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The Effects of Inclusion on Mathematics Achievement of General Education Students in Middle School

Shirley Brewton
Seton Hall University

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THE EFFECTS OF INCLUSION ON MATHEMATICS ACHIEVEMENT OF
GENERAL EDUCATION STUDENTS IN MIDDLE SCHOOL

BY
SHIRLEY BREWTON

Dissertation Committee

Dan Gutmore, PhD., Mentor
John Collins, Ed.D.
Laura B. Weitzman, Ed.D.
Gayle Griffin, Ph.D

Submitted in partial fulfillment
of the requirements of the Degree of Doctor of Education
Seton Hall University

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ABSTRACT

THE EFFECTS OF INCLUSION ON MATHEMATICS ACHIEVEMENT OF GENERAL EDUCATION STUDENTS IN MIDDLE SCHOOL

The purpose of this study was to investigate the effects of inclusion on mathematics achievement of general education students in middle schools. Student math academic assessment scores were compared using the Standard Proficiency Assessment (SPA) scores for grades fifth, sixth, and seventh. The Grade Eight Proficiency (GEPA) was used for grade eight. An independent t-test was conducted for the purpose of this study. This study examined the math achievement scores of the general education students in an inclusive environment to the general education students who were not in an inclusive setting in two middle schools.

Data from interviews conducted with two principals from the middle schools and two focus groups interviews were held with general education and special education teachers who serviced students in mathematics in a non-inclusive and inclusive setting. The interview sessions were audio-taped. The tapes were transcribed and analyzed to find commonalities and differences by using eight questions to address seven areas within the study.

The results of this study revealed no statistically significant differences between the general education students in an inclusive setting and non-inclusive setting. Further data also reveals that placing students with learning disabilities with students without disabilities is not disruptive while math instruction is provided.

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DEDICATION

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CHAPTER I

Introduction

Background

Since the 1970's, inclusion has been receiving widespread attention in school districts and across the country. Inclusion was exceedingly rare during much of the 20th century in terms of educating students with disabilities in regular classrooms. A movement in society has changed the direction in which it educates children. As a result, schools have intensified their efforts to improve quality, provide greater equity, and increase accountability. The principles set forth in the regular education initiative and the inclusive schooling movements have gained momentum and are becoming the standards used to restructure special education delivery (National Association of School Boards of Education, 1992). As a result of the parental pressures placed on the courts and legislatures for changes in educational services, parents began to seek access to public schools as an issue of civil rights for those children with disabilities. The cumulative results of these efforts lead to The Education For All Handicapped Children Act of 1975 (PL. 94-142) and America for Disabilities Act of 1973.

Today, inclusion is a common organizational response to providing special education services. One area of focus is the effect of inclusion on students who have no identified disability. Many students with mild to severe disabilities are being placed in regular education classrooms and engage in the same curriculum and activities as their peers. According to the Individuals with Disabilities Education Act (IDEA), learning-disabled students are required to be educated in the least restrictive environment (LRE). Schools and local education authorities are under increasing pressure to solve problems in

the special education needs and public sector. Some educators and the public sector have questioned if this approach is best for regular education students (Hines & Johnston, 1996). The pressure that exists to maintain and improve standards to accommodate all students is difficult and complex. Federal court decisions, particularly the *Oberti* Decision in New Jersey, have interpreted the law, in most circumstances, to mean that students with severe disabilities must be included in their local school with their non-disabled peers, and in some instances with appropriate aids and support.

During the mid-1990's, Congress established a series of laws that emphasized state standards and accountability, reform design for schools, and inclusion of students with disabilities in general education. Among these are: Goals 2000; Educate America Act of 1994; Improving America's School Act of 1994, later replaced by the No Child Left Behind Act of 2001; and the 1997 Amendments to the IDEA. IDEA '97 strengthened the major purpose of ensuring access to an effective, equitable education for children and youth with disabilities. IDEA also emphasized accountability through the establishment of statewide goals for the performance of students with disabilities and their inclusion in general assessments at the state and district levels, with the necessary accommodations and modifications.

Several research studies have suggested that the success of students with disabilities in general education classrooms is directly related to the services received (US Department of Education, 1995). One of the support programs that have been made available is mainstreaming. Since 1975, mainstreaming has been frequently confused with and referred to as inclusion. The full intent of inclusion was not substantiated until the 1980's when the inclusion movement became well known (Freagon, 1993).

Mainstreaming is the process of placing a special education student into a regular education classroom with few modifications in the curriculum (Freagon, 1993). The standard of success for mainstreamed students is the same standard as regular education students (Freagon, 1993). "Inclusion does not mean trying to fit students with special needs into the mainstream: instead it means creating a mainstream where everyone fits" (Snell & Janney, 1993, p.245). Therefore "mainstream" implies a privilege for the special education student; and inclusion is a right.

The intent of inclusive education is to embrace all students, and to provide special education students the right to be educated in regular education classrooms. Pearpoint and Forester (1992) described the underlying values of an inclusive school as the new ABC's, Acceptance, Belonging, and Community and the three R's Reading, Writing and Relationships.

The movement towards inclusion was legally influenced. Court decisions provided guidelines governing placement under IDEA. According to *Oberti v. Board of Education of the Borough of Clementon School District* (3rd Circuit Court, 1993), the court ruled in favor of more inclusive settings than that provided by a self-contained placements (National Study of Inclusive Education, 1994, p.10). The court also indicated that the appropriate planning, teaching methods, and support services should enable the regular education teacher to solve any behavior problems caused by disabled students included in the regular education classroom.

According to Neary and Halvorsen (1995), "the best environments for learning are those in which students are motivated, learning is active and information is presented in a manner that recognizes the diversity of each student (p.4)" Identifying and

understanding the needs of each student in order to provide instruction at different levels should be recognized by both general and special education teachers. Classrooms have become tremendously diverse with different student ability levels; therefore, it is essential that general education and special education teachers have an awareness and sensitivity to the needs of all students to promote successful inclusion programs.

A major controversy surrounding inclusion is the fear that inclusion might result in a “watered down” curriculum for students without disabilities, and time devoted to learning would be lessened because of the needs of students with disabilities. A partnership between general and special education teachers needs to be established to cooperatively develop and plan educational strategies to meet the diverse needs of all students. Fullan (1991) points out that quality interaction between educators brings about successful change.

Some of the strongest arguments for greater inclusion come from a philosophical, moral or ethical base. This country was founded upon the ideals of equality and opportunity for all and freedom of choice. Proponents and opponents agree that the philosophical, moral, and ethical basis for full inclusion is potent. For instance, Lieberman (1992) indicated that

The selling points for full integration are emotionally powerful. They do not lend themselves to be easily challenged...The arguments speak in ideals for all humanity. Images are presented that show friendship, loyalty, togetherness, unity, helpfulness without monetary compensation, caregiving from the heart, building a society based on mutuality of interest. As a fellow man goes, so go I. Only a cynic

would take this on. (p.13)

Across the country, attention has been focused on inclusion, although most of the attention was concentrated on how inclusion affects the students with disabilities. The effects of inclusion on students without disabilities have been limited in the research. Even in the absence of evidence, some educators question whether inclusion is best for regular education students (Hines & Johnston, 1997).

Research on students with and without disabilities has changed focus over the last decade. The 1980's presented a great deal of published research on the benefits of social interactions of students without disabilities, with students with disabilities. A number of researchers have investigated inclusive education practices and cited both social and academic benefits for students without and with disabilities (Brucker, 1994; Freagon, 1993; Giangreco, 1997; Moore 1998; Sharpe, York, & Knight, 1994; Waldron and McLeskey, 1998). The focus of these studies was on the area of math and how it affects general education students in an inclusive setting.

The impetus for mathematics reform is the poor performance of America's students on national mathematics tests (McKnight et al., 1987). It is rooted in the sociological forces, employer's mathematical expectations, life skills of adults as well as performance based and criterion based assessment approaches for evaluating student progress (Rivera, Taylor & Bryant, 1994-95). These reforms in mathematics were aimed at establishing mathematical standards, promoting literacy in mathematics, emphasizing problem solving and researched based pedagogy in how children learn mathematics. Despite the strong advocacy for inclusion, minimal research exists on the efficacy for

special education students and even less regarding its effects on regular education students in mathematics.

Little research is available that studies the math achievement of students with disabilities during adolescence. Adolescence is a crucial time when students are beginning to consciously act on life and career choices. Students begin to interact more intensely with each other, learn to recognize and appreciate their abilities, interests, and differences. According to Tomlinson, Moon and Callahan (1998), middle school students are diverse learners. Middle school students appear to move from socially awkward to socially adept and can range from those who are emotionally insecure to those brimming with confidence. Many are socially inept: their behaviors fluctuate between child to adult personalities, sometimes taking on these characteristics in the same day. There are several studies that demonstrate that as students move from elementary to middle schools, achievement and motivation decline as well as positive attitudes towards education. Their thinking moves from concrete concepts to abstract thought on the elementary level. In elementary schools, the class sizes were smaller, projects were more stimulating, with cooperation and collaboration among teachers. Often, middle school emphasizes rote memorization, competition, and less creative assignments. Eccles and Midgley (1989) and Wigfield et al. (1991) reported in their research that negative changes occurred over the transition to adolescence changes, which were due to contextual changes in the school environment.

According to the Third International Mathematics and Science Study (TIMSS), the nation's attention continues to focus on mathematics teaching and learning. The TIMSS results indicated a mediocrity in the mathematics teaching and learning in the

middle schools and beyond (Silver, 1997). The findings of TIMSS combined with other related research, suggests some pathways, whereas progress can be made. A necessity of a serious commitment to improve mathematics is essential to all students.

Statement of the Problem

The purpose of this research is to determine the effects of inclusion on mathematics achievement of general education students in two middle schools. The performance of learning disabled and general education students will be analyzed. The problem will be investigated in two urban middle schools with a total population of approximately 1560 students.

Hypothesis

Ho1: There is no significant difference between the math academic achievements of middle school general education students in inclusive classes as compared to students in non-inclusive classrooms.

Research Questions

The major research questions addressed in this study are:

1. How does the mathematics academic progress of general education students in an inclusive setting compare to the mathematics academic progress of general education students in a regular education classroom setting?
2. Is the placement of students with learning disabilities instructionally disruptive to students without disabilities when math instruction is provided?

Purpose of the Study

The purpose of this study is to increase the understanding of the effect of inclusion on the math performance of general education students. There is a lack of in-depth, research-based information in the area of effects on general education students in inclusive settings. Each year, more and more disability students are instructed in general education classes. New Jersey is one of the states that have been criticized for educating too many students in restrictive settings. Therefore, this study reviews the effects of inclusion in math on the general education students in middle school as a result of integrated placement.

This study was designed to address the academic progress and outcomes of general education students who received math instruction in inclusive classrooms. The study will discuss the significance of math instruction, teacher collaboration, inclusion, staff development training, instructional time, student achievement, and teacher commitment. Since there was conflicting data in the research pertaining to the negative effects of non-disabled students receiving instruction in the same classroom with disabled students, this study will be significant. Waldron and McLeskey (1998) investigated the effects of an inclusion program on reading and math achievement of students with learning disabilities. The results revealed that general education students made significantly more progress in reading and comparable progress in math compared to learning disability students in resource settings.

Manset and Semmel (1997) investigated the academic achievement gains of students with mild learning disabilities in inclusive programs. Their findings showed that inclusive programming effects were not very positive. Although methodological

problems limited the findings regarding the efficacy of inclusive programs, the researcher concluded that the evidence that a model of wholesale inclusive programming that is superior to a more traditional special education service delivery model does not presently exist.

The educational reform initiative of the 21st century differs from the past reform effort within the context of the broader school restructuring movement (Nisbet, 1992). The new vision focuses on what is best for all students; unlike the past reform initiatives which were limited attempts to change special education techniques and strategies on how services would be delivered, or to add to the approaches that were already being used in the regular education classroom. The 21st century predictions emanate from research on the need for school reform, national goals, federal legislation and local reform efforts.

Limitations and Delimitations of Study

As policies are adopted and procedures formulated, decisions have to be made as to the extent to which services are provided for special education and general education students in an inclusive setting. School districts can analyze the research that was designed to determine the effects of inclusion on mathematics achievement in middle schools as they establish their inclusion models for instruction.

This study was researched in two New Jersey urban middle schools. The number of subjects in the study was limited to those students enrolled in the middle school math classes during the 2003-2004 academic year in grade 5, 6, 7 and 8.

This study is limited to the respondent's interpretation of the questions.

This study is limited to personal and professional biases of the respondents due to training in inclusion or from their own personal experiences.

In addition, this study will not look at class size, family background, parental involvement, and the textbook being used. Other factors that were not investigated were social benefits, teacher perceptions of inclusion and the amount of math homework assigned to students.

Definition of Terms

Academic Achievement: Grades assigned by teachers and /or test score results that reflect the skills developed and knowledge attained by students with regard to subject matter (Good & Merkel, 1973).

Collaboration: Professional interaction between two educators, in which shared program planning, implementation and evaluation are designed to be more effective than if either professional worked alone (Bauwens & Hourcade, 1995).

Inclusion: The enrollment of students with disabilities in the regular classroom they would have attended if they did not have disabilities (Werts, Caldwell, & Wolery, 1996, p. 53).

Individual Education Program (IEP): An educational program designed to meet the unique needs of a student with disabilities. (DEDE, F-4, 1996).

Least Restrictive Environment (LRE): A provision contained in the IDEA that requires school institutions to ensure: 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 classes, separate schooling or other removal of children with disabilities from the regular environment occurs only

when the nature of the severity of the handicap is such that education in regular classes with the use of supplementary aids and services can not achieve satisfactorily (Individuals with Disabilities Education Act, 29 U.S.C. 1401, q.,18; 34 C.F.R.sec.300.550).

Mainstreaming: Mainstreaming involves the placement of a special education student into one or more “regular” education classes (Freagon, 1993).

Middle School: Educational level referring to either grades 5, 6, 7 and 8, or grades 7, 8 and 9, depending on the individual district. Synonymous with junior high school.

Summary

Since today’s standards reform and inclusion mean that the expectations for all students with disabilities has intensified, students with disabilities are increasingly remaining in the regular education classrooms for most or all of the school day. Instruction by the general education teacher along with the special education teacher share the responsibility of ensuring that all students learn the same core content and concepts in the curriculum. This study will address the academic progress and outcomes of general education students receiving math instruction in inclusive settings.

Mathematics instruction has presented challenges for general education students as well as special education students. Wiig and Semel (1984) expressed that the language of mathematics as being “conceptually dense” because one can not gain conceptual meaning of mathematics by reading the entire math sentence. These researchers indicated that students must comprehend the meaning and operation of symbols encountered in number sentences.

To enhance the research on the effects of inclusion in math on the general education students in middle schools, the following factors will be addressed: a) inclusion, b) teacher collaboration, c) math instruction, d) staff development training, e) instructional time and, f) teacher commitment. Research findings suggest that these factors are related to successful inclusion.

Organization of the Research

This research study is organized in five chapters. Chapter I, Introduction, provides the background information that covers: statement of the problem, hypotheses, research questions, purpose of the study, limitations of the study, and definition of terms.

Chapter II, Review of Relevant Research and Literature, discusses the most current and relevant work related to this study.

Chapter III, Methodology, will define the design of the study, subjects, selection of subjects, instrument, data collection, data processing, and analysis.

Chapter IV, Results and Findings, will report the outcomes of the methodology of the chapter. Analyses and descriptive summaries will be included.

Chapter V, Summary, Conclusions and Recommendations, will provide information on all of the chapters and including the summary of the purpose of this research, discussion of the findings, and recommendations for further research.

CHAPTER II

Review of the Related Literature

Introduction

This chapter presents a review of the literature as it pertains to the effects of inclusion on mathematics achievement of general education students in two middle schools. Among the topics addressed in this chapter include the following: Introduction, Historical Overview, Inclusion, Mathematics, Student Achievement, Collaboration, Instructional Time, Staff Development, and Teacher Commitment.

