The Influence of Inclusion on Language Arts Literacy and Math Achievement on Non-disabled Middle School Students

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THE INFLUENCE OF INCLUSION ON LANGUAGE ARTS LITERACY AND MATH ACHIEVEMENT OF NON-DISABLED MIDDLE SCHOOL STUDENTS

BY

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Submitted in Partial Fulfillment
Of the Requirements for the Degree of
DOCTOR OF EDUCATION
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2010
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DEDICATION

This dissertation is dedicated with much appreciation to my family. The value of an education and learning was fostered in me by my parents who supported my efforts to seek education and enriching experiences all my life. They taught me that no goal is unattainable and never to stop seeking more knowledge and understanding. I also want to dedicate this work to my husband, Mike, and my children, Adam and Morgan. You gave me the support and fortitude to continue my education and not to stop reaching for goals and new pathways. Together we have traveled this journey and your love, encouragement, and understanding have been a guiding light and sustained me through this process.
ACKNOWLEDGEMENTS

Many have been instrumental to the process of beginning and working on my research study. My mentor, Dr. Chuck Achilles, has been an inspiration all along. After completing my Ed.S. degree in Cohort I of the SHU/MUJC partnership, I decided to “keep going” and work toward my doctorate. My policy and research classes with Dr. Achilles were inspiring and invigorating. Dr. Achilles, you always encouraged us to think outside the box and to examine information critically. Our classes were filled with intriguing discussions and challenges to rethink old assumptions. Curiosity and analysis were at the core of our learning, and you were always available for just one more conversation and had an endless supply of articles at your fingertips at every moment. Those two classes made it clear that I had found a mentor, and you have guided me through this entire process. Dr. Connelly, you have been a support and guide to me since the Ed.S. program. As my professor for my administrative internship, you were a valuable resource and steady hand when it seemed like the tasks were more than could be managed in a day. Your calm and encouraging presence was just perfect. You have continued in that capacity through the dissertation process, and that has been so important to me. Laura Weitzman, what can I say? You were the one who started me on this path and have stuck with me through it all along. Your support, guidance and mentorship through the past fifteen years of my career have been very special. How very fortunate I am to have you as a friend and mentor. I also want to acknowledge Dr. Regina Peter, a colleague and a friend, who continually encouraged me and was available to help guide me whenever I needed. Your sense of humor and ability to keep it all in perspective has helped me through this process. In addition, my friends from Cohort 1 of the Ed.S.
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ABSTRACT

The researcher conducted a non-experimental study to investigate and analyze the influence of inclusion on the academic achievement of non-disabled students. The researcher analyzed the data using a longitudinal explanatory design. The data used were the NJ ASK Language Arts Literacy and Math scores from 6th and 7th grade students for two years.

The results of the data analysis revealed that inclusion did not have a negative influence on the academic achievement of the non-disabled students. In three of the eight statistical analyses, the influence of inclusion had no significant influence on the achievement of the non-disabled students. In the other five analyses, the non-disabled students performed better when in classes with inclusion as compared to when in classes without the inclusion of the special education students. In addition, the comparison of the proficiency categories revealed similar findings. Most of the comparisons showed that non-disabled students in classes with inclusion had similar percentages of proficiency as their non-disabled counterparts who were in classes without special education students. Only one comparison revealed a higher percentage of non-disabled students in the partially proficient range when in the classes with inclusion whereas in five out of the eight comparisons, the non-disabled students in classes with inclusion had higher percentages of advanced proficient scores than when in classes without inclusion.

The findings of this study provide support for the positive perceptions that many teachers have for the practice of inclusion as well as the theoretical basis for the practice of inclusion. However, teachers are concerned about the implementation of inclusion and administrative support for the practice. The findings of this study reveal that concerns
that inclusion of the special education student will negatively influence the achievement
of the non-disabled student are unfounded by empirical evidence and that more attention
should be paid to what other intervening variables may be influencing the achievement of
the students instead of the mere presence of students with disabilities in the mainstream
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CHAPTER 1

INTRODUCTION AND BACKGROUND

Introduction

Education is not specifically mentioned in the Constitution of the United States. Historically, the federal government influences educational policy, but federal funding of public education accounts for only about 7% of school budgets. (LaMorte, 2005, p.1) State governments have plenary power over public education and "...this power is carried out by constitutional and statutory provisions, executive acts, state board of education policies, and actions of chief state school officers." (LaMorte, p.2) The federal government, however, has a number of overarching mandates with which the individual states are expected to comply. Some of these are protections set forth under the Fourteenth Amendment such as civil rights, due process, and equal protection. Others are statutes such as Title IX of the Education Amendments of 1972, the Education for All Handicapped Children Act of 1975 renamed the Individuals with Disabilities Education Act of 1990 (IDEA) and reauthorized in 1997 and 2004, and the No Child Left Behind Act of 2001 (NCLB), PL 107-110, passed 1/8/02. In the area of special education, several laws have changed the manner in which public school professionals educate students with disabilities. The laws governing the placement and programming of special education students are designed to meet the needs of the special education students and provide learning opportunities for the disabled that are aligned as closely as possible with the curriculum taught to non-disabled students. New Jersey's administrative code, N.J.A.C. 6:14, sets forth the specifics for implementing special education services in the state in accordance with IDEA. One component of N.J.A.C. 6:14 is that the student with
disabilities must be educated in the least restrictive environment (LRE). This mandate is the legal impetus for the inclusion of disabled students in the mainstream classroom environment. The legal definition of LRE is that...

to the maximum extent appropriate, children with disabilities...are educated with children who are not disabled, and that 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 handicap is such that the education in regular classes with the use of supplementary aids and services cannot be achieved satisfactorily. (20 U.S.C. 1412 [5] [B]) (as cited in LaMorte, 2005)

Several guidelines have been established to determine when it is appropriate to include students in regular classes. DeMitchell and Kerns (1997) reviewed pertinent court cases that led to the establishment of a three-part inquiry to determine whether the student with disabilities should be educated in the regular classroom with supplementary aids and services. These inquiries are:

1. Will the child receive an educational benefit, both nonacademic and academic, from the regular education placement?

2. What is the child's overall educational experience in the mainstream environment, balancing the benefits of regular and special education?

3. What effect does the special education child's presence have on the regular classroom environment and the education that the other students are receiving?

For several decades now, much attention has been given to advancing the rights and needs of students with disabilities which for years had been largely ignored. Inclusion of students with disabilities into the regular, mainstream classes has become commonplace. In fact, in 1992, the National Association of State School Boards endorsed full inclusion. This movement is in keeping with the LRE mandate. While there has been much attention to the needs of the student with disabilities, however, there has been less...
attention to the third LRE question. That question addresses the effect the special education student or students have on the classroom environment and the other students. Little research could be found about the influence of the presence of the special education student and special education teacher on the academic achievement of the general education student.

Student achievement is a primary goal for our schools. With the passage of NCLB, New Jersey has set forth standards and state assessments to determine what is believed to be adequate proficiency in academic areas. The proficiency levels are categorized as advanced proficient, proficient, partially proficient. In fact, according to NCLB, by 2014, educators must have 100% of students in a school proficient on the language arts literacy (LAL) and math tests in order not to be at risk of being designated by the state education department as a failing school district. In light of the goal of student achievement as well as the increase in accountability for student test outcomes, educators need to consider the influence of the presence of the disabled student and special education teacher on the non-disabled students' achievement. To answer the third LRE question adequately, data and findings about the non-disabled students must also be considered. Without this component to the LRE decision, school personnel are in jeopardy of not complying with the original federal IDEA mandate.

Problem Statement

Student achievement is a primary goal for education. Special education laws mandate that the student with disabilities be educated in the LRE. Frequently, this means that the disabled student is in the general education classroom with supplementary aids, aides, and services. Since curricular and instructional modifications are often necessary for the
special education student to learn effectively, a special education teacher may also be in the classroom to support the instruction of the students with disabilities. Grading for the student may be the responsibility of either the general education or special education teacher, but both teachers are legally responsible to follow the modifications set forth in the individual education plan (IEP). New Jersey has determined specific programmatic guidelines for the continuum of special education services. When students with disabilities are in the general education environment with a special education teacher, this program is called an in-class resource program (ICRP) and is commonly referred to as in-class support (ICS). The student with disabilities has an IEP that describes needs and the specifics of the program that will be delivered in the classroom and what instructional modifications are to be adhered to for that student in the classroom that may differ from what is being done for the student without disabilities.

The question that needs attention and review is: How does the presence of the student with disabilities and the special education teacher (ICRP) influence the academic achievement of the non-disabled students?

Purpose

The researcher’s purpose for this study is to determine if and how the achievement of the general education student may be influenced when there are special education students and a special education teacher in the classroom.
Research Questions

1. What is the difference, if any, between the NJ ASK Language Arts Literacy test scores of general education 6th and 7th grade students when they are in classes with students with disabilities and a special education teacher (ICRP) and without any students who require ICRP?

2. What is the difference, if any, between the NJ ASK Math scores of general education 6th and 7th grade students when they are in classes with students with disabilities and a special education teacher (ICRP) and without any students who require ICRP?

3. What are the percentages of partially proficient, proficient, and advanced proficient scores of the non-disabled students when in classes with students who require ICRP as compared to when they are in classes without students who require ICRP?

Significance of the Study

Results of this study will be beneficial for school administrators learning more about the influence, if any, of the in-class resource program instructional model on the achievement of the non-disabled student. Previous research supports that students with disabilities benefit from the interaction and learning with non-disabled peers. At the secondary level, the benefit for the disabled student is not just academic but social, emotional, and behavioral. In part, this refers to the "psychological sense of community" (PSOC) which describes the need for all people to be part of a community. (Sarason, 1974) This is important at school as the overall functioning of the special education student influences other students' outcomes. Fewer disciplinary concerns are desirable as
fewer could lead to a safer, more secure, and friendlier environment which theoretically promotes and supports learning better than when disabled students are educated primarily in special classes. However, although considerations for the student with disabilities are paramount and have taken our teachers several decades of attention and work to arrive at a model whereby inclusion in the mainstream classes is the first consideration, we should carefully review and consider how this model of teaching influences the educational outcomes for the non-disabled student. In this study, the researcher will examine exactly that aspect of the inclusion initiative.

Learning more about the influence of the ICRP model of education will be important for school administrators. The school leader needs a clear vision that promotes student learning which encompasses the inclusion of all members of the school community as cited by Standard 1 of the Interstate School Leader Licensure Standards (ISLLC) (Green, 2005, p.213). The faculty’s vision for the school helps to shape the educational program and develop an implementation plan. The data from this study will help people in learning about the achievement of non-disabled students when they are in classes where there is ICRP and supports the vision for the school. Standard 2 of ISLLC is also significant for this study. This standard refers to the school leader developing programs conducive to student learning. This emphasizes the leader seeing that all students achieve and that there are many ways that students learn. The school leader may need to know more about how the ICRP delivery of services is influencing student achievement. In this study, the researcher aims to add information about ICRP for the school administrator. Collaboration with families and community members is an important component for successful schools. Standard 4 of ISLLC refers to this factor
and supports the involvement of families and stakeholders in school decision-making processes. In New Jersey, community members vote on public school budgets. Special education costs are a significant portion of annual costs, and knowledge about the influence of the special education programs will be useful for making funding decisions.

**Delimitations of the Study**

The programs provided to support disabled students in the general education classroom which are termed in-class resource programs (ICRPs) vary from district to district. For this study, standardized test results stored in the district files were obtained from heterogeneously grouped language arts literacy (LAL) and math classes when there were special education students and a special education teacher and supports in the classroom for the entire class periods five days a week. Information about the student identity is anonymous with the exception of whether or not the student is a special education student or a general education student. This researcher did not include data from classes where a paraprofessional may be providing support for the disabled students or from general education classes without a special education teacher that are not heterogeneously established but are grouped for a higher level instructional class.

The researcher conducted this study in a suburban middle school ranked “I” by the District Factor Group (DFG) system in New Jersey. In this study, the researcher did not review elementary or high school classes, nor include a review of middle schools in other DFG groups.

Teachers’ instructional practices vary, and the amount of collaborative teaching by the instructional pair of the general education teacher and the special education teacher can vary from pair to pair and from time to time during a school year. The
variable of differing instructional practices will not be considered in this study.

Teachers' schedules are determined by the school administrators, however, and whether or not teacher pairs have collaborative planning time is a structural consideration.

In examining the academic achievement of the general education student, only language arts literacy (LAL) and math skills will be studied by analyzing students' scores on the NJ ASK test. There will be no review of a student's performance in other academic areas.

