional education centers were not included in this

study due to their unique populations; however, the public school districts in Michigan that were included in this study may have included alternative schools.

This study used special education test data from the ACT mathematic portion of the Michigan Merit Examination from the first year data was reported, 2006-2007, to the most recent year, 2010-2011. The 2006-2007 school year was the first year of increased curricular requirements for all students entering the eighth grade and the first year of mandatory ACT examinations for all students in the eleventh grade. Additionally, the 2006-2007 school year was chosen as a baseline because it marked the first time that Michigan used a four-year cohort formula to determine school completion (MDE-CEPI, 2007). The change was possible due to public school districts tracking individual students enrolled for the first time in ninth grade starting with the 2003-2004 school year.

The 2010-2011 school year was chosen to study the cohort results with the increased curricular requirements. Also, 2010-2011, at the time of this writing, was the most recent year with data that tracked the percentage of the instructional day that students with disabilities spent in general education classrooms.

Public school districts with subgroup populations of 10 or more students were selected. Sub-group populations were reportable at 10 or more students to protect student anonymity (MDE-CEPI, 2012). The first four research questions focus on school districts that meet the data requirements for school year 2010-2011. It is estimated that over 300 school districts have data representing school year 2010-2011. School districts that met the data requirements for both 2006-2007 and 2010-2011 were selected for the fifth research questions in the study. It was estimated that more than 200 school districts have data representing both 2006-2007 and 2010-2011 school years.



## **Limitations and Delimitations**

The limitations of this study, design parameters that restrict or limit the researcher included the availability of public school data as it pertains to school district information and students with disabilities. Limitations of using a public database include aggregate performance reporting of students with disabilities in lieu of disaggregate, or categorical data. For example, disaggregated categorical performance data such as Emotional Impairment (EI), or Autistic Impairment (AI), is unavailable as it relates to student achievement and school completion. Another example of study limitations includes the disaggregation by gender of ACT mathematics performance for students with disabilities. To protect student anonymity, data of test populations under 10, which is often the case for students with disabilities, is suppressed.

Delimitations of the study, parameters determined by the researcher, included selection of school districts for inclusion in the study. The researcher selected to examine student success as measured by graduation rates, dropout rates, and ACT mathematics performance in Michigan public school districts; therefore, charter schools and public school academies were not part of this study.

Research has shown that the method or model of instructional delivery in general education classrooms where students with disabilities are placed is a critical component of student success. Instructional delivery methods used in the selected classrooms were not known and were not components of this study, thus constituting a further delimitation. Additional delimitations included selection of school year data collected. The researcher chose school year 2006-2007, as it was the first year of increased curricular requirements for all students entering the eighth grade and the first year of mandatory ACT examinations for

all students in the eleventh grade. Additionally, the 2006-2007 school year was chosen as a baseline, as it marks the first time that Michigan used a four-year cohort formula to determine school completion (MDE-CEPI, 2007). At the time of this writing, the 2010-2011 school year is the most recent year in the public database. Finally, school districts with special education populations under 10 were not included in the study, as this data is often suppressed to protect student anonymity.

### **Procedures**

Authorization to conduct the study was obtained from the Human Subjects Institutional Review Board (IRB) at Eastern Michigan University (see Appendix). Data collected from the Michigan Department of Education (available online at <http://www.michigan.gov/mde>) were used to answer all of the research questions. Data representing the percentage of the instructional day that students with disabilities spend in general education classrooms as defined by Michigan's Office of Special Education and Early Intervention Services (OSE-EIS) are available from the Michigan Department of Education (available on line at <http://www.michigan.gov/mde>). District level funding and expenditures and pupil-teacher ratios are available from the Michigan Department of Education (available on line at <http://www.michigan.gov/mde>) in Bulletin 1014. Graduation and dropout rates reported as < 5% and > 95% were converted to .0250% and .9750% for the purpose of this study.

### **Data Analysis**

All of the raw data for the independent and dependent variables were entered into a statistical database. The software package SPSS, v. 21 for Windows (IBM, 2011), was used for analysis. A Pearson Product-Moment correlation was used to explore the strength of the

relationship of each independent variable(s)—percent of the instructional day students with disabilities spend in general education classrooms, students with disabilities cohort ratio, pupil-teacher ratio, district enrollment, instructional expenditure ratio, economically disadvantaged student ratio—and the dependent variable(s)—graduation rate, dropout rate, and ACT mathematics performance.

Portney and Watkins (1993) suggested that multiple regression analysis provides a powerful statistical approach for explaining and predicting quantifiable outcomes. The focus of this study was to understand the relationship(s) between an inclusionary learning environment and student success. An inclusionary learning environment includes the percentage of the instructional day that students with disabilities spend in general education classrooms along with factors that may influence instructional quality (district instructional expenditure, total district enrollment, students with disabilities cohort ratio, district pupil-teacher ratio, and economically disadvantaged student ratio). Student success is measured using school district graduation rate, dropout rate, and ACT mathematic performance for students with disabilities from selected school years 2006-2007 and 2010-2011. The researcher used a multiple regression analysis to determine the strength of the relationship by adding additional control variables including finance, size, and socio-economic status to represent instructional quality.

### **Validity and Reliability**

The Joint Committee on Standards for Educational and Psychological Testing (1999) defined validity as, “the degree to which evidence and theory support the interpretations of test scores” (p. 9). Reliability refers to the consistency of the study and is a “precondition for validity” (Guba & Lincoln, 1989, p. 234). Internal validity is concerned with factors within

the research study that may raise doubts about the results or the possibility of a confounding variable impacting the interpretation of the results. External validity is concerned with the extent to which the results of the study are generalizable to other populations.

This study used a non-experimental correlation design, which typically results in higher external validity and lower internal validity. The researcher attempted to minimize threats to internal validity by avoiding discussion of causation, as this is a relationship study only, clearly identifying the variables, and attempting to strengthen the internal validity through multiple regression analysis and specific selection criteria (Cone & Foster, 2006). Additionally, a non-experimental correlational study using public secondary data minimizes influencing factors, such as sampling or selection bias, which would jeopardize the internal validity (Guba & Lincoln, 1989). By increasing the internal validity of this study, the generalization or external validity is decreased. The criteria stipulated by the researcher for the variables (subgroup population size and public school district data) limited the variance on the dependent variable creating higher internal validity.

Because the study uses data reported to the federal government in the State of Michigan's State Performance Plan, the data should be dependable, reliable, and valid. Also, statistical software, SPSS, v. 21 for Windows (IBM, 2011) was used to analyze the data.

