The Effect of Inclusion on Student Performance on State Assessments

By

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ABSTRACT

Years of research on the effect of inclusive placements on the academic performance of students with disabilities has been notable for its inconsistent and contradictory findings. This study examined the performance of 651 elementary, middle, and high school students with disabilities in a large urban school district in a plains state on state assessments in reading and mathematics. The goal of this analysis was to determine the extent to which the inclusion of students with disabilities in general education classrooms impacts their performance on state assessments. Scores of students taking the general assessment and the modified assessment were included in this study. The dependent variable was each student's reading and mathematics score on the state assessment, and the independent variable was the student's access to general education curriculum as measured by Office of Special Education Programs (OSEP) inclusiveness designations. Control variables were selected to test for the effects the individual variables of a student's disability type, race, gender, and socio-economic status, and because students in the data were nested within schools, hierarchical-linear analysis was employed to reduce potential biases due to correlated observations. Finally, the regression models included school-level predictors for building inclusiveness, qualifications of general and special education teachers, and proportions of students with disabilities, students from low-income families, and students of color. The study produced four main findings. First, the student-level variable, OSEP level of inclusion, was a highly significant predictor of increased academic performance on state assessments in both reading and mathematics in every model. Second, the student-level predictor, free/reduced lunch, had a highly significant negative effect on student performance in reading and in mathematics, nearly twice the positive effects of inclusion. Third, the school-level predictor, percent of minority student enrollment of school, had significant negative effect

on student performance in mathematics. Finally, the interaction of student OSEP level of inclusion and the school's percent of highly qualified special education teachers had a significant positive effect in mathematics, suggesting that the effect of inclusiveness is amplified by access to a highly qualified teacher in this subject. In terms of the primary question of the effect of inclusive placements on the academic performance of students with disabilities, results indicate that as the student's level of inclusion increases, performance on state assessments improves in both reading and mathematics.

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CHAPTER 1

INTRODUCTION

As recently as the early 1970s, more than a million children with disabilities were barred from attending public school while hundreds of thousands languished in institutions (Kober, Jennings, Rentner, Brand, & Cohen, 2001; Martin, Martin, & Terman, 1996; Turnbull, Stowe, & Huerta, 2007). Parents and advocates for children with disabilities fought passionately for the right of these children to attend public schools. The passing of P.L. 94-142, the Education for All Handicapped Children Act of 1975 (now the Individuals with Disabilities Education Act or IDEA), was an important achievement in this regard because the law mandated for children with disabilities a free appropriate public education in the least restrictive environment (LRE) (Kauffman & Hallahan, 2005).

While the act required the education of students with disabilities in general education classrooms to the maximum extent appropriate, it also required a continuum of services ranging from the most restrictive setting of hospitals and institutions to less restrictive settings within schools like resource rooms and separate special classes and ultimately to placement in the general education classroom, which was seen as the LRE for most students. Although the right of students to be educated in the LRE was granted by the IDEA, inclusive practices did not emerge overnight. On the contrary, schools struggled with just how to include students with mild to moderate disabilities in regular classrooms. Complicating this issue were multiple court cases affirming that the LRE for any particular student could be anywhere along the continuum and that the general education classroom was merely an option on the continuum (Kavale & Forness, 2000). In practice, although students with mild to moderate disabilities joined their non-disabled peers for lunch, physical education, and recess, many were routinely assigned to

separate special classes or resource rooms for academic instruction, where often what was taught bore little resemblance to the curriculum for general education students. The result was a dual system that fragmented instruction and often stigmatized students (Henley, Ramsey, & Algozzine, 2002).

Another complicating factor is that the statutory preference for general education placements notwithstanding, the LRE principle is a rebuttable presumption; an inclusive placement in a general education classroom "is not an absolute right [in the IDEA] but is secondary to the primary purpose of [appropriate] education" (Turnbull, 1993, p. 159). As such, schools were able to exploit this ambiguity in the statute by using appropriate education arguments to override LRE decisions (Skrtic & Kent, in press). In response to complaints from many educators and advocates who argued that schools were acting against the spirit of the law by denying students with disabilities access to general education classrooms, Madeleine Will, Assistant Secretary of Education and Director of the Office of Special Education and Rehabilitative Services (OSERS), initiated what came to be known as the Regular Education Initiative (REI). The REI was a national call for shared responsibility in schools, for general and special educators to work together to develop effective programs for students with disabilities delivered in general education settings (Will, 1985, 1986). Will's proposal and other like-minded REI or "inclusive education" proposals in the late 1980s and early 1990s rejected the traditional dual general-special system of education, questioned the instructional effectiveness of special education pull-out programs, and, depending on the inclusive education proposal, promoted the inclusion of many, most, or all students with disabilities in general education classrooms (McLeskey, 2004).

Although in principle the idea of inclusion lives on as a fundamental principle of special education practice, the inclusive education movement spurred by the REI was short-lived, overtaken in the mid 1990s by the "standards-based reform" movement (Skrtic, Harris, & Shriner, 2005). Beginning with two interrelated federal laws—Goals 2000: Educate America Act (1994) and the 1994 reauthorization of the Elementary and Secondary Education Act as the Improving America's Schools Act (IASA)—and culminating with the 1997 reauthorization of the IDEA and the 2001 reauthorization of the Elementary and Secondary Education Act as the No Child Left Behind Act (NCLB), the accountability-based reform logic of standards-based reform was introduced and eventually mandated throughout public education, including special education. The 1997 IDEA sought to align special education systems, services, and accountability mechanisms with the emerging standards-based reform framework of Goals 2000 and the IASA (McDonnell, McLaughlin, & Morison, 1997). It embraced the goal of standards-based reform—unification of educational systems and services to support all students in achieving high standards—which, according to its logic, was to be achieved by aligning assessment and accountability systems to hold schools accountable for the academic progress of all students (Kleinhammer-Tramill & Gallagher, 2002)

Under the 1997 IDEA, students with disabilities were assured access to the general education *curriculum* and inclusion in standardized *assessments*, a calculated reframing of the traditional policy aim of including students with disabilities in general education classrooms by the U.S. department of Education (Hehir, 1994; Riley, 1995), undertaken justifiably to improve the academic and post-school outcomes of students with disabilities (Skrtic et al., 2005). The reauthorized IDEA found that underachievement for students with disabilities was a direct result of low expectations, separate classes, and a separate curriculum. To address this problem, the

law, for the first time, required full participation of students with disabilities in state-wide assessments, based on the assumption that participation in assessments would increase access to and participation in the general education curriculum, and that this, in turn, would improve academic outcomes (Zigmond, Kloo, & Volonino, 2009).

Although the IDEA required inclusion of students with disabilities in assessments of progress, it did not require that their assessment results be considered in programmatic decision-making. Such consideration had to await the 2001 reauthorization of the Elementary and Secondary Education Act as the No Child Left Behind Act (NCLB). Under NCLB, the assessment results of all students, including those with disabilities, must be part of a single accountability system premised on Adequate Yearly Progress (AYP) on state assessments, a requirement that supported the accountability intentions of IDEA 1997 (Thurlow, 2002). Students with disabilities were now responsible for the same curricular content and performance standards as other students, and thus the same ultimate goal of 100% proficiency on state assessments in reading and mathematics by 2014.

Whether one is concerned with the traditional policy aim of including students with disabilities in general education classrooms or the current aim of providing them with access to the general education curriculum and inclusion in assessments, the underlying question is: What placement options produce the best outcomes for students with disabilities? From a policy perspective, those concerned with the traditional aim need to know whether educating them in general education classrooms results in better outcomes than more restrictive placement options. Those concerned with the aim of providing access to the curriculum need to know which placement options result in more effective access as reflected in better test performance. Unfortunately, the answer to these questions is anything but clear or simple. Researchers have

been trying for decades with varying degrees of success to pinpoint the factors that result in the greatest academic achievement.

Some early studies in the 1960's seemed to favor inclusion, even for students with "mental retardation" (hereafter "intellectual and developmental disabilities" or "intellectual disabilities"). In a classic article, Dunn (1968) argued that traditional models of placing students with mild disabilities in separate special education settings had no sound research basis. Additionally, he pointed out that students from minority and low socio-economic groups were over-represented in special education and that students are often stigmatized by a disability label. Dunn's work was pivotal in the movement that advanced inclusive education, even though he advocated the use of resource rooms when appropriate to meet the needs of students (McLeskey, 2004; Zigmond, 2003).

The picture became even less clear over the course of the 1970s and early 1980s as conflicting studies and meta-analyses were published. Positive effects of regular class placements were found in many though not all studies during this period, and it became increasingly apparent that students with disabilities were a diverse group with differing responses to their instructional settings. The needs of some students seemingly were met more successfully in one setting than another, while for others the setting made little difference. For example, in their review of 17 studies, Sindelar and Deno (1978) found mixed results for students with disabilities when included in general education classes. They stated there was little evidence to suggest that resource rooms for students with mild intellectual disabilities were preferable, but found that students with mild to moderate LD fared well in general education classes augmented by resource room support as opposed to regular class placement alone. Carlberg and Kavale's (1980) meta-analysis of 50 studies of regular versus special education placements showed that

while general education classes were more effective than special education classes for students with intellectual disabilities, special education classes were much more effective for some students with learning disabilities and emotional disturbances.

Other studies during this period concluded that resource rooms were somewhat more effective for students with learning disabilities and behavioral disorders when combined with placement in the general education classroom for at least part of the day (Zigmond, 2003). Later, in a three year study contrasting outcomes for students with disabilities in an inclusive setting to those of students served in a separate setting, the students in the inclusive setting attained significantly higher achievement scores in mathematics during the first year of the study, but over the course of three years showed no significant differences in reading or mathematics (Affleck, Madge, Adams, & Lowenbraun, 1988). Finally, Baker, Wang, and Walberg (1994) reported the results of three meta-analyses of studies on the effects of inclusive education practices for students with disabilities done between 1980 and 1994. A total of 74 studies were included in the three analyses with positive effect sizes ranging from .08 to .44, with an average of .195, which the authors characterized as close to the accepted effect size for effective instructional practices.

Despite the lack of clarity about the effectiveness of one placement setting over another, the 1980s was a time of both rising numbers of students identified as disabled and increased criticism of resource room or "pull-out" programs for serving them, even though, as noted, a substantial number of studies indicated increased performance in these more restrictive settings (Manset & Semmel, 1997). One explanation offered for results indicating better student performance in resource rooms than in general education classrooms was that students with disabilities in these programs were being taught by highly trained special educators, whereas the

students to which they were being compared merely were placed in general education classrooms without adequate supports (Zigmond, 2003).

During the REI debate of the late 1980s and early 1990s, research on the relative merit of inclusive versus special education placements also produced mixed results across reading and mathematics achievement, as well as for low to average and high-achieving students with disabilities (Klingner, Vaughn, Hughes, Schumm, & Elbaum, 1998). A review of the effects of eight different inclusive education models for elementary students with mild disabilities indicated that inclusive education was effective for some but not all of the students (Manset & Semmel, 1997).

Zigmond (2003) summarized the results of these three decades of research on the effects of more and less inclusive placements as inconclusive, at best. Moreover, she criticized it for including studies that were methodologically flawed and premised on an insufficient research base. For example, she pointed to meta-analyses that include studies not worthy of consideration and contexts that differed from study to study, making comparisons impossible. The methods were flawed in these studies, Zigmond contends, because of limitations of pre-post treatment designs that use control groups of traditional settings for some studies while others used program volunteers who received special training and may have been heavily invested in the outcomes. Additionally, Zigmond reported that too many studies attempted to answer questions related to the best place to educate students with disabilities without clarity on the type and level of disability of the students in question and the goals of their instruction.

The Problem

Although three decades of research on the relative effects of inclusive and special education placements has not provided us with a clear answer to the underlying question of

which placement options produce the best outcomes for students with disabilities, the availability of data on the performance of students with disabilities on state assessments since 1997-2001 presents us with two advantages in this regard. The first advantage is that the scope of the problem is now more readily apparent—that is, since the participation of students with disabilities in state assessments has been required and publicly reported, data is available to show that, nationally, students with disabilities have made progress in grades 4 and 8 and in high school at all levels (basic, proficient, and advanced) in both reading and mathematics, but that the achievement gap between them and their non-disabled peers is greater than 30-40% in some states (Center on Educational Policy, 2009), a gap roughly equivalent to the stubborn achievement gap between low income and racial/ethnic minority students and their middle class majority peers (Chudowsky & Chudowsky, 2009). According to the Center on Educational Policy (2009), the situation is somewhat better in the state where the present study was conducted both in reading—only a 14-30% achievement gap between students without disabilities (82-90% of whom score proficient) and students with disabilities (52-76% of whom score proficient) —and mathematics—a 13-29% achievement gap between students without disabilities (62-90% of whom score proficient) and students with disabilities (33 -75% of whom score proficient).

A second advantage of the availability of data on the performance of students with disabilities on state assessments has led to better research on the placement effects question. Research conducted after 1997-2001 on the achievement of students with disabilities under different placement conditions has been much improved (Burstein, Sears, & Wilcoxen, 2004; Rea, McLaughlin, & Walther-Thomas, 2002), including, for example, consideration of different models of inclusive education, such as co-teaching and cooperative teaching (Manset & Semmel,

1997; Saint-Laurent et al., 1998), effects of placement of social development of students with disabilities (Banerji & Dailey, 1995; Erwin & Sookak, 1995), and effects of inclusion on the achievement of students without disabilities in inclusive classes (Fisher, Pumpian, & Sax, 1998; Peltier, 1997).

Although research on the effectiveness of inclusive education may have been improved since 1997-2001, significant, interrelated research challenges remain in addressing the question of which placement options produce the best outcomes for students with disabilities. One challenge is the "best for whom" (Zigmond, 2003, p. 196) problem. Students with disabilities represent a very broad range of varying types and levels of disability. How does inclusive education impact the achievement of students across this range? Another challenge is that inclusive education itself also varies by amount or level of inclusiveness. How does level of inclusiveness affect the achievement of students with different types and levels of disability? Another related challenge that has received far less attention in the research literature is the influence of student characteristics such as race, socio-economic status, and gender on the effects of inclusive placements. Finally, a challenge that has not been addressed in this area of research is the influence of school characteristics on the effects of inclusive placements, characteristics such as building inclusiveness, the qualifications of special education and general education teachers, and the demographic characteristics of the students served.

Methodological Approach

This study was designed to address these challenges. It examines the reading and mathematics achievement of students with disabilities under different placement conditions in an urban school district as measured by their performance on the state assessment. As such, the predictor variable was student's access to general education curriculum as measured by Office of

Special Education (OSEP) inclusiveness designations, ranging from included in general education for the majority of the school day to education in a separate setting. Control variables were selected to address the "best for whom" problem, including the individual variables of type of disability, race, gender, and socio-economic status. Finally, since the students in the data were nested within schools, hierarchical-linear analysis was employed to reduce potential biases due to correlated observations. The regression models include school-level predictors for building inclusiveness, qualifications of general and special education teachers, proportions of students with disabilities, students from low-income families, and students of color.

Purpose of Study

Life for students with disabilities does not end with graduation from high school. On the contrary, most students will live for decades as adults in their communities; therefore, it is the responsibility of public education to prepare them well for post-secondary education, employment and independent living. Academic achievement matters for all students, not just those who develop typically. Years of research, though inconclusive, holds out hope that under certain conditions some students with disabilities appear to make better academic gains in more inclusive settings. But additional research is needed to determine the relative effectiveness of various placement options on the diverse needs of students with disabilities. Schools must keep the long term goal of educating competent and contributing young adults in mind as they deal with day to day instructional decisions about placement. The analysis of available data can assure districts that their placement decisions are grounded in evidence rather than passion or habit.