**Limitations of the Study**

This study was conducted in a suburban middle school, DFG I, so the findings cannot be construed to apply to all grade levels or to all districts. This researcher reviewed data from a two year period, and there are no controls for the previous achievement levels of the students.

Since the data used are archived data from heterogeneously mixed classes, the results are not skewed by the achievement results of students in the classes established to be for high level students.

An in-class resource program whereby the special education teacher supports the student with disabilities in the mainstream class has certain parameters set by the New Jersey Administrative Code. They refer to the maximum number of special education students who can be receiving services in a mainstream class at any given time. This was the only prescriptive design when the researcher reviewed the influence of the program. Particular teaching styles or the experience levels of the teachers were not considered in this study. Hence any generalization of the findings of this study will need to be made cautiously.
Definition of Terms

**Academic achievement**: Results and proficiency levels as determined by NJ ASK test scores in the areas of language and math.

**District Factor Group (DFG)**: New Jersey ranking of school districts by socioeconomic status (SES). Schools are ranked from a low of “A” to a high of “J” by indicators such as income, occupation, and education. (See Appendix)

**General education teacher**: A teacher certified in the state of New Jersey to teach the subject and level that he/she is teaching.

**Heterogeneous class**: A class made up of students with varying achievement levels with no or little attention to other factors (e.g. race, gender, age, etc.).

**In-class resource program (ICRP)**: The special education program whereby a student with disabilities is educated in the general education classroom with support from a special education teacher and accommodations. The number of students receiving this program at the secondary level is limited to ten at one time per class.

**Inclusion**: An education model whereby students with disabilities are educated in the general education class with supplementary aids and other supports.

**Least Restrictive Environment**: A provision determined by IDEA and the New Jersey Administrative Code that requires schools to insure

...that 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 that special classes, separate schooling or other removal of children with disabilities from the regular education environment occurs only when the severity of the handicap is such that education in regular classes with the use of supplementary aids and services cannot be achieved satisfactorily. (P.L.: 94-142, Section 1412 [5] [B] as cited in Villa & Thousand, 1995, p.5)
Mainstream class: A class taught by a general education teacher.

Special education students: Students who have been found eligible for special education and related services under the criteria determined by the New Jersey Administrative Code.

Special education teacher: A teacher certified by the state of New Jersey to teach students classified as students with disabilities.

Summary

In current times, there seems to be a trend toward using standardized test results to measure effectiveness of teaching. In New Jersey, all students in grades three through eight take the NJ ASK test except when an Alternate Proficiency Assessment (APA) is indicated when the special education student is not exposed to the general education curriculum. Results of NJ ASK are divided into three categories: Advanced Proficient, Proficient, and Partially Proficient. Current mandates call for districts to have 100% of their students at least at the proficient level by 2014 or be at risk of being labeled a failing school district. This mandate, in addition to the special education laws requiring that students with disabilities be educated in the least restrictive environment (LRE) along with non-disabled peers when possible, suggests that further study be completed to investigate the influence of the inclusion of the special education student on the academic achievement of the non-disabled student. Chapter 2 includes a summary of previous research, theory, and literature on this topic. In Chapter 3, the researcher provides a description of the design and methods used in this study to investigate the research questions. Chapter 4 contains the basic analyses for the study, and in Chapter 5 the
researcher presents the findings of study along with conclusions, discussion, and implications for policy, practice, and for further research.

In order to help readers understand the conceptual context that the purpose and research questions for this study are related to, the next chapter includes a review of the history of special education laws and inclusion as well as a review of the research, theory, and literature on the influence of inclusion of special education students in classes with non-disabled students. The earlier research on both teacher and student perceptions is included, as well as a review of some earlier studies on the influence of inclusion on the academic performance of non-disabled students; however, few studies were found on the influence of inclusion on the academic performance of non-disabled students beyond elementary school years.
CHAPTER 2

REVIEW OF RESEARCH, THEORY, AND PRACTICE

Introduction

This chapter, in which the researcher has provided background on the research being conducted, is divided into sections. In the first section, the researcher reviews an overview of the history of inclusion in the United States. In the second section, the researcher explores literature, research, and theory about the teacher's perceptions and concerns about inclusionary practices. In the third section, the author reports on previous research findings on the influence inclusion may or may not have on student academic achievement of non-disabled students being taught in the same classroom as the special education students. In the final section, the researcher presents a theoretical framework for the study that is derived from the research.

Historical Review of Inclusion

The current law that guides the education services that teachers and other education personnel provide for students with disabilities is the Individuals with Disabilities Education Act (IDEA), or PL 94-192. This law, last reauthorized in 2004, mandated that children with disabilities will receive a free and appropriate public education in the least restrictive environment alongside their non-disabled peers (Perry & Kamann, 1994, as cited in Scirica, 2001). The IDEA was an outgrowth of The Elementary and Secondary Education Act (ESEA), PL89-10, that was signed into law in 1965. The ESEA established the basis for inclusive education.

In 1954, the U.S. Supreme Court decision in Brown vs. Board of Education of Topeka, determined that when a state provides education, the public schools must offer
an equal educational opportunity to all children (Villa & Thousand, 1995). This case became a foundation for advocacy groups who represented disabled children. With the passage of P.L. 89-10 in 1965, new efforts began to take shape to change education programming for children with disabilities. Title VI of ESEA created a Bureau for the Education of the Handicapped to provide grants to states for the expansion of programs for disabled students (Martin, 1968). However, programs and services for disabled students were still inadequate.

In 1972, a lawsuit was filed against the public schools in the District of Columbia, Mills vs. Board of Education, following the school board’s refusal to enroll or expel students based on their disability. The court decision was that school districts were constitutionally prohibited from not providing programs for disabled students based on inadequate resources. Children with disabilities were guaranteed equal access to public education and if the school leaders considered a transfer out of the regular education classroom, the students were entitled to full procedural protection with the right to be heard by legal counsel (U.S. Congress, 1973).

The legal steps toward inclusion of the disabled student not only in the public school but in the general education classroom have continued until the time of this review (2010). The IDEA mandates that children with disabilities be educated in the regular education classroom whenever appropriate (National Association of School Boards of Education, or NASBE, 1992). In New Jersey, N.J.A.C. 6A: Chapter 14, mandated that students with special needs receive their education in the least restrictive environment (LRE). The mainstream classroom would be the ideal LRE for students if indeed their education needs could be met effectively in that classroom environment.
In addition, the USA (2010) has the additional focus of one goal of No Child Left Behind (NCLB) which is that schools will have 100% of students proficient in academic skill areas by the year 2014. With this legal requirement which has been declared unconstitutional by the 6th Circuit US Court of Appeals, the issue in 2010 is not only on the placement of the disabled student in the LRE but the achievement of each student. As achievement of all students is monitored and the funding of public schools is influenced by proficiency levels, the concern of the influence of inclusion on achievement became a central issue in many education communities from 2002 forward.

Teacher Perceptions on Inclusion in the Classroom

Inclusion had become a trend in education settings by 2010, and there had been a surge in education research about the perceptions and behaviors of general education teachers about including special needs students in the mainstream classes for 15 or more years. Some research findings are available from prior years but as the education laws have changed, the occurrences of inclusion have grown as well as research about educator perceptions. This new research on inclusion is not limited to the United States. Reports by 2010 are from countries as far away as Australia and Ireland.

In 1996, Scruggs and Mastropieri reported on research on inclusion from 1958 to 1995. They found that although about two thirds of general education teachers supported the concept of inclusion, a smaller majority reported being actually willing to include students with disabilities in their classrooms. These findings pointed to what seemed to be a significant demarcation regarding this topic in that perceptions may reveal conceptual support of inclusion, but the implementation of the practice may be another issue. Much of what is reported here has more to do with the actual perceptions and
behaviors of general education teachers regarding the implementation of inclusion in their classrooms and the influence of that inclusion on regular or general education youth.

Bradfield, Brown, Kaplan, Rickert and Stannard (1973) reported on perceptions and concerns of general education teachers that the quality of the education programs would be lowered if special needs students were included in the regular classrooms. Charles and Malian (1980) reported that students who required accommodations in the regular classroom setting were not willingly accepted by general or regular education teachers. Gersten, Walker and Darch (1988) found that concerns about the fair division of teacher time were an issue and hence that teacher effectiveness would be affected negatively. At the International Special Education Congress, Bunch and Finnegan (2000) reported that earlier research indicated that teachers had negative perceptions of inclusion and teaching students with special needs (as reported by Siegal & Jausovec, 1994).

In 1994, Vaughn studied 25 general education teachers and found negative perceptions regarding inclusion. These negatives were related to concerns regarding class size, inadequate resources, lack of teacher preparation for the task and worries about whether or not all students would benefit from inclusive classrooms. Smith (2000) reported a qualitative study of K-3 teachers who reported concerns similar to concerns reported by Vaughn (1994). The specific concerns in this study were with class load, classroom support, collaborative planning time, implementation of the practice, training, and whether or not there would be continual reassessment of the practice and design.

D'Alonzo (1997) reported on a New Mexico study by researchers who questioned the dual system of regular and special education. More than half of the respondents reported that they did not believe that inclusion would result in the elimination of labeling
of students with disabilities. More than half of the respondents reported concerns regarding socialization for all of the students and that this would result in self-esteem problems for the students with disabilities. These results were different in other studies where socialization was seen as a positive element of inclusion (Avissar, 2000). Further, results reported by D’Alonzo (1997) were that 85% of teachers reported concerns about teacher stress, and 82% had concerns regarding classroom management.

In the Smith (2000) study, 75 K-3 teachers were surveyed and 47 responded (a 62.7% response rate). Teachers reported that they had been teaching in inclusive classrooms: 34 reported that they were effective (72.3%) and 13 reported that they felt unsuccessful (27.7%). Survey results revealed that like many other research findings, many teachers did share the belief in the fundamental value of inclusion. Teachers reported that a positive sense of classroom community was usually created and that the special needs students benefited in the supportive context of the regular classroom. This benefit is what was termed by Sarason in 1974 as a psychological sense of community (PSOC). Although they had conceptual support for inclusion, however they did report implementation concerns. Issues regarding administrative support in areas such as class size, classroom support, training, and planning and collaboration time were major related concerns and influenced their positive perceptions towards inclusion. These concerns were important, and also they were likened to concerns raised when researchers studied teacher stress and burn out.

Taylor et al. (1997) have conducted several studies on the topic of teacher perceptions about inclusion. Taylor, Richards, Goldstein and Schilit found that both regular and special education teachers had positive perceptions of inclusion and the
regular education initiative (REI), but their perceptions were negative about implementation. The most negative responses were from the most experienced teachers. In a later study, Taylor (2003) analyzed the reported perceptions of experienced versus inexperienced teachers. Both groups responded that inclusion was appropriate but there was no consensus about how much or for what subjects, i.e. academic versus non-academic subjects. The findings revealed that general education teachers overall were not as positive about inclusion as special education teachers were.

Research on teacher perceptions about inclusion seems to be consistent in many of these areas even in other countries. Subban reported on a study in Australia that included 122 teachers. Results revealed that teachers were accepting and positive about inclusion but concerned about implementation. Variables such as teacher’s gender, age, level of qualification in special education, and the severity of the student’s disability were revealed to be possible factors in shaping the teachers’ perceptions toward inclusion. Participants who had some training in special education were more positive and had fewer concerns about implementation than did teachers with less preparation. Knowledge and understanding about the law seemed to lead to an increase in teachers’ positive perceptions of inclusion.

Avradianis reported on studies in England. Here also it was found that there was a general positive perception about the concept of inclusion. Unlike some other studies, one study indicated that the more experienced teachers had more positive perceptions than did the less experienced teachers. In Israel, similar results to those reported by Avradianis were reported by Avissar who surveyed 50 general education teachers. Perceptions were generally favorable for inclusion and previous experience was a
positive factor. Some difficulties such as knowledge of instructional practices, lack of professional support, class size, behavioral problems, and school climate were reported on in the study.

Winter presented a paper on studies conducted in Northern Ireland. The significance of teacher perceptions as predictors and determinants of teaching practices was revealed as important. The research results showed that teachers' willingness to include students with special needs in their classrooms was important, but the most important factor in shaping the perception of the teacher was pre-service preparation.

In Avradimis' study in England, the researcher reported that the study results showed that teachers had concerns about managing students with emotional and behavioral difficulties. They reported that they needed more support. Berryman (1989) and Horne and Riccardo (1988) reported that general education teachers had not developed an empathic understanding of disabling conditions. Hayes and Gunn (1988) and Barton (1992) found that teachers were not ready to accept students with special needs. The Center and Ward (1987) research showed that the teacher perceptions reflected a lack of confidence in their instructional skills and concerns about the unavailability of qualified support personnel to assist them.