### **Summary**

This chapter included methods used in the conduct of this study regarding the relationship(s) between an inclusionary learning environment and student success. Results of the study are presented in Chapter IV, and the study concludes in Chapter V with a summary of the study and discussion of conclusions, recommendations, and implications for further study.

## CHAPTER IV–RESULTS

Since the passage of NCLB (2001) and renewal of IDEA (2004), school districts have been required to provide students with disabilities equitable access to the general education curriculum and show progress of student achievement in that curriculum. Evidence about which school districts have been successful in this regard remains elusive, as research on inclusion at the secondary level has shown mixed results (Fore et al., 2008; Bear, Kortering, & Braziel, 2006; Thurlow et al., 2002). The work of Goodenow, 1993; Finn, 1993; and Christle et al., 2007 supported inclusion as a means of furthering the psychological needs of students, providing a sense of belonging and motivation.

The purpose of this study was to understand the relationships, if any, between an inclusionary learning environment and student success. An inclusionary learning environment comprises the percentage of the instructional day that students with disabilities spend in general education classrooms and factors that may influence instructional quality (district instructional expenditure, total district enrollment, students with disabilities (SWD) cohort ratio, district pupil-teacher ratio, and economically disadvantaged student ratio). Student success was measured using graduation rate, dropout rate, and school district ACT mathematic performance for students with disabilities from selected school years 2006-2007 and 2010-2011.

Anonymous public data from the Michigan Department of Education representing 360 public school districts were included in this study. Data from public school academies, charter schools, and regional education centers were not included in this study due to their unique populations; however, the public school districts in Michigan that were included in this study may have included alternative schools. This study used special education test data

from the ACT mathematic portion of the Michigan Merit Examination from the first year data was reported, 2006-2007, to the most recent year, 2010-2011. Only public school districts with subgroup populations of 10 or more students were selected to protect student anonymity (MDE-CEPI, 2012).

### **Research Questions and Results**

The following research questions and null hypotheses, investigated at a 0.05 level of significance, guided this study:

**Q 1.** What is the relationship between the percentage of the instructional day that students with disabilities spend in general education classrooms and the district graduation rate for the 2010-2011 school year?

**Null hypothesis:** There will be no relationship between the percentage of the instructional day that students with disabilities spend in general education classrooms and the graduation rate for 2010-2011 school year.

**Q 2.** What is the relationship between the percentage of the instructional day that students with disabilities spend in general education classrooms and the district dropout rate for the 2010-2011 school year?

**Null hypothesis:** There will be no relationship between the percentage of the instructional day students with disabilities spend in general education classrooms and the dropout rate for the 2010-2011 school year.

**Q 3.** What is the relationship between the percentage of the instructional day students with disabilities spend in general education classrooms and the district ACT mathematics performance for the 2010-2011 school year?

**Null hypothesis:** There will be no relationship between the percent of the instructional day students with disabilities spend in general education classrooms and the district ACT mathematics performance for the 2010-2011 school year.

**Q 4.** What is the relationship between the aggregate of factors representing Instructional Quality and Graduation Rate, Dropout Rate, and ACT mathematics performance for 2010-2011.

**Null Hypothesis:** There will be no relationship between the aggregate of factors representing Instructional Quality and Graduation Rate, Dropout Rate, and ACT mathematics performance for 2010-2011.

**Q 5.** What is the relationship between the differences in the percentage of the instructional day that students with disabilities spend in general education classrooms and the differences in Graduation Rate, Dropout Rate, and ACT mathematics performance for 2006-2007 and 2010-2011 school years?

**Null Hypothesis:** There will be no relationship between the differences in the percentage of the instructional day that students with disabilities spend in general education classrooms and the differences in Graduation Rate, Dropout Rate, and ACT mathematics performance for 2006-2007 and 2010-2011 school years.

The first four research questions focused on school districts that met the data requirements for school year 2010-2011. A total of 360 school districts had reportable data for the first two research questions. A total of 287 school districts reported ACT results for research question three. Research question four consisted of two parts representing the populations used in research questions 1-3. School districts that met the data requirements for both 2006-2007 and 2010-2011 were selected for the fifth research question in the study. The

first subsample for research question five, graduation subsample, resulted in a pairing of 307 school districts. The second subsample, ACT subsample, resulted in a pairing of 221 school districts.

Statistical analysis using SPSS, v. 21 for Windows (IBM, 2011), was used to examine the data by performing Pearson Product-Moment correlations, multiple regressions, and *t* tests. As a relationship study using secondary public data, the use of correlation and regression analysis strengthened internal validity (Cone & Foster, 2006) minimizing influencing factors, such as sampling or selection bias, which would jeopardize internal validity (Guba & Lincoln, 1989).

### **Research Questions 1 and 2**

Research questions 1 and 2 explored the relationship between the percentage of the instructional day that students with disabilities spend in general education classrooms and the district graduation rate and the dropout rate for the 2010-2011 school year. As shown in Table 1, a Pearson product-moment correlation found a significant positive correlation,  $r = .14$ ,  $p = .007$  for selected variables in relation to the graduation rate; thus, providing support to reject null hypothesis 1. Variables in relation to the dropout rate  $r = -.08$ ,  $p = .12$  showed no significant correlation; thus providing support to retain null hypothesis 2. The results of the Pearson product-moment indicate that a relationship exist between the percentage of the instructional day that students with disabilities spend in general education classrooms and graduation rates. The relationship between the percentage of the instructional day that students with disabilities spend in general education classrooms and dropout rates was not determined to be significant per the Pearson product-moment analysis.



Table 1

*Correlations for Selected Variables with Graduation Rate and Drop Out Rate (N = 360)*

<b>Variable</b>	<b>Graduation Rate</b>	<b>Dropout Rate</b>
Time in Regular Education Classroom	.14 *	-.08
District Instructional Expenditure Ratio	.07	-.06
Total District Enrollment	-.06	.00
SWD Graduate-Dropout Cohort Ratio	-.07	.07
District Pupil Teacher Ratio	-.10	.09
District Economic Disadvantage Ratio	-.35 **	.38 **

\*  $p < .01$ . \*\*  $p < .001$ .

### **Research Question 3**

Research question 3 examined the relationship between the percent of the instructional day students with disabilities spend in general education classrooms and the district ACT mathematics performance for the 2010-2011 school year. As shown in Table 2, a Pearson product-moment correlation found a significant positive correlation,  $r = .21$ ,  $p = .001$ , providing support to reject null hypothesis 3. The results of the Pearson product-moment indicate that a relationship exists between the percentage of the instructional day that students with disabilities spend in general education classrooms and ACT mathematics performance for the 2010-2011 school year.