Long term goals are critical, but the reality today is that the pressure to make AYP is pervasive in school districts; newspapers publish the results for each school and states post

"report cards." Each year, the percent of students who must score proficiently on state assessments increases until it reaches 100% by 2014. Initially, many districts found it relatively easy to increase proficiency rates by aligning curriculum and instruction to tested indicators. As time goes on, however, districts are left with the groups of students who are hardest to move to the proficient level, making it more likely that they will miss making AYP eventually. The IDEA mandates that students with disabilities be educated in the least restrictive environment, but as the pressure to make AYP increases, and student sub-groups like special education fail to make AYP, schools increasingly may be tempted to increase pull-out time for these students to prepare for tests. An inherent tension exists between the IDEA and NCLB. On one hand, NCLB requires the same outcome for all students while, in principle, the IDEA requires individualized outcomes. IEP teams and school administrators need to know what factors and conditions have the greatest impact on the academic performance of students with various types and levels of disability to be able to make appropriate, individualized placement decisions for them. Toward this end, the present study sought to answer the following questions:

1. How does inclusiveness of placement affect the academic performance of students with disabilities?
2. Is the effect of placement on performance robust (resistant to errors) to type of disability, race, gender, and socio-economic status of the student?
3. How is the effect of placement on performance affected by the school variables of overall inclusiveness of building, proportion of highly qualified general education teachers, proportion of highly qualified special education teachers, proportion of students with disabilities, proportion of low SES students, and proportion of racial/ethnic minority students?

Significance of Study

The significance of this study is two-fold. First, increasing the academic performance of students with disabilities is critical for their post-school education, employment, and ability to live independently. Adults with disabilities are chronically under-employed and, therefore, their rate of employment is 19.2% as compared to 64.5% of adults without disabilities (Bureau of Labor Statistics, 2010). Students with disabilities attend college or other post-secondary institutions at a lower rate as well—14% versus 53% for adults without disabilities (Able Trust, 2009)—which also negatively impacts their ability to obtain employment.

The study also provides critical information for schools and districts as they strive to meet the AYP requirements of NCLB. As a disaggregated sub-group under the statute, students with disabilities are expected to reach 100% proficiency along with every other student group. Schools that do not meet the AYP standards can be subject to sanctions that include restructuring and loss of federal and state funds. The state assessment is the measure of schools' AYP status; therefore, while research that measures the effects of inclusive placements on the academic performance of students with disabilities through other means may be helpful, research that tests the effects of inclusive placements on using standardized state assessments is more relevant and significant.

As such, this study is relevant for parents, educators and administrators who seek to close the achievement gap between students with disabilities and their non-disabled peers, a long-standing goal of school reform efforts. Advocates and parents of children with disabilities continue to fight for meaningful access to general education classrooms and curriculum, and the need for research on the effectiveness of inclusive settings continues. As school administrators

and educators make decisions about the placement of students with disabilities, they need valid and reliable evidence of improved outcomes.

In the wake of standards-based reform, schools have worked to align their curriculum and instruction with state assessments which make student performance on these tests particularly applicable for study as opposed to measures that are not so aligned. State assessment scores are currently the bright line on which schools are measured and those scores determine whether schools and districts make AYP. Students with disabilities comprise a sub-group that can make the difference.

Limitations

The study is limited in several ways which are fully discussed in Chapter 5. The limitations are listed briefly here:

- Utilizing the OSEP level of inclusion as a predictor does not allow for precise calculations of students' instruction time.
- Findings are for one district only, and for a single year (2009).
- Findings are reported for the district as a whole, rather than by grade level.
- Disability labels cannot accurately describe the unique characteristics of children.
- Costs related to the implementation of inclusive v. pullout programs are unavailable.
- Curricular materials and methods of instruction used for reading and mathematics instruction are unknown within and across schools.
- The level of professional development provided to staff with regard to inclusion is unknown.
- Students taking the alternate assessment were excluded from the sample.

CHAPTER 2

REVIEW OF LITERATURE

Parents and advocates for students with disabilities fought for decades for their children to be included in general education classes and have access to the general education curriculum; however, not everyone agrees that inclusion is the best way to educate these students. The definition of *inclusion* is not universally agreed upon and the research base is often referred to as inconclusive. This chapter begins by defining the principle of least restrictive environment and the history of the inclusion movement. Next, the results of research and literature about the effects of inclusion from 1968 through the present are discussed. The chapter ends with a discussion of socioeconomic status as a risk factor, teacher quality as related to student performance, and the effects of a school's culture.

Least Restrictive Environment and Inclusion

The roots of the least restrictive environment (LRE) principle can be traced to the 1960s, well before the landmark Education for All handicapped Children Act of 1975 (EAHCA or P.L.94-142 as it is better known) was enacted. The law was the culmination of multiple factors, most notably, the decision of *Brown v. Board of Education* in 1954 (Turnbull et al., 2007). The *Brown* decision dismantled the systematic segregation of African-American students and led directly to the application of the equal protection clause of the 14th Amendment to students with disabilities. In fact, Turnbull (2004) pointed out that if one were to substitute the words "students with disabilities" for "Negro" and "non-disabled" for the word "white" in the Brown decision, it becomes readily apparent how the Fourteenth amendment became the constitutional basis for the rights of students with disabilities. The similarities between students with disabilities and their African American counterparts in *Brown* included unequal educational

opportunities, educational segregation and an underlying philosophy that relied on stigmatization and the resulting negative consequences.

The Civil Rights Act of 1964 gave further momentum to the cause by recognizing the social injustices suffered by African-Americans and paved the way for other groups to demand similar guarantees (Kober et al., 2001). Americans with disabilities were awarded protection from discrimination on the basis of disability in 1973 by the Rehabilitation Act and the provisions in section 504 of that law.

Other early cases that dealt directly with the rights of students with disabilities to be educated in public schools such as *Mills v. Board of Education* (1982) and *Pennsylvania Association for Retarded Children (PARC) v. Commonwealth of Pennsylvania* (1971, 1972) resulted federal support for the LRE principle (Taylor, 1988). The language in the *PARC* decision offered clear support for educating students in the LRE, indicating that placement in the regular school is preferable to a separate school, and that education in a regular class is preferable to a separate class. At the federal level, IDEA describes LRE in this way:

> To the maximum extent appropriate, children with disabilities, including children in public or private institutions or other care facilities, are educated with children who are not disabled, and special classes, separate schooling, or other removal of children with disabilities from the regular educational environment occurs only when the nature or severity of the disability of a child is such that education in regular classes with the use of supplementary aids and services cannot be achieved satisfactorily (IDEA 20 U.S.C. § 1412)

Continuum of Services

The IDEA mandates a continuum of services for students with disabilities. Typically, from most to least inclusive the continuum includes the following placement options: hospital, institution, homebound instruction, special day school, and full-time special classroom in regular

school, part-time special classroom in regular school, regular classroom with resource room services, and full-time regular classroom.

Inherent in the idea of a continuum is that (a) an appropriate placement for any student can be found somewhere on the continuum; (b) the most intensive supports are provided in the most restrictive settings; and, (c) placement is flexible, with students able to move up and down the continuum as their needs change (Taylor, 1988).

Educational terminology related to the subject of including students with disabilities can be confusing. The following definitions are provided for clarification in this paper:

1. *Mainstreaming:* the practice of including students with disabilities in general education classrooms without special education supports, either full or part-time (Henley et al., 2002). Students are commonly mainstreamed during lunch, recess, and in activity classes such as art, music, and physical education.

2. *Inclusion:* the practice of including students with disabilities in general education classrooms for periods of their school day, depending on the needs of the student.
    - Special education supports are provided in general education during the portions of their day when needed.
    - Students may be removed for portions of the day when their special education services cannot be provided effectively in general education, and/or if the student's behavior disrupts their learning or the learning of others.

3. *Full Inclusion:* the practice of including students with disabilities in general education classrooms for all of their day, and providing all special education services in that setting.

4. *Resource room:* a special education setting in a regular school, serving students with mild to moderate disabilities. Students attend for portions of the day and return to general education classrooms as appropriate.

5. *Self-contained special education classroom*: a special education classroom in a regular school, serving students with moderate to significant needs.
    - Students often stay in this classroom for all or the majority of their day.
    - Students are included in general education classes for periods of the day, but most often are accompanied by special education staff.

When P.L. 94-142 was passed with its mandate for LRE, school districts found themselves struggling with the precise meaning of the term. While the act required the education

of students with disabilities alongside their non-disabled peers to the maximum extent appropriate, the law also required a continuum of service. Multiple court cases affirmed that LRE for any particular student could be anywhere along the continuum and that the general education classroom was merely an option on the continuum (Kavale & Forness, 2000). The LRE for many students was the resource room for instructional time and the general education classroom, lunch room, and recess with their peers. The result was a dual system that created fragmented instruction and often stigmatized students (Henley et al., 2002). Many educators and advocates felt that schools were not living up to the spirit of the law and the system was failing students with disabilities.

Singer (1988) outlines the rise of the Regular Education Initiative (REI) in the late 1980s. Although the rights of students to be educated in the LRE were granted by P.L.94-142, inclusive practices did not emerge overnight. On the contrary, schools struggled with just how to include students with mild to moderate disabilities in regular classes. Supporters of REI asserted that special education had not adequately served students with mild to moderate disabilities and therefore special education as a whole needed to be completely restructured. The REI also claimed that most students continued to be educated in restrictive settings, although Singer indicated that 1988 data from the Office of Special Education Programming (OSEP) showed that 68% of students were included for most or part of their day in general education. Wang and Walberg (1988) asserted that it was time for the field to capitalize on promising ideas to improve instruction by delivering services in the regular education classroom rather than continue with a dual system that segregated students without resulting in clearly improved performance.

Especially troublesome to those who question the effectiveness of inclusion is the Full Inclusion Movement (FIM) or the idea that the vast majority of students with disabilities should

be educated in the general education classroom all of the time. Those who support FIM argue against special education in separate settings and feel that general education should take on the responsibility of mildly and moderately disabled students, including those with learning disabilities, emotional disturbances, and mild intellectual disabilities (Singer, 1988).

Arguments against Inclusion

The intensity of those who argue against the FIM is unmistakable. The second edition of *The Illusion of Full Inclusion* (Kauffman & Hallahan, 2005) reprinted many of the original articles against full inclusion from the mid 1990s as well as more recent articles that continue the anti-inclusion sentiment. The editors refer to the FIM as "special education's largest bandwagon ever" (p. ix) and they warn that students have become more disabled due to a focus on inclusion rather than remediation. In other words, placement has become more important than closing the gap between students with disabilities and their peers.

One argument against inclusion is that students without disabilities suffer because too much time and attention is focused on the needs of a few included students (Bateman, 1994). Others contend that the focus on inclusion, particularly the FIM, potentially confuses the setting with the effectiveness of the instruction; in other words, the instruction is flawed unless it takes place in the general education setting (Mock & Kauffman, 2005). They argue that the setting constrains the instruction because specially designed instruction cannot be delivered in the same way in every setting; moreover, some instruction is less effective when delivered within the confines of the general education setting. The inclusion debate continues today, but an understanding of the factors that support increased academic performance are particularly important when viewed in the larger context created by No Child Left Behind (NCLB) and its accountability requirements.

Response to Intervention

An approach that is gaining momentum due to NCLB and the 2004 reauthorization of the IDEA is Response to Intervention (RtI) which refers to the educational practice of implementing high quality, evidence-based instruction and intervening when needed with additional instruction matched to students' needs (Batsche, Elliott et al., 2005). Simply stated, in a setting where RtI is implemented fully, all students have access to instructional methodology that is proven to meet the needs of the majority of the students, and a systematic plan exists that provides immediate and effective interventions with monitoring to those students who do not meet established benchmarks for learning. RtI is a practice that transcends the barriers between general and special education because it encompasses all of education and abandons the wait-for-failure model that currently exists in the eligibility determination for special education (Finn, Rotherham et al., 2001). The IDEA allows the use of RtI for special education eligibility determination for learning disabilities.

An understanding of the critical components of RtI is essential in order to see how RtI differs from the general education interventions that were required by the IDEA 1997. Under that requirement, a problem solving team reviewed interventions that had been tried with students who struggled academically or behaviorally to ensure that all of the options available through general education were exhausted prior to an eligibility determination. The core instruction was presumed to be effective, so students who did not benefit from classroom instruction were referred to teams for special education evaluation. A major difference between that process and RtI is that RtI requires general education to be accountable for the effectiveness of the core instruction by conducting periodic universal screening to determine if the core is effective for approximately eighty percent of all students. RtI is not a new method to identify

children who are eligible for special education, although that determination could be made by examining a student's lack of response to interventions. Rather, RtI is a way to ensure quality instruction for all students and consists of three essential components (Batsche, Elliott et al., 2005):

1. Multiple tiers of intervention service delivery. A three-tiered model is common.
    - Tier 1 instruction is given to all students. The instruction used must have a high probability of bringing at least eighty percent of students to proficiency. This is achieved by using research validated practices and curricula.
    - Tier 2 provides supplemental instruction to students who display inadequate progress with Tier 1 instruction alone. It is important to note that Tier 2 is provided in addition to, not instead of, Tier 1 instruction. This instruction must be evidence-based. Tier 2 instruction is provided until students attain the missing skills or until it is determined that their response to intervention is not at an acceptable level and needs Tier 3 supports. Many students' needs will be met in Tier 2.
    - Tier 3 provides intensive intervention in addition to Tiers 1 and 2. The interventions are typically longer in term and may or may not include services through special education. In other words, not all students in Tier 3 are automatically eligible for special education.
2. A problem-solving method that ensures the effectiveness of instruction at each level. A problem-solving system determines where problems exist, the extent of the problems, and tracks the effectiveness of interventions.

3. Integrated data systems that drive data-based instructional decisions for students. A key element is frequent progress monitoring using assessments that are sensitive enough to measure progress over time.

RtI is a promising instructional practice that may close performance gaps and, therefore, reduce the numbers of students who will be identified with disabilities (Batsche, Elliott et al., 2005). A key component is the requirement for evidence-based instruction which is consistent with the IDEA and NCLB. The IDEA only applies to students with disabilities while NCLB applies to all children and has accountability requisites which may result in consequences for districts that do not meet the Adequate Yearly Progress benchmarks.

No Child Left Behind and Standards Based Reform

NCLB tends to be a polarizing law. Some consider it the legislative path to educational excellence while others feel the path leads only to the destruction of public education. Based on the bipartisan support NCLB had at its passing in 2001, the strong anti-NCLB sentiment today seemed unlikely when President Bush signed it into law. NCLB and its strong accountability requirements may have seemed like a sweeping reform at the time, but it was actually the culmination of more than a half century of gradual increases in the federal role in education and the latest reauthorization of the Elementary and Secondary Education Act of 1965 (ESEA). ESEA provided funding linked to low income students and it was the beginning of programs such as Title 1, Head Start, and Bilingual Education. ESEA also marked a public recognition that equal access was not enough since children who were disadvantaged by poverty or other conditions needed more than mere access. They needed targeted programs if the achievement gap were to be closed (Meier & Wood, 2004).