Although somewhat different because the results do not specifically address the influence of the inclusion of the special education student, The State of Tennessee's Student/Teacher Achievement Ratio (STAR) experiment Technical Report (1985-1990) reports research results regarding the teacher perceptions about improved individualized instruction when class size is reduced or there is the presence of a full time aide. These findings may be considered to apply to this research because individualized instruction is
an important characteristic of classes that include special education students. Primary-grade teachers reported positive changes in the physical, social, and emotional atmosphere of the classroom and that learning was occurring in a more relaxed environment when there was a significant reduction in class size or there was a full-time aide in the classroom. Research results revealed that the students were more likely to have their individual learning needs met when in the smaller size classes or when there was a full-time aide.

Using case study and qualitative methodology, Brownell (2006) described concerns that influenced general education teachers' willingness to adopt new strategies. Brownell reported several teacher characteristics that included teacher knowledge of curriculum and pedagogy, teacher reported beliefs and knowledge about behavior management, teacher views on teaching styles and student-centered learning, teacher ability to reflect on student learning, and teacher knowledge of instructional adaptations. Van Hover (2003) reported findings similar to those found by Brownell from analysis of interviews of 12 teachers. Van Hover deduced themes which included teacher concerns about instructional approaches and how to make necessary adaptations for students with disabilities. There was evidence indicating strong concern regarding contextual support for the general education teachers. Some discussion was reported about the concern of lowering the curriculum standards for the rest of the students if instructional and curricular adaptations were made for students with disabilities.

Several studies revealed some concerns about the school administrator readiness for inclusion. This was a concern of the general education teachers because, as Shapiro pointed out in research, teachers who were not working in an inclusive program at the
time of the study reported that their schools lacked the necessary resources to ensure the success of an inclusive school program. Bunch (1992) reported that teachers responded that inclusion increased the demands on the regular education teacher and Waldron (1995) discussed concern that the workload was worrisome and overwhelming. Three predominant concerns were evident in the study reported by Bunch (2000). The reported concerns were the issues of professional adequacy, teacher overload, and fear of insufficient support. Some concerns were also raised about legal liability when the teachers were responsible for the education of the special needs students.

Weitzman (2000) studied the attitudes of special education directors towards inclusion. In a qualitative study, she found that 81% of the directors ranged from somewhat supportive to supportive of inclusion. Another finding in the Weitzman study was that directors with more experience had significantly more favorable attitudes towards inclusion than the directors with less experience. The findings did reveal that those directors that felt the most strongly about inclusion felt so based on a civil rights standpoint as opposed to simply an educational perspective. The results of the Weitzman study are included because the director's perceptions of inclusion may influence the amount and quality of administrative support that teachers receive.

**Implications of Inclusion on Classroom Instruction**

With the research findings regarding general education teacher perceptions about inclusion and the concerns that the researcher found in the studies, one can begin to consider seriously what directions need to be addressed in curricula for the students. Titone (2005) remarked that, "Inclusion is not something different, it's just adding to the philosophy that we already have and expanding it so that the range of students we deal
with is bigger” (p. 32). The suggestion seems to be that inclusion should be part of the planning of education leaders. Teaching models need not focus on the deficit model. Courses in curriculum, pedagogy, and diversity might be designed to teach educators to approach all students as intact, whole human beings. Differentiation of curriculum and assessment would be the norm. Collaboration between and among teachers would enhance curricula delivery. General education teachers need to expand their knowledge base on teaching techniques, and special education teachers would benefit from learning more content knowledge. In the Titone (2005) study, one teacher reported that:

It comes back to attitudes. Teachers have to believe they can teach in inclusive ways. It’s no different from good teaching really. The attitude is more the important thing. Once teachers learn that they are truly expected to teach every child in their class, I think they’ll begin to think about how inclusive teaching might be approached.

This would begin to address the concern of fear that was presented earlier. A teacher in one of Titone’s focus groups stated the following about teacher perceptions and how to get beyond the fear: “To fall in love with someone in special education, because once you’ve got the teacher’s heart then they (sic) can bring their skills to bear.” So long as teachers are saying or thinking “get that kid out of my room,” special educators cannot teach them the pedagogical strategies they need to be successful. Once teachers have the strategies and understand and feel secure about teaching the curriculum to their inclusive class, more teachers will say what one teacher in the Titone (2005) study said: “I can teach all children.”

The study reported by Berry (2006) revealed that teacher perceptions may influence teaching practices and their orientation to writing instruction. The teacher whom Berry described as an interventionist teacher would acknowledge that the
disability was a barrier to learning, but the student was still amenable to instruction in the
general education setting. Interaction with the students was academic in nature and
reflective of a coaching style.

VanHover (2003) interviewed 12 social studies teachers who volunteered to
participate in the study from a school district in North Central Florida who responded that
adaptations to instructional practices were needed for the students to make gains.
Although a small sample, the study was intended as initial exploratory research with
implications for further research. Findings of the study included that choosing
curriculum materials, planning instructional activities, and creating assessment
opportunities are all ways to adapt the curriculum for the benefit and success of all
students. The King (2003) paper about studies at the Research Institute on Secondary
Education for Youth with Disabilities (RISER) at the University of Wisconsin-Madison
included programs at four different schools. The general education teachers who were
committed to and successful with sustaining inclusion efforts were making instructional
accommodations while continuing to maintain the curriculum demands and hold high
expectations for student achievement. One teacher remarked,

The positive effect (inclusion) has had on my teaching is that many times what is
helpful for special ed kids is helpful for regular ed kids and also helpful for me.
The clearer I can be, and the more I can bring the ideas into the realm of the
concrete, the better.

The implications of inclusion for curriculum are most clearly stated in the Titone (2005)
study when curriculum development was recommended as very important because it was
the map that guided the process.
Research on Academic Achievement of General Education Students in the Inclusive Classroom

As the movement for inclusion develops to address the needs of the student with disabilities and there are noted concerns from the teachers in the general education classrooms, there is a need for research to determine what influence inclusion of special needs students has on the achievement of non-disabled students. The body of research in this area is quite small and not particularly wide-ranging, by 2009.

Using a quasi-experimental design, Sharpe, York, and Knight (1994) studied the elementary level to examine the influence of inclusion on the academic achievement of non-disabled elementary school students in the same room. When comparing the achievement of the non-disabled students when in the inclusive class to that of the students in a class without special needs students, the authors revealed no significant differences in the academic performance in the skill areas of reading, language arts, or math between the two groups.

Cushing and Kennedy (1997) conducted a small study utilizing single-case tactics to examine the influence of peer support dyads of a non-disabled student and of a special needs student at the intermediate level on the performance of the non-disabled student. The non-disabled peer improved in academic engagement, assignment completion, and perceived classroom participation, and these improvements endured over time.

Staub and Peck (1995) found that the students without disabilities made significantly greater progress in reading and math skills than the non-disabled students who were not in classrooms with inclusion. Similarly, Saint Laurent, et al., (1998) found
that the reading and math achievement of the non-disabled third grade students they studied was better when the students were in the inclusion classrooms than when they were not in the inclusive classes, but the writing performance between the two groups showed no significant difference. Salend and Duhaney (1999) found that the achievement of general education students when in the inclusive classes was better to or equal to that of the students in the mainstream classes without special education students and services, but there was no statistical control for student ability at the beginning. The researchers found that the general education students developed a greater sense of tolerance and understanding when in the inclusive classrooms. In addition, Hunt (2000) found positive effects of inclusion on the achievement of the general education elementary students.

In another elementary school study, Huber, Rosenfeld, and Fiorello (2001) analyzed the effect on achievement of non-disabled students when disabled students were in the classroom. Results of the analysis of variance (ANOVA) revealed that inclusion may have contributed to different rates of achievement gains for general education students. The lower achieving students benefited from the inclusive practices whereas the higher achieving students lost ground.

In 2005, in a thesis presented to the faculty of the Graduate School of Education of Harvard University, Gruner researched the question of whether reading achievement differed for nondisabled students when they were educated in inclusive versus non-inclusive 3rd grade classrooms. In this study, Gruner controlled for several variables including background characteristics of the student as well as the effect of the years of experience of the classroom teacher. Gruner's findings revealed that the nondisabled
students educated in the inclusive classrooms essentially performed as well in reading as did those who were educated in non-inclusive classrooms. Similarly, in 2006, McCartney conducted a research study in an elementary school for a doctoral dissertation on the effects of inclusive school environments on the academic achievement of elementary general education students in a K-8 system in a rural/suburban area of New Jersey. The school was identified as a DE District Factor Grouping system. The null hypothesis in this study that inclusion has no impact on general education students' academic performance as assessed by standardized tests was retained.

Demeris, Childs, and Jordan (2007) conducted a study with data from third-grade students and controlled for the variables of class size and socio-economic status (SES). The central question for the researcher was whether the number of special needs students in the classroom had influenced the academic achievement of the students without special needs. Standardized reading, writing and math tests were used for assessing achievement. The findings supported the findings of many previous studies and revealed that the academic performance of the non-disabled student was not compromised by the presence of the special needs students in the classroom.

In reviewing the literature for research about the influence of inclusion on the academic achievement of the non-disabled student in grades beyond elementary school, there was little found. In 2000, Scharlman conducted research for a doctoral dissertation at Seton Hall University on the effect of in-class support on the mathematics performance of classified and non-classified high school students. The study was conducted in an I level DFG suburban high school in New Jersey. One finding was that non-disabled students were not adversely affected by having disabled students in their classes.
Although the grades of the non-classified students did not significantly increase during the time period studied, they did not significantly decrease either.

Several years later, in 2005, Brewton completed a doctoral dissertation at Seton Hall University on the effects of inclusion on mathematics achievement of general education students in middle school. As compared to Scharlman’s study which was in a suburban high school, Brewton’s study took place in two urban middle schools. The researcher examined data from one school year and used the Standard Proficiency Assessment (SPA) and Grade Eight Proficiency Assessment (GEPA) as the performance measures. Findings revealed that the math achievement scores of the non-disabled students were not affected by having disabled students in the classroom during math instruction. Other findings from this study revealed through qualitative methods were that students of teachers who had consistently high expectations for their students produced higher than expected academic growth. The research also revealed that the teachers had administrative support and shared planning time was built into the schedules of the general education and special education teachers. These findings give credibility to the research findings that administrative support is important for the successful implementation of inclusion.

Another research project involving the achievement of eighth-grade non-disabled students when included in classes with special education students and a special education teacher was conducted by Hartshorn in 2009, but this was in an “I” level DFG suburban middle school. The action research project examined the achievement of the non-disabled students and their perceptions of their satisfaction in their inclusive classroom. The research sample was small involving one class of 22 students, 15 of whom were non-
disabled. Survey results revealed that 60% of the students felt the class was “just right for me academically” (p. 57). Other survey results were that 93% of the non-disabled students responded that they always or most of the time enjoyed having two teachers in the class. Academic performance for this action research project was limited to an assessment of the student’s performance on a research project. The researcher found that the non-disabled students scored no lower than a B, and the average of the group of non-disabled students was 95. When compared to the other classes of the same teacher, achievement of the non-disabled students was quite similar where the average score on the same project was 93.1 for the non-disabled students. Similarly to the Brewton study, the teachers in the Hartshorn study had common planning time built into their schedules.

In addition to administratively scheduled common planning time, the recommendation for more administrative support and further teacher training has been suggested in a number of studies over years. In 1978, for a doctoral dissertation at the University of Tennessee, Fullerton conducted a research study and analyzed verbal and nonverbal behaviors of teachers toward educable mentally retarded students and non-disabled students in classroom settings. The findings included that general education teachers gave the mainstreamed special education students more than their proportionate share of communication cues and their non-verbal communication cues were extremely encouraging to both the general education and special education students. Conclusions from Fullerton’s research study included that general education teachers were inconsistent in their communication to the special education student in the general education classroom. She concluded that this may lead to problems in communication that may hinder learning and possibly heighten the frustration level of the special
education student. These findings led to recommendations for training of general education teachers to make their communication with special education students more positive and to assist them in coping with the instructional implications that they confront when special education students are included in the general education classrooms. In addition, Fullerton recommended pre-service training for teachers as well as inservice training for prospective teachers and administrators.