Table 2

*Pearson Product-Moment Correlations for Selected Variables with ACT Math Scores (N = 287)*

Variable	ACT Math
Time in General Education Classroom	.21 **
District Instructional Expenditure Ratio	.08
Total District Enrollment	.07
SWD ACT Cohort Ratio	-.21 **
District Pupil Teacher Ratio	-.21 **
District Economic Disadvantage Ratio	-.57 **

\*  $p < .01$ . \*\*  $p < .001$ .

#### **Research Question 4**

Research question 4 explored the relationship between the aggregate of factors representing instructional quality and graduation rate, dropout rate, and ACT mathematics performance for 2010-2011 by conducting three multiple regression models. Results are shown in Tables 3, 4, and 5.

Table 3 displays the multiple regression model predicting 2010-2011 SWD graduation rate based on selected variables. The overall regression model was significant ( $p = .001$ ) and accounted for 13.9% of the variance in the dependent variable. Inspection of the table found that graduation rate was negatively correlated with the district economic disadvantage ratio ( $\beta = -.37, p = .001$ ). The results of the graduation rate regression analysis indicated a negative relationship exist between certain individual factors representing

instructional quality and the dependent variable, graduation rate. Specifically, as a district's economic disadvantaged ratio increases, graduation rates for students with disabilities decrease.

Table 3

*Prediction of 2011 SWD Graduation Rate Based on Selected Variables (N = 360)*

<b>Variable</b>	<b>B</b>	<b>SE</b>	<b>β</b>	<b>p</b>
Intercept	0.80	0.16		.001
District Instructional Expenditure Ratio	0.05	0.18	.01	.79
Total District Enrollment	0.00	0.00	-.08	.12
SWD Graduate-Dropout Cohort Ratio	0.20	0.23	.05	.39
District Pupil Teacher Ratio	0.00	0.00	-.05	.29
District Economic Disadvantage Ratio	-0.36	0.05	-.37	.001

Full Model:  $F(5, 354) = 11.46, p = .001. R^2 = .139.$

Table 4 displays the multiple regression model predicting 2010-2011 SWD dropout rate based on selected variables. The overall regression model was significant ( $p = .001$ ) and accounted for 15.0% of the variance in the dependent variable. Inspection of the table found that dropout rate was positively correlated with the district economic disadvantage ratio ( $\beta = .39, p = .001$ ). The results of the dropout rate regression analysis indicated a positive relationship exist between certain factors representing instructional quality and the dependent variable, dropout rate. Specifically, as a district's economic disadvantaged ratio increases, dropout rates for students with disabilities increase.

Table 4

*Prediction of 2011 SWD Dropout Rate Based on Selected Variables (N = 360)*

<b>Variable</b>	<b><i>B</i></b>	<b><i>SE</i></b>	<b><math>\beta</math></b>	<b><i>p</i></b>
Intercept	0.04	0.08		.60
District Instructional Expenditure Ratio	-0.03	0.09	-.02	.76
Total District Enrollment	0.00	0.00	.02	.75
SWD Graduate-Dropout Cohort Ratio	-0.13	0.11	-.06	.26
District Pupil Teacher Ratio	0.00	0.00	.05	.35
District Economic Disadvantage Ratio	0.19	0.03	.39	.001

Full Model:  $F(5, 354) = 12.45, p = .001. R^2 = .150.$

Table 5 displays the multiple regression model predicting the 2010-2011 ACT mean score based on selected variables. The overall regression model was significant ( $p = .001$ ) and accounted for 35.5% of the variance in the dependent variable. Inspection of the table found that the ACT mean score was negatively correlated with both the district pupil teacher ratio ( $\beta = -.16, p = .001$ ), and the district economic disadvantage ratio ( $\beta = -.55, p = .001$ ). The results of the ACT mean score regression indicated a negative relationship exists between certain factors representing instructional quality and the dependent variable, ACT mean score. Specifically, as a district's economic disadvantaged ratio increases, the ACT mean score for students with disabilities decrease. Additionally, as a district's pupil teacher ratio increases, the ACT mean score for students with disabilities decrease.

Table 5

*Prediction of 2011 SWD ACT Mean Score Based on Selected Variables (N = 287)*

<b>Variable</b>	<b>B</b>	<b>SE</b>	<b>β</b>	<b>p</b>
Intercept	18.32	0.98		.001
District Instructional Expenditure Ratio	0.34	1.12	.01	.76
Total District Enrollment	0.00	0.00	.06	.26
SWD ACT Cohort Ratio	0.20	1.37	.01	.88
District Pupil Teacher Ratio	-0.08	0.02	-.16	.001
District Economic Disadvantage Ratio	-2.99	0.28	-.55	.001

Full Model:  $F(5, 281) = 30.87, p = .001. R^2 = .355.$

The combination of findings in Tables 3 to 5 provided support to reject null hypothesis 4. The results of the regression analysis indicate that a relationship exists between Instructional Quality and the dependent variables, Graduation Rate, Dropout Rate, and ACT mean score.

### **Research Question 5**

Research question 5 explored the relationship between the differences in the percentage of the instructional day that students with disabilities spend in general education classrooms and the differences in Graduation Rate, Dropout Rate, and ACT mathematics performance for 2006-2007 and 2010-2011 school years. To answer this question, the researcher used a paired *t* tests resulting in the pairing of 307 school districts for the graduation subsample and 221 school districts for the ACT subsample, shown in Tables 6

and 7. The pairing of school districts allowed for associations to be examined and correlation determined.

Inspection of Table 6 and Table 7 found the following differences between 2007 and 2011 means and associated level of significance: (a) time in general education classroom increased ( $p = .001$ ); (b) graduation rate decreased ( $p = .001$ ); (c) dropout rate decreased ( $p = .02$ ); and ACT mathematic mean scores increased ( $p = .001$ ).

Additionally, the following differences were found in the Instructional Variables: (a) district instructional expenditure ratio increased ( $p = .001$ ); (b) total district enrollment decreased ( $p = .004$  grad-drop subsample;  $p = .01$  ACT subsample); (c) graduate-dropout cohort ratio remained stable ( $p = .56$ ); ACT cohort ratio increased ( $p = .02$ ); (d) district pupil teacher ratio increased ( $p = .001$ ); and (e) district economic disadvantage ratio increased ( $p = .001$ ). This combination of findings provided support to reject null hypothesis 5. The results of the paired  $t$ -test indicate that a relationship exist between the differences in the percentage of the instructional day that students with disabilities spend in general education classrooms and the differences in Graduation Rate, Dropout Rate, and ACT mathematics performance for 2006-2007 and 2010-2011 school years.