As late as 1980, with the exception of programs for students with disabilities, few states were focused on programs for needy students (Anderson, 2005). Additionally, as the federal government recognized the special needs of students who lived in poverty and provided funding to help those students, the states did not always use those funds for their intended purposes. Since the federal government had not built in a strong accountability piece to Title 1 funds, most states followed suit and did not impose strict guidelines for districts to follow. As one might expect, funds did not always go to support disadvantaged children but instead funded expenditures such as football jerseys and swimming pools (McDonnell, 2005). Revelations like this mobilized groups who represented the interests of poor students and resulted in stricter regulations and increased federal monitoring. Notable in the increased accountability was the lack of recommendations for programming as the compliance extended solely to fiscal matters. Unfortunately, many districts found the most effective means of showing that Title 1 funds were used appropriately to be separating Title 1 students and programs from those funded by other sources. By 1976, about 70% of these students received services in a setting outside of the general classroom (McDonnell, 2005). As a result, many programs were not a systematic extension of the core curriculum and the reporting remained focused on appropriate use of funds instead of demonstrating academic progress for students in Title 1 programs.

The 1980 report, *A Nation at Risk*, warned that our declining academic performance put the future of all Americans at risk for decreased global competitiveness economically, militarily, and academically. Among the recommendations of *A Nation at Risk* were increased academic rigor, implementation of standards and high expectations, and increased focus on teacher preparation. The report became a catalyst for major changes in the federal role of education due to its resonance with groups who were already calling for change in public education. Public

opinion polls showed increased concerns about the quality of schools. Congress argued that federal money should not be spent without expecting some accountability for results. As the public voiced their dissatisfaction with schools and their rising costs, state and federal legislators responded to their constituency by focusing on education. Some governors embarked upon a discussion related to the establishment of national goals, envisioning them as useful to guide state action, and not imagining that they would stimulate new federal action (Schwartz & Robinson, 2000).

In a regularly-scheduled reauthorization of ESEA in 1988, amendments to Title 1 required for the first time that states define and measure the educational achievement that was expected for disadvantaged students. Additionally, states had to identify schools who were not meeting the anticipated levels of achievement. Reaction from the states varied as some set high levels while others set their targets low. In 1991, the Department of Education proposed the implementation of national goals in a proposal known as America 2000. The America 2000 legislation ultimately did not pass, but the idea for national goals was not abandoned (Jennings, 2000). Goals 2000 was passed in 1994 calling for national standards to serve as exemplars for states as they developed their own standards. The centerpiece of the Goals 2000 bill provided aid to states to develop their own standards and assessments, but no strings were attached to this funding. Goals 2000 called for educational improvement for all students, unlike most prior federal legislation that targeted certain disadvantaged groups.

The purpose of academic content standards is to clearly articulate what students should know and be able to do as a result of their instruction and the educational experiences provided; however, *standards-based reform* has a broader meaning because it implies that the standards are accompanied by assessments that measure outcomes for students (Thurlow, 2000). Standards-

based reform was written into law when the 1994 reauthorization of ESEA required states to develop content and performance standards that were tied to accountability measures. Adequate Yearly Progress (AYP) was now a part of the educational jargon, although not to the extent that the next reauthorization would bring. While states were now required to demonstrate continuous progress, no timeline was established. States varied widely in their response to the required performance standards. While most states complied by establishing performance standards, the expectations were significantly different. A dozen states required 90-100% of students to meet the proficiency standard, while ten states expected only 50% of students to reach proficiency. Timelines ranged from six to twenty years for implementation (McDonnell, 2005). Many began to question what standards-based reform meant for students with disabilities since they were routinely excluded from state assessment tests (Sailor, 2002; Thurlow, 2000). Possibly more disheartening and more telling is, as Thurlow (2000) pointed out, that analyses of the standards originally developed indicates that students with disabilities had not been considered; less than 25% of the states with standards mentioned students with disabilities in core subject area documents.

The 2001 reauthorization now known as NCLB contained many changes; however, the revised and highly demanding accountability requirements for AYP are undoubtedly the biggest challenge for schools. The results of state assessments tests are most relevant AYP measure for the purposes of this study, but one would be remiss not to mention that AYP under NCLB contains other accountability measures such as requirements for at least 95% participation rates on state assessments, graduation rates of 80% or higher, and 90% student attendance rates. Some of the AYP components include ways for districts to satisfy the requirements by showing improvement over previous years, but a full explanation of the intricacies of NCLB is beyond the

scope of this discussion. Clearly, schools and school districts are particularly focused on the requirements for state assessment test results. The provisions of NCLB hold schools and districts accountable for the academic achievement of all students and specifically require that every student reaches proficiency in reading and mathematics by 2014. States must set adequate yearly progress (AYP) objectives using incremental steps to reach 100% proficiency by the target date (U.S. Department of Education, 2002). What is unknown to many people outside of K-12 education is the sheer number of ways that a district can fail to make AYP based on state assessment scores alone.

To illustrate this point, keep in mind that all students and all student sub-groups must meet the AYP targets each year. Consider a hypothetical school that includes the following groups: (a) all students, (b) free and reduced meal students, (b) students with disabilities, and (d) four ethnic groups (Caucasian, African-American, Hispanic, Asian). A sub-group must contain 30 or more students to be counted and our hypothetical elementary school, serving grades K-6, has 30 or more students in each of the six sub-groups at each grade for a total of seven groups in each grade (one group of all students, plus six sub-groups). In our hypothetical school, students in grades 3-6 will be tested in reading and mathematics to determine if the school makes AYP. Thus, our school has to meet AYP targets in fifty-six ways: four grades taking two assessments each equals eight assessments. Each of the seven groups must reach the target for AYP on the eight assessments (seven times eight equals 56). The school fails to make AYP if even one group does not meet the target. Furthermore, a school district can only make AYP if all of the schools make AYP. It does not take long to realize that school districts, particularly large districts, face an overwhelming challenge to continue meeting AYP year after year. One of the concerns voiced by advocates for students with disabilities is that these students will be made

into “scapegoats” if they are the reason that schools and school districts fail to make AYP. This notion is supported by 70% of school administrators according to survey data (Cole, 2006). Strikingly, 54 % of those surveyed agreed or strongly agreed that students with disabilities are experiencing more pullout remediation as a result of NCLB, and 74% of those surveyed indicated a pressure to group students with disabilities for remediation because of the pressure to make AYP. In reality, when the reasons that schools and school districts miss AYP targets is analyzed, the students with disabilities are only a small part of the reason for not making AYP. In a report by the Aspen Institute (2006), 58% of Florida schools reported sub-groups of students with disabilities. 22% of those schools missed AYP for students with disabilities; however, in only 2% of the cases was the sub-group of students with disabilities the sole factor in the school not making AYP. In other words, either other sub-groups also failed to make AYP or the school failed to make AYP based on other factors, such as participation rates or attendance rates. In Michigan, only 12% of schools that did not make AYP missed solely due to students with disabilities. These findings do not square with the fear that students with disabilities are a major factor in schools missing AYP targets, yet that fear may drive school administrators to promote less inclusive practices in order to better ensure remediation on tested items.

The legislative history of NCLB began in 1965 with an emphasis on closing the gap for disadvantaged children. Its present day march toward 2014 when one hundred percent of students must be proficient in reading and mathematics is accompanied by stringent accountability measures and possible consequences for districts that are not able to meet them. Students with disabilities are a sub-group that causes concern for building and district administration who worry that their schools will not meet AYP targets. Students with disabilities are served in a variety of ways; some students are in the general education classroom for all or

most of their day while others attend mostly special classes. A review of the research with regard to the effect of placement on the performance of students with disabilities has done little to enlighten the field on which placement or combination thereof provides the best outcomes for students.

Early Research: Achievement in General Education versus Pull-out Settings

Prior to the passage of P.L. 94-142, Lloyd Dunn was one of the most influential voices in special education and his work is seen by some as a catalyst for the changes seen in that legislation (McLeskey, 2004). In 1968, Dunn wrote a classic article that was at one time the most cited in special education literature entitled, "Special Education for the Mildly Retarded-Is Much of It Justified?" Dunn argued that young children (not adolescents) should not be segregated in separate settings. He based his arguments on several studies in the 1960's which showed that students with mild intellectual disabilities make at least as much progress in general education classes as in separate settings. The studies also showed that the same applied to students with emotional disturbances. Dunn asserted that labels do more harm than good because of the stigmatization of students.

Dunn's dissatisfaction with a dual system of general education and special education had grown over time, and although he remained devoted to special education students, he stated in his article that he felt the past and present practices were "morally and educationally wrong" (p. 5). He called the removal of special education students into separate settings "obsolete" (p. 6), but allowed that the practice was a combination of sincere efforts on the part of both systems. Special educators felt that they could provide specialized programming more effectively in pull out settings while general educators wanted to remove children from unrealistic setting demands or inappropriate instruction. He called on educators to follow their consciences in light of the

research that showed separate settings were neither favorable nor necessary. In a stinging criticism, he stated:

> In large measure we have been at the mercy of the general education establishment in that we accept problem pupils who have been referred out of the regular grades. In this way, we contribute to the delinquency of the general education since we remove the pupils that are problems for them and thus reduce their need to deal with individual differences. …Our honor, integrity, and honesty should no longer be subverted and rationalized by what we hope and may believe we are doing for these children—hopes and beliefs that have little basis in reality. (p. 20)

Dunn pointed out that pupils from low socio-economic backgrounds, minority groups, and single parent families were vastly overrepresented in special education. He argued that these disadvantaged students were often mistakenly identified as disabled by general education, raising serious civil rights issues that could no longer be ignored. Dunn's article is seen by many as the impetus for mainstreaming and leading directly to the key components of P.L. 94-142 including Least Restrictive Environment and non-discriminatory assessment practices (McLeskey, 2004).

1975-1997 Research Studies

Ten years after Dunn's influential article, a review of seventeen studies by Sindelar and Deno (1978) supported at least some of his views. Their review of the studies linked to academic achievement showed little difference in outcomes for students with intellectual disabilities whether their instruction took place in a resource setting or a general education classroom. They qualified their findings with a note that this was a relatively small body of research that needed further study. They felt more strongly that the outcomes for students with LD were more certain since those students seemed to benefit from a combined approach of instruction in general education with additional resource room services. Two years later, a meta-analysis of fifty studies had similar findings. Carlberg and Kavale (1980) found in their review of the research that students with intellectual disabilities performed no differently

whether they were educated in general education or in special education settings. Conversely, they found positive effects of special class placement for students with learning disabilities and emotional disturbances. They warned against overgeneralizations of the superiority of the general education class over special classes as preferable for all students and that the trend toward mainstreaming may not be appropriate for all children.

While the findings of the Carlberg and Kavale (1980) meta-analysis was generally favorable toward inclusive practices, their review of the literature illuminated what was, and still is, a chronic source of frustration for the field: contradictory findings between studies, inconclusive findings, and a lack of unequivocal superiority of one setting over another. In an effort to provide clarity to the field, Wang and Baker (1985) asserted that their meta-analysis showed conclusive findings of the superiority of the general classroom over special settings. In their review of eleven studies dating from 1975 to 1984, mainstreamed students consistently outperformed non-mainstreamed students with comparable special education classifications. They looked at outcomes for performance effects (such as measures of achievement in academic subjects), attitudinal effects (such as measures of self concept, attitudes toward learning and school), and process effects (such as interactions between teachers, teachers and students, and between students). While their findings were encouraging, the studies included typically had small sample sizes (median of 40), differing grade levels or unknown grade levels, and the outcomes were not reported by disability category or level.

In addition to the meta-analyses, individual studies are of interest in determining the appropriate educational setting for students with disabilities. Affleck et al. (1988) published the results of a three year study of an Integrated Classroom Model (ICM). The general education teachers involved in the ICM were all either former special education teachers or were given

intensive additional training on the ICM which is a highly structured setting and required regular observations to ensure the fidelity of the implementation of model. The study compared the achievement of students in typical resource models where students are supported at least part of their day in a separate setting with students who were included full time in a general education classroom. The students in the fully inclusive classrooms had mild learning disabilities (LD), mild intellectual disabilities (ID), and emotional disturbances (ED), and comprised about one-third of the classroom. The outcomes were measured on the Woodcock Johnson Achievement test. The results of the study showed virtually no difference in the outcomes for special education students, with the exception of one year during which mathematics scores in the ICM were significantly higher. Overall, the authors argued that the differences were not great enough to justify a separate setting for students with mild disabilities, but cautioned against interpreting the results to say that the ICM was the only alternative setting. Interestingly, the study also compared the results for general education students in the ICM as compared to general education students in classes with no students with disabilities. No significant differences were noted in their achievement which indicated no adverse effects to general education students in inclusive settings.

A study by Banerji and Dailey (1995) of students with LD in grades 2-5 investigated the outcomes for students in a co-teaching model where a special education and general education teacher both were in the classroom, either part or full-time. This study did not use standardized outcome measures, but rather informal measures of writing samples, sentence structures, and reading levels using pre and post testing for students in fifth grade and affective outcome measures for all students with disabilities in grades 2-5. The findings suggested that the students with learning disabilities made academic gains that were comparable to the typically developing

peers. The affective gains were also comparable. The authors discussed four main themes that emerged from their study: 1) students in the inclusive program did not feel or behave differently from their non-disabled peers; it would have been difficult to determine which students had disabilities, 2) students with learning disabilities showed improved self-esteem and motivation, 3) the students appeared to genuinely enjoy working and learning together, and 4) teachers within the team reported satisfaction with the collegiality and improved understanding of individual student needs.

Another meta-analysis conducted by Manset and Semmel (1997) returned inconclusive findings once again. They measured the student academic outcomes in eleven studies of eight different inclusive models which were conducted from 1984-1994, including the Affleck et al. (1988) study. In most cases, the students involved were pulled out for at least part of their day. One of the points that Manset and Semmel made was that it was extremely difficult to discuss the results for inclusive settings because the models differed so substantially in their structure. They noted that, for the most part, "special education services were not eliminated but re-conceptualized, redistributed, and in many cases, simply renamed" (p. 160). They pointed out that some of the models closely mirrored the very special education programs they were to have replaced. Additionally, they questioned the additional staffing expense for inclusive programs when they yielded such unimpressive outcomes for students.

The studies in this period were conducted before the IDEA 1997 was passed and therefore, the students with disabilities in these studies were not guaranteed access to the general education curriculum. We simply do not know if or how much their instruction was aligned to that of their non-disabled peers during the time that they were educated in separate settings. The

results of the studies were inconclusive overall, but seemed to agree on the point that students with intellectual disabilities made similar progress in regular class or separate settings.

1998 to Present

Several studies in this time period looked at the effects of providing specialized training about inclusive practices for staff prior to and/or during the time of the study. Waldron and McLeskey (1998) studied the growth of students with learning disabilities, grades 2-6 in schools whose staff had volunteered to participate in the study. They were provided specific training for teaching methods used in inclusive classrooms. Student progress in reading and mathematics was measured on the Basic Academic Skills Samples (BASS). Their findings were supportive of inclusive settings. Overall, students with LD in both settings made comparable progress in mathematics. In reading, students made significantly more progress in the inclusive setting than those students who received their special education service in resource rooms. Waldron and McLeskey also differentiated between students with mild and severe LD. Students with mild LD made significantly more progress in reading in inclusive settings while students with severe LD made comparable progress regardless of setting. One of the goals of this study was to replicate a 1995 study by Zigmond et al., who challenge the benefits of full inclusion programs. In that study of the performance of special education students with learning disabilities in an inclusive setting, they found only about half made comparable progress to general education students in reading and mathematics. Therefore, Zigmond et al. concluded that the students who did not make comparable progress would have been better off in a resource model. Waldron and McLeskey (1998) assert that since Zigmond et al. did not use a comparison group of students with disabilities who were educated in a non-inclusive setting, their criticism did not hold up. They make the point that progress should not be measured against non-disabled peers; instead,

the rationale for inclusive settings can be simply that if the results of non-inclusive settings are comparable to inclusive settings, the choice must be the least restrictive environment under the IDEA.