Theoretical Framework and Summary

With the Supreme Court decision in Brown vs. Board of Education in Topeka (1954) being over 50 years ago, the issue of public schools offering an equal education opportunity to all children continues to be one of unsettled conclusions. In 1965, the Elementary and Secondary Education Act (ESEA) established the basis for inclusive education and the beginning of regulations that would mandate procedures for offering equal educational opportunity to students with disabilities. As years progressed, the mandate developed to its current state which is that students with disabilities be educated in the general education classroom whenever appropriate. This mandate is predicated on the belief which is supported by research findings that the disabled student can benefit socially, emotionally and academically when exposed to the same curriculum and in the same class as their non-disabled peers.

While research and theory supported the inclusion of the special needs student in the mainstream classroom for the benefit of the special education student, there was little attention paid to how inclusion would influence the non-disabled students or affect the teachers (Daniel & King, 1997; Salend, 2001; Frieden, 2004). Over the course of the past 50 years, research findings have shown that most teachers support the concept of
inclusion but felt concern about how to instruct a class effectively when disabled students were included. Some reported concerns focused on if the quality of the education for the non-disabled student would be compromised (Bradfield, Brown, et al. 1973) as well as if the division of teacher time would diminish teacher effectiveness (Gersten, Walker, & Darch, 1988).

Subsequent to these reported concerns, research has begun to emerge to review these issues so that the implementation of the legal mandates for inclusion of the special education student into the general education classroom will not necessarily be in direct opposition to the other federal and state mandates for academic achievement standards created after the passage of NCLB (2001) (signed into law in 2002). As school administrators structure their schools to provide for inclusive classrooms, it will be wise for them to keep in mind several constructs that may enable a greater degree of success. Theoretical basis exists that supports positive and significant results when the curriculum is differentiated (Lloyd, 1999). Differentiated instructional classroom units with projects that are challenging for all with less reliance on rigid, textbook teaching is effectively accomplished with the pairing of a general education and special education teacher in the same class (Sapon-Shevin, 1995). In addition to the evidence supporting differentiation of curriculum, the findings of the STAR study reveal that small class size in the early elementary grades has an advantage over the larger classes in reading and math achievement (Finn and Achilles, 1989). Hence, a theoretical construct that supports small class sizes with differentiated instruction has empirical support for demonstrating positive results.
There is also an ethical perspective that may be considered as part of a theoretical framework on inclusion. Glanz (2008) posited that inclusion was a moral necessity. His analysis presents a nonconsequential ethical approach. After review of related research, Glanz concluded that inclusive practices in schools are a moral necessity and that commitment to the ideals of justice, equity, and excellence for all students must be affirmed and reaffirmed on a continual basis. Glanz’s theoretical model fits well with the finding in Weitzman’s study (2000) which revealed that special education directors who were most favorable and in support of inclusionary practices, felt so from an ethical, civil rights vantage point and not necessarily from an education standpoint.

Although the practice and research on inclusion are not new and the legal impetus to educate disabled students in the mainstream classroom (LRE) continues as well as the growing focus on standardized testing and accountability for proficiency on tests, research on the influence of inclusion on the academic achievement of the non-disabled student is still sparse. For more than a quarter of a century, recommendations for administrative support for inclusion have been cited in research findings, but the academic outcomes for the non-disabled students in the inclusion classrooms have not been well researched.

In Chapter 3 of this study, the researcher describes the design and methods for this study in which the researcher examines the influence of inclusion on the academic performance of the non-disabled students in a suburban middle school which includes administrative support for the teachers by providing common planning time and staff development opportunities for teachers who teach in inclusive classrooms, two factors prior studies have named as helping inclusion be important for all students.
In this chapter, the researcher identified the questions that guided the research, the design, and methods used for data collection and analyses. The purpose for this study was to determine how the achievement of the general education student may be influenced by inclusion.

The NJ ASK standardized-test scores are the measurement used to assess academic achievement in New Jersey in grades three through eight. This study was conducted using primarily archival data from one middle school. The research for this study was quantitative, is limited in scope, but these added research findings may be useful for education administrators in determining recommendations for policy, practice, and for further research. Prior to conducting the research, permission for the study was granted by the Superintendent of Schools. (See letter in Appendix.)

Research Design

The research design of this study was non-experimental (Johnson, 2001). According to Johnson, “...The clearest way to classify non-experimental research is based on the major or primary research objective” (p.8). Johnson also suggested that the design be classified along a time dimension. Using Johnson’s typology, this research is considered to be a longitudinal, explanatory study (Type 9). When determining whether the primary objective of a study was explanatory, Johnson suggested that the following questions need to have been considered: “...(a) Were the researchers trying to develop or test a theory about a phenomenon to explain “how” and “why” it operates? (b) Were the
researchers trying to explain how the phenomenon operates by identifying the causal factors that produce change in it?" (p.9) The time dimension of longitudinal is appropriate for this study because the data were collected at more than one point in time. The subtype was a trend study where independent samples were taken from a population over time and the same questions were asked. Specific students were not identified or studied in order to protect for anonymity of human subjects, and therefore the study was not a panel or prospective study where the same individuals were studied at successive points over time. This design model can also be referred to as ex post facto as the students have already completed the grades that were being studied (Kerlinger, 1968).

Methods

Quantitative methods were used to assess the data collected. The quantitative data used in the study are the NJ ASK standardized test scores in language arts literacy (LAL) and math for 6th and 7th graders. Test score data were gathered from archival records from the 2006-2007 and 2007-2008 school years.

The subjects for this study were general education students attending a grade 6-8 middle school. The NJ ASK standardized test scores in language arts literacy and math from the 2006-2007 and 2007-2008 school years for these students were retrieved from student records and analyzed.

The school is the sole middle school in a K-8 district in a suburban area of Somerset County, New Jersey. The district is designated by the State of New Jersey as an 'I' District Factor Group (DFG). In October 2008, the district had a total population of 2205 students. There are four elementary schools, grades K-5, and one middle school in the district. The elementary school populations ranged from 338 students to 410
students and the middle school total population was 716 students at the time of the study.

The percentage of special education students in the district was 16.5% as of October 2006, 14.8% as of October 2007, and 15% as of October 2008.

The central office administration consisted of a Superintendent of Schools, a Business Administrator, a Director of Student Personnel Services, a Curriculum Supervisor and two Technology Coordinators. Each elementary school had a principal, and the grades 6-8 middle school had a principal and a dean of students. The table below shows the information about the district’s number of general education teachers, special education teachers, and paraprofessionals over a three year period which encompasses the time of the study.

**Table 1: School District Staff Numbers 2006-2009**

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<th>General Education Teachers</th>
<th>Special Education Teachers</th>
<th>Paraprofessionals</th>
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<tr>
<td>2006-2007</td>
<td>171</td>
<td>38</td>
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<td>2007-2008</td>
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<td>2008-2009</td>
<td>171</td>
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During the 2006-2007 school year, the total grade 6 population was 240 students, and the population for grade 7 was 223 students. In the 2007-2008 school year, there were 245 students in grade 6, and 237 in grade 7. The students sampled were in mainstream, heterogeneous classrooms without special education students and a special education teacher, and in heterogeneous classrooms with special education students and a special education teacher (ICRP). The number of special education students in the classroom was limited to the maximum number mandated by the New Jersey
Administrative Code. The district practice recommended that class size not exceed 24 students total. The middle school offered special education programs ranging from a self-contained special education class with highly individualized and specialized instructional services to services with support for the disabled student in the mainstream classes.

**Instrumentation**

The NJ ASK language arts literacy (LAL) and math scores of general education students provided the quantitative data base for this study. These data were chosen as the measure for academic achievement because they are a standardized measure and therefore can be considered to have a high level of reliability. The New Jersey Department of Education (NJDOE) aligns the test with the New Jersey Core Content Standards (NJCCS), and these are the curriculum guidelines used by the teachers. The NJDOE's technical report provides the specific steps taken in creating and scoring questions on the test to address reliability. The annual reports provide tables based upon Cronbach's coefficient alpha measure of internal consistency (NJDOE, 2007, pp. 91-92) (NJDOE, 2008, p. 120). In 2007, the NJ ASK6 Language Arts Literacy section had an alpha of .82, and the alpha of the Math section was .87. On the NJ ASK7 in 2007, the alpha score for the Language Arts Literacy section was .83 and .87 for Math. The next year, 2008, the NJ ASK6 Language Arts Literacy alpha score was .89 and the alpha score for Math was .90. The NJ ASK7 Language Arts Literacy alpha score in 2008 was .89, and the Math alpha score was .91.

The validity of the instrumentation is considered to be strong. The data were collected ex post facto (after the fact) and were not influenced, controlled, or manipulated
by the researcher in any way. Testing procedures are clearly defined by the state, and all personnel must be trained to administer the test while strictly adhering to the guidelines. The general education students from each grade level take the tests without accommodations or modifications. Time allotment and instructions are proscribed by the testing instrument. Tests are scored by the New Jersey Department of Education (NJDOE), and test-score results are reported to the district.

**Internal and External Validity**

The design of this study is non-experimental and has no random assignment to groups. Because of this, the results of this study cannot provide evidence for causality of one variable upon the other. Historical validity concerns are present in this study as there are no controls for variables for the previous class placement or academic achievement of the students whose scores were in the samples. In addition, there was no control over what other confounding variables may have influenced the outcome, such as race, SES, or gender. However, we do know that at the time of the study, all the participants were residents of the same township and were currently all receiving their education in an “I” DFG level school district.

There may also be attrition validity issues. The only known information is that the students whose test scores were included in the data of this study were living in the township and attending the middle school at the time of the NJ ASK testing. For example, the 6th grade general education students whose scores were tabulated in the 2006-2007 school year may not be all the same students in the 2007-2008 school year. During the time of testing from one year to the next, some students may have moved away and others may have moved in. Or a general education student one year may have
become classified as Eligible for Special Education and Related Services and therefore not part of the sample the next year.

Although there are these validity concerns, by using only test scores from a standardized testing instrument, testing validity is strengthened. The same testing conditions were present for all students in the sample. Also, test scores were only used from classes considered to be heterogeneous by the district. The Math classes designated as High level classes were not included in the sample population in order to not skew the results of the study in any way.

External validity concerns are also present in the study. The sample sizes are relatively small in some of the groups creating population validity concerns. Ecological validity issues are created by the setting, and therefore the ability to generalize the results of this study beyond this school is limited. However, as we know the school for this study is an “I” DFG community, the results of this study may be worthy of attention to personnel in other districts in this category or other communities outside of New Jersey with similar SES characteristics to those of an “I” classification within New Jersey.

Data Collection

The standardized test data collected were used to assess the academic achievement of general education students in language arts literacy (LAL) and math when they were taught in mainstream classes with inclusion as compared to classes without inclusion. These data were collected to answer research questions 1, 2 & 3 which are:

1. What is the difference, if any, between the NJ ASK Language Arts Literacy test scores of general education 6th and 7th grade students when they are in classes
with students with disabilities and a special education teacher (ICRP) and without ICRP?

2. What is the difference if any between the NJ ASK Math scores of general education 6th and 7th grade students when they are in classes with students with disabilities and a special education teacher (ICRP) and without ICRP?

3. What are the percentages of partially proficient, proficient and advanced proficient scores of the non-disabled students when in classes with students who require ICRP as compared to when they are in classes without students who require ICRP?

The mainstream classes were heterogeneous classes and not classes designated by the school as high level classes. The data were retrieved from archival records with no personal student information included. The identities of the students or any identifying information about the students were not known to this researcher who was a School Social Worker in the district at the time of the study.

Data Analysis

The researcher examined the standardized test score data collected. By comparing the test-score data from students from the classes with inclusion with test-score data from students in the classes without inclusion, the researcher sought to determine if inclusion had any appreciable influence on the academic achievement of the general education students. The data were collected and analyses were completed using Statistics Package for the Social Sciences (SPSS). To compare the means of the two groups of students, the data were analyzed using independent, two-tailed t-tests for research questions one and two, and an eyeball comparison of proportions for research
question three. To ascertain if the mean difference of the two groups was statistically significant a significance level of $\leq .05$ was established. In addition to these analyses, research questions one and two were analyzed for effect size using Cohen's $d$ to determine if the results were practically significant (Witte & Witte, 2007, p. 299).

For research question one, the null hypothesis is:

$H_{01}$: There is no difference between the performance on the NJ ASK LAL test between 6$^{th}$ and 7$^{th}$ grade general education students in classes with students with disabilities and a special education teacher (ICRP) and 6$^{th}$ and 7$^{th}$ grade general education students in classes without ICRP.