Table 6

*Comparison for Educational Variables across Years for Graduation Subsample (n = 307)*

<b>Variable</b>	<b>Year</b>	<b><i>M</i></b>	<b><i>SD</i></b>	<b><i>t</i></b>	<b><i>p</i></b>
Graduation Rate <sup>a</sup>	2007	0.70	0.17	11.71	.001
	2011	0.58	0.18		
Time in General Education Classroom <sup>a</sup>	2007	0.53	0.16	15.68	.001
	2011	0.65	0.14		
District Instructional Expenditure Ratio <sup>a</sup>	2007	0.60	0.05	14.55	.001
	2011	0.63	0.05		
Total District Enrollment	2007	4,457.73	7,321.89	2.87	.004
	2011	4,082.37	5,421.09		
Graduation-Dropout Cohort Ratio <sup>a</sup>	2007	0.12	0.13	0.58	.56
	2011	0.12	0.04		
District Pupil Teacher Ratio	2007	22.98	2.24	3.82	.001
	2011	23.49	2.46		
District Economic Disadvantage Ratio <sup>a</sup>	2007	0.34	0.19	30.46	.001
	2011	0.46	0.19		
Dropout Rate <sup>a</sup>	2007	0.15	0.10	2.29	.02
	2011	0.14	0.09		

<sup>a</sup> Percentage expressed as a mean score.

Table 7

*Comparison for Educational Variables across Years for ACT Subsample (n = 221)*

<b>Variable</b>	<b>Year</b>	<b><i>M</i></b>	<b><i>SD</i></b>	<b><i>t</i></b>	<b><i>p</i></b>
ACT Mean	2007	14.65	1.66	7.56	.001
	2011	15.51	1.01		
Time in General Education Classroom <sup>a</sup>	2007	0.54	0.15	13.21	.001
	2011	0.65	0.13		
District Instructional Expenditure Ratio <sup>a</sup>	2007	0.60	0.04	14.05	.001
	2011	0.63	0.04		
Total District Enrollment	2007	5,350.18	8,443.63	2.49	.01
	2011	4,900.68	6,174.20		
ACT Cohort Ratio <sup>a</sup>	2007	0.09	0.04	2.34	.02
	2011	0.10	0.04		
District Pupil Teacher Ratio	2007	23.05	2.24	3.51	.001
	2011	23.53	1.98		
District Economic Disadvantage Ratio <sup>a</sup>	2007	0.31	0.19	27.12	.001
	2011	0.43	0.19		

<sup>a</sup> Percentage expressed as a mean score.

### **Additional Findings**

An additional set of analyses, a series of change scores, were created to determine if changes to the dependent variable between 2007 and 2011 as described in Tables 6 and 7 were associated with changes to the independent variable. For example, was there a correlation between the increased time spent in general education and the increase in ACT



mean? These change scores were created by subtracting the 2007 metric from the equivalent 2011 metric. The district changes in graduation rate and changes in dropout rate were correlated with six selected change variables, as shown in Table 8. For the resulting 12 correlations, one was statistically significant at the  $p < .01$  level. Specifically, changes in the SWD graduation-dropout cohort ratio were positively correlated with changes in the graduation rate ( $r = .14, p < .01$ ). The results of this correlation indicate that a positive relationship exist between changes to the dependent variable, graduation rate, and changes to the independent variable, SWD graduation-dropout cohort ratio.

Table 8

*Pearson Product-Moment Correlations for Selected Change Variables with Changes in Graduation Rate and Drop Out Rate in the Graduation Subsample (n = 307)*

<b>Change Variable</b>	<b>Change in Graduation Rate</b>	<b>Change in Dropout Rate</b>
Time in General Education	.00	-.01
District Instructional Expenditure Ratio	.01	.05
Total District Enrollment Change	-.04	.05
SWD Graduation-Dropout Cohort Ratio	.14 *	-.02
District Pupil Teacher Ratio	-.01	.03
District Economic Disadvantage Ratio	.05	.00

\*  $p < .01$ . *Note.* Change = 2011 Metric – 2007 Metric.

In Table 9, changes in the ACT math scores were correlated with six selected change variables. None of the resulting six correlations were significant at the  $p < .05$  level. The results of this correlation indicate that there was no relationship between changes to the dependent variable between 2007 and 2011 and changes to the independent variable.

Table 9

*Pearson Product-Moment Correlations for Selected Change Variables with Changes in ACT Math Scores in the ACT Subsample (n = 221)*

<b>Change Variable</b>	<b>Change in ACT Math</b>
Time in General Education	-.08
District Instructional Expenditure Ratio	.00
Total District Enrollment	.01
SWD ACT Cohort Ratio	.04
District Pupil Teacher Ratio	.01
District Economic Disadvantage Ratio	.01

\*  $p < .01$ . *Note.* Change = 2011 Metric – 2007 Metric.

### **Summary**

This study examined the relationship between the inclusion of students with disabilities in general education classrooms and student success. Anonymous public data representing 360 public school districts was examined using Pearson Product-Moment correlations, regression analysis, and paired  $t$  test. In the final chapter, findings from this study, examining the relationship between inclusion and student success, are compared to

those discussed in the literature, conclusions and implications are drawn, and a series of recommendations are suggested.

The following findings contributed to a greater understanding as they related to the research questions.

**Q 1.** What is the relationship between the percentage of the instructional day that students with disabilities spend in general education classrooms and the district graduation rate for the 2010-2011 school year?

**Finding:** Time spent in general education is correlated with graduation rate. The null hypothesis is rejected.

**Q 2.** What is the relationship between the percentage of the instructional day that students with disabilities spend in general education classrooms and the district dropout rate for the 2010-2011 school year?

**Finding:** Time spent in general education is not correlated with the dropout rate.

The null hypothesis is retained.

**Q 3.** What is the relationship between the percentage of the instructional day that students with disabilities spend in general education classrooms and the district ACT mathematics performance for the 2010-2011 school year?

**Finding:** Time spent in general education is correlated with ACT math performance.

The null hypothesis is rejected.

**Q 4.** What is the relationship between the aggregate of factors representing Instructional Quality and Graduation Rate, Dropout Rate, and ACT mathematics performance for 2010-2011.

**Finding:** Aggregated factors are correlated with graduation rate, dropout rate, and ACT math performance. The null hypothesis is rejected.

**Q 5.** What is the relationship between the differences in the percentage of the instructional day that students with disabilities spend in general education classrooms and the differences in Graduation Rate, Dropout Rate, and ACT mathematics performance for 2006-2007 and 2010-2011 school years?