Educating children who have disabilities in classes with their non-disabled peers is considered inclusive schooling. The National Center on Educational Restructuring and Inclusion (NCERI) developed a definition, which was comprehensive and illustrative of many definitions published of the term inclusion. Inclusion made provisions for all students, including those with significant disabilities, equitable opportunities to receive effective educational services, with the needed supplementary aids and support services, in age-appropriate classrooms in their neighborhood schools in order to prepare students for productive lives as full members of society (p. 99).

There is a limited amount of quantitative research regarding inclusive education. Staub and Peck, (1995) reported that based on their data, many inclusion supporters used anecdotal and qualitative research which provided support for inclusive schooling. These researchers examined the research relevant to inclusion and concluded that restructuring would not affect the academic progress of non-disabled children in a negative manner. Based on the limited quantitative research, Staub and Peck (1995) suggested that inclusion contributed to the growth in social cognition, improved student self concept,

reduced fear of difference, contributed to student's development of warm and caring friendships, and improved student achievement.

The research on the effects of inclusion on non-disabled students has been primarily descriptive and limited. The majority of the studies researched have been at the early childhood level, with relatively few studies on elementary and secondary age students reported (Staub & Peck, 1995). These researchers noted that existing studies indicate that inclusion does not harm students without disabilities.

Historical Overview

The concept of including children with disabilities in general education classrooms with general education children has created much debate and provoked questions about what effect inclusion has had on the general education students in the class. These questions, despite the controversy, have demonstrated that inclusion has substantial support from the political, judicial, and legislative venues (Alper, Schloss, Etscheidt, & MacFarlane, 1995). Promoting citizenship is paramount to public education. The preparation of a knowledgeable and informed electorate ensures the election of responsible and compassionate leaders.

During the 1950's and 1960's, courts and legislatures were pressured to make changes in educational services for children with disabilities. These efforts changed the treatment of America's disabled population. The Education for All Handicapped Act (PL 94-142) signed by President Gerald Ford in 1975 strengthened these efforts. This Act embraced two basic rights for children with disabilities. All children were to be afforded a "free appropriate public education" and it had to be delivered in the "least restrictive environment". The least restrictive environment required that students be placed where

they could be the most successful. As a result of these guaranteed rights, the general education classroom was not necessarily the least restrictive environment for all children. The placement was deemed inappropriate if a student with disabilities jeopardized the quality of education in the classroom. When Public Law 94-142 was implemented, most states did not interpret the least restrictive environment as the general education classroom and as a result, a “pull out” placement option was implemented (Walther-Thomas, 1997).

In the 1954, decision in *Brown v. Board of Education of Topeka*, the Supreme Court ruled when a state provides education, the public schools were the vehicle by which equal education must be available to all children (Villa & Thousand, 1995). *Brown v. Board of Education* helped pave the way for different sub-groups to advocate for equal opportunities, especially those representing disabled children. Separate but equal was deemed a violation in the 1950’s. This court case also had an impact on segregation.

Prior to the 1970’s, states could choose to provide or deny school enrollment to children with disabilities (Heward & Cavanaugh, 1993; Keefe & Davis, 1998), whereas other states provided educational services to children with disabilities. These states provided services through the education of “handicapped” children in the permissive legislation (Hallahan & Kauffman, 1997). Only since a federal court case in 1972 and the passage of federal legislation in 1975, have all states been mandated to provide a free and appropriate public education to all students with disabilities.

The Individuals with Disabilities Act of 1990 (PL 101-476), which updated PL 94-142, strongly advocated that children with disabilities to be educated in their home-school and general education classroom whenever possible. These regulations have

required that schools make a significant effort to find an inclusive solution for children (Rogers, 1993). The courts gave serious consideration to inclusion of children with severe disabilities in mainstream education. Full inclusion has not been made mandatory, therefore mainstreaming may not be appropriate as students advance through school. The court case of *Daniel R. R. v. State Board of Education* (1989) established legal standards for making decisions regarding inclusion. These standards are:

1. Will the child receive both an educational benefit, and nonacademic benefit from the regular education placement?
2. Will the child's overall educational experience in the mainstreamed environment, balance 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? (as cited in DeMitchell & Kerns, 1997, p.164)

Since the inception of the Education for All Children Act, the recent legislation in support of inclusion was The Individuals with Disabilities Act Amendments of 1997, signed into law by President Clinton. The IDEA Amendments of 1997 goes a step beyond compliance in the pursuit of quality (Williams & Katsiyannis, 1998). Educators were required to plan for at-risk students although not labeled disabled, as included in the IDEA Amendments.

During the 1960's, federal and state education agencies convinced advocates that children had not been given a quality education by agencies that were enforcing broader federal mandates. Congress in 1966 under Title VI of the Elementary and Secondary Education Act mandated a Bureau for the Education of the Handicapped to provide

grants to states to expand and improve programs for educating children with disabilities through grants (Martin, 1968). The Bureau was responsible for administering programs and projects relating to the education and training of children with disabilities, including programs for training teachers and for conducting research in the field of special education. By the late 1960's and early 1970's, there was no state that served every child with disabilities; in fact some children were turned away. Some children were placed in inappropriate programs. At least 45 states had passed some form of legislation mandating education for children with disabilities by 1963 (U.S. Congress, 1995).

In 1972, in *Mills v. Board of Education*, a suit against the District of Columbia Public Schools was filed based on the refusal to enroll some students and expel others exclusively on the basis of their disability. The Board of Education did not provide schooling for these students, which violated controlling statutes and board regulations. An estimated 12,000 children with disabilities did not receive services because of budget constraints. The U. S. District Court ruled that school districts were constitutionally prohibited from deciding that they had inadequate resources to serve children with disabilities. Because of the equal protection clause of the Fourteenth Amendment, school districts could not cite the burden of inadequate funding to fall more on children with disabilities than on other children as a reason. The Fourteenth Amendment protected the rights of students with disabilities. State laws do not have the authority to override this constitutional protection.

Mills v. Board of Education had a pivotal affect by guaranteeing children equal access to public education in all aspects of schooling. When their school considered changes in their status such as: suspension, expulsion, reassignment, and transfers out of

regular education classrooms, the students were entitled to full procedural protection with the right to be heard by legal counsel (U.S. Congress, 1973).

Despite the fact that all school districts in the United States were required to offer minimal special education programs, seven states were educating less than 20% of their children with disabilities. Nineteen states serviced fewer than a third. Only 17 states offered service to at least 50% of the disabled (U.S. Congress, 1995).

Litigations and advocacy movements continued to define and develop the principles for providing an appropriate education in the least restrictive environment. Under the IDEA, the children with disabilities had to be educated in a regular classroom whenever appropriate (NASBE, 1992). The IDEA required that in order to meet the needs of each individual student, a range of educational placements had to be made available. In the 1980's, advocates for inclusion advocated for LRE's ultimate implication of consolidating special education and regular education, as noted in the literature from Stainback and Stainback (1990), and Grider (1995).

With the growing movement to integrate special education services in the general education classrooms, expenditures were no longer being divided specifically between special and general education. Special education services were paid for with a combination of local, state and federal funds. In most states, the expenditures were known to be significantly high, although the exact expenditures were unknown. Expenditures varied by the type of disability and nature of the services provided.

The passage of the Education for All Handicapped Children Act of 1975 transformed a patchwork of programs for students with disabilities. This law stated that no one should be denied the right to a free and appropriate public education in the least

restrictive environment. The 1975 Legislation Education for Handicapped Children Act, was updated in 1990 and reinforced by IDEA 1997 and 2004. IDEA replaced Public Law 94-142 and mandated “free, appropriate public education for every child or youth between the ages of three and twenty-one regardless of the nature and severity of the disability he/she may have had” (Walther-Thomas, 1997, p.487).

Inclusion

Profound challenges of inclusion are defining what unexamined notions of what “ordinary” and “normal” really mean (Forrester & Pearpoint, 1997). It requires that one understand the origins, implications, past and present definitions of inclusion in research. Research to date is based on different definitions of inclusion.

When the IDEA was passed in 1974, the definition for the term inclusion was introduced, thus becoming the turning point for the placement of students with disabilities. All schools were required to receive federal funding, by law, to make provisions for a free and appropriate education for all students regardless of their handicap. Yet, the term inclusion does not appear in the IDEA text.

Ferguson (1995) defines inclusion as a meshing of general and special education reform initiatives and strategies to achieve public education that includes all children with high quality education by providing a meaningful effective curriculum and student supports. Freagon (1993) defined inclusion as a rather unique unstated term under the IDEA (IDEA, PL 101-476). It describes increasing practices of educators.

Halvorsen and Neary (2001) pointed out that inclusion differs from mainstreaming in that students do not belong to any specialized environment based on ability, that students were members of the regular education class. This practice was

implemented in middle schools using the true middle school model. In these middle schools, the first association for students with disabilities was to be a member of the classroom, not a member of the special education population. Common in the middle schools was the co-teaching model, which lends itself to inclusive practices. The co-teaching model was not a new concept in public schools. This model embraces ongoing classroom participation by supporting teams. Although co-teaching has been found to be difficult to implement without proper teacher preparation and support services, research suggest that co-teaching is an approach that offers potential benefits for disabled students and low achieving students, including the teachers who teach them (Karge, McClure & Patton, 1995). Where interdisciplinary teaching teams collaborate in their planning, the co-teaching model is more successful. Routines to address long-term and weekly/daily instructional planning issues were developed to help ensure that all students receive the appropriate instruction to help them reach their learning potential.

According to Tomlinson, Moon, and Callahan (1998), middle school is a land of diversity. These researchers compared students to puzzle pieces trying to fit into a larger completed area. In middle schools, students are so diverse. Inclusion and teaming allows the learning support that students need to work cooperatively with their peers in an academic setting. In teaming students at the middle school level, teachers have the flexibility to create learning environments effective for all students (Walther-Thomas, 1997).

A review of the literature identifies a variety of inclusive programming that American public schools have implemented. The research findings are primarily based on philosophical and empirical data. Recent studies reveal the effectiveness of one or

more aspects of inclusion, and fall within three categories (Banerji, 1995). These categories include: a) studies examining students' academic achievement outcomes, b) affective or social behavior outcomes and, c) program processes and delivery. Most research on the subject of inclusion concluded that integrating students has beneficial effects on both students with learning disabilities and regular education students in inclusive schools (Banerji, 1995).

Research also reveals that inclusion has had a positive academic impact on all students. This positive impact could be seen in two ways: a) positive impact on the disabled student, b) little or no signs of decrease in academic performance on the part of the non-disabled student (Hunt, Staub, Alwell, & Goetz, 1994). These researchers arrived at this conclusion in their study that students assigned to cooperative learning groups in math in the classroom did not appear to have a significant difference from those groups that had a disabled child compared to those who did not have a disabled child participating in the group activity. Cook et al. (1995) discovered in their large-scale study of the differential effects, that effective schools' quality indicators have an impact on regular and special education students' achievement. Teachers were surveyed in approximately 56 schools over 2 years to determine the extent that effective schools quality indicators (academic emphasis, administrative feedback and teacher recognition, frequency of professional interaction, etc.) were being implemented. In addition, standardized reading achievement test scores for regular education and special education students were collected in each of these schools. The researchers found that schools, whose regular education students were demonstrating gains, also were inclined to contain special education students who were showing achievement losses. The result of the study

were somewhat mixed, as the gains and losses were typically of a “small magnitude.” Across the years surveyed, the effect of quality indicators was not large or consistent for regular education students.

Lipsky and Gartner (1997) from the NCERI’s National Study of Inclusive Education (1995) arrived at the conclusion that the data demonstrated a strong trend toward improved student outcomes (academically, socially and behaviorally) for special and general education students. Hunt et al. (1994) compared the academic achievement of non-disabled students in cooperative learning groups that did or did not have classmates with severe disabilities. The researchers arrived at the conclusion that there were no statistically significant differences between those groups on math achievement pre- and post-test scores.

Hines and Johnston (1996) called attention to the ethical implication of inclusion of special education students being morally right. They expressed the view that some educators questioned whether inclusion was appropriate for regular education students. Hines and Johnston (1996) provided some insight into the difference in inclusion verses mainstreaming. Inclusion establishes the student’s “right” to a regular classroom while mainstreaming was viewed as a benchmark where students “earn” their way back into the classroom. Presently, the inclusion paradigm shift has challenged educators to look beyond mainstreaming to find inclusive strategies to meet the needs of individual students.

Research was completed by Sharpe, York and Knight (1994) on the impact of inclusive school environments on the academic performance of general education students. This study examined the academic performance differences of 35 general

education students provided with instruction in an inclusive environment. The inclusive group and 108 general education students were not in inclusive environments. Group achievement test scores and report card ratings were indicators of their performance in the academic areas of reading, language arts, mathematics, and areas of conduct and efforts. The results of this research revealed no statistically significant differences between the groups in each academic and behavioral measure.

The success of inclusion depends upon the instruction, the context being taught, and the learner (Tisdell, 1995). Teachers and administrators have rethought the concept of one teacher in his or her classroom. This model has been the norm (Lee, Smith, & Croninger, 1995). The current movement is toward an "organic" model, where teachers are encouraged to work collaboratively to face the challenges in the classroom. The organic model provides an avenue to benefit by working as a team to meet individual student needs. This approach was promoted as a result of special education mandates for inclusive classes.

Collaboration

Currently, the philosophy is to include all students in the same class, which brings about the collaboration between the general education and special education teachers cooperatively to join their professional expertise, perspective, and skills. Collaboration is the backbone of successful inclusion (Edmiaston & Fitzgerald, 1998). According to research, many teachers are poorly prepared for the role as collaborators and co-teachers (Bauwens & Hourcade, 1995; Pugach & Wesson, 1995; Walther-Thomas, 1995). Collaboration calls for the shift in the control of the teacher and the shared responsibility

of the learning environment instead of individually taking on the responsibility of the entire job.

Collaboration occurs when the general education, special education teachers, and paraprofessionals work together as a team to plan instruction, create modifications, and problem-solve. Administrative involvement is essential in ensuring the success of inclusion programs. Principals, as the instructional leaders of the schools, play a major role in facilitating collaborative efforts of instructional staff (Meyerowitz, 1990). Effective principals assist in providing the vision, moral, purpose, recognition, and encouragement that teachers need during the implementation of the inclusion process (Barth, 1990; Fullan, 1993).

Collaborative support among school staff unfolded from the shift to inclusive classrooms. Currently, many inclusive schools have instructional support teams (IST), which link all school resources to maximize the needs of students with social-emotional problems, persistent academic, or behavior problems. Giangreco (1995) suggests that the IST: a) ensure that regular education services are used effectively, b) provide peer support and teacher problem solving assistance and, c) assist teachers of special needs students.

Giangreco (1996) offered 10 recommendations to general education teachers working in an inclusive setting: a) work with other team members, b) welcome the students in their class, c) be the teacher of all students, d) make sure everyone belongs to the classroom community and everyone participates in the same activities, e) clarify and share expectations with team members, f) adapt activities to the students' needs, g)

provide active and participatory learning experiences, h) adapt classroom/arrangements, materials, and strategies, i) make sure support services help, and j) evaluate the teaching.

The movement from individualized teaching and team teaching has been a major component of school organization and curricular reform that has been favored strongly by professionals in education (Bergen, 1994; Bittner & Joyce, 1995; Latz & Dogon, 1995; Lee, Smith & Croninger, 1995; Rainforth & England, 1997). Administrators and teachers were required to reconsider the manner in which the “closed-door classroom” model had impacted instruction from kindergarten to the college level. Lee, Smith and Croninger (1995) analyzed the effects of restructuring student achievement in many secondary schools nationwide. The current movement was toward a model in which teachers were encouraged to work collaboratively to examine the challenges they faced in the classroom, and then decide collectively how to best problem-solve as committed individuals.

With the inception of Public Law 94-142, the Education of Handicapped Act of 1995 renamed the Individuals with Disabilities Education Act (IDEA), the team teaching approach was promoted because of special education mandates for inclusion classrooms. Team teaching incorporated teacher joint planning and the division of the lesson planning and instruction. Full accountability of the class is the responsibility of both teachers. In team teaching, the student’s success depended upon the ability of the team to identify strategies that would best enhance the level and quality of instruction to support student success in an inclusion classroom.