For research question two, the null hypothesis is:

$H_{02}$: There is no difference between the performance on the NJ ASK Math test between 6$^{th}$ and 7$^{th}$ grade general education students in classes with students with disabilities and a special education teacher (ICRP) and 6$^{th}$ and 7$^{th}$ grade general education students in classes without ICRP.

For the third research question, a comparison of the percentages of the partially proficient, proficient, and advanced proficient scores was made by eyeballing the proportions on a bar chart.

The rejection of the null hypotheses would mean that there are statistically significant differences in the standardized test scores in LAL or Math for middle school general education students when they are in classes with inclusion as compared to being educated in classes with inclusion.
In this chapter the researcher presented the design and methods used to conduct the study of students in, and out of classes with ICRP for students with disabilities.

Chapter 4 will include the data obtained and the analyses of those data.
CHAPTER 4

RESULTS OF DATA ANALYSIS

In this chapter, the researcher presents the results of the statistical analyses used to address the research questions in this study. The first section provides information about the school district whose students' test scores were utilized for this study. The procedures used to collect the data for the study are presented in the next section. In the last section, the results and interpretations of quantitative statistical analyses that were used to test the research hypothesis are presented. The researcher conducted this analysis to determine the influence of the inclusion of special education students and a special education teacher on the language arts literacy and math performance of the non-disabled students. The language arts literacy and math achievement was determined by using New Jersey ASK scores.

Hypothesis

Based on results from the review of literature and previous related research, the working hypothesis for this study was that the inclusion of special education students and a special education teacher in the mainstream classes (ICRP) would not have a significant influence on the academic achievement of the non-disabled students. The design of the study was a non-experimental, longitudinal, explanatory study (Johnson, 2001).

Description of the School District

For the purpose of researching the questions in this study, the researcher used data from a K-8 school district in suburban New Jersey. In New Jersey, the Department of Education categorizes school districts into district factor groups (DFG) which range from A to J. “A” districts are in the poorest communities and “J” districts are in the wealthiest
communities in the state. The district that was used in this study was categorized as an "I" district in 2009. The data presented in the table below reflect demographics of the school community as reported on the School Matters website (October, 2009).

Table 2: School District Demographics 2009

<table>
<thead>
<tr>
<th>State Tests</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Districtwide Reading Proficiency</td>
<td>95.2%</td>
</tr>
<tr>
<td>Districtwide Math Proficiency</td>
<td>91.4%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Classroom Profile</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Students per teacher</td>
<td>10.3</td>
</tr>
<tr>
<td>Enrollment</td>
<td>2,212</td>
</tr>
<tr>
<td>Economically Disadvantaged</td>
<td>0.3%</td>
</tr>
<tr>
<td>Breakdown by Ethnicity</td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>78.4%</td>
</tr>
<tr>
<td>Black</td>
<td>1.4%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>3.8%</td>
</tr>
<tr>
<td>Asian/Pacific Islander</td>
<td>16.4%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Spending &amp; Revenue per Student</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Revenue</td>
<td>$14,854</td>
</tr>
<tr>
<td>Total Expenditures</td>
<td>$14,470</td>
</tr>
</tbody>
</table>

The data for this study were solely from the middle school in the district. From the School Matters website (October, 2009), Table 2 reflects the district enrollment over a five-year period and Table 3 reflects the enrollment for the middle school during that same time period. Although there were no data available about average class sizes for the district, the district guidelines are that classes in the middle school not exceed 24 students.
Table 3: School District Enrollment 2003-2007

<table>
<thead>
<tr>
<th>District Enrollment Over Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
</tr>
<tr>
<td>-----------------------------</td>
</tr>
<tr>
<td>Enrollment</td>
</tr>
</tbody>
</table>

Table 4: School District Middle School Enrollment 2003-2007

<table>
<thead>
<tr>
<th>Middle Enrollment Over Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
</tr>
<tr>
<td>-----------------------------</td>
</tr>
<tr>
<td>Enrollment</td>
</tr>
</tbody>
</table>

Student Groups

The data collected for this research study were the NJ ASK Language Arts Literacy and Math test scores for 6th and 7th general education students from 2007 and 2008. The sample groups excluded classes that were scheduled as “High” math classes which were comprised solely of high achieving students. The data for the study were collected from classes indicated by the district as heterogeneously grouped. The sample groups compared were classes with all general education students and classes with general education students as well as special education students and a special education teacher (ICRP). The following tables reflect the sample sizes of each of these groupings for each year, grade level, and subject area studied.
Table 5: 2006-2007 School Year-6th and 7th Grade Language Arts Literacy and Math Sample Sizes

<table>
<thead>
<tr>
<th>Grade level</th>
<th>Academic Area</th>
<th>General Education students only</th>
<th>General Education students with ICRP</th>
</tr>
</thead>
<tbody>
<tr>
<td>6th</td>
<td>Language Arts Literacy</td>
<td>n=167</td>
<td>n=19</td>
</tr>
<tr>
<td>6th</td>
<td>Math</td>
<td>n=61</td>
<td>n=38</td>
</tr>
<tr>
<td>7th</td>
<td>Language Arts Literacy</td>
<td>n=139</td>
<td>n=41</td>
</tr>
<tr>
<td>7th</td>
<td>Math</td>
<td>n=57</td>
<td>n=38</td>
</tr>
</tbody>
</table>

Table 6: 2007-2008 School Year-6th and 7th Grade Language Arts Literacy and Math Sample Sizes

<table>
<thead>
<tr>
<th>Grade level</th>
<th>Academic Area</th>
<th>General Education students only</th>
<th>General Education students with ICRP</th>
</tr>
</thead>
<tbody>
<tr>
<td>6th</td>
<td>Language Arts Literacy</td>
<td>n=181</td>
<td>n=23</td>
</tr>
<tr>
<td>6th</td>
<td>Math</td>
<td>n=35</td>
<td>n=60</td>
</tr>
<tr>
<td>7th</td>
<td>Language Arts Literacy</td>
<td>n=164</td>
<td>n=38</td>
</tr>
<tr>
<td>7th</td>
<td>Math</td>
<td>n=44</td>
<td>n=40</td>
</tr>
</tbody>
</table>

From the School Matters website (October, 2009), demographic information about the district’s middle school student proficiencies on the NJ ASK tests in 2007 is reported in Table 7. Table 8 reflects the proficiency on the NJ ASK in 2007 by subgroups. The information reflected in these tables indicates that the overall proficiency of the students in the middle school chosen for this study was high, and the score results qualified the school for being considered achieving Adequate Yearly Progress (AYP).
Figure 1: NJASK 2007 Reading and Math Middle School Proficiency Percentages

Middle
2007 Reading and Math Proficiency

<table>
<thead>
<tr>
<th>Schoolwide Reading Proficiency</th>
<th>Schoolwide Math Proficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>83.9%</td>
<td>87.2%</td>
</tr>
</tbody>
</table>
Instruments

The superintendent of the school district selected for the study was contacted and agreed to allow the district's data to be used for this study. The researcher met with the superintendent and a designee of the district to review the proposal. The data were supplied to this researcher with identifying information eliminated with the exception of the student's status as non-disabled.

The academic achievement information used were the NJ ASK6 and NJ ASK7 scores from 2007 and 2008. The NJ ASK test is a criterion-referenced test that provided
scores in the area of language arts literacy and math. This study is quantitative and uses archived data. This researcher delimited the academic achievement data to the NJ ASK scores in order to utilize a standardized measure versus grades assigned by teachers which are not a standardized measure of achievement. The NJDOE’s technical report provides the specific steps taken in creating and scoring questions on the test to address reliability. The annual reports provide tables based upon Cronbach’s coefficient alpha measure of internal consistency (NJDOE, 2007, pp. 91-92) (NJDOE, 2008, p. 120). In 2007, the NJ ASK6 Language Arts Literacy section had an alpha of .82, and the alpha of the Math section was .87. On the NJ ASK7 in 2007, the alpha score for the Language Arts Literacy section was .83 and .87 for Math. The next year, 2008, the NJ ASK6 Language Arts Literacy alpha score was .89, and the alpha score for Math was .90. The NJ ASK7 Language Arts Literacy alpha score in 2008 was .89, and the Math alpha score was .91.

Data Collection

The researcher examined archival data from the NJ ASK scores. The data were grouped by grade level for the years 2007 and 2008. The NJ ASK Language Arts Literacy and Math scores were tabulated for general education students and separated by class placement based on whether or not the class was a general education class with or without special education students and a special education teacher. Using the SPSS statistical software, the test scores of the sample groups were compared using Independent t-tests to assess statistical significance ($p \leq .05$). The Cohen’s $d$ calculation was used to assess practical significance ($d \geq .03$). In addition, the sample groups were
divided based upon the percentage of students scoring partially proficient, proficient or advanced proficient. These proportions were then compared by the use of bar graphs.

Results of the Data Analyses

The first research question was what is the difference, if any, between the NJ ASK Language Arts Literacy test scores of general education 6th and 7th grade students when they are in classes with students with disabilities and a special education teacher (ICRP) and without ICRP? The null hypothesis is that there is no difference in NJ ASK 6th and 7th grade Language Arts Literacy scores of general education students based on inclusion in classes with special education students. Any differences were tested for significant differences at p ≤ .05.

Independent t-tests were conducted to determine the significance of the influence of ICRP on the NJ ASK Language Arts Literacy scores of the 6th and 7th grade students in 2007 and 2008. In 2007, the 6th grade general education students in classes without ICRP (n=167) had a mean score of 240.05. The mean of the 6th grade general education students in classes with ICRP (n=19) was 231.10. The Levene’s Test for Equality of Variances indicated that variances for scores of students in classes with and without ICRP did not differ significantly from each other (p=.623), and therefore you can use the slightly more powerful equal variance t-test. The mean difference between the two groups of students was 9.41 with a p-value of .111. Since this is greater than the alpha of .05, the null hypothesis was retained. Effect sizes were calculated using Cohen’s formula (Cohen, 1988). Cohen’s d effect size is the difference between the mean of the two sample groups divided by the pooled standard deviation. The difference was found to be
practically significant with $d = .37$ using the following guidelines: small = .2, medium = .5, and large = .8 or greater (Cohen, 1988).

Table 7: NJASK 2007-6th Grade Language Arts Literacy Independent T-Test

<table>
<thead>
<tr>
<th></th>
<th>ICRP</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>NJASK6LA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Without ICRP</td>
<td>167</td>
<td>240.5210</td>
<td>23.95750</td>
<td>1.85389</td>
<td></td>
</tr>
<tr>
<td>With ICRP</td>
<td>19</td>
<td>231.1053</td>
<td>27.08812</td>
<td>6.21444</td>
<td></td>
</tr>
</tbody>
</table>

Table 7a: NJASK 2007-6th Grade Language Arts Literacy Independent T-Test

<table>
<thead>
<tr>
<th></th>
<th>Levene's Test for Equality of Variances</th>
<th>t-test for Equality of Means</th>
<th>95% Confidence Interval of the Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F</td>
<td>Sig.</td>
<td>t</td>
</tr>
<tr>
<td>variances assumed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>not assumed</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Also in 2007, the 7th grade general education students in classes without ICRP (n=139) had a mean score of 237.49 on the Language Arts Literacy portion of the NJ ASK. The mean of the 7th grade general education students in classes with ICRP (n=41) was 245.75. The Levene’s Test for Equality of Variances indicates variances for scores in classes with and without ICRP do not differ significantly from each other (p=.998),
and therefore you can use the slightly more powerful equal variance t-test. The mean difference between the two groups of students was -8.26 with a p-value of .047. Since this is less than the alpha of .05, the null hypothesis was not retained. This means that there is a statistically significant difference in the NJ ASK Language Arts Literacy scores for general education students when there are special education students and a special education teacher in the class. Although the alpha score of .047 is only slightly lower than alpha of .05, it is sufficient to say that the 7th grade general education students in classes with ICRP on average did slightly better on the NJ ASK LAL test than did the general education students in classes without ICRP. The effect size of \( d = -0.353 \) is practically significant.