**Findings:** Differences in instructional day are correlated with graduation rate, dropout rate, and ACT mathematics. The null hypothesis is rejected.

## **CHAPTER V – SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS**

This chapter includes a summary of the key findings from the study, a review of the methods employed, and connections to previous research and theory regarding the inclusion of students with disabilities in general education classrooms. Additionally, recommendations for future research, policy holders, and building practitioners are discussed.

### **Purpose and Significance of Study**

The purpose of this study was to understand the relationships, if any, between an inclusionary learning environment and student success. Research at the secondary level has been predominantly qualitative. This quantitative study adds to the scholarly research, which is limited at the secondary level. The significance of this study is further enhanced by application of the findings to the practice of inclusion as a means to improve academic performance, specifically mathematics, at the secondary level and to inform policy as it relates to inclusionary learning.

### **Review of Methods**

Anonymous public data from the Michigan Department of Education representing 360 public school districts were included in this study. This study used special education test data from the ACT mathematic portion of the Michigan Merit Examination from the first year data were reported, 2006-2007, to the most recent year, 2010-2011.

The first four research questions focused on school districts that met the data requirements for school year 2010-2011. A total of 360 school districts had reportable data for the first two research questions. A total of 287 school districts reported ACT results for research question three. Research question four consisted of two parts representing the

populations used in research questions 1-3. School districts that met the data requirements for both 2006-2007 and 2010-2011 were selected for the fifth research question in the study. The first subsample for research question five, graduation subsample, resulted in a pairing of 307 school districts. The second subsample, ACT subsample, resulted in a pairing of 221 school districts. Statistical analysis using SPSS, v. 21 for Windows (IBM, 2011), was used to examine the data by performing Pearson Product-Moment correlations, paired *t*-tests, and multiple regressions.

### **Research Questions**

The following research questions and null hypotheses, investigated at a 0.05 level of significance, guided this study:

**Q 1.** What is the relationship between the percentage of the instructional day that students with disabilities spend in general education classrooms and the district graduation rate for the 2010-2011 school year?

**Null hypothesis:** There will be no relationship between the percentage of the instructional day that students with disabilities spend in general education classrooms and the graduation rate for 2010-2011 school year.

**Q 2.** What is the relationship between the percentage of the instructional day that students with disabilities spend in general education classrooms and the district dropout rate for the 2010-2011 school year?

**Null hypothesis:** There will be no relationship between the percentage of the instructional day that students with disabilities spend in general education classrooms and the dropout rate for the 2010-2011 school year.

**Q 3.** What is the relationship between the percentage of the instructional day that students with disabilities spend in general education classrooms and the district ACT mathematics performance for the 2010-2011 school year?

**Null hypothesis:** There will be no relationship between the percentage of the instructional day that students with disabilities spend in general education classrooms and the district ACT mathematics performance for the 2010-2011 school year.

**Q 4.** What is the relationship between the aggregate of factors representing Instructional Quality and Graduation Rate, Dropout Rate, and ACT mathematics performance for 2010-2011.

**Null Hypothesis:** There will be no relationship between the aggregate of factors representing Instructional Quality and Graduation Rate, Dropout Rate, and ACT mathematics performance for 2010-2011.

**Q 5.** What is the relationship between the differences in the percentage of the instructional day that students with disabilities spend in general education classrooms and the differences in Graduation Rate, Dropout Rate, and ACT mathematics performance for 2006-2007 and 2010-2011 school years?

**Null Hypothesis:** There will be no relationship between the differences in the percentage of the instructional day that students with disabilities spend in general education classrooms and the differences in Graduation Rate, Dropout Rate, and ACT mathematics performance for 2006-2007 and 2010-2011 school years.

## Summary of Key Findings

**Research Question 1.** “What is the relationship between the percentage of the instructional day that students with disabilities spend in general education classrooms and the district graduation rate for the 2010-2011 school year?”

A Pearson product-moment was used to analyze the relationship between the percentage of the instructional day that students with disabilities spend in general education classrooms and the district graduation rate. The results indicate that a relationship exist between the percentage of the instructional day that students with disabilities spend in general education classrooms and graduation rates. This finding suggest that increasing the percentage of time that students with disabilities spend in general education classrooms may increase a district’s 4-year graduation rate for this subgroup. Specifically, the results of Research Question 1, testing the null hypothesis at  $< .05$ , revealed a significant positive correlation ( $r = .14, p = .007$ ) between the percentage of the instructional day students with disabilities spend in general education classrooms and the district graduation rate for the 2010-2011 school year, thus providing support to reject the null hypothesis.

**Research Question 2.** “What is the relationship between the percentage of the instructional day that students with disabilities spend in general education classrooms and the district dropout rate for the 2010-2011 school year?”

A Pearson product-moment was used to analyze the relationship between the percentage of the instructional day that students with disabilities spend in general education classrooms and the district dropout rate. The results indicate that no relationship exist between the percentage of the instructional day that students with disabilities spend in general education classrooms and dropout rates. This finding suggest that increasing the



percentage of time that students with disabilities spend in general education classrooms may not reduce a district's dropout rate for this subgroup. Specifically, the results of Research Question 2, testing the null hypothesis at  $< .05$ , revealed no significant correlation ( $r = -.08$ ,  $p = .12$ ) between the percentage of the instructional day students with disabilities spend in general education classrooms and the district dropout rate for the 2010-2011 school year, thus providing support to retain the null hypothesis.

**Research Question 3.** “What is the relationship between the percentage of the instructional day that students with disabilities spend in general education classrooms and the district ACT mathematics performance for the 2010-2011 school year?”

A Pearson product-moment was used to analyze the relationship between the percentage of the instructional day that students with disabilities spend in general education classrooms and the district ACT mathematics performance. The results indicate that a relationship exist between the percentage of the instructional day that students with disabilities spend in general education classrooms and ACT mathematic performance. This finding suggest that increasing the percentage of time that students with disabilities spend in general education classrooms may increase a district's ACT mathematic performance for this subgroup. Specifically, the results of Research Question 3, testing the null hypothesis at  $< .05$ , revealed a significant positive correlation ( $r = .21$ ,  $p = .001$ ) between the percentage of the instructional day students with disabilities spend in general education classrooms and the district ACT mathematics performance for the 2010-2011 school year thus providing support to reject the null hypothesis.

**Research Question 4.** “What is the relationship between the aggregate of factors representing Instructional Quality and Graduation Rate, Dropout Rate, and ACT mathematics performance for 2010-2011?”