Whether inclusion is in an elementary, middle, or high school, changes should occur for both general and special education teachers. An adjustment for the general

education teacher occurs in the classroom. This adjustment takes place when collaboration with the special education teacher and the general education teacher are planning and discussing lessons together. Collaborative planning should be an ongoing process.

The structure of many middle schools facilitates professional collaboration and peer support, an important ingredient for successful inclusion. The foundation for an effective middle level school is interdisciplinary team organization. Interdisciplinary teaming gives the opportunity for selected group of teachers to work with the same group of students. Teachers become flexible and creative in providing an efficient learning environment for each student in the group. Middle school educators claim that teaming offers students an opportunity to maximize their learning (Walther-Thomas, 1997).

Yatvin (1995) believed special education teachers do not have the support or time to collaborate with general education teachers; therefore instruction in a resource room tended to be skill related rather than a holistic approach to learning. Collaboration at the secondary level is equally complicated. Departmentalization is one of the factors that lend itself to this complication due to the isolation of educators and the lack of common preparation time (Jackson, 1993; Smith 1991).

Collaboration allows time for planning, development, and evaluation. Co-planning must occur frequently according to research. "Planning sessions were viewed as priorities by both teachers; they refused to let other competing responsibilities interfere with their planning sessions" (Walther-Thomas, Bryant, & Land, 1996, p. 260).

According to Bauwens, Hourcade and Friend (1989), co-teaching is a process used as "an

educational approach in which general and special educators jointly plan for and teach heterogeneous groups of students in integrated settings” (p.19).

The teaming approach to inclusion can be a difficult task. Major changes in educators' attitudes and skill levels are required to promote changes, as well as a build trust among educators who traditionally control their own classrooms and usually ignore other classrooms. Bergen (1994) and Trent (1998) called attention to many problems that affect team teaching when used in conjunction with inclusion such as: participation of some professionals more fully than their colleagues, team meetings often lack meaningful or productive discussion and decision-making. In addition, it is difficult to integrate diverse interests and methods of teaching strategies.

According to Ripley (1997), and Bakken and Clark (1998), effective team teaching in an inclusive setting could offer benefits to teachers as well as students. The instruction becomes unified instead of fragmented and separated into disconnected studies. These researchers clarified the point that the building level principal and other administrative staff had to assist the collaborative teams to insure that adequate support was in place to sustain new activities and to develop and maintain curriculum objectives.

As a result of collaboration, effective co-planners learned to share their roles and responsibilities. Both special education and general education teachers developed a trust in each other's skills and increased their professional knowledge and expertise. Consequently, through effective collaboration or co-teaching, long-term and short-term planning issues were addressed.

Friend and Cook (1996) presented a description of key elements necessary for collaboration. In addition to being voluntary, mutual agreements of goals and

responsibilities must be shared by the collaborators. Equal responsibilities for decision-making and taking responsibility for the outcomes of those decisions should be agreed upon by all members.

The literature on collaboration, related to inclusion, described teacher behavior, such as sharing goals, being able to listen, trust and openness. Teamwork, cooperation and a shared vision were repeatedly identified as important factors in inclusion (Thousand, & Villa, 1990). However, inclusion, collaboration, teamwork or cooperation does not function in this manner, and resistance is evident (Katzenbach & Smith, 1993).

The literature is rich with studies on collaborative teaching. Thousand and Villa (1992) researched needed aspects of collaborative teams and the dynamics added to restructuring. Maroldo (1994) found that special and general education teachers needed to learn common language, due to the isolation they had experienced. Each member of the collaborative team should accept the responsibilities for student outcomes by decisions made by the team members.

Mathematics

As a result of current findings, mathematics education has undergone reform. America's students have demonstrated chronic poor performance on national mathematics tests (McKnight et al., 1987). These current findings maybe the result of changing sociological forces such as; technological advancements, cultural and linguistic diversity. The life skills that were necessary for adulthood and interest in alternative assessment approaches for evaluation of student progress have experienced change (Rivera, Taylor, Bryant, 1994-95). The reform focused on redefining the mathematics curriculum and instructional goals and objectives, literacy in mathematics, and

methodology. Not until the launching of Sputnik were mathematics educational reform initiatives pushed into the national consciousness (Fullan, 1993). Carmine (1990) documented the need for reform. Now more than 40 years later, the development of standards to provide direction for the curricular and pedagogical reform has been used as an attempt to improve mathematics performance in the United States. Hofmeister (1993) cited that research pertaining to mathematics education was not like other curricular areas where there are distinct approaches to learning.

The national reform movement over the past 90 years has not produced the best results. Some of the basic psychological aspects of learning were neglected (e.g., attention, metacognition, memory, perception) and compounded the math problems of students with disabilities (Lerner, 1993). An additional reform movement (i.e., The National Council of Teachers of Mathematics (NCTM) Standards that emerged advocated discovery learning via constructivism for teaching mathematics. Since 1990, Carmine (1992) claimed that rigid adherence to a constructivist paradigm resulted in five reform cycles in mathematics. One of the first reform movements that specifically addressed mathematics education resulted from the public's reaction to U.S. preparedness for World War II. Taking the side of classical education, the 1893 Committee of Ten's recommendations for standardizing college entrance requirements with the idea that more advanced studies of mathematics should be required in high schools. This reform resulted in curriculum changes that required the study of geometry and trigonometry for students pursuing a college education.

Large scale reform effort devoted to improving mathematics and science education moved onto the educational landscape nationwide, although the focus was

again on the curriculum and math content. The New Math was based on a conceptual theory that was nontraditional. The focus of this reform movement was on changing the curriculum and the content of the class and not on pedagogical education.

The three major movements in mathematics were New Math, Back-to-Basics, and Mastery Learning. These three reform initiatives focused on fixing the existing system of education by focusing on making changes in the programs and/or fixing the teachers. These reforms focused on the use of teacher training to implement and institutionalize the goals of the reforms.

Statewide education reforms and funding targeted at disadvantaged students seems to be contributing to mathematics improvement (NCTM, 2003). According to the New York Times ("National study examines reasons why pupils excel," 2000), gains were made in some states from reform efforts. The Rand Corporation, a nonprofit, nonpartisan corporation cross analyzed several factors contributing to statewide student achievement on the National Assessment of Educational Progress (NAEP) tests from 1990 to 1996, which was close to the time it expected the first effects of the state reform efforts to become noticeable. The Rand report noted that math scores were rising across the country at an average of one percentile per year, although there was a variance among states. The report also noted that other influences on student achievement, smaller class sizes for primary grades, better resources for teachers and programs for disadvantage students were all related to student success.

The NCTM (1989) accepted and published essential components of a math curriculum, which became known as the "NCTM Standards." This document outlined what students should learn in mathematics in grades K through 12, nationwide. The

standards were an attempt to change both the math curricula and pedagogy (Hofmeister, 1993). Emphasis was placed on the understanding of mathematical processes in order to communicate the language of math. Emphasis was also placed on problem solving skills and the seriousness of students gaining “mathematical power” (NCTM, 1989, p. 5). The chairman who produced the standards document, T. Romberg, implied that “mathematical power means having the experience and understanding to participate constructively in society” (Romberg, 1993, p. 37). The concepts and skills listed in the standards for all children are considered appropriate.

There have been concerns expressed by many educators regarding the application of the Standards to student with disabilities (Carmine, 1992; Hofmeister, 1993; Hutchinson, 1993; Mercer, Harris & Miller, 1993; Rivera, 1993). One of the concerns was the lack of references in the Standards document to students with disabilities. The No Child Left Behind Act (NCLB) is striving towards a vision to provide rigid and demanding subject matter for all students. Mathematics is one of the disciplines crucial in this effort. According to a report by the Council of the Great City Schools, the first year of the federal NCLB Act, students in the nation’s big-city school systems made substantial gains in mathematics and reading on state-mandated assessments (Council of Great City Schools, 2004).

Waldron and McLeskey (1998) researched the effects of an inclusion program on reading and math achievement of students with disabilities. The results of this study indicated that 38% of learning disability (LD) students who were educated in inclusion classes made comparable progress in mathematics compared to students receiving

services in a resource setting. The results also demonstrated that more significant progress was made by the mild learning disabled students.

Flechner, Garnett, and Shepherd (1982) conducted a study, which found six graders with learning disabilities solved basic addition facts similar to third graders without disabilities. These researchers also found that fifth graders with learning disabilities solved one third as many multiplication problems as students without disabilities on timed assessments. It was reported in research that secondary students with mild disabilities accomplished proficiency in math at the fifth and sixth grade level although they did not perform well on required minimum competency tests (Cawley, Baker-Kroczynek & Urban, 1992). Comparatively, Cawley and Miller (1989) reported that LD students' mathematical knowledge had a tendency to progress 1 year for every 2 years they were attending school

Pressley and McCormick (1995) suggest that students be instructed on how to use specific strategies to solve problems. These researchers' findings indicated that students who receive explicit instructions in problem-solving strategies have a tendency of becoming more skilled in solving math problems. Bley and Thornton (1995) reported that problem solving could be difficult to teach, although it was one of the most important areas in mathematics instruction because it affects a person's everyday life.

Schoenfeld (2002) examined the Pittsburgh, Pennsylvania school district to find out how a curriculum reform based on the application of the NCTM standards and principles supported minority students. This study concluded that in order to ensure sustained improvement in mathematics instruction, a high-quality curriculum must be provided, the assessment aligned to the curriculum, and a stable, knowledgeable, and

professional teaching community must be in place. According to Carmine (1997), the major educational goal for all students, including those students with disabilities, is better problem solving performance. In order to assist students with their reasoning and probability, a well designed curriculum can facilitate the learning. Once the curriculum is available for use in the classroom, steps must be put in place to ensure that teachers are supported in the use of curriculum materials (Silver & Stein, 1996). Manswell-Butty (2001) conducted research that supported Schoenfeld's conclusions. She found that minority 12th grade students receiving reform instruction had significantly higher achievement scores than students receiving traditional instruction.

McKinney and Osborne (1993) demonstrated in their longitudinal research that regardless of current levels of academic performance, the ability to persist on academic tasks was a key predictor of "how well" and "how much" students learn in school. Students' active engagement in learning is related to increased achievement in areas such as reading and mathematics have long been known. Bettge and Hasselbring (1993) found that when providing students with "anchored instruction," which is an array of real world problems to be practiced and expanded upon, their knowledge of mathematical operations involving fractions could help students transfer their problem solving abilities to new situations.

Much research has been carried out to identify components that contribute to successful mathematics instruction. It is fact that students learn mathematics skills best when teachers use direct instruction (e.g., organizers, guided and independent practice, modeling, examples) and some students can benefit from working in a variety of instructional settings (e.g., cooperative learning groups, peer tutoring). The challenge for

educators is to identify practices that are the most effective for their students and apply the instruction systematically to enable students to master math curriculum objectives. As a result of the Third International Mathematics and Science Study (TIMSS), an intolerable and pervasive mediocrity has evolved in the middle schools and beyond. Students in grades 7, 8, and 12 achieve poorly in math in comparison to the rest of the world (Stigler & Hiebert, 1997). With mathematics difficulties that are evident and the implementation of inclusion programs, this study will add to the existing research and provide a foundation for additional research in this area.

Staff Development

In order for the staff to meet the needs of the students, staff development is necessary for best practices and planning the curriculum (Benninghof, 1996). Staff must meet to discuss the needs of students as related to their participation in the general education curriculum. According to Willis (1995), teachers are not adequately trained and resources are not always available.

Staff development sessions provide one way that teachers can earn valuable training. Staff development training must be made available as a part of every teacher's workday. Areas of emphasis include: (a) emphasis on higher-order thinking skills, (b) integrated curricula, (c) interdisciplinary teaching, (d) multicultural curricula, and (e) life-centered curricula.

Six criteria that were instrumental to developing an effective staff development training sessions were identified by Bernal and Torres (1990). The criteria were a) goal match, b) multiple sessions, c) orientation, d) collaborating, e) practice/sharing, and f) follow-up.

Educators and other staff members have different levels of readiness and skills for inclusion. Some have had many years of experience, experiences that were accommodating, whereas others have taught homogeneous groups of students. Collaboration comes natural for some educators, while others need time and training to structure a collaborative relationship. Knowing that there are varieties of needs, planning support, and staff development is essential in order to alleviate the “one size fit all.”

In 1997, the United States Congress passed an amendment to the IDEA, which called for joint planning between special and general education teachers for special education students. This report contained the results of an in-service needs assessment conducted as part of an overall Comprehensive System of Personal Development that states were required to develop by law (Buell, Hallam, Gamel-McCormick, & Scheer, 1999). The goal of this report was to examine the factors contributing to teachers’ ability to meet the educational needs of students with special needs in an inclusive setting. The training needs and in-service training for general and special education teachers were highlighted in the results. Both general and special education teachers were receiving training through a variety of programs to assist them in teaching in an inclusive setting. Currently, teachers must become more responsible for meeting the needs of all students in comparison to a quarter of a century ago when general and special education teachers were trained separately. Separate training brought about a dual education system in which the special education teachers were responsible for the instruction of special education students and general education teachers took the responsibility of “regular education students.”

The Education of All Handicapped Children's Act (EHA) mandated that to the maximum extent appropriate, children with disabilities in public or other care facilities be educated with non-disabled peers. The reauthorization and renaming of the EHA became the Individuals with Disabilities Act (IDEA) in 1990. The amendment to the IDEA asked for improved outcomes and results for disabled students by getting general education teachers more involved with students with disabilities. This practice brought about the requirement that general and special education teachers collaborate to meet the needs of all the students. The term "full inclusion" described the setting for students with and without labels who were being excluded from the general education setting. Hardman, Drew and Egan (1999) accepted the definition for full inclusion as meaning support services come to students with special education labels who are placed in general education classrooms.

According to Benninghof (1996), three factors are essential to successful staff development for inclusion: a) the district must offer a variety of activities to address the individual needs of staff and students, b) the staff development model must take into account that there are different levels of staff development readiness, and c) the implementation is the most successful when input is encouraged and change is seen as a long-term process. Staff development not only provides teachers with current strategies and techniques, it enhances the skills that the teacher already had. "Training oriented toward fine tuning consolidated our competence and is likely to increase effectiveness" (Joyce & Showers, 1980, p.378)

As a result of research studies, teachers who were trained to use different strategies to teach subject areas successfully accommodate a vast number of students in

their classrooms. Bradley, King-Sears, and Tessier-Switlick (1997) reported that preparing all teachers to teach all students suggest that pre-service teachers need content as well as pedagogy to educate all children successfully. These studies indicated that training must focus teachers to use a variety of strategies to teach subject areas; thus more students will be successful in the classroom.

Instructional Time

Research reveals in general education that time related instructional variables (e.g., time allocated for instruction and learner engagement) are predictive of academic achievement (Good & Brophy, 1986; Greenwood, 1991). The literature suggests that half of the regular school day is dedicated to instruction, which 70%-80% of students are engaged and that ratio of engagement accounts for 33% (Good & Brophy, 1986). Examining the component of instructional time is limited in research literature. It is necessary that all students benefit from instruction and the presence of students with disabilities does not diminish the quality of instruction for students without disabilities.

Reports on the use of instructional time have limited itself to students with mild and moderate disabilities at the elementary and middle school levels (Ysseldyke, Thurlow, Christenson, & Weiss, 1987). Ysseldyke et al. (1987) found different results in a study involving 122 students from 10 schools. Out of the 122 students, 92 students were identified as having mild to moderate disabilities, and 30 students without disabilities. The average engagement ratio was 57%, with minimal differences noted between student groups. The engaged time was observed within the context of allocated time, and the sample included students who demonstrated no signs of learning problems.

Hollowood, Salisbury, Rainforth, and Palombaro (1994) compared allocated and actual instructional time for six randomly selected non-disabled students that included at least one student with severe disabilities, with a comparison group of non-disabled students in non-inclusive classrooms. The researchers' findings indicated that the presence of students with severe disabilities had no effect on levels of allocated or engaged time. In addition, time lost to interruptions of instruction was not significantly different in inclusive and non-inclusive classrooms. In a similar study, Helmstetter, Peck and Giangreco (1993) surveyed 166 high school students who had been involved in inclusive classrooms in rural, suburban, and urban areas of Washington State. These students did not believe that their participation in inclusive classrooms had caused them to miss out on other valuable educational experience.