Table 8: NJASK 2007-7th Grade Language Arts Literacy Independent T-Test

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>NJASK7LA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Without ICRP</td>
<td>139</td>
<td>237.4964</td>
<td>22.98382</td>
<td>1.95031</td>
</tr>
<tr>
<td>With ICRP</td>
<td>41</td>
<td>245.7561</td>
<td>23.82623</td>
<td>3.72103</td>
</tr>
</tbody>
</table>
On the Language Arts Literacy test of the NJ ASK in 2008, the 6th grade general education students in classes without ICRP (n=181) had a mean score of 227.20. The mean of the 6th grade general education students in classes with ICRP (n=23) was 223.43. The Levene’s Test for Equality of Variances indicated that variances for student scores in classes with and without ICRP do not differ significantly from each other (p=.261) and therefore you can use the slightly more powerful equal variance t-test. The mean difference between test scores of the two groups of students was 3.76, with a p-value of .372. Since this is greater than the alpha of .05, the null hypothesis was retained. Using the Cohen’s d formula for effect size for these data the result was d=.211 which is a small effect size and not practically significant.
Table 9: NJASK 2008- 6th Grade Language Arts Literacy Independent T-Test

<table>
<thead>
<tr>
<th>Group Statistics</th>
<th>ICRP</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>NJASK6LA Without ICRP</td>
<td>181</td>
<td>227.2044</td>
<td>19.35665</td>
<td>1.43869</td>
<td></td>
</tr>
<tr>
<td>With ICRP</td>
<td>23</td>
<td>223.4348</td>
<td>16.29787</td>
<td>3.39834</td>
<td></td>
</tr>
</tbody>
</table>

Table 9a: NJASK 2008- 6th Grade Language Arts Literacy Independent T-Test

<table>
<thead>
<tr>
<th>Independent Samples Test</th>
<th>Levene's Test for Equality of Variances</th>
<th>t-test for Equality of Means</th>
<th>95% Confidence Interval of the Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F</td>
<td>Sig.</td>
<td>df</td>
</tr>
</tbody>
</table>

In 2008, the 7th grade general education students in classes without ICRP (n=164) had a mean score of 236.72 on the Language Arts Literacy NJ ASK. The mean of the 7th grade general education students in classes with ICRP (n=38) was 245.97. The Levene’s Test for Equality of Variances indicated that variances for student scores in classes with and without ICRP did not differ significantly from each other (p=.737), and therefore you can use the slightly more powerful equal variance t-test. The mean difference between the two groups of students was -9.24 with a p-value of .038. Since this is less than the alpha of .05, the null hypothesis was rejected. Much like the result of the NJ ASK7 LAL
in 2007, this means that there was a statistically significant difference in the NJ ASK Language Arts Literacy scores for general education students when there were special education students and a special education teacher in the class. With the alpha score of .038, the analysis indicates that once again in 7th grade the general education students in classes with ICRP on average did slightly better on the NJ ASK LAL test than the general education students in classes without ICRP. Also, using the Cohen's d formula for effect size the result for these data were $d = -.382$ which is practically significant revealing that the results are both statistically and practically significant.

Table 10: NJASK 2008- 7th Grade Language Arts Literacy Independent T-Test

<table>
<thead>
<tr>
<th>Group Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>ICRP</td>
</tr>
<tr>
<td>N</td>
</tr>
<tr>
<td>Mean</td>
</tr>
<tr>
<td>Std. Deviation</td>
</tr>
<tr>
<td>Std. Error Mean</td>
</tr>
<tr>
<td>NJASK7LA</td>
</tr>
<tr>
<td>Without ICRP</td>
</tr>
<tr>
<td>With ICRP</td>
</tr>
</tbody>
</table>

Table 10a: NJASK 2008- 7th Grade Language Arts Literacy Independent T-Test

<table>
<thead>
<tr>
<th>Independent Samples Test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>Levene's Test for Equality of Variances</td>
</tr>
<tr>
<td>------------------------------------------</td>
</tr>
<tr>
<td>F</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>NJASK7LA</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
The second research question refers to the performance of the 6th and 7th grade general education students on the Math portion of the NJ ASK tests in 2007 and 2008. The null hypothesis is that there is no statistically significant difference in the NJ ASK Math scores of the general education students when in classes with or without ICRP.

In 2007, the 6th grade general education students in classes without ICRP (n=61) had a mean score of 224.18 on Math on the NJ ASK. The 6th grade general education students in classes with ICRP (n=38) had a mean score of 235.18 on the test. The Levene’s Test for Equality of Variances indicated that variances for student scores in classes with and without ICRP do not differ significantly from each other (p=.715), and therefore you can use the slightly more powerful equal variance t-test. The mean difference of the scores was -11.00 with a p-value of .005. This indicated that the difference is statistically significant and that the null hypothesis is rejected. The data indicated that on average the 6th grade general education students did better on the NJ ASK test when in classes with ICRP. The effect size was d= -.612 which is a large effect size and the results are practically significant.

Table 11: NJASK 2007- 6th Grade Math Independent T-Test

<table>
<thead>
<tr>
<th>Group Statistics</th>
<th>ICRP</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>NJASK6MA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Without ICRP</td>
<td>61</td>
<td>224.1803</td>
<td>19.53075</td>
<td>2.50086</td>
<td></td>
</tr>
<tr>
<td>With ICRP</td>
<td>38</td>
<td>235.1842</td>
<td>16.25449</td>
<td>2.63883</td>
<td></td>
</tr>
</tbody>
</table>
Table 11a: NJASK 2007- 6th Grade Math Independent T-Test

<table>
<thead>
<tr>
<th></th>
<th>Levene's Test for Equality of Variances</th>
<th>t-test for Equality of Means</th>
<th>95% Confidence Interval of the Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F</td>
<td>Sig.</td>
<td>t</td>
</tr>
<tr>
<td>NJASK6MA Equal variances assumed</td>
<td>.134</td>
<td>.715</td>
<td>-</td>
</tr>
<tr>
<td>Equal variances not assumed</td>
<td>2.902</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>3.026</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

For the 7th grade general education students, the mean score for the students in classes without ICRP (n=57) on the NJ ASK Math test was 204.45. For the general education students in classes with ICRP (n=38), the mean score on the NJ ASK Math test in 2007 was 218.26. The Levene’s Test for Equality of Variances indicated that variances for scores in classes with and without ICRP do not differ significantly from each other (p=.429) and therefore you can use the slightly more powerful equal variance t-test. The mean difference was -13.80 with a p-value of .002 which is less than alpha of .05. Once again the null hypothesis is rejected reflecting that there is a statistically significant difference in the NJ ASK Math scores for general education students when in classes with ICRP as opposed to no ICRP. Using Cohen’s d formula d= -.686 which is a large effect size and practically significant, the data revealed that the 7th grade general
education students on average did better on the NJ ASK Math test when in classes with ICRP.

Table 12: NJASK 2007- 7th Grade Math Independent T-Test

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>NJASK7MA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Without ICRP</td>
<td>57</td>
<td>204.4561</td>
<td>20.80614</td>
<td>2.75584</td>
</tr>
<tr>
<td>With ICRP</td>
<td>38</td>
<td>218.2632</td>
<td>19.41814</td>
<td>3.15004</td>
</tr>
</tbody>
</table>

Table 12a: NJASK 2007- 7th Grade Math Independent T-Test

<table>
<thead>
<tr>
<th>Group</th>
<th>Levene's Test for Equality of Variances</th>
<th>t-test for Equality of Means</th>
</tr>
</thead>
<tbody>
<tr>
<td>NJASK7MA</td>
<td>F = .631, Sig. = .429</td>
<td>t = -3.253, df = 93, Sig. (2-tailed) = .002, Mean Difference = -13.80702, Std. Error Difference = 4.24410, 95% CI = 22.23496 to 5.37907</td>
</tr>
</tbody>
</table>

When reviewing the NJ ASK Math test results from the next year, 2008, the 6th grade general education students in classes without ICRP (n=35) had a mean score of 216.68. The 6th grade general education students in classes with ICRP (n=60) had a mean score of 236.66. The Levene’s Test for Equality of Variances indicated that variances for scores in classes with and without ICRP do not differ significantly from each other (p=.577), and therefore you can use the slightly more powerful equal variance t-test. The mean difference of these scores was 19.98 with a p-value of .000. With the p-value being
less than the .05 alpha the null hypothesis is rejected indicating that on average the 6th grade general education students did better on the NJ ASK Math test when in classes with ICRP as compared to being in classes without ICRP. The effect size result using Cohen’s d was \(d = -1.11\), a large effect size, indicating practical significance.

Table 13: NJASK 2008- 6th Grade Math Independent T-Test

<table>
<thead>
<tr>
<th>Group Statistics</th>
<th>ICRP</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>NJASK6MA</td>
<td>Without ICRP</td>
<td>35</td>
<td>216.6857</td>
<td>16.26214</td>
<td>2.74880</td>
</tr>
<tr>
<td></td>
<td>With ICRP</td>
<td>60</td>
<td>236.6667</td>
<td>19.63969</td>
<td>2.53547</td>
</tr>
</tbody>
</table>

Table 13a: NJASK 2008- 6th Grade Math Independent T-Test

<table>
<thead>
<tr>
<th>Independent Samples Test</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Levene's Test for Equality of Variances</th>
<th>t-test for Equality of Means</th>
<th>95% Confidence Interval of the Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>Sig.</td>
<td>t</td>
</tr>
<tr>
<td>NJASK6MA Equal variances assumed</td>
<td>.313</td>
<td>.577</td>
</tr>
<tr>
<td>Equal variances not assumed</td>
<td>5.343</td>
<td>-82.184</td>
</tr>
</tbody>
</table>

In 2008 on the NJ ASK Math test, the 7th grade general education students in classes without ICRP (n=44) had a mean score of 214.29. The 7th grade general education students in classes with ICRP (n=40) had a mean score of 214.70 on the NJ ASK Math test. The Levene’s Test for Equality of Variances indicated that variances for student scores in classes with and without ICRP do not differ significantly from each
other \((p=.293)\), and therefore you can use the slightly more powerful equal variance t-test. The mean difference in the scores was -.40 with a p-value of .919. The p-value is greater than .05 so the null hypothesis is retained. Using the Cohen’s d test for effect size, \(d=\ .022\) which reveals the data are not practically significant.

Table 14: NJASK 2008–7th Grade Math Independent T-Test

| Group Statistics |
|------------------|-----------------|-----------------|-----------------|
| N                | Mean            | Std. Deviation  | Std. Error Mean |
| ICRP             |                 |                 |                 |
| Without ICRP     | 44              | 214.2955        | 19.75499        |
| With ICRP        | 40              | 214.7000        | 16.30039        |

Table 14a: NJASK 2008–7th Grade Math Independent T-Test

<table>
<thead>
<tr>
<th>Independent Samples Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Levene’s Test for Equation of Variances</td>
</tr>
<tr>
<td>F</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>NJASK7MA Equal variances assumed</td>
</tr>
<tr>
<td>Equal variances not assumed</td>
</tr>
</tbody>
</table>

The third research question refers to the percentages of partially proficient, proficient and advanced proficient scores on the NJ ASK tests for general education students in classes with ICRP as compared when in classes without ICRP. New Jersey has established cut off scores to determine proficiency levels on the NJ ASK tests. The test scores range from 100-300. A score under 200 is partially proficient, a score from
200-249 is proficient, and from 250-300 is advanced proficient. The table below reports the percentages of the NJ ASK LAL and Math scores for 6th and 7th grade general education students in 2007 and 2008 when in classes with and without ICRP.

Table 15: 2007 NJASK- 6th and 7th Grade Language Arts Literacy and Math Proficiency Percentages- ICRP and No ICRP

<table>
<thead>
<tr>
<th></th>
<th>6th gr.</th>
<th>6th gr.</th>
<th>6th gr.</th>
<th>6th gr.</th>
<th>7th gr.</th>
<th>7th gr.</th>
<th>7th gr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>LAL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No ICRP</td>
<td>2.4</td>
<td>10.5</td>
<td>6.6</td>
<td>0</td>
<td>2.2</td>
<td>0</td>
<td>40.3</td>
</tr>
<tr>
<td>Proficient</td>
<td>52.7</td>
<td>53</td>
<td>86.9</td>
<td>74.4</td>
<td>61.9</td>
<td>48.8</td>
<td>56.1</td>
</tr>
<tr>
<td>Advanced Proficient</td>
<td>43.7</td>
<td>36.8</td>
<td>6.6</td>
<td>25.6</td>
<td>35.9</td>
<td>51.2</td>
<td>3.5</td>
</tr>
</tbody>
</table>

To illustrate the proportions of the three proficiency categories of the 2007 and 2008 NJ ASK tests further, and how the general education students scores compared
when the students were educated in classes with and without ICRP, the following figures offer an eyeball look at how these groups compare to one another.

Figure 3: 2007 NJ ASK6 LAL Proficiency ICRP and no ICRP

![Graph showing comparison of Proficiency levels between ICRP and no ICRP in 2007 NJ ASK6 LAL.

Figure 4: 2007 NJ ASK6 Math Proficiency ICRP and no ICRP

![Graph showing comparison of Proficiency levels between ICRP and no ICRP in 2007 NJ ASK6 Math.