A multiple regression was used to analyze the relationship between the aggregate of factors representing Instructional Quality and Graduation Rate, Dropout Rate, and ACT mathematic performance. These factors included: district instructional expenditure, total district enrollment, students with disabilities cohort ratio, district pupil-teacher ratio, and economically disadvantaged student ratio, factors which research has shown may influence a district’s graduation rate, dropout rate, and ACT mathematic performance. The results indicate that a relationship exist between the aggregate of factors representing Instructional Quality and a district’s Graduation Rate, Dropout Rate, and ACT mathematic performance. This finding suggest that a school district’s investment in factors representing Instructional Quality has influence on a district’s Graduation Rate, Dropout Rate, and ACT mathematic performance for this subgroup.

Specifically, the results of Research Question 4, using multiple regression to examine the relationship between the aggregate of factors representing Instructional Quality and Graduation Rate, Dropout Rate, and ACT mathematics performance for 2010-2011 found: (a) Instructional Quality accounted for 13.9% of the variance in the Graduation Rate; (b) Instructional Quality accounted for 15.0% of the variance in Dropout Rate; and (c) Instructional Quality accounted for 35.5% of the variance in the ACT Mathematic mean score. Overall, each regression model was significant ( $p = .001$ ) providing support to reject the null hypothesis.

Additionally, within the aggregate Instructional Quality, the variable demonstrating the greatest influence on Graduation Rate, Dropout Rate, and ACT mathematic performance was the district's Economically Disadvantaged Ratio. This finding suggest that reducing a district's Economically Disadvantaged ratio may have a positive influence on Graduation Rates, Dropout Rates, and ACT mathematic scores for this subgroup. Specifically, further inspection of the Instructional Quality variables found: (a) Graduation Rate was negatively correlated with the district Economic Disadvantage Ratio ( $\beta = -.37, p = .001$ ); (b) Dropout Rate was positively correlated with the district Economic Disadvantage Ratio ( $\beta = .39, p = .001$ ); (c) the ACT Mathematic mean score was negatively correlated with both the district Pupil Teacher Ratio ( $\beta = -.16, p = .001$ ), and the district Economic Disadvantage Ratio ( $\beta = -.55, p = .001$ ).

**Research Question 5.** “What is the relationship between the differences in the percentage of the instructional day that students with disabilities spend in general education classrooms and the differences in Graduation Rate, Dropout Rate, and ACT mathematics performance for 2006-2007 and 2010-2011 school years?”

A paired *t*-test was used to determine if there was a significant difference in Graduation Rate, Dropout Rate, and ACT mathematic mean scores between 2006-2007 and 2010-2011. The results indicate a significant difference in means between 2006-2007 and 2010-2011; the Graduation Rate decreased, Dropout Rate decreased, and ACT Mathematic mean scores increased. This finding suggest that increased time in general education classrooms may result in higher ACT mathematic score means and lower Dropout Rates for this subgroup. However, it may also suggest that students with disabilities need more than 4-years to graduate with a standard diploma. Specifically, the results of Research Question 5,

using a paired  $t$  tests to examine the differences between 2007 and 2011 found: (a) time in general education classroom increased ( $p = .001$ ); (b) graduation rate decreased ( $p = .001$ ); (c) dropout rate decreased ( $p = .02$ ); and ACT mathematic mean scores increased ( $p = .001$ ). This combination of findings provided support to reject the null hypothesis.

### **Connections to Research and Theory**

Vygotsky's (1978) theory of social development provided the framework to examine the effectiveness of an inclusionary learning environment and its relationship to student success. Vygotsky promoted inclusion for students with disabilities suggesting that learning alongside nondisabled peers enabled appropriate social interaction and learning to occur. Using the term *positive differentiation*, Vygotsky (1978) believed that a deferential approach to curriculum and instruction under the guidance of an adult, or more knowledgeable other (MKO) enabled a student with disabilities to extend his or her zone of proximal development (ZPD), the area between what a child can do on their own and what they can do with adult help.

Cobb (1994) supported Vygotsky (1978), viewing mathematical learning as a process of active construction that occurs when children engage in classroom mathematical practices while interacting with others. Inclusion of students with disabilities in general education classrooms to gain access to high-quality mathematic instruction and curriculum was called for by the National Council of Teachers of Mathematics (2012). Legislation supporting this perspective, IDEIA (2004) mandated that the education of students with disabilities be provided in the least restrictive environment (LRE) as possible. Since the passage of IDEIA (2004) over 6.5 million children and youth with disabilities, 13% of public school enrollment, were placed in general education classrooms (NCES, 2013).

Asserting that the educational progress of students with disabilities had been limited by low academic expectations due to restricted access to general education curriculum, legislation (NCLB, 2001) held school districts accountable for the education of all students, mandating participation on state assessments. The rationale of requiring all students to take the same test without consideration for a student's disability has been questioned (Johnson, 2012). Indeed, research regarding the effectiveness of inclusion at the secondary level, as measured by student achievement, has produced mixed results (Fore et al., 2008; Hang & Rabren, 2009). The purpose of this study was to add to the body of research regarding the inclusion of students with disabilities in general education classrooms, specifically, to understand the relationship(s) between an inclusionary learning environment and student success.

### **Inclusion and Academic Achievement**

The research in this study included examination of ACT mathematic mean scores for students with disabilities in 287 public school districts in Michigan for the 2010-2011 school year. The results of a Pearson Product-Moment correlation (.21) suggested that academic performance as measured by ACT mathematic mean scores is related to the percentage of time students with disabilities spend in general education classrooms. Additionally, a review of the paired *t*-test indicated that the ACT Mathematic mean increased ( $p = .001$ ) from 14.65 (2007) to 15.51 (2011) during a time that Michigan enacted higher curricular and graduation requirements (MDE-MMC, 2012) for all students.

Despite the challenges of providing inclusion at the secondary level (Mastropieri & Scruggs, 2001), these findings along with previous research (Hang & Rabren, 2009; Rea et al., 2002; Waldron & McLeskey, 1998) found support that students with disabilities may be

academically successful in inclusionary settings. As the ACT exam is administered during a student's 11<sup>th</sup> grade, typically after Algebra I, Geometry, and during their Algebra II school year, the connection between mathematic curriculum exposure and successful student achievement (Payne & Biddle, 1999) was also supported. Lastly, while previous research has used a multitude of measures to gauge student achievement (surveys, internal grades and assessments, observations, and so on), this study used a nationally normed assessment, the ACT Mathematic Exam, and anonymous public school district data representing students with all types of disabilities who took the ACT Mathematic exam during 2006-2007 and 2010-2011 school years.