McGregor and Vogelsberg (1998) took a look at what research had shown regarding the impact of inclusion. The results support the conclusion that the performance of typically developing students was not compromised. McDonnell, Thorson, McQuivey and Kiefer-O'Donnell (1997) indicated no difference in rates of teacher engagement and therefore no negative impact on instructional opportunities. Schools in Illinois that have been successful at teaching all students reported that when general education teachers were not provided with the support, modifications, and aids, the instructional time could be a negative factor in the classroom for non-disabled students.

According to Peck, Hayden, Wandschneider, Peterson and Richarz (1989) and Shanker (1993), only one study had directly investigated the issue of non-disabled students losing time in the classroom dealing with children with disabilities. The

researchers randomly selected six non-disabled students in classrooms that had at least one student who had severe disabilities. Each classroom had support from a paraprofessional. A comparison group of students without disabilities in non-inclusive classroom were chosen. The amount of instructional time was compared. The findings indicated that the presence of severe disabled students had no effect on the time lost to interruptions and was not significantly different. Teachers and parents who had direct experience with inclusive classrooms were surveyed. These findings supported their survey responses.

Many studies sought to investigate the concerns that students with disabilities require a disproportionate amount of time in an inclusive setting, therefore, reducing educational opportunities of other students. Hollowood, Salisbury, Rainforth and Palonbraro (1994) found that the quantity and level of time spent on instruction for students without disabilities was not adversely affected by students with disabilities participating in the same classroom, which suggest no negative impact on instructional opportunities (McDonnell et al., 1997). Research suggests that middle and high school teachers monitor the academic progress of non disabled students at a higher rate in comparison to students with disabilities (Vaughn & Schumm, 1996).

Student Achievement

Sharpe, York, and Knight (1994) provided some insight on the impact of being educated in an inclusive setting on the academic performance of elementary students by using a pretest-posttest research design. These researchers contrasted measures of academic performance for 35 students who attended classes with 2 students with significant disabilities with the academic performance and behavior of their peers without

disabilities who were taught in classes that did not include students with significant disabilities. The study's findings suggested that there were no significant differences between both groups on measures of academic performance and behavior which included the Science Research Assessment Survey (Science Research Associates, 1975), the Houghton Mifflin (1982) reading series, and students' report card grades for reading, mathematics and spelling.

Saint-Laurent et al. (1998) conducted a study to examine the academic impact of third-grade students without disabilities placed in an inclusive setting. A comparison of the reading, mathematics, and spelling performance of 209 non-disabled students who were provided instruction in an inclusion setting and 232 non-disabled students provided instruction in a general education classroom that did not include students with disabilities. The results of this study revealed that mathematics and reading performance of the non-disabled students in the inclusive setting was significantly better than the non-disabled students who were instructed in a general education classroom. On the other hand, the writing performance of the two groups demonstrated no significant difference. Waldron and McLeskey (1998) conducted research to compare the academic progress of elementary students in inclusion programs with students in non-inclusion programs. As a result of the research, the setting did not influence the proportion of students with mild or severe learning disabilities who made progress that was comparable to their grade level peers in mathematics.

Kochar, West, and Taymans (2000) drew conclusions from research that the benefits of inclusion across grade levels outweigh the problems inclusion presents. These researchers believe that non-disabled students have the advantage of an additional teacher

or paraprofessional to assist them with the development of their own skills. These researchers contend that non-disabled students develop a greater acceptance of students with disabilities.

According to Walther-Thomas et al. (1996) in a 3 year study of elementary inclusive settings with both special and general education students, benefits were found where co-teaching was practiced. The results of the researchers study included the improvement of social skills for special education students and all students were reported to have developed an appreciation of their own skills and accomplishments. Similar findings were reported by Salend and Duhaney (1999) in a review of research on inclusion at the elementary and secondary levels. Researchers reported that the academic performance was equal to or better in inclusive settings for general education students, including high achievers. Similarly, Hunt (2000) reported positive effects for general and special education students at the elementary level. The researcher found academic benefits for general education students. General education students had additional special education staff in the classroom, individualized instruction, and small group instruction.

Staub and Peck (1995) reported in their study that one of the strongest conclusions was the fact that students without disabilities in an inclusive setting made significantly greater progress in reading and math than their peers in non-inclusive settings. In this study, the individual classrooms were not analyzed. Even though the results of this study supported inclusive settings, less than half of the students with disabilities made as much or more progress than their peers without disabilities.

Although the body of literature examining the effects of inclusion on students without disabilities is limited, research has indicated that students without disabilities do

not suffer academically from being in classes servicing students with learning disabilities and / or mild behavior disorders. Also, general education students develop personal, moral and ethical principles reflecting a greater sensitivity to the needs of others when placed in inclusive settings. The general education student can act as a role model for students with disabilities (Neary & Halvorsen, 1995).

Results from the California Achievement Test Scores given to non disabled students showed no difference in scores when the class was composed of one-third students with disabilities and two-thirds students without disabilities (Affleck, Madge, et al, 1988). Similarly, non-disabled students have benefited academically from programs that created an integrated classroom. With two teachers and a low teacher-to-student ratio of approximately 1-14, the non-disabled students benefited most on a comprehensive test in reading, math and language skills. In this integrated setting, non-disabled students demonstrated greater gains than non-disabled students in general education classes and the students with disabilities in integrated classes (Bear & Proctor, 1990).

Teacher Commitment

Teacher commitment is crucial to effective schools (Fesko, Kfir, & Nasser, 1997). Research findings suggest that low levels of commitment may result in a decrease in student achievement on tests and increase staff turnover (Reyes & Fuller, 1995). Teacher commitment is essential in improving teacher performance and student learning and to reduce teacher turnover (Ingersoll & Alsalam, 1997). These researchers tend to assume that changing the nature of teaching will lead to increased engagement and commitment. Research and other reports also tend to assume that the profession can be altered and the probability that teachers will continue to be excited and involved in their work will

continue the duration of their career. Research on teacher commitment in education has followed the definition of using attitudinal measures of liking the job and using the school as indicators of commitment (Rosenholz & Simpson, 1990). In this research, commitment refers to the commitment to student learning.

With the diversity of students in the schools of today, inclusion of students with disabilities, the teacher who is committed and values the learning of all students is vital. According to Baker and Zigmond, 1995, if educators do not truly believe that all children can learn, they should not be in the classroom. According to research, little is known about commitment, which consists of personal and professional investment in the workplace and its goals, as indicated by certain behaviors and attitudes that indicate additional effort. With the prevailing turnover and the expansive belief that the professional commitment of some educators has dwindled, several reforms to professionalize the profession are under way. Among these initiatives are more and better professional development, and providing teachers with more opportunities to select the schools in which they work (Sykes, 1999).

In conclusion, inclusion is not a new topic but a topic of concern as more schools are receiving funding and support of the initiation of inclusive practices. Non-disabled students as well as disabled students will be greatly affected and impacted through the implementation of inclusion. School districts need to assess the mathematics curriculum and classroom instruction that affect student learning. A need to take an in depth view of the commitment to improve mathematics achievement by all students through teacher training and professional development is another area in need of further research.

CHAPTER III

Methodology of the Study

The purpose of this study was to answer some questions about the effects of inclusion on mathematics achievement of general education students in middle schools. This chapter provides a description of the procedures that will be used in the selection of the sample. This chapter also describes the procedures used to collect, organize and analyze the data. The methodology of this study is divided into six sections: a) the research questions, (b) population of study, (c) instrument, (d) data collection, (e) data processes and analysis, and (f) hypothesis testing.

The effect of inclusion on general education is an emerging area of interest. This study, conducted in an effort to address concerns such as inclusion, staff development, instructional time, mathematics, collaboration, student achievement, and teacher commitment, focuses on the effects of inclusion in the middle schools. Through the use of both qualitative and quantitative approach, the following methodologies were used to collect the data: (a) Informal interviews that involved principals from two middle schools in face-to-face taped-recorded interviews. (b) Focus groups interviews at the two middle schools, and (c) Independent *t*-test.

The benefit of the quantitative research was to use a deductive approach to test the hypothesis stated. According to Huysamen (1997), quantitative research is used to typically discern a cycle of successive phases of hypothesis formulation, data collection, analysis, and interpretation. McCullough (1997) states that there are advantages to using quantitative research because the results are found to be able to be projected to the

population to the proportion of the respondents who would have answered that in the same manner if they had been asked.

The use of the qualitative design was most appropriate for this study in that it provided the opportunity for the researcher and/or proxy, who is a retired principal, to interview and interact with the subjects where they normally spend their time. By using focus groups as a data source, it allows individuals to share ideas and “when one person speaks out on a sensitive issue, it releases inhibitions of others who might not do so in a one-to-one situation” (Krathwohl, 1998, p.295). According to Bogdan and Biklen, (1992), researchers believe that there are multiple ways of interpreting experiences that are available through the interactions with each other, which becomes the meaning of our experiences that constitute reality.

Chapter III will present the research design used for this study. Test score data were gathered from the archival records covering the 2003-2004 academic school year. The study compared the math test scores of general education students in an inclusive setting to general education students in a regular setting without special education students during math instruction.

Research Questions

1. How does the mathematics academic progress of general education students in an inclusive setting compare to the mathematics academic progress of general education students in a regular education setting?
2. Is the placement of students with learning disabilities disruptive to students without disabilities while math instruction is provided?

Population of the Study

The population of this study was investigated in two urban New Jersey middle schools with a combined population of approximately 1560 students. Both special and general education teachers provided math instruction in the inclusive classes. General education teachers instructed math in the regular education classes. A 50 minute period of time was provided for math instruction 5 days a week in both the general education and inclusive classes. The math curriculum used in both general education and inclusive classrooms were identical. The demographics of the two middle schools are shown in Table 1.

Table 1

Middle School Demographics 2003-2004

Schools	Total Enrollment	Language Diversity	Avg. Class Size
#1	752	English 92% Spanish 8%	25.4
#2	808	English 87% Spanish 4% Creole 3% Other 6%	25.2

Student math academic scores of general education students in an inclusive setting and general education students in a non-inclusive from the 2003-2004 school year were used in this study. The math assessment scores in this study consisted of 1002 general education students in non-inclusive classes and 104 general education students in inclusive setting in Grade 5, 6, 7, and 8, which is the total number of general education students from both middle schools. Math scale scores were used to determine the

significance by using the *t*-test. Scores of the special education students were not used in this study.

A letter of confidentiality was sent to a total of 21 teachers, 7 of which were special education teachers. Of the teachers who volunteered to participate in this study, 1 (6%) was non-tenured and 16 (94%) were tenured. The letter described the nature of the research and the writer's request for teacher participants to be interviewed as a focus group. Permission was granted by 17 out of 21 (81%) of the general and special education teachers. The focal point of the teacher focus group interviews centered around the math effects on the general education students. The researcher identified seven areas for discussion in each focus group. They were also asked to share some of their collaboration issues and the staff development received to assist them in being effective in an inclusive and regular setting providing math instruction

Letters were sent to the principals of both middle schools asking permission to be interviewed on the topics of the effects of inclusion on the mathematics achievement of general education students. The focus of the principal interviews centered on inclusion, staff development, instructional time, mathematics, collaboration, student achievement, and teacher commitment. Principals, as the instructional leaders of their buildings, have an impact on how programs are effectively implemented. It is important that the researcher gain an understanding as to how principals can improve math achievement in inclusive settings. Principals were specifically asked to share information about the effects of inclusion on mathematics achievement of general education students in their particular school.

A self-addressed, stamped envelope was included with the letters for an easy return. The participation in these interviews was totally voluntary. Principal interviews and teacher focus group interviews were completed over a period of 1 month during the 2004-2005 school year.

Instrument

The performance measures employed in this study consisted of the Standard Proficiency Assessment (SPA) and the Grade Eight Proficiency Assessment (GEPA) mathematics achievement scores. Measurement Incorporated (MI) as a foundation for the development process for SPA was selected on the basis of its experience in developing tests, such as the GEPA. As a result of the State Board of Education adapting core curriculum standards, the New Jersey Department of Education established statewide assessments. As a part of a continuous effort to align district curriculum, instruction and assessment to state standards, in 1999-2000, two public school districts began to collaborate to develop a local assessment program that was closely aligned to the state core content standards. The SPA Test provides diagnostic information on student performance to identify strengths and weaknesses relative to state standards. The SPA is correlated to the GEPA and has predictive value. MI's recommendations of mathematics skills are tested in Grade 5, 6, and 7. The content clusters include, number sense: operations and properties, data analysis, probability, spatial sense and geometry, patterns, functions and algebra. Both measures involved, the SPA and the GEPA, were used to compare the mathematics performance of the general education students in the inclusive settings to the general education students in the regular education settings.

The GEPA is a state test administered to eighth graders to measure whether the students gained knowledge and understanding of skills identified in the core content standards. The GEPA helps to determine whether students are making satisfactory progress toward mastering skills needed to pass the graduation test, the High School Proficiency Test (HSPT). The results of the GEPA are used by local school districts to determine the strengths of the curriculum. In addition, the GEPA helps districts to develop remedial programs to improve skills. The results are used to satisfy federal requirements under the NCLB Act.

To enhance the study, eight interview questions were developed by the researcher to address the effects of inclusion on mathematics achievement of general education students in middle school (See Appendix F). The participants who agreed to be a part of the focus groups provided their responses to the questions. In developing these eight questions, the researcher examined some of the most frequent questions asked about inclusion in literature. Based on the research, the eight questions were developed. According to the literature, there are certain questions that recur among teachers and administrators, as they develop inclusive programs (Waldron & McLeskey, 1996). One of the primary questions included was improving academic and social progress. Consequently, evidence in research indicates that in successful inclusion programs, the academic and social accomplishments of typical students are at least equal to, if not greater than those of similar students who are in non-inclusive settings.

Throughout the research, the instructional strategies most effective for implementing inclusion included collaboration and teaming to accommodate diverse learners. The research suggests nationwide, successful educators are emphasizing time

for collaboration in educating students in an inclusive setting, therefore the researcher found it necessary to incorporate a question about collaborative planning between the general education and special education teacher.

Most noticeably in the research was the concern of placing students with disabilities in general education classrooms with a lack of disruptions. Equally as important was the question of staff development training provisions for teachers providing instruction in inclusive settings. A limited amount of studies take the position that students with disabilities are placed in general education classrooms without proper supports (Baines, Baines, & Masterson, 1994). Since administrators and teachers are required to provide services to all students, staff development training is essential in providing in an inclusive setting as well as a non-inclusive setting. According to the Comprehensive System of Personnel Development (CSPD), states must develop a system to insure that ALL teachers are prepared to work with special education students (Beull, et al., 1999). Lack of training has accounted for some of the resistance in implementing inclusive education.

Data Collection

A quantitative and qualitative design was used to examine the academic performance difference between the general education students in the inclusive classes and the general education students in the regular education classes. After the Superintendent of Schools and the building administrators extended support for the study and the participant groups were identified, student assessment scores were collected from the school board archival records from the 2003-2004 academic school year. All general education test scores from grades 5,6,7 and 8 were used in the study. Only teachers

providing math instruction were selected to participate in the focus groups. Qualitative data was collected from principal interviews and teacher focus group interviews. Two focus groups, which consisted of the regular and special education teachers teaching in a non-inclusive and inclusive setting and the other group consisting of the special education teachers teaching in the inclusive settings, were interviewed within the time span of 1 hour. The focus of the interviews was to gather information on the seven areas: inclusion, mathematics, student achievement, collaboration, instructional time, staff development, and teacher commitment.

The letters of introduction explaining the purpose and to allow subjects to be fully informed on how the data was being collected was distributed to each participant at both middle schools. Principals and teacher participants in each focus group were insured confidentiality. By October 2004, 17 reply forms out of the 21 letters sent to prospective participants were returned demonstrating agreement to participate in the study. Six of the participants were special education teachers and 11 were regular education teachers. All participants allowed taping since they were assured that the interviews would be transcribed by the researcher and a proxy to be shared with no one.

Data Processing and Analysis

All data analysis procedures were conducted using the Statistical Product and Service Solutions (SPSS) 12.0 version for Windows, a comprehensive computerized system. Mathematics achievement scores for all general education students were used. The data gathered were analyzed to determine the effects of inclusion on mathematics achievement of general education students in middle school. All student names were removed because an index system was only needed.