2007 NJASK6 LAL Proficiency Categories

2007 NJASK6 MATH Proficiency Categories
Figure 5: 2007 NJ ASK7 LAL Proficiency ICRP and no ICRP

![Bar graph showing proficiency categories for 2007 NJ ASK7 LAL.]

2007 NJASK7 LAL Proficiency Categories

Figure 6: 2007 NJ ASK7 Math Proficiency ICRP and no ICRP

![Bar graph showing proficiency categories for 2007 NJ ASK7 Math.]

2007 NJASK7 MATH Proficiency Categories
Figure 7: 2008 NJ ASK6 LAL Proficiency ICRP and no ICRP

Figure 8: 2008 NJ ASK6 Math Proficiency ICRP and no ICRP

2008 NJ ASK6 LAL Proficiency Categories

2008 NJ ASK6 MATH Proficiency Categories
Figure 9: 2008 NJ ASK7 LAL Proficiency ICRP and no ICRP

Figure 10: 2008 NJ ASK7 Math Proficiency ICRP and no ICRP
Summary

In this study, the researcher compared the standardized test scores from the NJ ASK6 and NJ ASK7 tests for 6th and 7th graders in 2007 and 2008. The analyses of these data were for the purpose of determining if and how the achievement of the general education student may be influenced when there are special education students and a special education teacher in the classroom. The results of the analyses indicate that the inclusion of special education students and the special education teacher in the mainstream class does not hinder the academic achievement of the non-disabled student. The null hypotheses of this researcher that the inclusion of the special education students would not make a difference on the academic achievement of the non-disabled student was retained in only three of the eight analyses. In the five analyses in which the null hypothesis was not accepted, the analysis revealed that the non-disabled students, on average, performed better when in classes with the special education students and the special education teacher. The analyses revealed that the results were both statistically and practically significant. Also, when comparing the proportions of proficiency categories on the NJ ASK tests of the general education students in the two types of class settings (ICRP vs. no ICRP); on only one out of eight of the comparisons were there a higher percentage of students in the partially proficient category when in classes with ICRP. The following chapter includes a summary of the findings as well as conclusions and recommendations for policy, for practice, and for further research.
The Individuals with Disabilities Education Act (IDEA) is the current law that guides the education services for students with disabilities. The legal background for this law emanated from the 1954 U.S. Supreme Court decision in Brown vs. Board of Education in Topeka that public schools must offer equal education opportunity for all children. Both prior to that Supreme Court decision and in the current time (2010), there continue to be unsettled questions and concerns as to how and where to educate the special needs student for both their benefit as well as for the mutual benefit of the non-disabled student. Inclusion of the special education student in the general education classroom is what is referred to as the Least Restrictive Environment (LRE) and is the legal requirement. Procedural guidelines require that a well documented rationale be made when an education setting other than the general education classroom is chosen for a special education student. These guidelines were established to afford equal quality of education experiences to all students. The rights of the special education student are protected under the auspices of the IDEA, and if the general education classroom environment is not appropriate for the special education student, they can be placed in a separate classroom or school setting to meet their needs. Amidst the progress for the rights of disabled students, controversy over how the inclusion of the special education students influence the average scores of the non-disabled student has been a topic of discussion among educators.
The researcher examined the average academic achievement of the non-disabled students when special education students and a special education teacher were included in the general education classroom at the middle-school level. Earlier research on the topic of inclusion often focused only on the outcomes for the special education student or on teacher perceptions of the inclusive classroom. Benefits for the special education students are well documented from academic, social, and emotional perspectives. Research regarding teacher perceptions generally were found to be conceptually favorable but with concerns regarding implementation and administrative support. Since 1999, a small body of research has begun to emerge in which researchers have analyzed the influence of inclusion on the non-disabled student. Social and emotional influences have been reviewed most frequently, but there is a paucity of research on the influence of inclusion on academic achievement. Early studies have largely been at the elementary level with results indicating that the concern that inclusion negatively influenced academic achievement were unsupported.

In this chapter, a summary of the study is presented including the research problem, findings and conclusions. In addition, recommendations for policy, practice, and for future research are provided.

Summary

Teacher perceptions on inclusion have been studied since the mid 1950’s. In 1996, a comprehensive review of the research on inclusion found that teachers generally supported the concept of inclusion but many were concerned about implementation of the practice. The social, emotional benefits described by the teachers for all students are what Sarason (1974) described as the psychological sense of community (PSOC).
Additional researchers have focused on how inclusion influences classroom instruction. Titone (2005) suggested that teaching models not focus on the deficit model and that differentiated instruction be the model for all students. When general education teachers made instructional accommodations yet maintained high expectations for all students, inclusion was considered to be successful (King, 2003).

The body of research on the academic achievement of the general education student in the inclusive classroom is relatively small. One of the first studies on this topic was in 1994 when Sharpe, York, and Knight used a quasi-experimental design and found that there were no significant differences in the academic performances of the non-disabled elementary students in reading, language arts, or math when in inclusive classrooms as compared to those not in inclusive classrooms. Other researchers had findings that inclusion had no significant influence on the academic achievement of the elementary level non-disabled student (e.g., Gruner, 2005; McCartney, 2006; Demeris, Childs, & Jordan, 2007). Several other studies found that at times the non-disabled elementary students did better when in the inclusive classrooms (Staub & Peck, 1995; Saint Laurent, et al., 1998; Salend & Dulaney, 1999; Hunt, 2000).

Research studies beyond the elementary level were even fewer. A study conducted at the middle school level in 2005, resulted in a finding that the math achievement scores of the non-disabled students were not affected by having special education students in their class (Brewton, 2005). At the high school level, a similar result was found regarding the math achievement of the non-disabled student when in a class with special education students (Scharlman, 2000).
This study was non-experimental and used a longitudinal, explanatory design (Johnson, 2001). The data used for this ex post facto study were archival (Kerlinger, 1968). The data were from a suburban "I" DFG suburban middle school. Enrollment in the district ranged from 2155 students in 2003, to 2212 students in 2007. In the middle school, the enrollment was 693 in 2003, and 730 students in 2007. The data analyzed in this study were the NJ ASK Language Arts Literacy (LAL) and Math scores for 6th and 7th grade general education students in the 2006-2007 and 2007-2008 school years.

The data collected were analyzed to answer three research questions:

1. What is the difference, if any, between the NJ ASK Language Arts Literacy test scores of general education 6th and 7th grade students when they are in classes with students with disabilities and a special education teacher (ICRP) and without ICRP?

2. What is the difference, if any, between the NJ ASK Math test scores of general education 6th and 7th grade students when they are in classes with students with disabilities and a special education teacher (ICRP) and without ICRP?

3. What are the percentages of partially proficient, proficient and advanced proficient scores of the non-disabled students when in classes with students who require ICRP as compared to when they are in classes without students who require ICRP?

Based on the review of the literature and the previous related research studies, the hypothesis for this study was that the inclusion of the special education students and a
special education teacher would not have a significant influence on the academic achievement of the non-disabled student.

The sample groups compared non-disabled students in classes with all general education students, and non-disabled students in classes that included special education students and a special education teacher (ICRP). Classes that were designated as having all high achieving students were excluded from the study.

For the first and second research questions, independent t-tests were conducted with the use of the SPSS Statistical Software and analyses of the effect size using the Cohen’s d formula. The percentages of partially proficient and advanced proficient NJ ASK scores for the sample groups were compared for the third research question by the use of bar graphs.

When comparing the NJ ASK Language Arts Literacy scores for the 6th grade general education students in classes with and without ICRP in 2007, the null hypothesis was retained. The specific number of students for this analysis was N= 167 without ICRP and N= 19 with ICRP. In 2008, the null hypothesis was also retained for the review of the 6th grade student’s LAL NJ ASK scores. The sample sizes for this analysis were N= 181 without ICRP and N= 23 with ICRP. These results indicate that for the 6th grade general education students the inclusion of special education students and a special education teacher does not have a statistically significant influence of their language arts literacy achievement as measured by the NJ ASK test. However, in 2007, the results were practically significant, d= .368, indicating that the non-disabled students in classes without ICRP performed better on the NJ ASK LAL test than the non-disabled students in classes with ICRP.
The results for the 7th grade general education students on their language arts literacy achievement when in classes with and without ICRP as measured by NJ ASK tests in 2007 and 2008 was different than for the 6th graders, and in both years the null hypothesis was not retained. In 2007, the sample sizes for the classes without ICRP was N= 139 and with ICRP was N= 41. For these analyses, the means for the ICRP classes were 245.75 and 237.49 for the classes without ICRP. The mean difference between the two groups was -8.26 with a p-value of .047. Since this was less than the alpha of .05, the researcher concluded that, on average, the 7th grade general education students in 2007 did better when in classes with ICRP than without ICRP. Similarly, in 2008 the null hypothesis was rejected for the 7th graders. For classes without ICRP, the sample size was N= 164, and the mean score on the NJ ASK LAL test was 236.72. In the classes with ICRP, the mean score was 245.97, and the sample size was N= 38. The mean difference was -9.24 and the p-value was .038. Once again, the 7th grade general education students, on average, did better on the NJ ASK LAL test when in classes with ICRP as compared to their counterparts when in classes without ICRP. The results for these analyses were both practically significant, d= -.353 in 2007 and d= -.382 in 2008, as well as statistically significant.

For research question two, the researcher examined the math academic achievement of the 6th and 7th grade general education students on the NJ ASK Math test in 2007 and in 2008 when in classes with and without ICRP. Both in 2007 and 2008, the null hypothesis was not retained for the 6th grade non-disabled students. In 2007, in classes without ICRP the sample size was N= 61, and for classes with ICRP the sample size was N= 38. The mean score in the classes without ICRP was 224.18 and 235.18 in
the classes with ICRP. The mean difference was -13.80 with a p-value of .002. The effect size was $d = -.612$, a large effect size. In 2008, results were similar for the 6th graders. The sample size in the ICRP classes was N= 60, and N= 35 for the classes without ICRP. The mean difference was 19.98 with the mean for the ICRP classes being 236.66 and 216.68 for the classes without ICRP. The p-value was .000, and therefore the null hypothesis was rejected indicating that on average, 6th grade general education students did better in math achievement as measured by the NJ ASK Math test when in classes with students with disabilities and a special education teacher than when in classes without ICRP. The effect size in 2008 was also large, $d = -1.11$, indicating that the results were practically significant as well as statistically significant.

Results of the data analyses for the 7th grade general education students on the NJ ASK Math test when in classes with ICRP as compared to their counterparts in classes without ICRP were not consistent from 2007 to 2008. The results from the analysis in 2007, reveal that the null hypothesis was not retained. The sample size in the classes with ICRP was N= 38, and the mean score was 218.26. In the classes without ICRP the sample size was N= 57, and the mean score was 204.45. With the mean difference of -13.80 and a p-value of .002, the null hypothesis was not retained and the researcher concluded that, on average, the 7th grade general education students did better in math achievement as assessed by the NJ ASK test in 2007 when in classes with ICRP as compared to the general education students in classes without ICRP. These results were also practically significant with a large effect size, $d = -.686$. However, in 2008 for the 7th grade general education students, their math achievement as assessed by the NJ ASK Math test, the null hypothesis was retained. There was no statistically significant
difference in their scores. The sample size for the students in classes with ICRP was \( N = 40 \) and the mean score was 214.70, and in classes without ICRP the sample size was \( N = 44 \) and the mean score was 214.29. The \( p \)-value of .919 was higher than the alpha of .05. Using Cohen’s \( d \) calculations, \( d = .022 \), no practical significance was revealed in this analysis either.

The third research question offered data which compared the percentages of 6\(^{th}\) and 7\(^{th}\) grade general education students scoring in the partially proficient, proficient, and advanced proficient ranges on the NJ ASK LAL and Math tests in 2007 and in 2008 when in classes with ICRP as opposed to without ICRP.

In 2007, the general education 6\(^{th}\) grade students had about the same percentage of students scoring in the proficient range in the two different settings. However, in the classes with ICRP, a higher percentage of students scored the partially proficient range by approximately 8%. The inverse was true for the advanced proficient range where almost 8% more students scored in this range when in the classes without ICRP. In 2008, the 6\(^{th}\) grade results were slightly different. In the classes with ICRP, there were no students scoring in the partially proficient range, and over 90% scored in the proficient range. When there was no ICRP, about 80% of the students scored in the proficient range, but almost 9% were in the partially proficient range. The difference in percentages in the advanced proficient range were only about 3% with more being in this range when in the classes without ICRP.