Two studies (Klingner et al., 1998; Saint-Laurent et al., 1998) found mostly positive results for inclusive settings, but warned that the resources needed for staffing and training inclusive programs are substantial and may be difficult to maintain. Saint-Laurent et al. (1998) analyzed the results of a one year study in thirteen schools. The collaborative model used included training for parents and students as well as the teachers. Staff attended weekly meetings and participated in joint planning sessions. An interesting finding was that the general education students in the treatment group benefited the most from the program as compared to the comparison group of general education students. Those students who were determined to be at-risk of academic failure did not differ statistically between groups. Special education students in the treatment group scored higher in writing and mathematics but no difference was seen in reading between the groups. The students with disabilities who received services in a resource room did not deteriorate, but the authors felts their progress was insufficient. The authors stated that the results for the inclusive setting were not clearly better and they questioned if some resource support would provide better outcomes. Klingner et al. (1998) found that higher achieving students with LD performed better in reading after a yearlong program that included substantial professional development for teachers. In this study, students with LD were only put in the inclusive setting if the teachers rated them as likely to succeed in that setting; those students whose needs were more significant were kept in the typical resource model. They found that the students whose instruction took place in a resource room benefitted from the small group

instruction and they recommended resource rooms as the better model for lowest achieving students with LD.

Another study compared two groups of 8th grade students with learning disabilities who attended different schools (Rea et al., 2002). In one school, services for thirty six students with learning disabilities were provided in general education; in the other, special education services were provided to twenty two students with learning disabilities in pullout settings. (These students attended general education classes for reading and mathematics, but without support.) The schools selected were in the same district to decrease the likelihood of differences occurring from variations in district procedures or processes. Students who had not attended the same school for at least two years were removed from the sample. The groups were compared on the following variables which revealed no statistically significant differences: race, SES, mother's educational level, gender, ethnicity, or IQ. Additionally, the students were similar in the mean of the number of years in special education and the length of time they attended the school district. Data were compiled from records covering the years 1994-1996. The students who received their special education services in general education settings achieved higher scores on the language and mathematics subtests of the Iowa Test of Basic Skills than those students who were pulled out for their special education services. Additionally, the students earned similar scores on reading comprehension, social studies, and science.

Malmgrem et al. (2005) utilized a hierarchical linear regression to examine the performance of students with disabilities on state assessments in two districts within a single state during two consecutive years. They analyzed results in reading and in mathematics for students in grades 3, 5, and 8. Their study used the performance of students without disabilities as a school-level variable as well as percent low SES, percent minority student enrollment,

percent special education students, enrollment, and the percent of special education students exempted from testing. Data used in their study were collected from publicly reported school-level data for the years 1999-2000 and 2000-2001. As the authors pointed out, the requirement to include 95% of students with disabilities in state assessments was not yet in statute. While the percent of students with disabilities who were exempted from testing was not statistically significant as a predictor of the performance of students with disabilities, they state they were somewhat limited by not knowing the reason for excluding the scores of certain students. The only variable found to be a significant predictor of the performance of students with disabilities was the performance of general education students; in other words, in schools where students without disabilities demonstrated higher performance, the same was true for students with disabilities.

Some studies from this period pointed out that the cost of providing high quality inclusive settings may be higher due to the level of training and support needed for staff. Unfortunately, the advantages of one setting over another were not yet clearly established, despite the additional training provided to staff. This time period is important for two reasons. First, the IDEA 1997 mandated that they have access to general education curriculum, and second, NCLB required that students with disabilities be measured on the same standards as their peers by participating in state assessments.

Other Relevant Research and Literature

Socioeconomic status as a risk factor for educational problems. The factors that predict a child's educational performance are complex. Some factors are internal, related specifically to the child's personal development, such as birth weight, lack of oxygen at birth, and intracranial hemorrhage (Keogh, 2005). Other factors are external, such as the child's

neighborhood, parent's education, frequent changes in residence, and number of children in the family with poverty and related disadvantages as the strongest predictors of a student's academic performance (Thompson, 2002). Many of these factors are associated with socioeconomic status (SES) (Selden, 1990; Skrtic et al., 2005). For example, children of high SES parents tend to have access to better health care, reducing the likelihood of birth defects which negatively influence development. Children of higher SES families tend to have more well-educated parents and more stable residence. Of course, the opposite is true for children from low SES families. Keogh (2005) pointed out that (a) SES is better viewed as a "cluster of conditions" rather than a single concept (p. 515), (b) outcomes within SES groups show considerable variance, and (c) developmental and achievement problems are found in every SES group.

The percent of low SES students was not a significant predictor in the study by Malmgren et al. (2005) of the performance of students with disabilities on state assessments. When controlling for other predictors, the lack of significance for school-level SES was a result that the authors referred to as both "startling" and "heartening" (p. 92). Citing the strong relationship between SES and other student- and school-level variables that is often associated with negative effects on academic achievement, the authors suggested the lack of a strong link was favorable for schools since school-level SES is a factor that is beyond the school's influence.

Teacher qualifications. AYP is arguably the best known feature of NCLB because of the highly publicized accountability measures for student achievement; however, other components of NCLB have a significant impact on school districts. One of these is the requirement for all teachers to meet the criteria for "highly qualified" status by the end of the 2006-2007 school year. In the state where this study was conducted, general education teachers must meet three requirements to be considered highly qualified in a core content area such as

reading or mathematics: 1) the teacher must possess a minimum of a bachelor's degree **and** 2) have a valid teaching license issued by the state with the appropriate subject and grade level endorsement, **and** 3) have demonstrated subject-matter competency in each subject taught. Competency may be established by either passing a rigorous State approved test or by meeting the State approved high, objective, uniform State standard of evaluation (HOUSSE). Special education teachers must meet the first two requirements listed for general education and demonstrate competency by completion of the appropriate Praxis II licensure examination. Additionally, in order to teach a core content area at the secondary level, a special education teacher must demonstrate competency in the same manner as general education teachers. Although the deadline for meeting the requirement has passed, not all school districts have met the target, including the district in this study.

Teacher quality is a known factor related to student achievement (Aaronson, Barrow, & Sander, 2007; Rivkin, Hanushek, & Kain, 2005; Rockoff, 2004). It would be a gross over-simplification of teacher quality to state that all highly-qualified teachers are *high-quality* teachers. The effectiveness of any given teacher is a combination of their teacher preparation program, their suitability for the profession, teacher mentoring, and years of experience. In any given year, teacher effectiveness can be impacted by personal problems, illness, and the effects of recent school budget cutbacks that result in overcrowded classes, lack of materials, and higher caseloads. The difficulty of measuring all of these complex factors and their interactions is readily apparent, yet one cannot ignore the impact of teachers on student achievement. For this reason, this study examines the effects of the percentage of highly qualified general and special education teachers in the schools and its relationship to students' achievement.

School culture. Inclusion, at its heart, is about acceptance. The Americans with Disabilities Act states that disability is "a natural part of the human experience." Attitudes toward people with disabilities are too often a mix of pity and fear leading to their exclusion (Turnbull et al., 2007). The LRE principle supports their inclusion in general education classes for most students, yet clearly, some schools do a better job of inclusion than others. As the call for inclusive education grew louder because of voices like Dunn (1968) and Will (1986), schools have been forced to change their structure, approach to the organization of schools, models of teachings, and even the roles of teaching staff (Carrington & Robinson, 2004). General education teachers sometimes resisted serving the students with disabilities who were suddenly included in their classes. Their resistance is understandable when considering that their teacher preparation programs often did not include a single class on exceptional children. They objected at times that they did not know what to do with students whose needs were outside of their teaching experience and expertise. Yet, some teachers, some schools, and even some districts worked through the process of making the changes that afforded inclusive education to their students. Inclusion is viewed as school reform in its truest sense and requires substantial professional development to implement appropriately. The fact that a student with disabilities is sitting in a general education classroom is not the equivalent of inclusive education (Skrtic, 1995). Professional development for effective inclusive education must include strategies to teach to various student needs, effective collaboration between general and special educators, and co-teaching practices. When considering staff turnover and changes in school leadership, inclusive education is a reform that demands a commitment over time, substantial funding for professional development, and increased staff to meet the needs of students who are spread out

across grade level classes rather than clustered in a resource room or self-contained classroom. The sustainability of inclusive practices can be difficult to manage.

Very little research exists on the ability of schools to carry out inclusive practices over time, but a study by Sindelar et al. (2006) shed light on the challenges involved. The focus of the study was a middle school that had been closely affiliated with the University of Florida for over ten years as they implemented inclusive practices. The study did not include information on academic performance of students; rather, it focused on the perceptions of staff about inclusion and the factors that contribute to sustainability. The school in the study was considered very effective in implementing inclusive education; yet, inclusive practices were not maintained over time. The authors pointed to three factors that explain why inclusion was not sustained: changes in leadership, teacher turnover, and a shift in state and district policies. New school leaders were not as supportive of inclusion as were their predecessors. As staff turned over, some of the teacher leaders who nudged administration toward inclusive practices left and other staff were not as committed to inclusion. Finally, in the wake of high- stakes testing initiated in Florida even prior to the passage of NCLB, the focus of the school administration shifted to test scores rather than continuing the inclusive practices that had been established. During the course of the study, the school changed principals two times. The third principal came into the role with heavy pressure to meet the targets established for the state test, the FCAT. The pressure trickled down to teachers who complained that they could not meet the needs of their diverse group of students as they cited inadequate co-teacher supports and training among their complaints. The authors noted that success at the study school was now being defined in terms of academic performance instead of the positive perceptions related to the inclusive practices that had been developed over the previous years. Unfortunately, the decision to abandon inclusive practices

was not data-based. For example, the school could have reviewed the academic performance of the students prior to the implementation of inclusive practices and compared their performance during the time that they were included. Under pressure to meet the targets, the school simply went back to their former placement practices. As many studies have shown, inclusive practices often do result in increased academic performance. Removing the students from their inclusive settings may actually have hurt their chances to improve performance on the state assessment, precisely the outcome the school sought to avoid.

Gersten, Vaughn, et al. (1997) discussed the difficulty of bridging the research to practice gap in special education. They indicated that educators do not routinely incorporate practices that are supported by research without supports that include continued professional development, regular feedback, and opportunities to collaborate with their colleagues to discuss the intervention and changes in student learning related to the intervention. More importantly, teachers will abandon effective practices, even after seeing positive changes in student learning to return to more familiar and comfortable methods. Their study indicated that new practices will be adopted when they are practical and "fit within the details of day-to-day classroom instruction (p. 469)." Practices that require radical change in what teachers do during lessons are more difficult to sustain, and inclusion certainly requires a substantial change in planning and instruction. Teachers require time to collaborate and discuss the implementation of inclusionary practices in order for them to be successful and those who effectively include students with disabilities need time to mentor others who are struggling. The culture of the building can be affected positively or negatively toward inclusive practices based on the experiences of teachers.

The effects of school populations have also been shown to have effects on individual student achievement, as in a study by Caldas and Bankston (1997). In that study, the effects of

peer family social status had a significant impact on individual academic achievement; in fact, it was only slightly less significant than the individual's own status. A study by Malmgrem et al. (2005) found the performance of the general education students was predictive of the performance of special education students after accounting for student demographic variables. In this study, the inclusiveness of a school as measured by the overall percentage of the day that all students with disabilities are included in general education classes is included to test for any effect on academic outcomes.

The Equality of Educational Opportunity study (Coleman et al., 1966) is one of the best known studies conducted related to the effects of school and student-level variables on student achievement. A major finding of the Coleman Report, as it is commonly known, was that school characteristics had little effect on academic outcomes whereas a student's family background was strongly tied to educational achievement. An unfortunate interpretation of the Coleman Report was that schools do not matter because they cannot overcome the effects of family. The original data from the report has been reanalyzed several times and some of the findings have been challenged, most recently by Borman and Dowling (2010). Using hierarchical linear modeling, their study asserts that schools do indeed matter. In their study, they found that 40% of the difference in achievement is between schools and that the effect of racial/ethnic and socioeconomic status of the school was one and three quarters times that of the same individual variables. Considering the time period of the Coleman Report, it may be difficult to determine the whether the scores of students with disabilities were included in the dataset. Borman and Dowling (2010) did not mention disabilities in the extensive list of variables analyzed and so the present study adds further information to the field related to students with disabilities and the effects of school variables on their performance on state assessments.

Summary

If one were to summarize the literature on the effectiveness of inclusive education for students with disabilities in a single word, that word would be inconclusive. The studies have many inconsistent descriptions, findings, and recommendations. Additionally, some of the studies were of programs that were expensive to replicate and nearly impossible to sustain. Our mandate under the IDEA and NCLB is to provide students access to the general curriculum using the least restrictive alternative. Continued research is needed to determine if that access translates into academic performance gains, and which students benefit from inclusive settings under what school conditions. This study has two distinct advantages over those described previously. First, the mandate by the IDEA 1997 to provide access to the general curriculum for students with disabilities has been in place for over a decade. Second, students with disabilities are now participating at a very high rate on state assessments tests. This allows us look at their level of inclusion and outcomes on state assessments in reading and mathematics in a new way and may shed light on the inclusion debate.

CHAPTER 3

METHOD

This study examines the achievement of 651 elementary, middle, and high school students with disabilities in a large urban school district on the 2009 state assessments in reading and mathematics. Scores of students taking the general assessment and the modified assessment were included in this study. The general assessment and modified assessment are based on the same standards, but the modified assessment differs in the following ways: (a) indicators tested in multiple years may be eliminated, (b) fewer multiple choice items are included, (c) fewer reading passages are included, and (d) only three answer choices are provided for multiple choice questions instead of four. The scores of students taking an alternate assessment were not included.

The independent variable is the student's access to general education curriculum which is measured by Office of Special Education (OSEP) inclusiveness ratings: (a) educated in a separate setting, (b) included in general education less than 40% of the school day, (c) included in general education 40-79% of the school day, or (d) included in general education 80% or more of the school day. Also included in the data set are the performance indicators of students with various disabilities. The dependent variable is each student's score on their 2009 state assessments in reading and mathematics. The study also examined the effects of a student's disability type, race, gender, and socio-economic status and certain school characteristics (see below) on the student's achievement on these tests. The goal of this analysis is to determine the extent to which the inclusion of students with disabilities in general education classroom impacts the student's achievement on state assessments.

Specifically, the data include, by anonymous student number, individual student demographic information (race and gender) as well as the student's OSEP and disability classification. To capture socio-economic information about the student, the dataset indicates the student's lunch status (full pay or free/reduced). Finally, the dataset includes the student's school data, including the school's average OSEP inclusiveness rating for its students with disabilities, the school's average free or reduced lunch percentage, the school's students-with-disabilities population percentage, and the school's minority enrollment percentage. Also included in the student's school data is the percentage of the school's general education teachers that are highly qualified and the percentage of the school's special education teachers that are highly qualified. Table 1 summarizes the predictors in the dataset and their corresponding numerical value. Tables 2 through 5 provide descriptive statistics about the dataset.