An independent *t*-test was conducted to determine if there were significant differences in the mathematics achievement test performances of general education students in the inclusive settings compared to general education students in regular education settings. Significance was established at the .05 level.

Hypothesis Testing

Ho1: There is no significant difference between the math academic achievements of middle school general education students in inclusive classes as compared to students in non-inclusive classes.

Rejection of the null hypothesis would mean that there would be significant differences between the math academic achievement of middle school general education students in inclusion classes and general education students in non-inclusion classes.

Math assessment scores for 1002 general education students in non-inclusive settings and 104 general education students in inclusive setting will be used in testing the hypothesis. An independent *t*-test was utilized to interpret and analyze the data collected.

The next chapter details the results and findings of the research study.

CHAPTER IV

Results of the Investigation

The purpose of this study was to determine the effects of inclusion on the mathematics achievement of students in middle school. The study disclosed whether there was a significant difference between the math academic achievements of middle school general education students in inclusive classes as compared to general education students in non-inclusive classes. Two focus groups were held with 17 general and special education teachers from two urban middle schools who taught math in inclusive settings and general education teachers who taught math in regular education settings.

Both qualitative and quantitative approaches were used to answer the research question. The qualitative findings of the research are presented first. The principal interviews (See Appendix G) and focus group discussion (See Appendix H) are included. The use of interviews to collect data provides a trail that gives the researcher the opportunity to understand or infer why the phenomenon occurred (Glesne & Peshkin, 1992). The researcher identified seven areas that were discussed in each interview and focus groups. The interview questions were frequently reviewed and redefined until the participants were interviewed. A summary is provided based on the questions asked during the principal interviews and focus group interviews. The interviews questions are as follows:

1. Does the mathematic academic progress of general education students in an inclusive setting compare to the mathematics academic progress of general education students in a regular education classroom setting? Explain.

2. Is there collaborative planning between the general education and special education teacher? Explain how time is provided for planning.
3. Is there consistency in keeping academic expectations for all students? Explain your answer.
4. Is the placement of students with learning disabilities disruptive/not disruptive to students without disabilities while math instruction is provided? Explain.
5. Has staff development training been provided successfully to implement inclusion? How much training has been provided?
6. Why do you believe math scores are increasing or decreasing when students with learning disabilities are included with the general education students?
7. What are some of the reasons that contribute to the loss of instructional time in an inclusive setting that impacts upon math instruction?
8. Are you fully committed to student learning that fosters mutual respect in an inclusive setting and believe that all students can benefit academically in math as well as other subjects?

Analysis of Interviews with Principals

Personal interviews were conducted during the month of November, 2004. These interviews were audio taped by the researcher, one of which a proxy conducted and audio taped. Each interview is included in Appendix G. The identity of each principal has been removed. Qualitative data was not coded for analysis in this study.

The respondents were asked to identify their earned highest degree. The responses indicated; 100% (2) had a Masters degree. Both principals indicated that they were enrolled in a Doctoral Program (See Table 2).

Table 2

Highest Degree Earned by Respondent Principals

Highest Degree Earned	Frequency	Percent
Masters	2	100%
Doctorate	Both Principals Enrolled in Doctoral Programs	

The respondents were asked to indicate the number of years of experience as a principal in general, and the number of years as a principal in their present school. Table 3 indicates the number of years of experience for each respondent principal.

Table 3

Years of Experience of Respondent Principals

Years of Experience	1-4	5-10	11-15	16-20
Principal Experience	50% (1)	50% (1)		
Current Position	50% (1)	50% (1)		

Qualitative data about the effects of inclusion on the math academic achievement of middle school students were provided by principals answering eight open-ended questions. Taping was permitted which facilitated the flow of the interviews. Tapes were transcribed and summarized with the goal of finding similarities and differences.

1. Does the mathematics academic progress of general education students in an inclusive setting compare to the mathematics academic progress of general education students in a regular education setting? Explain.

Both principals felt that the progress made by the general education students in an inclusive classroom was due to the teacher and the strategies that were used. There was a difference in how both principals felt about the performance of the general education students. Principal 2 conveyed that the students in an inclusive setting were not performing up to the same level as the general education students in a regular setting whereas Principal 1 expressed that the inclusive classes in certain grades, student progress was better than the general education students in the non-inclusive setting.

2. Is there collaborative planning between the general education and special education teachers? Explain.

Both principals stated that teachers were provided time to plan during grade level meetings. This is a grade level common planning time whereas teachers are able to plan together and adapt the curriculum to the needs of the students.

3. Is there consistency in keeping academic expectations for all students? Explain your answer.

Consistency towards keeping academic expectations for all students was positive. Both principals expressed that everyone is being viewed with high expectations and the need to meet District and No Child Left Behind benchmarks.

4. Is the placement of students with learning disabilities disruptive/not disruptive to students without disabilities while math instruction is provided? Explain.

Both principals indicated that the placement of students with learning disabilities was not disruptive to students without disabilities while math was being taught. They felt that the teacher or the quality of the people working in an inclusive setting was instrumental. Principal 1 shared that the new math series in usage focuses on engaging all students in hands-on activities and contributes to a non disruptive environment during math instruction.

5. Has staff development training been provided successfully to implement inclusion? How much training has been provided?

Staff development training had been provided in both schools, although additional training is needed. Both principals shared that training was provided during the inception of the inclusion program but has dwindled down. Principals and teachers are trying to find sources to provide assistance and access opportunities to support inclusion efforts.

6. Why do you believe math scores are increasing or decreasing when students with learning disabilities are included with the general education students?

Math scores seem to be increasing at both middle schools as indicated by both principals. They give credit for the increase to the teachers who provide different strategies and techniques and also students providing services to other students as tutors and mentors.

7. What are some of the reasons that contribute to the loss of instructional time in an inclusive setting that impacts upon math instruction?

There were common feelings towards the lost of instructional time at both schools. Principals felt that the teachers must make good use of time. The importance of

planning and preparation were key factors. Principal agreed that planning should be adapted to the needs of all of the students.

8. Are you fully committed to student learning that fosters mutual respect in an inclusive setting and believe that all students can benefit academically in math as well as other subjects?

Affirmative responses towards the commitment to student learning were conveyed. Both administrators pointed out that all students should be given the opportunity to learn and succeed whether they are special education or general education students.

Analysis of Focus Groups Interview

Two focus groups were interviewed in a 1 week period during the month of November of the 2004-2005 school year. One focus group consisted of 13 participants and 4 participants in the other focus group. The gender breakdown included 11 males (65%) and 6 females (35%) in the focus interviews (See Table 4). With regards to the experience level of teachers, 71% of the respondents had from 1 to 15 years experience as teachers, as presented in Table 5. Within this group, those teachers with 11 to 15 years had the most experience (12 %), followed by those with 6 to 10 years experience (24 %) and those with 1 to 5 years experience (35 %). Twenty-nine percent of the respondents had 20 + years experience as indicated in Table 5. Even though the size of the focus groups was considerably different in the number of participants, the numbers did not skew the results. The guidelines were the same for the general and special education teacher who taught math.

Table 4

Gender Breakdown of Teacher Respondents

	N	%
Female		35%
Male		65%

Table 5

Experience Breakdown of Teacher Respondents

	N	%
1-5 years		35%
6-10 years		24%
11-15 years		12%
16-20 years		0%
20 + years		29%

The majority of the respondents were teachers whose ethnicity were Black (88%), followed by White (12%).

Table 6

Racial/Ethnic Background of Respondent Teachers

Racial/Ethnic Background	Frequency	Percent
African American	15	88%
Caucasian	2	12%

The teacher respondents were asked to identify their earned highest degree. The responses were; 47% (8) indicated a Masters degree; and 53% (9) indicated a Bachelors degree. Table 7 shows the level of the highest degree earned of the responding teachers.

Table 7

Highest Degree Earned by Respondent Teachers

Highest Degree Earned	Frequency	Percent
Bachelors	9	53%
Masters	8	47%

With regards to the number of years teaching math, 64% had less than 15 years experience. There were 35% of the teachers responding with 15 or more years of experience, as shown in Table 8.

Table 8

Number of Years Teaching Math by Teacher Respondents

Years of Teaching Math	1-4	5-10	11-15	16-20	20+
Teachers	5 (29%)	6 (35%)	1 (6%)		5 (29%)

The focus group sessions were held in the parent conference room and a classroom in one of the middle schools. The sessions were informative and the researcher and/or proxy audio-taped and took notes during the session. The criteria for including the comments of the participants were dependent upon the four or more participant responding with similar comments to the eight interview questions. Also, if there was a comment that was totally different from the other respondent, that comment was included.

1. Does the mathematics academic progress of general education students in an inclusive setting compare to the mathematics academic progress of general education students in a regular education setting? Explain.

The responses to this question varied. There was a concern that the general education students advanced at a slower pace in an inclusive setting and how this might impede the progress of the general education students. Criticism was also apparent concerning the different classifications of special education students who were included in an inclusive setting, which could cause discipline problems.

2. Is there collaborative planning between the general education and special education teacher? Explain how time is provided for planning.

All of the participants agreed that collaborative planning was in place in their school. Collaboration occurred during the allotted preparation time. Special education and regular education teachers were able to share lesson plans and strategies to meet the needs of their students. The participant who felt that there was no collaboration among the teachers did specify that there should be collaboration. It was emphasized that in order to successfully plan, 50 minutes of time on a weekly basis should be made available to the teachers.

3. Is there consistency in keeping academic expectations for all students? Explain. Even though some of the participants felt that there was no consistency in keeping high academic expectations, a feeling of concern about the slower rate the special education students achieve in an inclusive setting was conveyed, along with the usage of the IEP's in an inclusive setting. It was evident that some of the participants truly believed that there should be consistency because all students are required to meet certain standards.

4. Is the placement of students with learning disabilities disruptive/not disruptive to students without disabilities while math instruction is provided? Explain.

There was an apparent difference in the interpretation of this question. A short discussion of the question teachers arrive at an understanding of the question. There were some positive and negative comments relayed. One of the teachers felt that sometimes special education students refuse to complete assignments because special education students realize they can not receive a grade lower than a C; therefore some of the general education students express the unfairness of expectations. There was a concern with the

classification of the students placed in an inclusive setting. One teacher felt that some students are misclassified. Depending upon the classification, some students would sometimes cause disruptions in the classroom. It was made clear that general education students are sometimes disruptive during math instruction. Those teachers who expressed that the placement of students with learning disabilities were not disruptive to students without disabilities thought regular education students could assist the special education students in math. They felt that the students relate to each other and speak the same language and therefore this do not cause disruptions.

5. Has staff development training been provided to successfully implement inclusion? How much training has been provided?

Five out of 17 teachers shared that they had not received staff development training. The remaining 12 teachers had some training, but felt that the training was not sufficient enough to meet the needs of all of the students. Emphasis was placed on adequate training not only for the instructional staff, but the paraprofessionals also.

6. Why do you believe math scores are increasing or decreasing when students with learning disabilities are included with general education students?

The majority of the participants agreed that the math scores were increasing. Reasons for the increase in math scores were attributed to peer-coaching, instruction on behalf of the teacher, teachers who have been teaching math for an extensive period of time, atmosphere for learning math, and the fact that there are two teachers in the classroom.

7. What are some of the reasons that contribute to the loss of instructional time in an inclusive setting that impact upon math instruction?

Participants conveyed that the behavioral problems are caused by special education students as well as regular education students in the classroom. These eruptions have to be addressed, which takes away from the instructional time. It was emphasized that the loss of instructional time has a lot to do with teacher preparation. It takes much preparation for different types of students who move academically at different paces. Differentiation of instruction is needed not only in an inclusive setting but in a regular education setting also.

8. Are you fully committed to student learning that fosters mutual respect in an inclusive setting and believe that all students can benefit academically in math as well as other subjects?

There was a 100% commitment to all students' learning. It was made clear that support is needed from the administration and on-going training to assist in fulfilling their commitment. Suggested in the interviews were the increase of teacher input in decisions relevant to inclusion and the implementation of mathematics programs across the grade levels. Teachers indicated that regardless of disabilities or special requirements, all children have the potential to learn and should have an education.

For the quantitative findings of the research, 2003-2004 SPA and GEPA scores were compared in grades 5, 6, 7, and 8. An independent *t*-test was conducted to determine if the math test scores between the general education students in inclusive setting and those general education students in regular setting differed significantly. The interviews with the principals and the teacher focus groups were used to compliment this data. Statistical analyses are provided for the research question.

SPSS 12.0 was used to analyze the raw data from the math assessment scores. The independent *t*-test was utilized to test if there was a significant difference in the mathematics achievement test scores of general education students in inclusive and non-inclusive settings.

The results of the study are examined in this chapter. Sample data was used to compare two population means. The sample data represents scale scores of students from two middle schools. Both middle schools are public schools in New Jersey. The sample data for the study was analyzed to answer the following hypothesis for a level of significance of $\alpha = .05$ level using an independent *t*-Test. When equal variances are assumed, there is no significant difference between the mean score of general education students enrolled in regular classes and the mean score of general education students enrolled in inclusive classes. The mean between the two scores for the general education students in the non-inclusive setting and the general education students in the inclusive setting were not statistically significant. The mean score for the non-inclusive group was 149.19 and the mean for the inclusive group was 142.91. The mean score was very close. The difference in the mean score was 6.28.

The standard deviation for both groups appears to be reasonably close. Levine's Test for Equality of Variance indicates that there was a statistically significant difference in the variation within the distribution ($p = .035$). Therefore the second row of data is used in the SPSS output (See Table 10); equal variance is not assumed. The P-P Plot shows that the data is not normally distributed (See Figure 1). This is an unexpected fact since N is so large. The effect is not due to the combination of the different grade levels since grades 5, 6, and 7 are normally distributed (See Figure 2). If you look at Figure 1 and

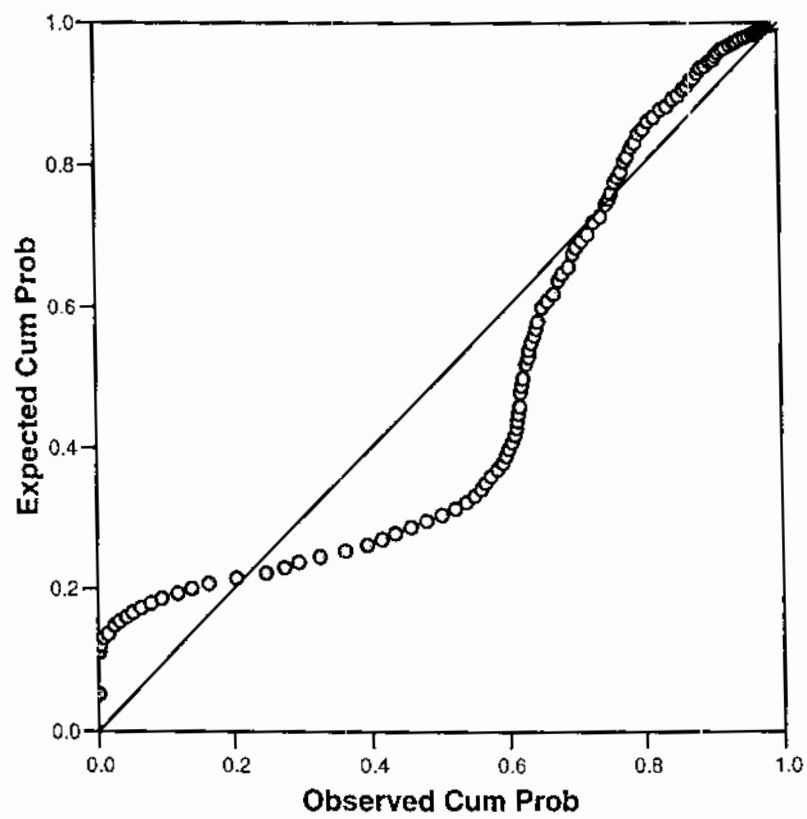


Figure 1. Expected versus observed cumulative probability for grades 5-8.