The math results for this research question for the 6\(^{th}\) grade general education students were different from in the language arts area. In 2007, there were no general education students who scored in the partially proficient range when in classes with
ICRP, and over 25% of the general education students scored in the advanced proficient range when in these classes. However, 6.6% of the general education students scored partially proficient when in classes without ICRP, and only 6.6% achieved advanced proficient status. These results were similar in 2008 for the 6th grade general education students when in classes with and without ICRP.

From the results of the data analyses from the 7th grade general education students on the LAL NJ ASK test in 2007 and 2008 in classes with and without ICRP, the findings from each year are similar with respect to percentages in partially proficient, proficient and advanced proficient categories. In both years, there were no general education students in the classes with ICRP who scored in the partially proficient range and in both years approximately 50% of these students scored in the advanced proficient range when in the ICRP classes. However, when in the classes without ICRP, the general education students had a small percentage both years scoring in the partially proficient range and no higher than about one third in the advanced proficient range as compared to the 50% from the ICRP classes.

The 7th grade general education NJ ASK Math results were similar from 2007 to 2008 when students were in the classes with ICRP as compared to the classes without ICRP. In addition, there was only slight variation between the percentages of the like categories when in ICRP classes as compared to when not in ICRP classes with the exception of one notable difference in the 2007 test scores. In that year, there were 40.3% of general education students who were not in classes with ICRP who scored in the partially proficient range as compared to 13.2% in that category when in the classes with ICRP. Because of this difference, this variation was again reflected in the
percentage of the students in the proficient range with almost 80% of the general education students in the proficient range when in the ICRP classes versus 56.1% when in classes without ICRP. In 2008, the percentages in all three categories for the two different groups were about the same.

Conclusions

Based on the review of the literature and previous research related to this study, the results of these analyses shed significant findings on the question of how inclusion of special needs students influences the academic achievement of the non-disabled student. In the era of high-stakes testing, school administrators will benefit from understanding some of the influences of inclusion. The legal mandate to educate special needs students in the least restrictive environment, preferably in the general education classroom, is likely to continue if not strengthen.

Curriculum standards are prescribed for all students and only a small portion of special needs students are exempt from standardized testing. Educators are being held to high expectations to have all students achieve proficiency on state standardized assessments by the year 2014 or have their school be labeled by the state department of education as a failing school. Given these parameters, now more than ever, will school administrators benefit from understanding what influences the achievement outcomes of their students.

The purpose for this study was to determine if and how the achievement of the general education student may be influenced when there are special education students and a special education teacher in the classroom. The results of this study were significant especially because five of the eight independent t-tests resulted in the non-
acceptance of the null hypothesis. Based on previous research and review of the literature, this researcher established the null hypotheses that the inclusion of special education students and a special education teacher in the general education class would not significantly influence the academic achievement of the non-disabled students. The concern was that the inclusion of the special needs students would disrupt and derail the academic progress of the general education students. Reports of teacher perceptions indicated that although they conceptually favored inclusion, they were concerned with the implementation and influence of inclusion.

Previous research findings on this topic are limited. The few studies that have been done have focused mostly on the elementary level. For the most part, the influence of inclusion was found not to be detrimental to the academic achievement of the non-disabled student. Because of these findings, along with supporting literature and theory about how differentiated instructional approaches contribute to positive outcomes, this researcher began this study with the working hypothesis that no significant influence of inclusion on the general education student's language arts literacy or math achievement would be found.

Results were unexpected. Although intervening variables were not controlled for in this study, the findings revealed that on none of the data analyses did the results indicate that inclusion negatively influenced the academic achievement of the general education students. This was consistent with what was expected. However, the findings that were reached five out of the eight times demonstrated that the inclusion of the special needs students and a special education teacher resulted in statistically and practically significant positive differences in the academic achievement in language arts literacy and
math as measured by the NJ ASK test of the non-disabled student were unanticipated. The t-test and effect size results are further substantiated by the comparison of the proficiency categories on the NJ ASK test for the different sample populations. On only one of the eight comparisons did the general education students, when in the classes with ICRP, have a higher percentage of partially proficient than the group without ICRP. On the higher end of the proficiency range, advanced proficient, in six out of the eight comparisons, the general education students when in classes with ICRP had higher percentages than their counterparts in the classes without ICRP.

**Recommendations for Policy, Practice and For Further Research**

Although the limitations of this study inhibit generalization of the results that would enable more direct implications for practice, these results do provide further information to a field of study that has been largely ignored for over 50 years. It has only been in the more recent years that attention has been paid to what inclusion means to the academic achievement of the non-disabled student. What we do see in the limited body of research and the findings of this study support are that sweeping concerns about the negative impact that inclusion of special needs students may have on the general education student are largely unfounded.

Previous researchers have primarily focused on the elementary grades, but inclusion is mandated for all grades. Especially as curricular demands grow over the years, understanding what the inclusion of the special needs student in the mainstream class may mean to the academic achievement of the non-disabled student is an important consideration. Administrators should make themselves aware of the research findings to respond to the worries of parents and faculty. Careful review of test-score results may
help an administrator be sensitive to any trends or concerns that are arising in a particular school. Additional studies at both the elementary and secondary levels are needed to understand more fully the implications of inclusion on academic achievement.

Attention to the administrative and implementation concerns is worthwhile. Note that in the school used for this study, the structure of the school did create common planning time for the general education and special education teachers. Although this variable was not controlled, some of the earlier studies did cite it as an important consideration for successful implementation of inclusion.

Another aspect that warrants further review at this time is the role of differentiated instructional techniques in regard to the question of how inclusion influences academic achievement of non-disabled students. The theoretical basis reviewed in this study indicates that it is an important factor, but understanding scope and depth of this would be helpful in later research and review. The role of the special services department and their personnel in a school district can be a worthwhile resource to consider when planning how to broaden the general education teacher’s skills with differentiated instruction. Special education teachers have substantially more background preparation in this area, and administrators can consider how best to structure and plan for sharing of information between various personnel in the district. In this study, the factors that the in-class support was provided by a certified special education teacher and that the classes were heterogeneously grouped need to be considered as variables that may have influenced the outcome of the data analyses.

Since placement in the general education class is the least restrictive environment for a special education student, administrators will need to consider this literature review
and the research findings when creating a master schedule and using personnel resources.

Although this researcher did not find any negative influence on the academic achievement of the non-disabled student when there were special education students in the class, the inclusive practices in the school studied and the classes compared included a special education teacher along with the special needs students. Perhaps the results of this study would have been different if the inclusive practice was to have the general education teacher as a sole teacher for the class or if the additional personnel were instructional aides and not certified special education teachers. In this study, the in-class support was provided by a certified special education teacher, and the classes were heterogeneously grouped. In addition, the related question about what influence inclusion may have on the academic achievement of high achieving general education students is worth closer review. These variables warrant further research to understand how changing the inclusion support from a certified special education teacher to a paraprofessional may change the outcome of the learning environment.

Further research on the influence of inclusion on the non-disabled student is strongly advised. Inclusion continues to be a practice that will continue as it is an outgrowth of the legal mandate for least restrictive environment settings for special needs students. More studies are suggested that control for variables such as SES and class size as those are variables that have been researched, and there is a large body of findings regarding their influence on student achievement. Research that also controls for previous academic achievement would also be suggested as it is unknown if that variable may have been a contributing influence in the current study.
Although the use of standardized test data provides for a reliable source of achievement data, caution should be exercised when basing any conclusions on only one measure. Studies with more diversified measures of both quantitative and qualitative methods may provide results that can be used in conjunction with the findings of this and other similar studies.

Although this study has limitations and delimitations and cannot be widely generalized, it does contribute to a growing body of research that can be considered when planning and structuring classes in a district. It is encouraging to see that the limited research on this topic, does not point to any major concerns that inclusion is impeding the academic achievement of the non-disabled student. Education administrators need to delve more deeply and understand this more, but while this is in progress, carefully structured and administratively supported inclusionary practices seem to do no harm to the non-disabled student. There is a growing body of evidence, further substantiated by this study, that inclusion at times may promote better achievement for non-disabled students than when they are educated in classes without inclusion.
REFERENCES


Appendices

A: State of New Jersey, Department of Education; New Jersey Department of Education

District Factor Groups (DFG) for School Districts.

The District Factor Groups (DFGs) were first developed in 1975 for the purpose of comparing students' performance on statewide assessments across demographically similar school districts. The categories are updated every ten years when the Census Bureau releases the latest Decennial Census data.

Since the DFGs were created, they have been used for purposes other than analyzing test score performance. In particular, the DFGs played a significant role in determining the initial group of districts that were classified as Abbott districts. Additionally, subsequent to the Abbott IV court ruling, the DFGs were also used to define the group of school districts on which Abbott v Burke parity remedy aid would be based.

The DFGs represent an approximate measure of a community's relative socioeconomic status (SES). The classification system provides a useful tool for examining student achievement and comparing similarly-situated school districts in other analyses. The DFGs do not have a primary or significant influence in the school funding formula beyond the legal requirements associated with parity aid provided to the Abbott districts.

B. IRB Certification and Approval documents

C: Permission Letter from the Superintendent of the district to conduct the study.
March 25, 2010

Faye Brady
15 Claremont Avenue
Livingston, NJ 07039

Dear Ms. Brady,

The Seton Hall University Institutional Review Board has reviewed your research proposal entitled "The Influence of Inclusion on Language Arts and Math Achievement of Non-disabled Middle School Students" and has approved it as submitted under exempt status.

Enclosed for your records is the signed Request for Approval form.

Please note that, where applicable, subjects must sign and must be given a copy of the Seton Hall University current stamped Letter of Solicitation or Consent Form before the subjects' participation. All data, as well as the investigator's copies of the signed Consent Forms, must be retained by the principal investigator for a period of at least three years following the termination of the project.

Should you wish to make changes to the IRB approved procedures, the following materials must be submitted for IRB review and be approved by the IRB prior to being instituted:

- Description of proposed revisions;
- If applicable, any new or revised materials, such as recruitment fliers, letters to subjects, or consent documents;
- If applicable, updated letters of approval from cooperating institutions and IRBs.

At the present time, there is no need for further action on your part with the IRB.

In harmony with federal regulations, none of the investigators or research staff involved in the study took part in the final decision.

Sincerely,

Mary F. Reucelle, Ph.D.
Professor
Director, Institutional Review Board

cc: Dr. Charles M. Achilles
REQUEST FOR APPROVAL OF RESEARCH, DEMONSTRATION OR RELATED ACTIVITIES INVOLVING HUMAN (SUBJECTS) PARTICIPANTS

All material must be typed.

PROJECT TITLE: The Influence of Inclusion on Language Arts and Math achievement of non-disabled middle school students

CERTIFICATION STATEMENT:

In making this application, I/We certify that I/We have read and understand the University's policies and procedures governing research, demonstration, and related activities involving human (subjects) participants. I/We shall comply with the letter and spirit of these policies. I/We further acknowledge my/our obligation to (1) obtain written approval of significant deviations from the originally-approved protocol BEFORE making these deviations, and (2) report immediately all adverse effects of the study on the subjects to the Director of the Institutional Review Board, Seton Hall University, South Orange, NJ 07079.

Amy Brady
RESEARCHER(S) OR PROJECT DIRECTOR(S) 2-10-10

My signature indicates that I have reviewed the attached materials and consider them to meet IRB standards.

C. Michael Brady
RESEARCHER'S ADVISOR OR DEPARTMENTAL SUPERVISOR 2/27/10

The request for approval submitted by the above researcher(s) was considered by the IRB for Research Involving Human Subjects Research. The request was approved by the Committee. Special conditions were not set by the IRB. Any special conditions are described on the reverse side.

Maury J. Penzhe, Ph.D.
DIRECTOR
SETON HALL UNIVERSITY INSTITUTIONAL REVIEW BOARD FOR HUMAN SUBJECTS RESEARCH

2/24/10
To Whom It May Concern:

As Superintendent of Warren Township Public Schools, I grant permission for Faye Brady to access the NJ ASK language arts and math scores for the 6th and 7th grade students from the 2006-07 and 2007-08 school years. Mrs. Brady has agreed to have a third party from Warren Township Schools provide her with the information so that the information will be coded and the student's identity will be confidential. Mrs. Brady has also agreed to use this archived data solely for the purpose of her doctoral research study for Seton Hall University on the influence of inclusion on the academic performance of general education students. Mrs. Brady will share the results of the study with me when she completes the research.

Sincerely,

James A. Canfield, Ed.D.
Superintendent of Schools

October 6, 2009