Table 1: Student- and School-Level Predictors

STUDENT AND SCHOOL LEVEL PREDICTORS		
Student-Level (Demographic)		
	Category Name	**Description**
1	OSEP	OSEP Level (1 = Separate Setting, 2 = <40%, 3 = 40-79%, 4 = >80%)
2	Gender	Student Gender (0 = female, 1 = male)
3	Race	Student Race (0 = white, 1 = nonwhite)
4	Math performance level or Reading performance level	Math/Reading State Assessment Achievement (1 = Academic Warning, 2 = Approaching Standards, 3 = Meets Standards, 4 = Exceeds Standards, 5 = Exemplary)
5	Disability Category 2	Emotional Disturbance
6	Disability Category 3	Learning Disability
7	Disability Category 4	Intellectual Disability
8	Disability Category 5	Other Health Impaired
9	Lunch	Student SES status (0 = full lunch, 1 = free/reduced lunch)
Building-Level		
1	OSEP Level of School	OSEP Inclusion Level for School (1 = Separate Setting, 2 = <40%, 3 = 40-79%, 4 = >80%)
2	% of Students Free Lunch	Percentage of Students in the School with Free/Reduced Lunch
3	% of Students with Disability	Percentage of Students in the School With a Disability
4	% Minority Students	Percentage of Minority Students in the School
5	% Highly Qualified Teachers	Percentage of Highly Qualified Teachers in the School
6	% Highly Qualified SpEd	Percentage of Highly Qualified Sped Teachers in the School

Table 2: Student- and School-Level Predictors Data Summary

STUDENT AND SCHOOL LEVEL PREDICTORS (DISTRICT-WIDE)				
Student-Level (Demographic)				
	Category Name	**Description**	**Mean**	**Standard Deviation**
1	OSEP	OSEP Level (1 = Separate Setting, 2 = <40%, 3 = 40-79%, 4 = >80%)		
2	Gender	Student Gender (0 = female, 1 = male)		
3	Race	Student Race (0 = white, 1 = nonwhite)		
4	Math performance level or Reading performance level	Math/Reading State Assessment Achievement (1 = Academic Warning, 2 = Approaching Standards, 3 = Meets Standards, 4 = Exceeds Standards, 5 = Exemplary)	2.66/2.54	1.06/1.12
5	Disability category 2	Emotional Disturbance		
6	Disability category 3	Learning Disability		
7	Disability category 4	Intellectual Disabilities		
8	Disability category 5	Other Health Impaired		
9	Lunch	Student Socioeconomic Status (0 = full pay, 1 = free/reduced lunch)		
Building-Level				
1	OSEP Level of School	OSEP Inclusion Level for School (1 = Separate Setting, 2 = <40%, 3 = 40-79%, 4 = >80%)	3.5	.84
2	% with Free Lunch	Percentage of Students in the School with Free/Reduced Lunch	73.88	15.90
3	% Students with Disabilities	Percentage of Students in the School With a Disability	17.44	15.40
4	% Minority Students	Percentage of Minority Students in the School	56.11	10.88
5	% Highly Qualified Teachers	Percentage of Highly Qualified Teachers in the School	85.48	22.67
6	% Highly Qualified SpEd Teachers	Percentage of Highly Qualified SpEd Teachers in the School	79.22	20.91

Table 3: Numerical District-Wide Counts of Relevant Predictors

NUMERICAL COUNTS OF RELEVANT STUDENT PREDICTORS	
District-Wide Counts	
Male Students with disabilities	463
Female Students with disabilities	188
Disability Category 1 (autism)	20
Disability Category 2 (Emotional Disturbance)	129
Disability Category 3 (Learning Disability)	324
Disability Category 4 (Intellectual Disability)	41
Disability Category 5 (Other Health Impaired)	137
OSEP Category 1	41
OSEP Category 2	25
OSEP Category 3	127
OSEP Category 4	458

Table 4: Summary of OSEP Category by Disability

OSEP CATEGORY COUNT BY DISABILITY (DISTRICT-WIDE)					
	Disability Category				
OSEP Category	1:Autism	2:Emotional Disturbance	3:Learning Disability	4:Intellectual Disability	5: Other Health Impaired
1 (separate setting)	1	28	3	2	7
2 (<40%)	1	8	8	6	2
3 (40-79%)	9	19	65	15	19
4 (>80%)	9	74	248	18	109

Table 5: Descriptive Statistics Summary

QUANTITATIVE SUMMARY		
Elementary School Data Summary		
Number of Elementary Schools		21
Number of Elementary Students		212
Number of Elementary OSEP Category 1		8
Number of Elementary OSEP Category 2		11
Number of Elementary OSEP Category 3		8
Number of Elementary OSEP Category 4		185
	Mean	**Standard Deviation**
Percentage of Elementary Students with Free/Reduced Lunch	76.2	14.5
Percentage of Elementary Students With a Disability	14.94	3.52
Percentage of Elementary Minority Students	58.1	11.7
Percentage of Highly Qualified Elementary Teachers	94.27	4.13
Percentage of Highly Qualified Elementary Sped Teachers	73.35	21.85
Middle School Data Summary		
Number of Middle Schools		6
Number of Middle School Students		305
Number of Middle School Students OSEP Category 1		29
Number of Middle School Students OSEP Category 2		3
Number of Middle School Students OSEP Category 3		79
Number of Middle School Students OSEP Category 4		194
	Mean	**Standard Deviation**
Percentage of Middle School Students with Free/Reduced Lunch	73.9	11.1
Percentage of Middle School Students With a Disability	26.65	27.07
Percentage of Middle School Minority Students	56.7	6.7
Percentage of Highly Qualified Middle School Teachers	79.02	29.2
Percentage of Highly Qualified Middle School SpEd Teachers	65.46	16.7

Table 5: Descriptive Statistics Summary (continued)

High School Data Summary		
Number of High Schools		3
Number of High School Students		134
Number of High School Students OSEP Category 1		4
Number of High School Students OSEP Category 2		11
Number of High School Students OSEP Category 3		40
Number of High School Students OSEP Category 4		79
	Mean	**Standard Deviation**
Percentage of High School Students with Free/Reduced Lunch	57.4	17.3
Percentage of High School Students With a Disability	19.79	16.27
Percentage of High School Minority Students	54.1	13.8
Percentage of Highly Qualified High School Teachers	86.26	17.72
Percentage of Highly Qualified High School SpEd Teachers	72.24	22.61

The reality of public school is that students are often educated in inclusive and resource settings with less than perfect supports. This study is a window into the state assessment results for students with disabilities in a typical urban school district, but the results are disaggregated by disability category and level of inclusiveness. Teachers were given neither special training nor additional resources as a part of this study. It is not anticipated that this study will provide conclusive answers to all of the questions surrounding inclusive education; however, it will inform the field and further our understanding of the effect of inclusive programming.

Analytical Strategy—Hierarchical Linear Regression

Since students were nested in schools, a hierarchical linear regression approach (Rabe-Hesketh & Skrondal, 2005; Raudenbush & Bryk, 2002) was used to examine the effects of student-level variables, including the level of inclusiveness *and* school-level variables on the performance of students with disabilities on state reading and mathematics assessments. By accounting for the nesting of students within schools, the hierarchical approach not only limits prediction biases, but also partitions variance components at different levels.

This strategy involves testing six consecutive models, fitted separately on mathematics and reading scores. In the first two steps, two different hierarchical *random intercept* models are fitted—the first one with no variables and the second one with only school-level factors.

$$Y_{ij} = \beta_{oj} + v_{ij} \quad (1a)$$

$$\beta_{oj} = \lambda_{oo} + U_{0j} \quad (1b)$$

$$Y_{ij} = \beta_{oj} + v_{ij} \quad (2a)$$

$$\beta_{oj} = \lambda_{oo} + \sum_{r=1}^{6}(\lambda_{0r} \text{ x } M_{rj}) + U_{0j} \quad (2b)$$

Where Y_{ij} = state reading/mathematics assessment achievement for student i in school j; β_{oj} = school-specific average likelihood of state reading/mathematics assessment achievement; λ_{oo} = across-school or grand average likelihood of state reading/mathematics assessment achievement; M_{rj} = r^{th} school-level predictor for school j, where r = 1, . . . , 6 (See Table 1); λ_{0r} = coefficient for the r^{th} school-level predictor, where n = 1, . . . , 6; U_{0j} = school-specific variation around $\lambda_{oo;}$ and v_{ij} = student-level variation. Model 1, also known as the *null* model, provides baseline measures for the variance in the dependent variable explained at different levels. Model 2, when contrasted to Model 1, helps determine the degree to which the school-level factors included in the study account for the variance at the school level.

The remaining steps in the analysis involved *random coefficient* (mixed) models, allowing both the intercept and the coefficient for the OSEP effect—a key focus—to vary randomly across schools. Model 3 begins with OSEP as the only specified variable. Models 4 through 6 constitute a stepwise process of including student-level fixed covariates, followed by the introduction of school-level fixed covariates and cross-level interactions of those covariates with the OSEP factor:

$$Y_{ij} = \beta_{oj} + \beta_{1j}OSEP_{ij} + v_{ij} \quad (3a)$$

$$\beta_{oj} = \lambda_{oo} + U_{0j} \quad (3b)$$

$$\beta_{1j} = \lambda_{10} + U_{1j} \quad (3c)$$

$$Y_{ij} = \beta_{oj} + \beta_{1j}OSEP_{ij} + \sum_{p=1}^{7} (\eta_p \text{ x } D_{pij}) + v_{ij} \quad (4a)$$
$$\beta_{oj} = \lambda_{oo} + U_{0j} \quad (4b)$$
$$\beta_{1j} = \lambda_{10} + U_{1j} \quad (4c)$$

$$Y_{ij} = \beta_{oj} + \beta_{1j}OSEP_{ij} + \sum_{p=1}^{7} (\eta_p \text{ x } D_{pij}) + \sum_{q=1}^{1} (\zeta_q \text{ x } S_{qij}) + v_{ij} \quad (5a)$$
$$\beta_{oj} = \lambda_{oo} + U_{0j} \quad (5b)$$
$$\beta_{1j} = \lambda_{10} + U_{1j} \quad (5c)$$

$$M_{ij} = \beta_{oj} + \beta_{1j}OSEP_{ij} + \sum_{p=1}^{7} (\eta_p \text{ x } D_{pij}) + \sum_{q=1}^{1} (\zeta_q \text{ x } S_{qij}) + v_{ij} \quad (6a)$$
$$\beta_{oj} = \lambda_{oo} + \sum_{r=1}^{6} (\lambda_{or} \text{ x } M_{rj}) + U_{0j} \quad (6b)$$
$$\beta_{1j} = \lambda_{10} + \sum_{s=1}^{6} (\lambda_{1s} \text{ x } M_{sj}) + U_{1j} \quad (6c)$$

where β_{1j} = random effect of OSEP level for student i in school j; D_{pij} = p^{th} demographic covariate for student i in school j, where p = 1, . . ., 9 (see Table 1); η_p = coefficient for p^{th} demographic covariate, where p = 1, . . ., 9; S_{qij} = q^{th} socioeconomic covariate for student i in school j, where q = 1 (see Table 1); ζ_q = coefficient for q^{th} socioeconomic covariate, where q = 1; λ_{10} = grand average or "main" OSEP effect; λ_{1s} = coefficient for the s^{th} school-level covariate, where s = 1, . . ., 6 (see Table 1); U_{1j} = school-specific variation around λ_{10}.

The basic objective in Model 3 is to obtain baseline estimates and significance tests for the OSEP main effect, as well as for the school-level variance around this effect. The main effect provides a reference point to track changes as the analysis includes covariates in the subsequent models. The estimate for the school-level variance around the main effect is important to identify the contribution of school-level factors to such variation.

Models 4 and 5 test the robustness of the OSEP effect to demographic and socioeconomic controls as well as potential changes in the fixed effects of demographic covariates from one model to the other. In Model 6, substituting equations (6b) and (6c) into (6a) produces the *full* regression equation involving the fixed effects of school-level covariates as well as the cross-level interactions of those covariates with the student-level OSEP factor. This model tests (a)

whether school-level factors account for the random variation around the main OSEP effect (to the extent that there is a meaningful degree of variation to account for), and most importantly, (b) whether the cross-level interactions are large and statistically significant, which would indicate that the overall inclusion effect is contingent upon various school characteristics.

CHAPTER 4

RESULTS

This study examined the reading and mathematics achievement of 651 students with disabilities under different placement conditions in a large urban school district, as measured by their performance on the state assessment. The outcome measure was the student's reading and mathematics achievement level on the state assessment on a 5 point scale (1=Academic Warning, 2 =Approaching Standards, 3=Meets Standards, 4=Exceeds Standards, 5=Exemplary.) The predictor variable was the student's access to general education curriculum as measured by Office of Special Education (OSEP) inclusiveness designations (1=education in a separate setting, 2=included in general education less than 40% of the school day, 3=included in general education 40-79% of the school day, and 4= included in general education for 80% or more of the school day). Control variables were selected to address the "best for whom" question posed by Zigmond (2003), including the individual variables of type of disability, race, gender, and socio-economic status. Finally, since the students in the data were nested within schools, hierarchical-linear analysis was employed to reduce potential biases due to correlated observations. Three research questions that guided the study are:

1. How does inclusiveness of placement affect the academic performance of students with disabilities?

2. Is the effect of placement on performance robust to type of disability, race, gender, and socio-economic status of the student?

3. How is the effect of placement on performance affected by the school variables of overall inclusiveness of building, proportion of highly qualified general education teachers, proportion of highly qualified special education teachers, proportion of students with disabilities, proportion of low SES students, and proportion of racial/ethnic minority students?

In a model presented by Raudenbush and Willms (1995) student achievement is affected by three factors: (a) student demographic variables, (b) school context, and (c) school policies and practices. School context is viewed as those factors outside of the control of the school such as percent of minority student enrollment or percent of students from poverty. School policies and practices are those factors within the control of the school such as percent of highly qualified teachers or OSEP school level of inclusion (Pituch, 1999). This study utilized six models to measure the effects of these variables and also analyzed interaction effects of student OSEP level of inclusion with other school-level variables of interest. Table 6 summarizes the results for reading and Table 7 summarizes the results for mathematics. The six models are described below with significant results noted.

Model 1 is the null model and provides an achievement coefficient for the average student with no other predictors. It addresses the question, "Are school-level variables strong enough to account for at least part of the variance?" The results indicate that much of the variance in the outcome is at the student level, as one would expect, but that schools *do* matter as the interclass correlation coefficients for reading and mathematics indicate. In addition to rejecting the null model of no between-school variations, Model 1 results indicate that 16% of the variance in reading is explained by schools (Table 6); in mathematics, 22% of the variance is explained by schools (Table 7). Although these percentages are small compared to the 84% and 78% of variance that is attributable to students in reading and mathematics, respectively, it is not trivial, as others have noted in this regard (Coleman et al., 1966; Borman & Dowling, 2010; Sørensen & Morgan, 2006). Variance at the student-level is more fully analyzed in Model 4.