Figure 2, you will observe some variation going on in Figure 1, compared to Figure 2, which shows the data distributed evenly. A bias in grade 8 must exist. This bias may exist because the SPA test was administered to grade 5, 6 and 7 and the GEPA test administered to grade 8. Figure 3 reflects some variation in grade 8. With the sample size of $N=1,106$, the distribution of the data is skewed right as shown in Figure 4. The symmetrical bell-shaped form shows that the mean, median and mode are almost identical for the normal curve. The box-plot shows the differentiation between the subgroups, general education students within an inclusion class versus general education students within a regular class. There are two outliers in the regular class which contributes to the variability of the subgroup (See Figure 5). Figure 6 shows the sample size of $N=1,002$, which consists of general education students in the regular education setting, as compared to the sample size of $N=104$ consisting of the general education students in the inclusive setting (See Figure 7). Eliminating the outliers does not affect the outcome of the study. There was no significant difference between the scores for the inclusive and non-inclusive group: therefore the Null Hypothesis was retained because the t -score was 1.746 and $p= .083$ (2-tailed significance), which is not significant at the $p>.05$ level. The general education students in the inclusive setting were not found to be effected by having special education students in the classroom. This study substantiated these findings.

Table 9 and Table 10 provided a statistical analysis of the independent t -test utilized to make the interpretations regarding the comparison of math assessment scores of general education students in non-inclusive and inclusive settings.

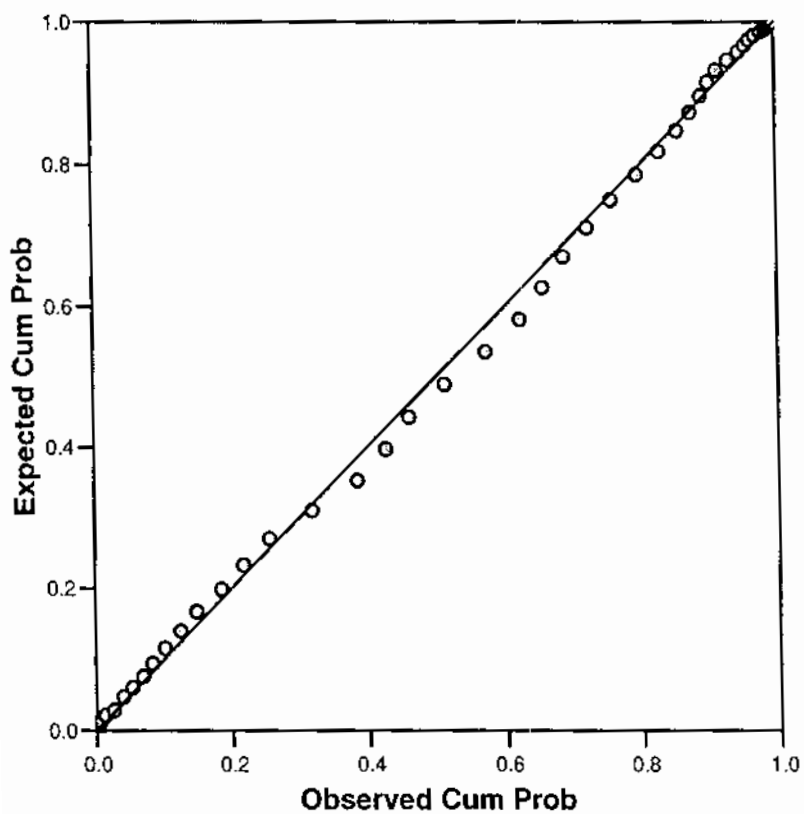


Figure 2. Expected versus observed cumulative probability for grades 5-7.

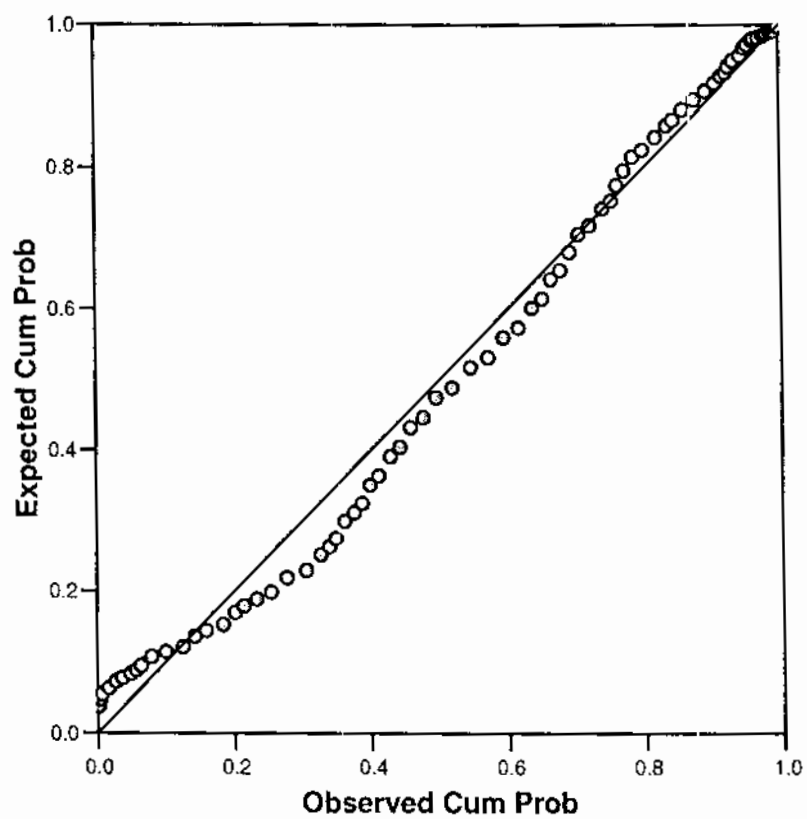


Figure 3. Expected versus observed cumulative probability for grade 8.

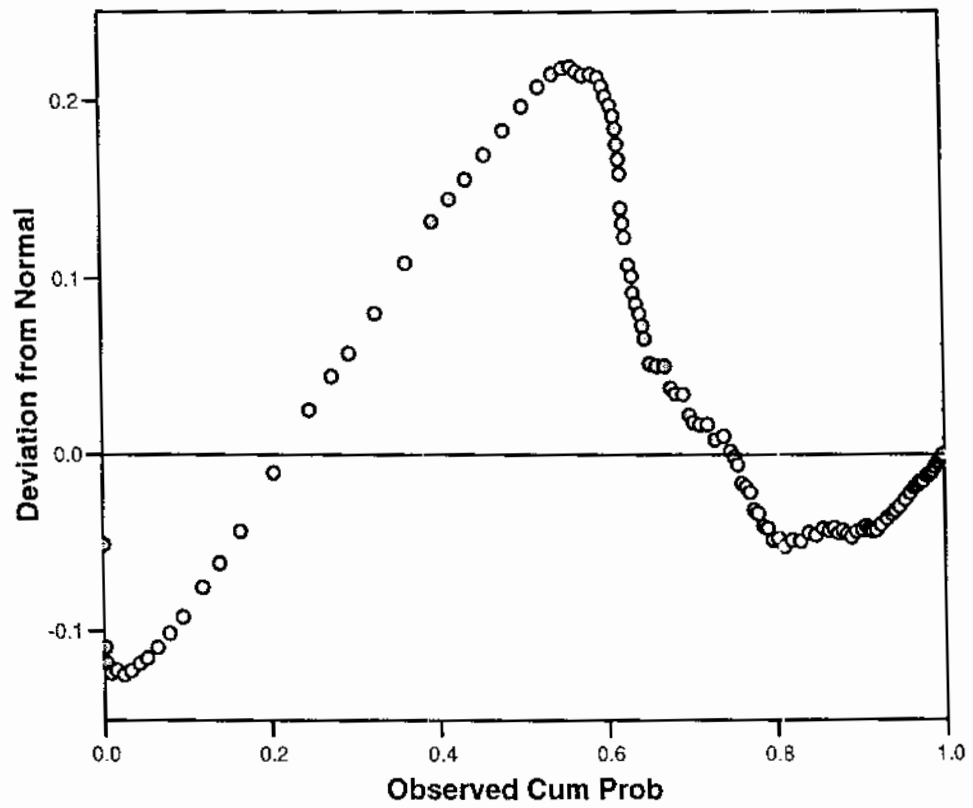


Figure 4. Deviation from the norm versus observed cumulative probability for grades 5-8.

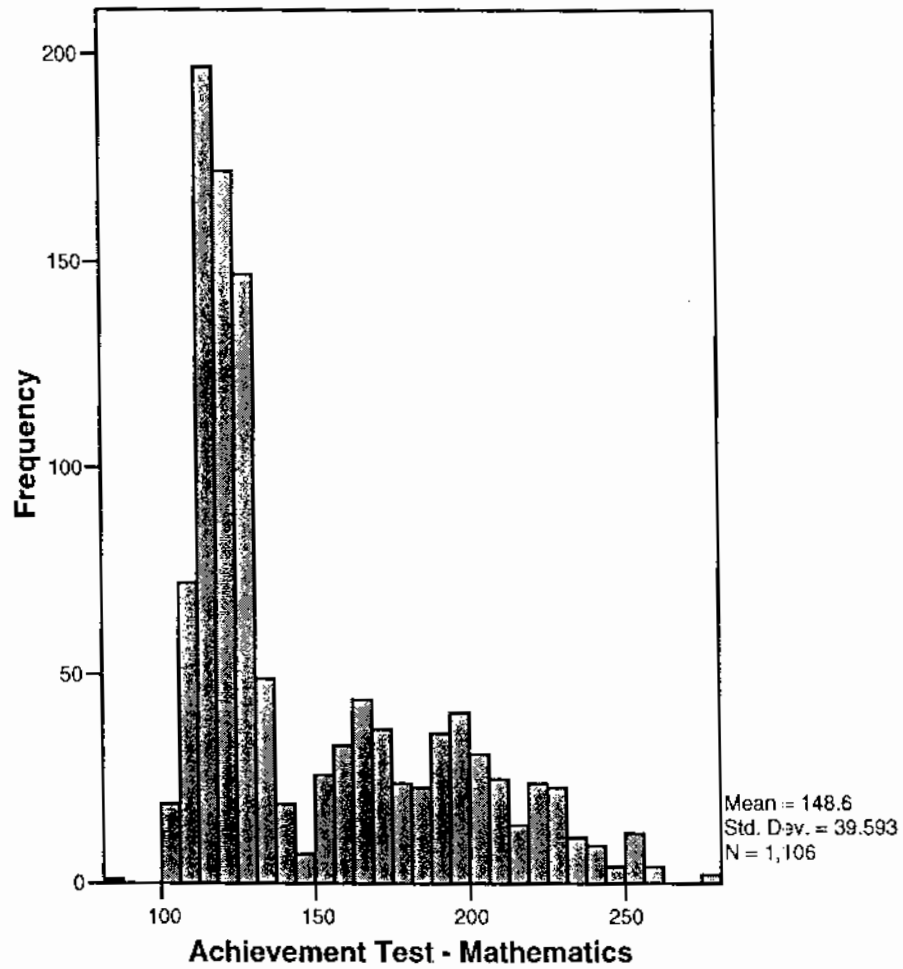


Figure 5. Histogram of distribution of math achievement scores for all general education students

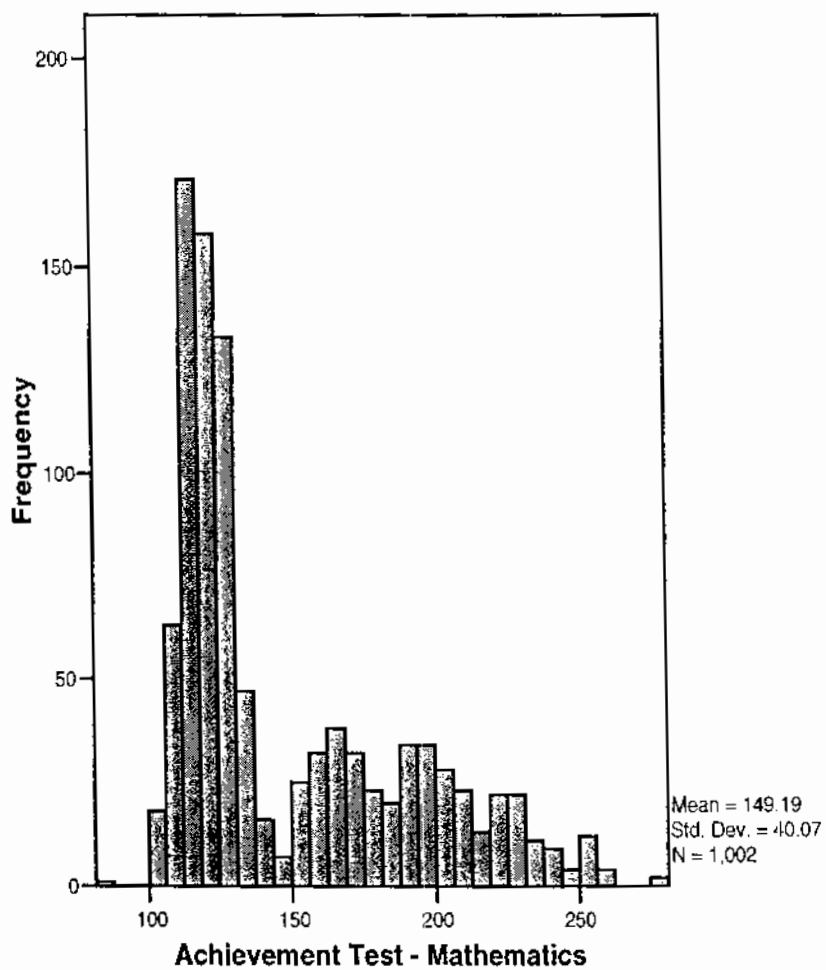


Figure 6. Histogram of distribution math achievement scores of general education students in regular setting.

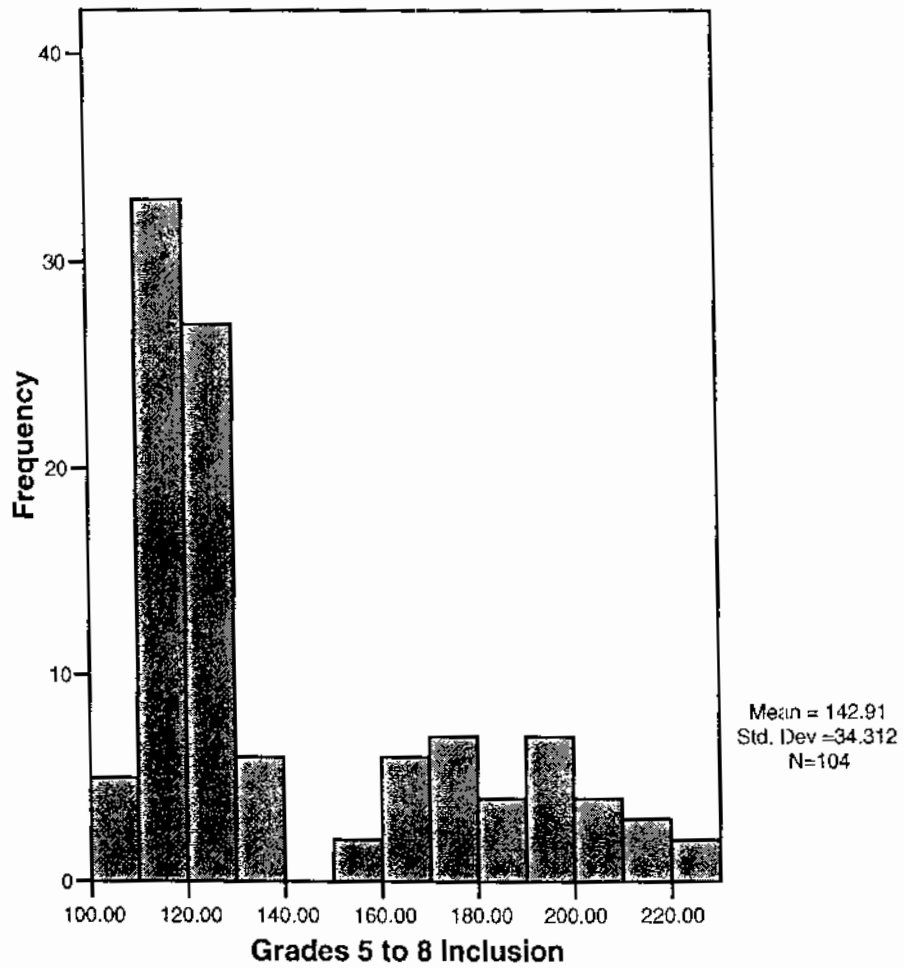


Figure 7. Histogram of distribution of math achievement scores of general education students in the inclusive setting.