### **Inclusion and School Completion**

According to NCES (2011), students with disabilities continue to dropout at more than twice the rate (15.5% vs. 7.8%) of their peers without disabilities. With average earnings for a high school diploma amounting to 67% of non-disabled high school graduates, students with disabilities would see a difference of \$376,000 over a lifetime of employment (Kortering & Christenson, 2009). Researchers have raised concern over rigorous curriculum, state mandated testing, and multiple diploma options (Erickson & Morningstar, 2009; Johnson, Stout, Thurlow, 2009; Johnson, Thurlow, & Schuelka, 2012) and have questioned whether school completion with a regular diploma has become insurmountable. Research regarding the effect of inclusion on graduation rates emerged (Goodman, Hazelkorn, Bucholz, Duffy, & Kitta, 2011), which suggested that whereas student achievement is important, graduating with a standard diploma has greater implications for society and the individual (Kortering & Christenson, 2009; Swanson, 2009).

This study analyzed the relationship between inclusion, as measured by the percentage of the instructional day students with disabilities spend in general education classrooms, and graduation and dropout rates of 360 public school districts in Michigan during the 2010-2011 school year. The results of a Pearson Product-Moment correlation (.14) suggested that school completion, as measured by a district's graduation rate, is related to the percentage of time students with disabilities spend in general education classrooms, whereas the relation to dropout rate was not statistically significant. Review of paired *t*-test revealed that the graduation rate decreased ( $p = .001$ ) from .70 (2007) to .58 (2011) while the dropout rate decreased ( $p = .02$ ) from .15 (2007) to .14 (2011).

According to NCES, (2008) more than 56.5% of students with disabilities graduated with a regular high school diploma during the 2005-2006 school year. This study revealed a similar graduation rate of 58% (2011). The findings indicated that although graduation rates have fallen, dropout rates have decreased. A possible explanation may be that students with disabilities take a little longer to graduate with a standard diploma, as this study was based on a four-year graduation rate cohort, or perhaps students transfer to alternative settings to complete their degree. Concerns that increased dropout rates are due to increased graduation requirements (Christenson & Thurlow, 2004; Mastropieri & Scruggs, 2001) were not supported by the research findings.

Another cornerstone of this study was the Participation-Identification Theory (Finn, 1993), which provided support for the social aspects of school and its relationship to school completion. Finn (1993) believed that alienation from school or lack of participation would lead to a student dropping from school. When a student experienced a sense of belonging (Bridgeland et al., 2006; Fletcher, 2009; Goodenow, 1993; Osterman, 2000), they were more

likely to participate and experience success. In this study, participation or inclusion of special education students in general education classrooms was measured by the percentage of the instructional day students with disabilities spend in general education classrooms. This study did not find a statistically significant relationship between the percentage of time students with disabilities spent in general education classrooms and dropout rates. However, a paired *t*-test revealed an increase in the amount of time students with disabilities spent in general education classrooms, .53 (2007) to .65 (2011) and a decrease in dropout rates, .15 (2007) to .14 (2011), suggesting that increasing the percentage of time students with disabilities spend in general education classrooms may play a role in keeping students in school.

### **Instructional Quality and Student Success**

Factors that may influence instruction and student learning in the instructional environment are included in the term *instructional quality*. As this study was conducted at the district level, instructional quality is defined by the following district level variables: instructional expenditure as a ratio of total funding; total district enrollment; special education cohort as a ratio of total students in the cohort; pupil-teacher ratio; and economically disadvantaged student ratio, as measured by the district percentage of students eligible for free or reduced lunch. The results of the regression analysis indicate that a relationship exist between the aggregate of factors representing Instructional Quality and a district's ACT mathematic performance. The results revealed that 35.5% of the variance in a district's ACT mean score was attributable to factors representing Instructional Quality. This finding suggests that a school district's investment in factors representing Instructional Quality has an influence on a district's ACT mathematic performance for this subgroup.



Further inspection of the Instructional Quality regression analysis revealed that socio-economic status, percent of economically disadvantaged students in a district, has the greatest impact on student success, a finding that provides support for previous research (Biddle, 1997; Coleman, 1966; Payne & Biddle, 1999). Additionally, the Pearson Product-Moment revealed that the number of students in class, as measured by Pupil-Teacher Ratio (-.21), and the number of students assigned to a cohort, as measured by ACT Cohort (-.21), has an impact on student achievement ( $p = .001$ ). Of the two variables, only Pupil-Teacher Ratio was significant ( $p=.001$ ) in the ACT regression model. These results offer support for research on size and student achievement (Lee & Loeb, 2000; Lee & Smith, 1997; Monk & Haller, 1993).

### **Recommendations for Further Research**

The existing research related to inclusion and student success was supported by the current study; specifically, the relationship between time spent in general education classrooms and student achievement, as measured by ACT Mathematic mean scores. According to Goodenow (1993), psychological membership or a sense of belonging may be a contributing factor to motivation, participation, and subsequently student achievement. This study focused on variables at the district level contributing to student success. A recommendation for future research would be to conduct similar studies at the building and classroom level to broaden understanding on how inclusion impacts these variables.

Whereas the current study affirmed much of the previous research, more research regarding the relationship between time spent in general education classrooms and graduation rates is needed. Specifically, although this study focused on the completion of public schooling as a 4-year cohort, other measures are available, using five-year and six-

year cohorts. The results of this study revealed that graduation rates decreased as did dropout rates between the two years under study. This begs the question; where did the students go? Did they stay in school to graduate later? Did they complete their degree elsewhere? Questions remain as to whether students with disabilities require an extended period of time to graduate with a diploma compared to nondisabled students. Because research has shown that graduation rates for student with disabilities receiving a standard diploma are twice as low as their nondisabled peers (NCES, 2011), more research is needed on how to increase these graduation rates.

Additionally, other variables such as cohort size, pupil-teacher ratio, and district enrollment, were included in this study to determine whether size was related to student success. The Pearson Product-Moment results revealed that cohort size (-.21) and pupil-teacher ratio (-.21) showed a significant correlation to student achievement. When an additional analysis was performed on the percentage of change in mean score between 2007 and 2011, neither variable showed significance relating to student achievement. However, cohort size was shown to have a statistically significant relationship (.14) to graduation rate. Although this result indicated a reliable pattern, it may be considered a spurious correlation worth future research.

Finally, since the Coleman Report was issued in 1966, several studies have been conducted to further understand the relationship between poverty and student success. The results of this study confirmed what previous research has long shown; the relationship between poverty and student achievement is strong ( $p = -.57$ ), and as a predictor of ACT Mathematic achievement ( $\beta = -.55, p = .001$ ), continues to be a compelling factor regarding student achievement. Although school funding and poverty have been combined in various

studies (Biddle, 1997; Payne & Biddle, 1999) as a predictor of the variance on student achievement, this study found as has previous research (Hanushek, 1997), increases in per-pupil instructional expenditures were not significantly correlated to increases in student achievement.