Table 6: Reading Results

READING

	1		2		3		4		5		6	
	coefficient estimate	std. error	coefficient estimate	std. error	coefficient estimate	std. error	coefficient estimate	std. error	coefficient estimate	std. error	coefficient estimate	std. error
Student OSEP												
OSEP level of inclusion					**0.147***	0.067	**0.146***	0.068	**0.150***	0.073	**0.201***	0.089
Student-Level Predictors												
Race							-0.093	0.089	-0.078	0.089	-0.083	0.09
Gender							0.103	0.094	0.106	0.094	0.111	0.094
Disability Category 2 -Emotional Disturbance							-0.06	0.262	-0.032	0.263	-0.049	0.265
Disability Category 3-Learning Disability							0.096	0.251	0.117	0.252	0.072	0.254
Disability Category 4-Intelletual Disability							0.324	0.295	0.359	0.296	0.309	0.297
Disability Category 5-Other Health Impaired							0.128	0.26	0.148	0.261	0.108	0.264
Lunch							**-0.233***	0.111	**-0.218***	0.111	**-0.227***	0.112
School-Level Predictors												
OSEP Level of School			0.169	0.363					-0.058	0..379	-0.021	0.382
% Students with Disability in School			0.01	0.024					0.013	0.024	0.009	0.024
% Students with Free/Reduced Lunch in School			0.004	0.01					0.008	0.011	0.007	0.011
% Highly Qualified Teachers in School			0.016	0.023					0.013	0.023	0.01	0.024
% Highly Qualified Special Ed Teachers in School			0.101	0.094					0.091	0.096	0.074	0.096
% Minority Students in School			-0.024	0.015					-0.027	0.016	-0.022	0.016
Cross-Level Interactions												
OSEP x OSEP Level of School											0.112	0.249
OSEP x % Highly Qualified Teachers in School											0.015	0.021
OSEP x % Highly Qualified Special Ed Teachers in School											0.083	0.071
OSEP x % Students with Disability in School											0.014	0.022
OSEP x % Free/Reduced Lunch in School											0.011	0.01
OSEP x % Minority in School											-0.017	0.015
Intercept	**2.658****	0.099	**2.622****	0.094	**2..644****	0.098	**2.725****	0.269	**2.66****	0.27	**2.638****	0.271
Variances Components												
Level 2												
OSEP												
Intercept	0.212**		0.171**		0.205**		0.2**		0.182**		0.006**	
Total	0.212**		0.171**		0.205**		0.2**		0.182**		0.006**	
Level 1												
Individual	1.103**		1.105**		1.099**		1.089**		1..090**		0.183	
Intraclass Correlation Coefficient	0.161		0.134									
Log-Likelihood	-978.737		-990.13		-978.128		-979.739		-992.269		-1006.757	
Wald Chi-Square			10.4		4.81		17.99		25.46		30.35	
Likelihood Ratio Test Chi-Square	**45.88****		**27.02****		**45.13****		**44.93****		**28.36****		**28.22****	

** Significant at 0.01; * Significant at 0.05

N = 651

Table 7: Mathematics Results

MATHEMATICS

	1		2		3		4		5		6	
	coefficient estimate	std. error	coefficient estimate	std. error	coefficient estimate	std. error	coefficient estimate	std. error	coefficient estimate	std. error	coefficient estimate	std. error
Student OSEP												
OSEP level of inclusion					**0.205****	0.062	**0.204****	0.63	**0.187****	0.067	**0.242****	0.082
Student-Level Predictors												
Race							0.02	0.08	0.025	0.081	0.022	0.081
Gender							0.088	0.085	0.089	0.085	0.091	0.085
Disability Category 2-Emotional Disturbance							-0.333	0.24	-0.306	0.241	-0.287	0.242
Disability Category 3-Learning Disability							-0.207	0.229	-0.196	0.229	-0.192	0.231
Disability Category 4-Intellectual Disability							-0.281	0.273	-0.267	0.274	-0.264	0.274
Disability Category 5-Other Health Impaired							-0.221	0.237	-0.208	0.238	-0.201	0.239
Lunch							**-0.402***	0.102	**-0.400****	0.102	**-0.411****	0.102
School-Level Predictors												
OSEP Level of School			0.403	0.353					0.169	0.366	0.198	0.378
% Students with Disability in School			0.006	0.022					0	0.022	-0.002	0.023
% Students with Free/Reduced Lunch in School			0.012	0.01					0.017	0.01	0.014	0.011
% Highly Qualified Teachers in School			0.005	0.022					0.001	0.022	0.001	0.023
% Highly Qualified Special Ed Teachers in School			0.115	0.091					0.094	0.092	0.073	0.096
% Minority Students in School			**-0.030***	0.015					**-0.032***	0.015	**-0.027***	0.016
Cross-Level Interactions												
OSEP x OSEP Level of School											0.292	0.235
OSEP x % Highly Qualified Teachers in School											-0.009	0.019
OSEP x % Highly Qualified Special Ed Teachers in School											**0.135***	0.069
OSEP x % Students with Disability in School											-0.008	0.02
OSEP x % Free/Reduced Lunch in School											0.013	0.009
OSEP x % Minority in School											-0.014	0.013
Intercept	**2.536****	0.103	**2.457****	0.092	**2.510****	0.097	**2.99****	0.248	**2.900****	0.249	**2.84****	0.251
Variances Components												
Level 2												
OSEP												
Intercept	0.247**		0.169**		0.213**		0.211**		0.178**		0.002**	
Total	0.247***		0.169**		0.213**		0.211**		0.178**		0.002**	
Level 1												
Individual	0.885		0.888		0.876		0.852		0.855		0.845	
Intraclass Correlation Coefficient	0.218		0.159									
Log-Likelihood	-873.71		-884.285		-870.303		-867.257		-880.007		-892.791	
Wald Chi-Square			13.53		10.78		34.96		43.09		53..30	
Likelihood Ratio Test Chi-Square	**94.878****		**36.41****		**79.61****		**79.3****		**36.96****		**35.71****	

** Significant at 0.01; * Significant at 0.05

N = 624

Model 2 introduces school-level variables to determine whether those factors sufficiently account for the school level variation found in Model 1. School-level variables include: (a) school OSEP level of inclusion (i.e., average percent of time all students with disabilities in the school are included in general education classrooms), (b) percent of students with disabilities, (c) percent of students receiving free/reduced lunch, (d) percent of highly qualified teachers, (e) percent of highly qualified special education teachers, and (f) percent of minority student enrollment. Introduction of these factors reduces the school-level variance component in reading from .212 to .171. This 3% drop indicates that much of school level variance in reading remains unexplained by the specified school-level predictors. The same is true for mathematics − a modest drop of 6% (Table 7). In other words, schools play a role in the performance outcomes for students on the state assessment, but the selected individual school-level variables are not significant with the exception of the percent of minority student enrollment in the school for mathematics (-0.030, $p<0.05$).

A possible interpretation is that school-level variables are not significant on their own, but as a group they account for some of the variance seen. Schools are complex organizations; therefore, this study is limited in its ability to observe the sources of variation across schools, a possible area of interest for future studies. Naturally, student-level variables are expected to account for more variance. In schools, students of the same race and gender with the same disability label often have very different characteristics and will respond differently to instruction (Hallahan & Kauffman, 1977; Henley et al., 2002; Swanson, 2005).

Model 3 describes student performance with OSEP level of inclusion (i.e., the extent to which a student is included in the general education classroom) as the only predictor to account for students nested within schools and begins to answer the first research question as to how

inclusiveness affects student performance on state assessments. This analysis is unadjusted for any student-level or school-level predictors. This model displays the significance of OSEP level of inclusion is seen for the first time. In both reading and mathematics, the coefficients are significant at $p<0.01$. For each increase in a student's OSEP level of inclusion, 0.147 on the 1 to 5 scale described above is added to their score in reading; 0.205 is added in mathematics. With a constant (i.e., grand average) of 2.658 in reading and 2.536 in mathematics, the increase by OSEP level is a modest, though not trivial gain. Proficiency for NCLB purposes is attained at a score of 3.0 on the assessment and the average score of students with disabilities in Model 1 is slightly over 2.5 in reading and mathematics. Schools strive to find ways to nudge students towards proficiency and these findings suggest that an increase in OSEP level of inclusion may raise the average score to 2.805 in reading and 2.741 in mathematics in this study. In practice, a school teetering on the edge of making AYP might choose to focus on students who are close to proficiency levels and seek strategies that might boost them over the 3.0 level. A finding such as the OSEP level of inclusion effect is not inconsequential to school administrators and is consistent with the findings of other studies (Wang & Baker, 1985; Waldron & McClesky, 1985; Klingner et al., 1988). Advocates for inclusionary practices would likely explain the finding in Model 3 by comparing the general education classroom to a more restrictive setting in terms of the level of language and access to the curriculum that may be found in each setting. For example, Walker and Ovington (1998) argue that because a general education classroom typically consists of twenty or more students who can actively participate in a lesson, a student with a disability who is included in a general education classroom benefits from the discussion and interactions of all of the students with each other and the teacher. Students with disabilities are exposed to rich conversation and different ways of thinking. Compare this to the small

groups of students commonly found in separate settings where five or so students with varying levels of disabilities often participate in drill and practice activities. The findings of Model 3 seem to support inclusionary practices; however, as noted earlier, student-level factors account for the majority of the variance in performance on the state assessment and are included for analysis in the following models.

As outlined in Chapter 3, Models 4 through 6 predict the student OSEP level of inclusion effect while controlling for relevant student- and school-level covariates and as a block, answer research questions two and three. In Model 4, student-level variables are introduced while holding the disability categories constant. The student-level variables include individual OSEP level of inclusion, race, gender, disability category, and lunch status. The findings are similar for both reading and mathematics. First, the effect of OSEP level of inclusion remains strongly significant and nearly identical to Model 3 (0.146, $p<.01$ for reading, 0.204, $p<.01$ for mathematics) indicating that the effect of OSEP level of inclusion is robust and independent of student variables. Second, a significant negative effect on achievement emerged for students who qualify for free/reduced lunch, a proxy for low socio-economic status (-.233, $p<0.05$ for reading, -.402, $p<0.05$ for mathematics). Other student level variables were not significant. It is possible that race is highly correlated with SES and therefore does not independently appear as a significant variable. Disability categories did not produce a significant effect in the students who participated in this study. This finding is worthy of future longitudinal studies to investigate whether individual disability categories typically have a greater effect on student performance than is indicated by this one year snapshot. Gender did not produce significant effects even though 71% of the students with disabilities in the study are male. At the state level, 66% of students with disabilities were male during the year of the study, so the district level is in line

with state averages. It appears that being male raises the chances of receiving special education services, but not at a level that is considered significant in this study.

Model 5 includes both student- and school-level variables. The positive effects of OSEP level of inclusion remain significant, nearly unchanged in reading and dropping slightly in mathematics. The negative effects of low SES status remain significant without notable change. In mathematics, the significant negative effect of increased percentage of non-white students remains nearly unchanged from Model 2. No other student- or school-level predictors were significant. The positive effects of OSEP level of inclusion are notable at this point, first for the consistency of the significance across models, and second, for the lack of other significant variables. In other words, gender does not impact tests scores in a significant way, nor does race. Using the findings of this study to predict what may occur in other settings, OSEP level of inclusion has a highly significant positive effect, SES has a significant negative effect, and percent of minority student enrollment in a school has a significantly negative effect for mathematics.

Model 6 includes both student- and school-level variables and introduces six interaction effects: the student's OSEP level of inclusion multiplied by the following school level factors: (a) OSEP level of school, (b) percent of students with disabilities, (c) percent of students receiving free/reduced lunch, (d) percent of highly qualified teachers, (e) percent of highly qualified special education teachers, and (f) percent of minority student enrollment. This model was designed specifically to test whether the OSEP level of inclusion effect is contingent on school-level variables.

In mathematics, the interaction effect of student's OSEP level of inclusion and percent of highly qualified special education teachers had a significant positive effect (0.135. $p < 0.05$).

This suggests that the gains due to OSEP level of inclusion are even greater in schools with greater percentages of highly qualified special education teachers. In mathematics, it can be predicted that students will realize a 0.135 additional point increase to assessment scores for each unit increase in highly qualified special education teachers. It is notable that the interaction of the percent of highly qualified special education teachers and student's OSEP level of inclusion was significant. It suggests that the positive effect of OSEP level of inclusion is even more pronounced in schools with greater percentages of highly qualified special education teachers. In other words, the benefits of inclusion are further amplified in the context of more credentialed teachers; however, this appears to be the case only for mathematics, and not for reading. Mathematics learning may be more sensitive to teacher qualifications than is reading learning. The main OSEP level of inclusion effect remained strongly significant and increased its positive effect on student performance in both reading and mathematics. The negative effect of low SES status remained significant and nearly unchanged for both subjects, as did the negative effect of percent of minority student enrollment in school for mathematics.

In summary, OSEP level of inclusion is strongly significant in all models and appears independent of student and school-level variables. Other findings of interest were the significant negative effect of low SES status, the positive interaction effect in mathematics of OSEP level of inclusion and percent of highly qualified special education teachers, and the negative effect of percentage of minority student concentration in the school in mathematics. Chapter 5 reviews the research questions that drove this study and how the results of the study answer those questions.

CHAPTER 5

DISCUSSION

In 1968, Lloyd Dunn chastised public education and the field of special education for continuing to place students with mild intellectual disabilities in separate special education classrooms. Drawing on evidence available at the time that showed this practice was instructionally ineffective, racially biased, and psychologically and socially damaging, he argued that instead these children should be educated in general education classrooms with their peers. Over forty years have passed and the debate continues to this day despite the many studies that have addressed this issue. Research on the relative merit of inclusive versus special education placements on the academic performance of students with disabilities has been inconclusive (Zigmond, 2003), at best, producing mixed results for reading and mathematics for low, average, and high-achieving students with disabilities (Klingner et al., 1998). Moreover, the understanding of how inclusive services impact the academic performance of students with disabilities has been hampered by research problems such as vague descriptions of placement settings, small numbers of participants, outcome measures that are often impossible to compare, and lack of clarity on which placement options are best for students with particular types and levels of disability and associated instructional goals (Zigmond, 2003).

In light of these inconclusive findings and methodological problems, both the results and design of the present study are significant. In terms of results, this study demonstrates increased academic performance in reading and mathematics for students with the full range of mild to moderate disabilities when they are included in general education classrooms for greater portions of their school day. Other notable findings include the significant negative effect of poverty on the academic performance of students with disabilities, and in mathematics the positive

contribution of greater numbers of highly qualified special education teachers and the negative effect of higher concentrations of minority students.

In terms of design, the present study was able to overcome many of the methodological problems that have been noted, thanks largely to the fact that both the IDEA and NCLB require that students with disabilities participate in state assessments, which has created two distinct advantages for conducting research on the effects of placement on achievement. First, comparable, standardized outcome measures are available for all students based on the same standards. Even the modified assessment is based on the same standards. Second, publicly reported data are now available for school variables such as OSEP level of inclusion, percent of highly qualified teachers, and percentage of low SES and minority students in schools. In conjunction with student-level data available at the district level, researchers are now able to describe placement settings relative to level of inclusion, amass adequate numbers of student participants across the full range of types and levels of disability, and introduce individual control variables such as type of disability, race, gender, and socio-economic status to specify which placement options are best for students with particular demographic and disability characteristics. Additionally, statistical analyses such as hierarchical linear regression allow researchers to develop sophisticated models that account for students being nested within schools, which reduces potential biases due to correlated observations and test the effects of school-level variables like building inclusiveness, qualifications of general and special education teachers, proportions of students with disabilities, students from low-income families, and students of color. A study such as the present one was not possible just ten years ago.