Table 9

Independent t-Test Results by Group

Group Statistics					
Group		N	Mean	Std. Deviation	Std. Error Mean
Achievement Test - Mathematics	Non-Inclusion	1002	149.19	40.070	1.266
	Inclusion	104	142.91	34.312	3.365

Table 10

Analysis Using Levene's Test for Equality of Variances

Independent Samples Test										
	Levene's Test for Equality of Variances		t-test for Equality of Means							
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference		
								Lower	Upper	
Achievement Test - Mathematics	Equal variance assumed	4.473	.035	1.540	1104	.124	6.278	4.076	-1.720	14.276
	Equal variance not assumed			1.746	133.947	.083	6.278	3.595	-.832	13.388

Since the purpose of the study was to answer some questions about the effects of inclusion on the mathematics achievement of general education students in middle schools, it was necessary to measure the sample size of the effect. Witte and Witte (2001) indicated that researchers should be aware of excessively large sample sizes. Statistical significance that lacks importance is sometimes caused by using excessively large numbers; therefore the difference between population means (effect) will be detected because of the little if any standard error. The effect does not approach the small, medium or large and the test would be reported as having statistical significance. This was not true in this current study.

These researchers provided information on the squared point biserial correlation, which focuses on the correlation between the pairs of observations to interpret the proportion of the variance in the dependent variable that can be explained by the independent variable. The researchers provided the formula used to find the proportion of the variance to evaluate the sample size.

Proportion of Explained Variance (Two Samples)

$$r^2_{pb} = \frac{t^2}{t^2 + df} \quad (1)$$

$$r^2_{pb} = \frac{1.746^2}{1.746^2 + (1002+104-2)} = \frac{3.048}{3.048 + 1104} = \frac{3.048}{1107.048} = .002$$

By using this formula, the results showed the small value of .002, which suggested that little if any of the variance in the mathematics achievement scores was explained by general education students included as apart of the inclusive setting. Nearly all of the math achievement scores were not explained by the status general education

students participating in the inclusive setting. According to Cohen's guidelines for effect size, this value suggests little if any effect (Cohen, 2001).

Summary

This chapter presents the findings of this study, which investigated the effects of inclusion on the mathematics achievement of general education students in middle school. One hypothesis was tested with two forms of statistical analysis utilized.

The hypothesis predicted demonstrated that there was no significant difference in the math achievement scores of general education students in an inclusive setting as compared to general education students in a regular setting. An independent *t*-test was utilized to determine if a statistical significance existed between the general education students in a regular setting versus general education students in an inclusive setting. The null hypothesis was not rejected. The relationship between the math achievement scores was not statistically significant. The results clearly show that general education students are not affected by having disabled students in the classroom during math instruction. All students were working toward the same overall educational outcomes. There may be a difference in the level at which students achieve these outcomes. When special education and regular education practices focuses on high expectations for students, student achievement improves. Teachers, who consistently have high expectations, as reflected in this study, their students produce higher than expected academic growth.

To enhance the study, interviews with two principals and two focus groups were held. Eight open-ended questions were asked to provide information on inclusion, collaboration, mathematics, staff development, instructional time, student achievement, and teacher commitment. These factors provided an overall representation of what

occurred in both middle schools as perceived by the participants. Principals provided the support necessary for a successful math class, whether inclusive or regular education. Principals displayed a commitment to all students. The resources needed to implement math strategies and the time for teacher collaboration and planning were built in the schedules.

The findings in this study may help to alleviate some of the concerns about the effects of inclusion among other school administrators, teachers, and parents. In conclusion, although the null hypothesis was not rejected, there is a need for additional staff development training for general education teachers in regard to inclusive education. With a firm understanding of services needed to adequately implement inclusive education, there may be a stronger willingness to conscientiously work on improving student math achievement scores in the future.

CHAPTER V

Summary, Conclusions, and Recommendations

Introduction

The purpose of this study was to increase the understanding of the effects of inclusion on the math performance of general education students. Specifically, this study investigated the SPA and GEPA mathematics scores of students in general education classrooms as compared to the SPA and GEPA mathematics scores of general education students in an inclusive setting. Both quantitative and qualitative measures were used in this research.

Summary of Study

Chapter I of this research provided background information on inclusion and mathematics reform, including the problem, hypothesis, research questions, purpose, limitations and delimitations of the study, and definition of terms. Within Chapter II, the researcher provided the literature review discussing the most current and relevant work related to the study. The literature reviewed inclusion, collaboration, mathematics, staff development, instructional time, student achievement, and teacher commitment. Chapter III reviewed the research design, math academic assessment scores of middle school students in grades 5, 6, 7 and 8, principal interviews and focus groups interviews. The method of data collection and analysis are also included. In Chapter IV, the researcher presented the research findings for the two research questions, including whether the null hypothesis was accepted or rejected. Chapter V will present the summary, conclusion as well as recommendations for further research.

Including children with disabilities in general education classrooms with general education students created much debate which provoked questions about what effects inclusion has on the general education students in the classrooms. Despite controversy, these questions have demonstrated that inclusion has considerable support from the political, judicial and legislative venues (Alper, Schloss, Etscheidt, & MacFarlane, 1995).

It was not until the 1950's and the 1960's that courts and legislatures were pressured to make changes in educational services for children with disabilities. In 1975 President Ford signed the Education for All Handicapped Act (PL 94-142), which afforded all children a "free appropriate public education" (FAPE). PL 94-142 was reauthorized and renamed The Individuals with Disabilities Education Act of 1990 (PL 101-476). The IDEA required that in order to meet the needs of individual students alongside their non-disabled peers, a range of educational placements had to be made more available in the least restrictive environment (LRE). In the 1980's, advocates for inclusion supported the LRE's ultimate implication of consolidating special education as noted in the literature from Stainback and Stainback (1990), and Grider (1995).

When the IDEA was passed in 1974, the term inclusion was introduced, which brought about the turning point for the placement of students with disabilities. Schools received federal funding to make provisions for a free and appropriate education for all students regardless of their handicap. It was hoped that this practice would be promulgated for all schools, including middle schools. Two teachers worked in collaboration to provide instruction to all students in an inclusive setting. This co-teaching model embraces ongoing classroom participation by these two teachers.

Research suggests that co-teaching is an approach that offers potential benefits for disabled students and low achieving students (Karge, McClure & Patton, 1995).

Some studies have revealed that inclusion has a positive academic impact on all students with little or no decrease in academic performance on non-disabled students (Hunt, Staub, Alwell & Goetz, 1994). According to Salend and Duhaney (1999), academic performance is equal to or better in an inclusive setting with general education students and high achieving students. A similar finding was reported by Hunt (2000). There were positive effects for both general education students and special education students at the elementary level.

Although some studies have revealed no evidence to indicate that inclusive activities have negatively impacted general education (York et al., 1992), concerns remain particularly those in staff development to promote development of more inclusive classrooms and schools (Sharpe, York & Knight, 1994). The fear that inclusion may result in a negative impact for students who are unclassified and losing instructional time in an inclusive setting is not inherent in the review of the literature. Fishbaugh and Gum (1994) reported that achievement test data exhibited consistent gains by general education students in inclusive settings. This study looked at two middle schools and designed to address the following questions:

Statement of Research Questions

1. How does the mathematics academic progress of general education students in an inclusive setting compare to the mathematics academic progress of general education students in a regular education classroom setting?

2. Is the placement of students with learning disabilities disruptive to students without disabilities while math instruction is provided?

This current study investigated the effects of inclusion on mathematics achievement of general education students in middle school. This study was approved by Seton Hall University's IRB (Internal Review Board), which ensured that there was a fair and ethical treatment completed on research participants. Permission was obtained from the Superintendent of Schools to conduct the study in the district as outlined previously.

Discussion

Hypothesis One

Hypothesis one predicted that there was no significant difference between the mathematics academic achievement scores of middle school general education students in inclusive classes as compared to the general education students in non-inclusive classrooms. A *t*-test was used in this study to determine if there was a significant difference in the academic achievement of both groups. Two middle school principals were interviewed and two focus group interviews were held to gather additional data to enhance the study.

The overall findings of this study do not indicate a decline in the academic achievement scores of general education students in an inclusive setting on the SPA and GEPA assessment measure employed. General education students in the inclusive setting performed as well as the general education students in the non-inclusive setting. Both schools used the same math program with 50 minutes per day allotted time provided for math instruction. The results were consistent with what has been generally found in previous documentation (Sharpe, York, & Knight, 1994) that elementary students on

measures of academic performance given instruction in a regular setting and an inclusive setting showed no significant difference. These findings indicate that the inclusive program in the two urban middle schools involved in this study had a positive impact on the math academic achievement of general education students. This investigation makes it clear that the two middle schools provided an instructional inclusive program that was academically structured in mathematics in the inclusive and regular education setting.

One of the concerns often questioned in literature is the negative impact on the academic achievement of students without disabilities. The results of this study reveal that an inclusive setting had positive benefits on the math academic achievement of non-disabled students. The findings allow the researcher to assert that inclusive settings do not adversely affect students with disabilities, similar to findings reported by other researchers (Hunt, Staub, Alwell, & Goetz, 1994).

Approximately 10% (104) of students were provided instruction in inclusive classes and 90% (1002) of students were given instruction in the non-inclusive classes. With such a large number of general education students receiving instruction in a regular classroom setting, an assumption might be that the general education students would score significantly different on the math assessment test, although studies cited in the literature reveals that there were no significant differences.

It is important to note that in this study, 104 general education students were provided math instruction in the inclusive setting with the support from an additional teacher, therefore more individualized instruction and small group instruction was provided. Having two teachers in the classroom may have had an impact on the ability of general education students in an inclusive setting achieving the same or higher than the

general education students provided instruction in the regular education settings. It is reasonable to assume that general education students did not suffer academically from receiving math instruction in an inclusive setting indicated in the literature review because the mean scores on the assessment tests revealed a difference of 6.28.

Data pertaining to the effects of inclusion on the mathematics achievement was analyzed by looking at the math achievement scores of the general education students, both non-inclusive classes and inclusive classes. In addition, principals and teachers were interviewed. Looking at the topic from various angles provided the study with a more global picture than achievement alone would have provided. Synthesizing this data provided direct implications for principals and teachers implementing an inclusive program: (a) deliver appropriate services, (b) create a school that supports change, (c) monitor and evaluate all student progress, and (d) provide attention to all students. One of the most significant findings from the interviews was the lack of staff development. Principals indicated that some inclusion training had been provided during the inception of their inclusion program but was not provided on a continuous basis. During the focus group interviews, twelve out of seventeen (71%) teachers expressed that they received some staff development training, but felt that it was not enough to help them meet the needs of their students.

Prior to 1975, general education and special education students received instruction in separate settings. With the inception and implementation of inclusion a new mindset and system had to be put in place. Principals, teachers, and parents had to change their ways of thinking. Staff development training to address the needs of general and special education students was necessary. Research repeatedly reveals that staff

development training is necessary for best practices to meet the needs of all students. Kearney and Durand (1992) cited that general education teachers were not prepared to accommodate the instructional needs of students with disabilities. Many opponents to inclusion philosophy note that there is too much emphasis on the ability and commitment of the regular education teacher. The responsibility and commitment must rest with the entire school. The commitment must be for the development of practices and structures that include students in all aspects of the school. Principals and teachers in this study indicated that the respondents were committed to all students' learning. An overwhelming finding of 100% commitment was reported by all participants in this study. It is conceivable to assume that they wanted all students to achieve in mathematics and other disciplines, even though teacher respondents felt that they should have more input concerning inclusive decisions and the implementation of math programs. The results of this investigation demonstrated that commitment was present since the math achievement scores of the inclusive and non-inclusive group were not significantly different.

The IDEA requires that schools consider modifications in regular classrooms before moving students to a more restrictive placement. This is an indication that regular classroom teachers need specialized training to provide instruction for students with and without disabilities in an inclusive setting. School districts must offer on-going training to address the needs of the teachers to educate all children successfully. Success of an inclusion program comes through the proper and adequate training. Since the New Jersey legislation required teachers to participate in 100 hours of staff development over a 5 year period, districts would benefit from providing staff development in the area of inclusion

and additional math training. Surprisingly, neither principals nor teachers made comments or suggestions in reference to colleges or universities offering courses in the content areas for general education teachers and/or special education teachers considering teaching in an inclusive setting. Because of the large and increasing number of disabled students receiving instruction in general education classes with their nondisabled peers, the number of special education and regular education teachers providing an inclusive environment must also increase. Lesar, Benner, Habel, and Coleman (1997) pointed out that many colleges have not improved upon their instructional programs for general education to include the necessary instructional techniques in working with students with learning disabilities. There are numerous issues that need to be resolved if we are to prepare our teachers to instruct all students.

Seventy-five percent of the teacher respondents had concerns regarding the classification of students in the inclusive setting and the impact that it might have had on the general education students. Even though there was a concern, the results of the *t*-test did not show an impact on the math assessment scores. There was no significant difference in the mean scores of the non-inclusive and inclusive group.

It is clear from the literature that the building principal is critical to sustaining a successful school. Both principals had strong beliefs about their inclusive program. According to this study, principals sustained the necessary structure for special and regular education teacher planning time and collaboration. As the educational leader, the principal is the individual whose vision of inclusion is made possible through an environment in which teachers have the time and opportunity to work together and

promote inclusion as a viable methodology to assure a successful education of all students in America's schools (Thousand & Villa, 1990).

Since the teachers were provided time to collaborate in their planning, it is reasonable to believe that this study confirms that collaboration may have had a positive impact on the results of this study. The majority of the teachers expressed that time was provided in their schedule to plan, collaborate, and evaluate student progress. Most of the literature suggests that there is some relationship between collaboration and a successful inclusion program. According to Edmiaston and Fitzgerald (1998) collaboration is the backbone of implementing a successful inclusion program. On the basis of the responses provided by the participants in the focus groups, collaboration may have impacted upon student achievement in the inclusive classes due to the shared responsibilities of two teachers providing math strategies and instruction. The collaborative opportunities that the general education students experienced in an inclusive class would not have been available if they were receiving instruction in a regular education classroom.

This research is consistent with the findings of Hollowood et al. (1994) that the presence of students with disabilities had no effect on engaged instructional time as indicated in study. Participants in this study emphasized that loss of instructional time was not caused by special education students only, the regular education students took away from the instructional time as well, by causing disruptions. The participant also believed that the loss of instructional time was due to the lack of teacher preparation. This was somewhat surprising because it was revealed in the interviews that time was allotted for planning and collaboration. If this designated time was made available during the

grade level periods, lack of preparation on the teacher's behalf should not be a factor for the loss of instructional time.

In looking at the math assessment scores of the general education students in both the inclusive and non-inclusive setting, the findings revealed no significant difference between the groups. An analysis of the interviews revealed that math scores were improving because certain strategies had been put in place; such as peer coaching, two teachers in the classroom, and teacher pedagogical practices. Results from the TIMSS report indicated that teachers were more likely to work in isolation who were assigned to provide mathematics instruction. Teachers did not collaborate effectively because of the lack of time and the manner in which they constructed their time. The TIMSS data also indicated that unlike teachers in Japan and Germany, the teachers in the United States do not have structured opportunities for interactions with colleagues concerning instructional issues. This is contradictory with what occurred at the two urban middle schools in this study. Special education and regular education teachers worked closely together during grade level meetings on a weekly basis to collaborate on the strengths and weaknesses of student skills. Strategies were shared to improve math performance for all students. Carmine (1997) confirmed in literature that today's classrooms are increasingly diverse. With a diversity of abilities, life experiences and cultural backgrounds; regular education and special education teachers must use instructional strategies that build on these differences while helping students learn skills in mathematics.