The researcher recommends the following topics for future research:

1. This study focused on graduation rates as a 4-year cohort. It is recommend that future research examine the relationship between time spent in general education classrooms and students with disabilities graduation rates for five-year and six-year cohorts.
2. As this was a quantitative study only, it is recommended that future research examine the relationship between inclusion and student success by adding a qualitative component. This may help to understand the relationship between inclusion and graduation at the building or classroom level. Variables used in this study to capture instructional quality explained only 14% of the graduation rate variance. A qualitative lens may unveil variables that impact the success of students with disabilities.
3. This study did not find a relationship between district level expenditures and student success. Therefore, it is recommended that future research differentiate between special education expenditures and general education expenditures to determine if relationships exist between expenditures and student success.
4. As this study was limited by the lack of special education categorical data, it is recommended that future research examine the relationship between student disability type and student success.

5. A delimitation of this study was the exclusion of charter or nonpublic school districts. Future research may wish to examine nonpublic school systems in regard to student success.

### **Policy Recommendations**

IDEIA (2004) established the expectation that students with disabilities would be educated in the least restrictive environment possible. This led to the inclusion of students with disabilities in general education classrooms to receive the same instruction and curriculum as their nondisabled peers. Additionally, NCLB (2001) with its requirement that students with disabilities participate on standardized state achievement testing has produced high expectations for all school districts, teachers, and students. The results of this study suggested that federal policy regarding inclusion of special education students has met its intended goals (a) increased exposure to general education, (b) increased student achievement (ACT Mathematic mean score), and (c) a reduction in the dropout rate.

As we approach the 50<sup>th</sup> anniversary of the Coleman Report (1966), as a nation we need to reflect on the progress, or lack thereof, regarding the issue of poverty and student success. This study and others revealed that a district's economic disadvantaged ratio is a strong predictor of student success. With NCLB's emphasis on student achievement, holding school districts accountable for progress, and a desire to provide educational equity within the system, policymakers should focus resources on ways to improve the communities and homes where underperforming schools exist. Payne and Biddle (1999) suggested that a child's home advantage, access to appropriate school supplies; living in communities free of crime, gangs, and drug problems; and communities that provide support programs and services are ways that state and federal policy may impact student achievement.

## **Practitioner Recommendations**

The percentage of time that students with disabilities spend in general education classrooms was shown to have a significant impact on ACT Mathematic mean scores. Additionally, a comparison of means between 2007 and 2011 show a decrease in dropout rates along with an increase in the amount of time students with disabilities spend in general education classrooms.

Conclusions drawn from this research suggested that school district leaders should, with proper support, work to increase exposure to general education curriculum and instruction, providing students with disabilities the opportunity to participate with their peers in all aspects of public education. Participation in general education classrooms, as suggested by Vygotsky (1978) and later supported by Finn (1993), allows students with disabilities to learn social and academic behaviors alongside their nondisabled peers promoting learning, motivation, and successful student outcomes.

## **Final Thoughts**

This study examined the relationship between inclusion of student with disabilities in general education classrooms and successful student outcomes as measured by public school graduation rates, dropout rates, and ACT Mathematics performance. The results of this study illustrated that increasing access to general education classrooms provided positive outcomes for students with disabilities including their ability to achieve on state standardized test. Additionally, the results of this study supported research suggesting that general education access is a means of socialization and school identification to reduce dropout rates for special education students.

Vygotsky (1978) suggested that a child's disability should not be the primary focus, but rather the social consequences of the disability. As sound educational practice, educators should focus on *positive differentiation*, what the child can do, by delivering instruction and curriculum that is differentiated to meet the needs of all learners, extending their zone of proximal development. Vygotsky suggested that expectations of society regarding the child with disability influences access to sociocultural knowledge, experiences, and opportunity. Sadly, our nation has shown that if left up to the states, especially local districts, equality of education for all students would be jeopardized; thankfully, through IDEIA (2004) and NCLB (2001), states and local school districts are now required to unlock general education access for students with disabilities, providing experiences and opportunity to fully participate in society.

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## APPENDIX

### EASTERN MICHIGAN UNIVERSITY Education First

December 8, 2013 UHSRC INITIAL APPROVAL: EXEMPT

To: Renee Rudloff Eastern Michigan University – College of Education: Leadership & Counseling

Re: UHSRC # 131112 Category: Exempt Approval Date: December 8, 2013

Title: An Examination of the Relationship Between Inclusion of Students with Disabilities in General Education Classrooms and Successful Student Outcomes as Measured by Public School Graduation Rates, Dropout Rates, and ACT Mathematics Performance

The Eastern Michigan University Human Subjects Review Committee (UHSRC) has completed their review of your project. I am pleased to advise you that your research has been deemed as exempt in accordance with federal regulations.

The UHSRC has found that your research project meets the criteria for exempt status and the criteria for the protection of human subjects in exempt research. Under our exempt policy the Principal Investigator assumes the responsibility for the protection of human subjects in this project as outlined in the assurance letter and exempt educational material.

Renewals: Exempt protocols do not need to be renewed. If the project is completed, please submit the Human Subjects Study Completion Form (found on the UHSRC website).

Revisions: Exempt protocols do not require revisions. However, if changes are made to a protocol that may no longer meet the exempt criteria, a Human Subjects Minor Modification Form or new Human Subjects Approval Request Form (if major changes) will be required (see UHSRC website for forms).

Problems: If issues should arise during the conduct of the research, such as unanticipated problems, adverse events, or any problem that may increase the risk to human subjects and change the category of review, notify the UHSRC office within 24 hours. Any complaints from participants regarding the risk and benefits of the project must be reported to the UHSRC.

Follow-up: If your exempt project is not completed and closed after three years, the UHSRC office will contact you regarding the status of the project and to verify that no changes have occurred that may affect exempt status. Please use the UHSRC number listed above on any forms submitted that relate to this project, or on any correspondence with the UHSRC office.

Good luck in your research. If we can be of further assistance, please contact us at 734-487-0042 or via e-mail at [gs\\_human\\_subjects@emich.edu](mailto:gs_human_subjects@emich.edu). Thank you for your cooperation.

Sincerely,

Dr. Kristine Ajrouch  
Faculty co-chair

University Human Subjects Review Committee

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[www.ord.emich.edu](http://www.ord.emich.edu) (see Federal Compliance) The EMU UHSRC complies with the Title 45 Code of Federal Regulations part 46 (45 CFR 46) under FWA00000050.