Findings, Conclusions, and Recommendations

This section is organized in three sections: findings and conclusions (by research question), policy recommendations, and limitations and recommendations for future research.

Findings and Conclusions

Discussion of findings and conclusions in presented by research question, which include:

1. How does inclusiveness of placement affect the academic performance of students with disabilities? (Models 3, 4, 5, and 6)

2. Is the effect of placement on performance robust by type of disability, race, gender, and socio-economic status? (Models 4, 5, and 6)

3. How is the effect of placement on performance affected by the school variables of overall inclusiveness of building, proportion of highly qualified general education teachers, proportion of highly qualified special education teachers, proportion of students with disabilities, proportion of low SES students, and proportion of racial/ethnic minority students? (Models 5 and 6)

Effects of inclusiveness of placement on academic performance of students with disabilities. Clearly, inclusive placements had a highly significant, positive effect on student performance in this study. In every model, for both reading and mathematics, and for students in all five mild to moderate disability categories considered, individual students' scores on the state assessment improved as OSEP level of inclusion increased, that is, as they spent more time in general education classrooms. Although extant research is inconsistent and contradictory with regard to the academic benefits of inclusion, this finding supports research showing positive effects of inclusive placements on the academic performance of student with disabilities (Baker et al. 1994; Klingner et al., 1998; Rea et al., 2002; Saint-Laurent et al.1998) and contradicts research that does not show such effects (Carlberg & Kavale, 1980; Klingner et al., 1998; Zigmond & Baker, 1990).

With regard to learning disabilities in particular, the findings of the present study are consistent with research showing that including students so labeled in general education classrooms improves their academic performance in reading (Waldron & McLeskey, 1998; Klingner et al., 1998, Rea et al. 2002) and in mathematics (Saint-Laurent et al., 1998; Rea et al., 2002), as well as with research showing that these students performed as well or better in reading or mathematics when receiving instruction in inclusive settings rather than resource rooms (Affleck et al., 1988; Saint-Laurent et al., 1998). The findings of the present study also contradict those of studies indicating that students with learning disabilities (Carlberg & Kavale, 1980) and low-achieving students with learning disabilities (Klingner et al., 1998) perform better academically in resource rooms. Research on the academic performance of students with intellectual disabilities has been somewhat more consistent, with results indicating that indicate students make at least as much progress in inclusive settings as in more restrictive settings (Affleck et al., 1988; Carlberg & Kavale, 1980; Dunn, 1968). The present research indicates positive effects from more inclusive placements for these students as well; however, it bears repeating that scores of students who qualify for the alternate assessment (i.e., students with significant intellectual disabilities) were not included in this study. This means that the students with the intellectual disabilities label in the present study were mildly or moderately disabled and thus assessed on grade level standards.

These findings regarding the academic benefits of inclusive education are even more noteworthy because the present study was designed to overcome the identified weaknesses of prior research in this policy arena. The inconsistent findings of this prior research have been attributed to methodological problems within and across studies, such as the number and types of disability classifications considered and issues associated with non-comparable measures of

student performance (Zigmond, 2003). Specifically, some studies only considered the performance of students in one or two disability categories (e.g., Affleck et al., 1988; Klingner et al., 1998; Rea et al., 2002; Waldron & McCleskey, 1998), whereas others used non-standardized or curriculum-based measures of academic performance (Banerji & Dailey, 1995; Waldron & McCleskey, 1998). The present study corrected both of these problems by considering the effects of inclusive placements on the academic performance of students across the full range of mild to moderate disability categories—learning disabilities, emotional disturbances, intellectual disabilities, other health impairments, and autism—and by using standardized state assessments in reading and mathematics as the measure of student performance. In addition, some authors of this prior research were reluctant to attribute outcomes (positive, negative, or neutral) to instructional setting alone because of mitigating factors such as specialized training provided to staff or availability of resources that might not be feasible for typical schools (Affleck et al., 1988; Manset & Semmel, 1997; Saint-Laurent et al., 1998; Waldron & McLeskey, 1998; Wang & Baker, 1985). The present study controlled for this problem by drawing a large sample of students from a single district in which, as matters of district-level authority, professional development and resource availability are relatively comparable and, moreover, by accounting statistically for students being nested within schools.

Effect of placement on performance by type of disability, race, gender, and socio-economic status. The OSEP level of inclusion was robust, highly significant, and appeared independent of student-level variables in every model for both reading and mathematics. This finding was encouraging because of the level of significance and the consistency of the positive effect of inclusion across models for both academic subjects, unlike previous studies with inconclusive or mixed findings. The highly significant nature of this finding lends strong

support to the benefits of inclusion for students with the full range of mild to moderate disabilities of either gender and regardless of race. That being said, one cannot overstate the importance of considering each student with a disability as a unique individual and providing services based on the recommendations of teachers, parents, and others who know the student's strengths and weaknesses and will monitor and take ameliorative action to amend service decisions as needed. The IDEA has a strong preference for students with disabilities to be educated in the regular class along with their non-disabled peers and removed only when the special education services and supplemental supports cannot be provided adequately in that setting. This finding lends support for general and special educators to work toward the goal of inclusion and careful monitoring of student progress.

One of the purposes of this study was to address the "best for whom" question posed by Zigmond (2003). For that reason, the performance of students with disabilities on the state assessments was analyzed by both student-level predictors (OSEP level of inclusion, race, gender, disability category, and lunch status) and by school-level predictors (OSEP level of inclusion of the school, percent students with disability, percent students on free/reduced lunch, percent highly qualified teachers, percent highly qualified special education teachers, and percent minority students). Interaction effects between student OSEP level of inclusion and the six school-level variables were considered as well. While these variables obviously do not include every student- or school-level variable, this study attempted to shed light on the effect of OSEP level inclusion on students with different disabilities and characteristics who attended different schools within a single urban district.

The student-level effects for gender, race, and type of disability were not significant. The school-level effect for percent of students with a disability was not significant. The school-level

effect of percent of minority student enrollment was significant in mathematics, but not in reading. Interaction effects for student-level OSEP level of inclusion and school-level percent of students with disabilities and percent of minority student enrollment were also not significant. Looking more closely at the results suggests that the effects of minority concentration might be overshadowed by the highly significant negative effect of low SES status, more fully addressed below. Minority status and low SES often are correlated (Keogh, 2005; Thompson, 2002) and both can be a predictor of a negative effect on school performance. In the present study, the strongly significant positive effect of student OSEP level of inclusion was tempered by the significant negative effect of poverty, which overwhelmed the positive effects of OSEP level of inclusion nearly two-fold.

Effect of school variables on the effect of placement on performance. This study sought to determine whether selected school-level variables—overall inclusiveness of building, proportion of highly qualified general education teachers, proportion of highly qualified special education teachers, proportion of students with disabilities, proportion of low SES students, and proportion of racial/ethnic minority students –affected the effect of placement on the performance of students with disabilities on state assessments. First, the school OSEP level of inclusion was included as an indication of increased staff acceptance of students with disabilities and a more positive attitude toward inclusion, and to see if, in turn, higher OSEP levels of inclusion at the school level would result in improved student performance on the state assessments. Second, given the requirement under NCLB for all teachers to meet the requirement for highly qualified status and the fact that not all schools in the study district had met that requirement, one could speculate that there would be an increase in student performance as the proportion of highly qualified teacher general and/or special education teachers increased.

Finally, as Selden (1990) pointed out, schools with higher concentrations of students living in poverty, often perform more poorly on assessments.

Overall, the effects of school-level variables were not significant, with the exception of minority student concentration on mathematics achievement. The non-significance of school-level variables may indicate the need for a wider scope of information on the school. This study is limited in this regard. However, the finding of largely non-significant school-level variables supports that of Malmgrem et al. (2005) who also found a lack of predictive value in most school variables in their study of the performance of students with disabilities on state assessments. They expressed surprise over the lack of significance of school-level SES as a predictor once they controlled for other variables. However, in the present research the highly significant negative impact of low SES status at the student-level suggests that the effect of poverty at the individual student level outweighs the school-level effect of poverty. As Keogh (2005) argues, student performance within SES groups varies and some students of low SES status do perform well academically; therefore, it makes sense that the effect of SES is seen at the student level rather than school level. In addition, Pituch (1999) pointed out that the practices of individual schools may lessen or increase the effect of SES on student performance. In other words, for reasons such as a highly influential teacher or especially effective principal, a school adopts practices that are particularly effective for supporting mathematics or reading instruction beyond what might be expected based on other factors.

In mathematics, the importance of highly qualified special education teachers is supported by the significant interaction effect of student's OSEP level of inclusion and percent of highly qualified special education teachers in the school. General education teachers are often seen as the content knowledge experts while special education teachers typically have an array of

strategies to support learners who struggle. The present findings show that the support of highly qualified special education teachers makes a positive difference in the academic performance of students with disabilities, particularly in mathematics, although it is not clear why that is so.

Policy Recommendations

The present research produced four main findings. First, the student-level variable, OSEP level of inclusion, is highly significant as a predictor of increased academic performance of students with disabilities on state assessments in both reading and mathematics in every model. Therefore, as IEP teams develop instructional programming for students, every effort should be made to include students with disabilities in the regular classroom with access to the general education curriculum at a level appropriate to the student. The mandate for placing children in the least restrictive environment is grounded in law, but this study provides further pedagogical support for inclusive placements based on the academic gains realized in such instructional settings.

Second, the student-level variable of SES status also was highly significant as a predictor of academic performance; however, the effect was negative—lower SES status predicted lower academic performance in both reading and mathematics. The finding that an increase in students' level of inclusion improved their academic performance is encouraging in both a human and policy sense, but the negative effect of low SES was nearly twice that of the positive effect of inclusion. Clearly, the policy implications here are huge in an era of increasing poverty and income disparities (Hacker & Pierson, 2010). Limited resources and budget cuts in education make it more difficult for schools to intervene on behalf of increasing numbers of children living in poverty. Moreover, despite billions of dollars spent to close the educational gap for economically disadvantaged students since the 1965 passage of ESEA, a solution has not

yet emerged. Continued research must be funded to determine effective instructional practices for students living in poverty. Although this finding regarding the negative effects of poverty on the reading and mathematics performance of students with disabilities is very disheartening, it is mitigated somewhat by the finding that their overall academic performance in both subjects is improved by more inclusive placements. The negative effect of poverty for economically disadvantaged students with disabilities is at least somewhat offset by inclusive placements.

Third, the school-level predictor, percent minority student enrollment of school, had significant negative effect in mathematics. Thompson (2002) pointed out that some schools located in urban areas with low SES and high concentrations of racial/ethnic minority students do "prosper" (p. 278) with effective leaders and committed professionals. District and school administrators in low income districts must learn to address the unique needs of their communities, while teachers must implement effective instructional practices and monitor students' progress frequently to inform their instruction. Adequate funding for professional development and instructional materials is critical as is the need to implement evidence-based practices, a requirement of NCLB.

Fourth, the interaction of student OSEP level of inclusion and percent of highly qualified special education teachers had a significant positive effect in mathematics. This finding supports the provision of effective co-teaching practices in which a special educator and a general educator join forces in the same classroom to support students with disabilities. Building collaborative models of support can result in the ability to effectively serve students of varying abilities in general education classrooms (Walther-Thomas et al., 2005). This may be especially important for mathematics instruction where availability of such support in the form of highly

qualified special educators who can augment teachers' content knowledge with sound instructional strategies can be a powerful advantage for student success.

Limitations and Recommendations for Future Research

As a predictor variable, OSEP level of inclusion in the present study limited the ability to make absolute calculations of instructional time. Given that a typical school day is seven hours, a student in the most inclusive OSEP placement might be served in a more restrictive resource room setting for as much as 80 minutes per day. In this study, the nature or amount of instructional support students actually received in such settings was unknown. Some students could have received instruction in reading and/or mathematics, or in neither subject, as it is possible that pull-out time was used for related services such as speech therapy, occupational or physical therapy, or behavioral or organizational skills.

The study is limited in three other ways. First, the findings presented are a snapshot in time; more specifically the achievement of students with disabilities in one district on the 2009 state assessment. Whether the results are an anomaly or a trend is impossible to determine and highlights the importance of looking at longitudinal data to inform the field. Second, the data could be further disaggregated by level (elementary, middle, high) for each subject area. One might find varying effects for reading and for mathematics at each level, which would not be surprising given the differences in the structure of elementary schools where students generally are assigned to a single teacher all day compared to middle and high schools where students typically are assigned to multiple instructors across the school day. Finally, it could be argued that the students who are most capable of performing well academically are included at a higher level and therefore, the results of this study are simply a reflection of the least impaired students performing better on the assessment. However, considering the highly significant positive

effects of the student OSEP level of inclusion, one could argue conversely that the students served in more restrictive settings might demonstrate increased performance if they were included more in general education. As Gersten et al. (1997) pointed out, instructional practices are embraced by general education teachers when they see benefits for all students in the class and disregard those practices that are "designed exclusively to meet the needs of a particular student (p. 469)." The progress of students with disabilities by nature proceeds at a slower rate than their non-disabled peers and their inclusion in a regular classroom requires teachers to differentiate their instruction rather than teach in just one way. It is more work and requires training and support that may not always be available. It is possible that students are being pulled from the general education classroom at times unnecessarily, but the available data are not sufficient to determine why students are included in the classroom at a particular level or the reason they are pulled out for instruction.

The study is limited by additional factors such as unknown costs of implementing more inclusive programs as opposed to more restrictive programs in this district, as well as the fact that the study was conducted in only one district. With the availability of state assessment data so readily available since the requirements of IDEA 1997 and NCLB 2001, replication of this study is quite manageable and will help further the information available on the effect of placement on student performance. Additionally, one of the requirements of NCLB is the use of evidence-based instruction. The curricular materials used in this district are unknown and it would be useful to determine the effect, if any, of different curricular tools utilized with students with disabilities.

The findings of this study suggest future research in three main areas: (a) research on overcoming the negative effects of low SES for students with disabilities, (b) investigating the

implications suggested by the positive interaction effect of highly qualified special education teachers and student OSEP level of inclusion in mathematics, and (c) continued investigation of the positive effects of student OSEP level of inclusion by disability category and grade level.

The NCLB and 1997 and 2004 IDEA mandates that required the participation of students with disabilities in state assessments have provided the field with a rich source of data and a more consistent outcome measure of academic achievement. Other outcomes, such as increased self-esteem and/or social skills are other desirable ends of inclusion and should be pursued and investigated. However, improved academic performance must continue to be the primary goal of public education for the vast majority of students with disabilities and is at the heart of standards-based reform.

Given the findings of this study in the context of NCLB requirements for highly qualified teachers and the IDEA principle of least restrictive environment, further research is required with regard to the effect of highly qualified special education teachers and inclusive settings for students with disabilities in mathematics. Students with disabilities in inclusive setting can receive special education supports from paraprofessionals, special education teachers, or a combination of the two. Future research can tell us which support models are most effective.

Although this study strongly supports inclusive practices for students with disabilities, it is difficult to imagine a scenario in which one could simply assume that increased inclusion levels are good for every student. The findings of this study should not be interpreted as advocacy of full inclusion across the board because of the unique differences among children and settings. More research should be conducted that further disaggregates the results of state assessment tests by disability category and by grade level of the student. Research questions yet to be answered include the effects of inclusive practices for students with disabilities at

elementary, middle, and high school levels, the differences in reading and mathematics performance across these levels, and differences between higher- and lower-achieving students in both subjects and all three levels.

This study began as an endeavor to further inform the field with regard to the effects of inclusion in light of a half-century of inconsistent and conflicting studies. Its findings shed some light on inclusionary practices, yet many questions remain that only continued research can answer. The study examined the results of performance for reading and mathematics on state assessments for 651 students. Each of those students is a human being with a unique set of skills and challenges and the researcher's fervent hope is that each one had an IEP team dedicated to determining which services and placement would serve them most effectively.

REFERENCES

Aaronson, D., Barrow, L., & Sander, W. (2007). Teachers and student achievement in the Chicago public high schools. *Journal of Labor Economics, 25,* 95-135.

Able Trust. (2009). *Facts about youth with disabilities.* Retrieved October 15, 2010 from http://www.abletrust.org/hsht/why/statistics.shtml.

Affleck, J. Q., Madge, S., Adams, A., & Lowenbraun, S. (1988). Integrated classroom versus resource model: Academic viability and effectiveness. *Exceptional Children, 54*(4), 339-348.

Anderson, L. W. (2005). The No Child Left Behind act and the legacy of federal aid to education. *Education Policy Analysis Archives.* Retrieved February 26, 2007 from http://epaa.asu.edu/epaa/v13n24.

Aspen Institute. (2006). *Children with disabilities and LEP students: Their impact on the AYP determinations of schools*. Retrieved on September 4, 2010 from http://www.aspeninstitute.org/sites/default/files/content/docs/commission%20on%20no%20child%20left%20behind/LEP_and_Disabilities_Subgroup_report_finala.pdf.

Baker, E.T., Wang, M.C., & Walberg, H.J. (1994). The effects of inclusion on learning. *Educational Leadership, 52*(4), 33-35.

Banerji, M., & Dailey, R. A. (1995). A study of the effects of an inclusion model on students with specific learning disabilities. *Journal of Learning Disabilities, 28*(8), 511-522.

Batsche, G., Elliott, J., Graden, J.L., Grimes, J., Kovaleski, J.F., Prasse, D., Reschly, D.J., Schrag, J., Tilly III, D.W. (2005). Response to Intervention: Policy Considerations and Implementation. Alexandria, VA, National Association of State Directors of Special Education, Inc.

Bateman, B. D. (1994). Who, how, and where: Special education's issues in perpetuity. In J. M. Kauffman & D. P. Hallahan (Eds.), *The illusion of full inclusion: A comprehensive critique of a current special education bandwagon*. Austin: PRO-ED.

Borman, G. & Dowling, M. (2010). Schools and inequality: A multilevel analysis of Coleman's equality of educational opportunity data. *Teachers College Record, (112)*5, 1201-1246.

Bureau of Labor Statistics. (2010). *Persons with a disability: Labor force characteristics summary.* Retrieved November 16, 2010 from http://www.bls.gov/news.release/disabl.nro.htm.

Burstein, N., Sears, S., & Wilcoxen, A. (2004). Moving toward inclusive practices. *Remedial and Special Education, 25*(2), 104-116.

Caldas, S. J., & III, C. B. (1997). Effect of school population socioeconomic status on individual academic achievement. *The Journal of Educational Research, 90*(5).

Carlberg, C., & Kavale, K. (1980). The efficacy of special versus regular class placement for exceptional children: A meta-analysis. *The Journal of Special Education, 14*(3), 295-309.

Carrington, S., & Robinson, R. (2004). A case study of inclusive school development: A journey of learning. *International Journal of Inclusive Education,* 8(2), 141-153.

Chudowsky, N., & Chudowsky, V. (2009). State Test Score Trends Through 2007-08. Washington, DC: Center on Education Policy.

Cole, C. (2006). Closing the achievement gap series: Part III. What is the impact of NCLB on the inclusion of students with disabilities? Bloomington: Center for Evaluation and Education Policy.

Coleman, J. S., Campbell, E., Hobson, C., McPatland, J., Mood, A., Weinfeld, F. D. (1966). Equality of educational opportunity. Washington, DC: Department of Health, Education, and Welfare.

Dunn, L. (1968). Special education for the mildly retarded-Is much of it justifiable? *Exceptional Children, 35*, 5-22.

Erwin, E. J., & Sookak, L. C. (1995). I never knew I could stand up to the system: Families' perspective on pursuing inclusive education. *JASH, 20*(2), 136-146.

Finn, C.E., Rotherham, A.J., & Hokanson, C.R. (Eds). (2001). *Rethinking special education for a new century.* Washington, DC: Thomas B. Fordham Foundation and Progressive Policy Institute.

Fisher, D., Pumpian, I., & Sax, C. (1998). High school students' attitudes about and recommendations for their peers with significant disabilities. *JASH, 23*(3), 272-282.

Gersten, R., Vaughn, S., Deshler, D., & Schiller, E. (1997). What we know about using research findings: Implications for improving special education practice. *Journal of Learning Disabilities, (30)*5, 466-476.

Hacker, J. S. & Pierson, P. (2010). Winner-take-all politics: How Washington made the rich richer and turned its back on the middle class. New York: Simon & Schuster.

Hallahan, D. P., & Kauffman, J. M. (1977). Categories, labels, behavioral characteristics: ED, LD, and EMR reconsidered. *Journal of Special Education, 11*, 139-149.

Hehir, T. (1994). *Improving the Individuals with Disabilities Education Act: IDEA reauthorization*. Unpublished manuscript. Washington, DC: United States Department of Education, Office of Special Education Programs.

Henley, M., Ramsey, R. S., & Algozzine, R. F. (2002). *Characteristics of and strategies for teaching students with mild disabilities*. Boston: Allyn and Bacon.

Jennings, J. F. (2000). Title 1: Its legislative history and its promise. *Phi Delta Kappan, 81*(7), 516-522.

Kauffman, J. M., & Hallahan, D. P. (Eds.). (2005). *The illusion of full inclusion: A comprehensive critique of a current special education bandwagon*. Austin: Pro-Ed.

Kavale, K., & Forness, S. R. (2000). History, rhetoric, and reality: Analysis of the inclusion debate. In J. M. Kaufmann & D. P. Hallahan (Eds.), *The illusion of full inclusion: A comprehensive critique of a current special education bandwagon*. Austin: Pro-Ed.

Keogh, B. K. (2005). Risk, School, and Society. In T. M. Skrtic, K. R. Harris & J. G. Shriner (Eds.), *Special education policy and practice: Accountability, instruction, and social challenges*. (pp. 509-525). Denver: Love Publishing Company.

Kleinhammer-Tramill, P. J., & Gallagher, K. S. (2002). The implications of Goals 2000 for inclusive education. In W. Sailor (Ed.), *Whole school success and inclusive education: Building partnerships for learning, achievement, and accountability*. New York: Teachers College Press.

Klingner, J. K., Vaughn, S., Hughes, M. T., Schumm, J. S., & Elbaum, B. (1998). Outcomes for students with and without learning disabilities in inclusive classrooms. *Learning Disabilities Research and Practice, 13*(3), 153-161.

Kober, N., Jennings, J., Rentner, D., Brand, B., & Cohen, G. (2001). Twenty-five years of educating children with disabilities: The good news and the work ahead. Washington, DC: American Youth Policy Forum and Center on Education Policy.

Malmgren, K. W., McLaughlin, M. J., & Nolet, V. (2005). Accounting for the performance of students with disabilities on statewide assessments. *The Journal of Special Education, 39*(2), 86-96.

Manset, G., & Semmel, M. I. (1997). Are inclusive programs for students with mild disabilities effective? A comparative review of model programs. *The Journal of Special Education, 31*(2), 155-180.

Martin, E. W., Martin, R., & Terman, D. L. (1996). The legislative and litagation history of special education. *Special Education for Students with Disabilities, 6*(1), 25-39.

McDonnell, L. M., McLaughlin, M. J., & Morison, P. (1997). *Reform for one and all: Standards-based reform and students with disabilities*. Washington, DC: National Academy of Sciences Press.

McDonnell, L. M. (2005). No child left behind and the federal role in education: Evolution or revolution? *Peabody Journal of Education, 80*(2), 19-38.

McLeskey, J. (2004). Classic articles in special education-articles that shaped the field, 1960-1996. *Exceptional Children, 25*(2), 79-87.

Meier, D., & Wood, G. (Eds.). (2004). *Many children left behind: How the No Child Left Behind act is damaging our children and our schools*. Boston Beacon Press.

Mock, D. R., & Kauffman, J. M. (2005). The delusion of full inclusion. In J. M. Kauffman & D. P. Hallahan (Eds.), *The illusion of full inclusion: A comprehensive critique of a current special education bandwagon*. Austin: Pro-Ed.

Peltier, G. L. (1997). The effect of inclusion on non-disabled children: A review of the research. *Contemporary Education, 68*(4), 234-238.

Pituch, K. A. (1999). Describing school effects with residual terms: Modeling the interaction between school practice and student background. *Evaluation Review, 23*(2), 190-211.

Rabe-Hesketh, S., & Skrondal, A. (2005). *Multilevel and longitudinal modeling using Stata*. College Station: Stata Press.

Raudenbush, S., & Willms, J. (1995). The estimation of school effects. *Journal of Education and Behavioral Statistics, 20*, 307-335.

Raudenbush, S. W., & Bryk, A. S. (2002). *Hierarchical linear models: Applications and data analysist methods*. Newbury Park, CA: Sage.

Rea, P. J., McLaughlin, V. L., & Walther-Thomas, C. (2002). Outcomes for students with learning disabilities in inclusive and pullout programs. *Exceptional Children, 68*(2), 203-222.

Riley, R. W. (1995). Reflections on Goals 2000. *Teachers College Record, 96*(3), 380-388.

Rivkin, S. G., Hanushek, E. A., & Kain, J. F. (2005). Teachers, schools and academic achievement. *Econometrica, 73*(2), 417-458.

Rockoff, J. E. (2004). The impact of individual teachers on student achievement: Evidence from panel data. *American Economic Review, 94*(2), 247-252.

Sailor, W. (2002). *Inclusion*. President's Commission on Excellence in Special Education, Research Agenda Task Force. Nashville. Testimony presented on April 18, 2002. Retrieved on August 17, 2010 from http://www.beachcenter.org/Books%5CFullPublications%5CPDF%5CPresidentReport.ppd.

Saint-Laurent, L., Dionne, J., Giasson, J., Royer, E., Simard, C., & Peirard, B. (1998). Academic achievement effects of an in-class service model on students with and without disabilities. *Exceptional Children, 64*(2), 239-253.

Schwartz, R., & Robinson, M. (2000). Goals 2000 and the standards movement. In D. Ravitch (Ed.), *Brookings Papers on Educational Policy: 2000* (pp. 173-214). Washington, DC: Brookings Institution.

Selden, R. (1990). Should test results be adjusted for socioeconomic status? *The School Administrator, 47*(5), 14-18.

Sindelar, P. T., & Deno, S. L. (1978). The effectiveness of resource programming. *The Journal of Special Education, 12*(1), 17-28.

Sindelar, P. T., Shearer, D. K., Yendol-Hoppey, D., & Liebert, T. W. (2006). The sustainability of inclusive school reform. *Exceptional Children, 72*(3), 317-331.

Singer, J. D. (1988). Should special education merge with regular education? In J. M. Kauffman & D. P. Hallahan (Eds.), *The illusion of full inclusion: A comprehensive critique of a current special education bandwagon.* Austin: Pro-Ed.

Skrtic, T.M. (1995). *Disability and democracy: Reconstructing (special) education for postmodernity*. New York: Teachers College Press.

Skrtic, T. M., Harris, K. R., & Shriner, J. G. (Eds.). (2005). *Special education policy and practice: Accountability, instruction, and social challenges*. Denver: Love Publishing Company.

Skrtic, T. M., & Kent, J. R. (in press). Rights, needs, and capabilities: Institutional and political barriers to justice for disabled people. In A. Kanter & B. Ferri (Eds.), *Righting educational wrongs: Disability studies in law and education*: Syracuse University Press.

Sørensen, A. B., & Morgan, S. L. (2006). School effects: Theoretical and methodological issues. In M. T. Hallinan (Ed.), *Handbook of the sociology of education*. New York: Kluwer Academic/Plenum Publishers.

Swanson, H. L. (2005). Searching for the best model for instructing students with learning disabilities. In T. M. Skrtic, K. R. Harris & J. G. Shriner (Eds.), *Special education policy and practice: Accountability, instruction, and social challenges*. (pp.348-369). Denver: Love Publishing Company.

Taylor, S. J. (1988). Caught in the continuum: A critical analysis of the principle of the least restrictive environment. In D. L. Ryndak & D. Risher (Eds.), *The foundations of inclusive education: A compendium of articles on effective strategies to achieve inclusive education*. Baltimore: TASH.

Thompson, F. T. (2002). Student achievement: Selected environmental characteristics, and neighborhood type. *The Urban Review, 34*(3), 277-292.

Thurlow, M. (2000). Standards-based reform and students with disabilities: Reflections on a decade of change. In T. M. Skrtic, K. R. Harris & J. G. Shriner (Eds.), *Special education policy and practice: Accountability, instruction, and social challenges*. (pp.59-82). Denver: Love.

Thurlow, M. (2002). Positive educational results for all students: The promise of standards-based reforms. *Remedial and special Education, 23*(4), 195-202.

Turnbull, H. R. (1993). *Free appropriate public education: The law and children with disabilities*. Denver: Love Publishing.

Turnbull, H. R., Stowe, M. J., & Huerta, N. E. (2007). *Free appropriate public education: The law and children with disabilities*. Denver: Love Publishing.

U.S. Department of Education, Office of Elementary and Secondary Education. (2002). *No Child Left Behind: A desktop reference*. Washington, DC.

Waldron, N. L., & McLeskey, J. (1998). The effects of an inclusive school program on students with mild and severe disabilities. *Exceptional Children, 64*(3), 395-405.

Walker, K. E., & Ovington, J. A. (1998). Inclusion and its effects on students. Retrieved November 28, 2007, from www.ed.wright.edu~prenickJournalArchivesWinter_1999inclusion.html.

Walther-Thomas, C., Korinek, L.& McLaughlin, V.L. (2005). Collaboration to support students' success. In T. M. Skrtic, K. R. Harris & J. G. Shriner (Eds.), *Special education policy and practice: Accountability, instruction, and social challenges*. (pp. 182-210). Denver: Love Publishing Company.

Wang, M. C., & Baker, E. T. (1985). Mainstreaming programs: Design features and effects. *The Journal of Special Education, 19*(4), 503-521.

Wang, M.C., & Walberg, H.J. (1988). Four fallacies of segregation. *Exceptional Children. 55*(2), p. 128-137.

Will, M. C. (1985, December). *Educating children with learning problems: A shared responsibility*. Paper presented at the Wingspread Conference on the Education of Special Needs Students: Research Findings and Implications for Policy and Practice, Racine, WI.

Will, M. C. (1986). Educating children with learning problems: A shared responsibility. *Exceptional Children, 52*(5), 411-416.

Zigmond, N. & Baker, J.M. (1990). Mainstreaming experiences for learning disabled students (Project MELD): Preliminary report. *Exceptional Children, 57*, 176-185.

Zigmond, N. (2003). Where should students with disabilities receive special education services? *The Journal of Special Education, 37*(3), 193-199.

Zigmond, N., Kloo, A., & Volonino, V. (2009). What, where, and how? Special education in the climate of full inclusion. *Exceptionality*, *17*, 189-204.