According to the TIMSS report, teachers in grades 5-8 often have the same mathematics background as teachers in grades K-6, and yet are expected to teach a more complex content. With the implementation of the NCLB, teachers are required to be

highly qualified in the area in which they teach. In this study, 64% of the teacher participants had experience teaching mathematics between 1-10 years and qualified to teach math according to the NCLB. The fact that the majority of the teachers had taught more than 5 years and qualified under the provisions of the NCLB, a positive impact on the general education student's math assessment scores was evident in the study.

During the first year of the Federal NCLB Act, students in the nation's big-city school systems made substantial gains in mathematic assessments (Council of Great City Schools, 2004). This data was found to be true as evidenced in the findings of this study. The 2003-2004 school year reflected an increase in the math scores in the two middle schools as indicated by the participants in this study.

This study represented an initial step towards examining a complex set of circumstances, attempting to determine academic performance differences based on instructional and policy that have been implemented in the classroom. Factors such as the support provided to regular classroom teachers may differ from school to school, and were not easily controlled for research purposes

Conclusion

Data pertaining to the math performance of general education students in an inclusive and non-inclusive setting was analyzed by looking at the math test scores on the math assessments. The synthesis of these data provided implications for teachers and administrators in regular and inclusive settings in middle schools.

Hypothesis: There is no significant difference between the math academic achievements of middle school general education students in inclusive classes as compared to students in non-inclusive classes.

The overall findings of the study did not indicate a significant difference in the math academic achievement of general education students in an inclusive setting compared to general education students in a non-inclusive setting. The sample data for this study analyzed for a level of significance of $\alpha = .05$. There was no significant difference in the mean scores for the inclusive group and the non-inclusive group. The non-inclusive group had a mean score of 149.19 and 142.91 as the mean score for the inclusive group. Although the data showed no significant difference, in order to maintain proficiency in mathematics, administrators and teachers must understand how students develop mathematical proficiency and maintain a repertoire of teaching practices to promote success. Given the lack of research concerning the effects of inclusion in the middle schools, comparison with previous studies is not possible. Research demonstrates mostly positive academic and social outcomes for students with and without disabilities in inclusive setting on the elementary level. Some studies have revealed no evidence that participating in an inclusive setting had negatively impacted on general education students (York, Vandercook, Macdonald, Heise-Neff, & Caughey 1992).

The results from the principal interviews indicated that teachers were provided with the time to collaborate during a designated common planning time once a week, therefore it is reasonable to believe the importance of collaborative planning. Planning time was one of the key factors for the implementation of inclusion. Bull and Buechler (1997) reported that inclusion creates changing roles of for teachers that included adequate planning time. The teachers and principals interviewed in this study reported that time for planning between the general and special education teachers was provided to successfully instruct all students. Meeting the needs of all students required on-going

collaboration. It is evident from this study that no one single teacher had all the tools to teach all students. A collaborative culture had to be cultivated between grade levels, content areas, support staff, parents, and administrators.

These findings may help to clear up some misconceptions about the effects of inclusion on the math achievement of general education students in middle school. This study may help to inform educators as they try to improve mathematics alignment and compatibility of regular and special education reforms to improve test scores. More research is needed to look at the effects of inclusion as students move on to high school.

Recommendations

Policy

Principals voiced the importance of continued staff development. Limited staff development training had been provided to train teachers on various aspects of inclusive practices. Principals need to understand what the inclusion practices are in the classroom. Locating and securing supports and services needed for regular education and special education teachers to provide an effective program for all students within the regular and inclusive classrooms is a topic of concern. Principals, as the instructional leader of the school, can empower and set the norm in the school. Principals are the strongest predictor of teaching effectiveness in inclusive classrooms, which is reflected in the building principal's attitude toward inclusion (Smith & Smith, 2000).

School districts need to provide staff development on how to integrate inclusive practices in the regular education setting. A policy should be established that would require teachers to earn hours toward the 100 hours to focus on inclusive education. This

requirement should be reflected in the teachers' Professional Improvement Plan that is required by the district.

Schools and districts are being held accountable for improving the math academic performances of all students whether students are in an inclusive or non-inclusive setting. All students are being held to higher expectations.

Practice

A recommendation to investigate the math certification of teachers providing instruction in an inclusive setting as well as a non-inclusive setting is needed.

Because of a growing amount of teachers coming from other fields into the teaching profession through the alternate route programs, there may be a need to study preparation programs to meet the needs of teachers teaching math, whether inclusive or non-inclusive practices. Developing a math mentoring program, pairing math master teacher with in-coming teachers within schools might aid in increasing math scores.

Suggestions for Further Research

This current study focuses on a small portion of New Jersey's middle schools. The primary focus of this study was two urban middle schools in the eastern part of the state. Based on this study, it is suggested that further research be explored to add to the limited body of knowledge regarding the effects of inclusion on mathematics achievement of general education students in middle school. Many key questions can not be easily answered because of the lack of comprehensive data. Several suggestions can be made based on the findings of this research study. Some suggestions for further research are not new, but mirror the recommendations that other researchers have made.

1. A study on the professional development and its impact on the academic achievement of general education students in an inclusive setting.
2. Compare the effects of inclusion on the general education population by grade level. With most of the research done on the elementary level, including middle and secondary schools would add to the research.
3. It is recommended for further research to increase the range of variables that may help administrators; teachers and policy makers better understand the effects of inclusion on general education students.
4. A study on the number of years teaching math and its impact on student achievement would add to the literature.
5. Research how inclusion has impacted academic achievement in other disciplines is recommended.
6. Including other academic years could yield richer data that would provide a long-term perspective on the effects of inclusion on mathematics achievement of general education students.
7. A future study could look at the comparison of special education students in regular education and replacement classes. Look to see if the profiles of included students are different from replacement students.
8. Including students with severe disabilities in an inclusive setting and the impact it has on the general education students for further research because education is moving in this direction.
9. For further research, classroom observations to view the strategies that teachers use in mathematics during instructions for the inclusive and non-inclusive setting.

10. Comparing the inclusion programs in a suburban district to the inclusion programs in an urban district is a study for future research.

11. A final recommendation would be that future studies related to this topic be researched with additional middle schools with a larger sample. Consideration for quantitative research using math report cards, district math standardized tests is necessary. The validity of the study would be enhanced using a larger data set in quantitative studies.

In closing, this study provided data on the effects of inclusion on the mathematics achievement of general education students in middle school. It relied heavily on historical analysis and the review of literature. The researcher found no significant difference in the math assessment scores of general education students in a regular education setting as compared to general education students in an inclusive setting. It can be concluded that clear achievement benefits accrue to students without disabilities who received their instruction in an inclusive classroom. This study has provided insight on inclusion and the importance of staff development, collaboration, commitment, instructional time, and how it can effect student achievement. All students can successfully learn in an inclusive setting, if there is shared responsibility between the special education and regular education teacher. An environment where there are beliefs of high expectations with firm convictions on meeting the needs of all students foster the development of structural supports and practices that are responsive to the needs of diverse students and aid in preparing our students in a diverse society. An inclusive setting can stimulate the kinds of experiences in the lives of children and the kind of reflective dialogue among administrators, teachers and parents that is needed to achieve change in the values and

ethics underlying public education policy. This study is encouraging as evidence of potential benefits of inclusion.

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Appendix A
Letter of Solicitation

Appendix B

Letter to Subjects in Study

*Shirley A. Brewton
1468 Highland Avenue
Hillside, New Jersey 07205
Phone: 973-923-6151 Work: 973-733-8386
E-mail: Sbrewtoncmmts@yahoo.com*

April 5, 2004

Dear Superintendent of Newark Public Schools:

My name is Shirley Brewton and I am a doctoral student at Seton Hall University in the Ed.D. degree program. At the present time, I am the Vice Principal at Camden Middle School. I am writing to request permission to solicit participation from three middle schools in your district.

To accomplish this task, focus groups will be set up with the teachers on a voluntary basis. Also, interviews with the principals will be conducted. Analyzing test data from the SPA and GEPA will be necessary to complete this research. I am researching the effects of inclusion on the mathematics achievement of general education students in middle schools.

If you permit me to run this study in your district, I ask that you please send me a letter of permission on your letterhead. I will need to show this letter to the Institutional Review Board for Human Subjects Research here at Seton Hall University.

After I receive your letter, I will contact the principals in the middle schools and ask for their permission.

I believe that this research has real and important implication for education. If you have any concerns or questions, please contact me. Thank you for your time and consideration.

Sincerely,

Shirley Brewton

Camden Middle Technology School
321 Bergen Street
Newark, New Jersey 07103

Shirley Brewton
Vice Principal

Date:

Dear Middle School Principal:

I am actively involved in a doctoral study at Seton Hall University in South Orange, New Jersey as a requirement to complete my Ed.D. degree in Educational Administration and Supervision.

The purpose of this study is to learn more about the effects of inclusion on mathematics achievement of general education students in middle school.

I would greatly appreciate your assistance in this study by completing the survey. I believe your responses will be invaluable for inclusive education research throughout the state.

Enclosed is a copy of the eight questions to help you with the interview. The interview should take no more than thirty minutes. I realize that your time is extremely precious, but I would like to include valuable information in this research in order to gain a more complete perspective on the effects of inclusion on mathematics achievement of general education students in middle school.

All interviews obtained will remain strictly confidential and the reporting will be only by group analysis. If you request a copy of the findings for this study you will be asked to include your address or e-mail address at the end of the survey. Surveys and addresses will be destroyed upon completion of the study.

This project has been reviewed and approved by the Seton Hall University Institutional Review Board for Human Services Research. The IRB believes that the research procedures adequately safeguard the subject's privacy, welfare, civil liberties and rights.

Please be assured that your participation in this research is voluntary and you may withdraw your participation at any time. If you have any questions about this study, please call me at (973) 733-8356 or e-mail me at sbrewtoncmmts@yahoo.com.

Included in this material is a reply form, which asks if you would participate in the interview. With your permission, the interview will be taped.

Please return the completed reply form by _____. Your return will signify that you have read the information above and any question you may have has been answered to your satisfaction. Your return of the survey indicates your understanding of the project and your willingness to participate, realizing that your participation is voluntary and may be withdrawn without prejudice at any time.

Thank-you for you anticipated participation,

Sincerely,

Shirley Brewton

Camden Middle Technology School
321 Bergen Street
Newark, New Jersey 07103

Shirley Brewton
Vice Principal

Date:

Dear Middle School Teacher:

I am actively involved in a doctoral study at Seton Hall University in South Orange, New Jersey as a requirement to complete my Ed.D. degree in Educational Administration and Supervision.

The purpose of this study is to learn more about the effects of inclusion on mathematics achievement of general education students in middle school.

I would greatly appreciate your assistance in this study by agreeing to participate in a focus group interview concerning the effects of inclusion on mathematics achievement of general education students in middle school. I believe your responses will be invaluable for inclusive education research throughout the state.

The focus interview should take no more than one hour. I realize that your time is extremely precious, but I would like to include valuable information in this research in order to gain a more complete perspective on the effects of inclusion on mathematics achievement of general education students in middle school.

All focus group interviews obtained will remain strictly confidential and the reporting will be only by group analysis. If you request a copy of the findings for this study you will be asked to include your address or e-mail address at the end of the survey. Surveys and addresses will be destroyed upon completion of the study.

This project has been reviewed and approved by the Seton Hall University Institutional Review Board for Human Services Research. The IRB believes that the research procedures adequately safeguard the subject's privacy, welfare, civil liberties and rights.

Please be assured that your participation in this research is voluntary and you may withdraw your participation at any time. If you have any questions about this study, please call me at (973) 733-8356 or e-mail me at sbrewtoncmmts@yahoo.com.

Included in this material is a reply form, which asks if you would participate in the interview. Please return the completed reply form by _____. Your return will signify that you have read the information above and any question you may have has been answered to your satisfaction. Your return of the reply form indicates your understanding of the project and your willingness to participate, realizing that your participation is voluntary and may be withdrawn without prejudice at any time.

Thank-you for you anticipated participation,

Sincerely,

Appendix C

Approval Letter from IRB to Conduct Research



SETON HALL UNIVERSITY.

1 8 5 6

October 27, 2004

Shirley Brewton
1468 Highland Avenue
Hillside, New Jersey 07205

Dear Ms Brewton,

The Seton Hall University Institutional Review Board has reviewed and approved as submitted under expedited review your research proposal entitled "The Effects of Inclusion on Mathematics Achievement of General Education Students in Middle School". The IRB reserves the right to recall the proposal at any time for full review.


Enclosed for your records are the signed Request for Approval form and the stamped original Consent Form. Make copies only of this stamped Consent Form.

The Institutional Review Board approval of your research is valid for a one-year period from the date of this letter. During this time, any changes to the research protocol must be reviewed and approved by the IRB prior to their implementation.

According to federal regulations, continuing review of already approved research is mandated to take place at least 12 months after this initial approval. You will receive communication from the IRB Office for this several months before the anniversary date of your initial approval.

Thank you for you cooperation.

Sincerely,



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

Cc: Daniel Gutmore, Ph.D.

Office of Institutional Review Board
Presidents Hall
Tel: 973.275.2974 • Fax: 973.275.2978
400 South Orange Avenue • South Orange, New Jersey 07079-2641

Appendix D

Reply Form

The Effects Of Inclusion On Mathematics Achievement Of General Education Students
In Middle School

Please Check:

_____ I agree to participate _____ I do not wish to participate

Name: _____

School _____

Telephone Number: _____

Best time of the day to be contacted: _____

A stamped, self-addressed envelope is enclosed for your response.

Thank you.

Return to:

Shirley Brewton
1468 Highland Avenue
Hillside, New Jersey 07205

Appendix E
Consent Form

Consent Letter

I understand that I am agreeing to participate in Shirley Brewton's study of the effects of inclusion on mathematics achievement of general education students in middle school. Shirley Brewton is a doctoral student at Seton Hall University in the Ed.D. degree program.

I understand that I have agreed to be interviewed, and with my permission, the researcher will make notes of my responses as well as audio tape our conversation, and that the tapes will be destroyed upon completion of the study. The amount of time involved to participate in this research will take a half hour up to one hour.

I understand that this information will be used for purposes of analysis only, and the confidentiality of the interview and of the district will be preserved.

I understand that all recorded and documented responses will be kept in a secure file cabinet in the researcher's home. It is my understanding that my participation in this study is voluntary and can be withdrawn at any time.

I understand that once the interview is complete, my participation in the study is finished. I also understand that a copy of the study's abstract is available upon request.

I understand that this project has been reviewed and approved by the Seton Hall University Institutional Review Board for Human Subjects Research. The IRB believes that the research procedures adequately safeguard the subject's privacy, welfare, civil liberties and rights. The chairperson of the IRB may be reached at (973) 275-2977 or 313-6314.

I have read the above material, and any questions I have asked have been answered to my approval. I agree to participate in this study, realizing that I may withdraw without prejudice at any time.

_____	_____
Subject	Date

College of Education and Human Services
 Department of Education Leadership, Management and Policy
 Tel: 973.761.9397
 400 South Orange Avenue • South Orange, New Jersey 07079-2685

APPROVED

OCT 27 2004

IRB
SETON HALL UNIVERSITY

Appendix F
Interview Questions

Interview Questions

1. Does the mathematic academic progress of general education students in an inclusive setting compare to the mathematics academic progress of general education students in a regular education classroom setting? Explain.
2. Is there collaborative planning between the general education and special education teacher? Explain how time is provided for planning.
3. Is there consistency in keeping academic expectations for all students? Explain your answer.
4. Is the placement of students with learning disabilities disruptive/not disruptive to students without disabilities while math instruction is provided? Explain.
5. Has staff development training been provided successfully to implement inclusion? How much training has been provided?
6. Why do you believe math scores are increasing or decreasing when students with learning disabilities are included with the general education students?
7. What are some of the reasons that contribute to the loss of instructional time in an inclusive setting that impacts upon math instruction?
8. Are you fully committed to student learning that fosters mutual respect in an inclusive setting and believe that all students can benefit academically in math as well as other subjects?

Appendix G

Transcript of Principal Interviews

Principal Interviews

Principal 1

- Q1. Does the mathematic academic progress of general education students in an inclusive setting compare to the mathematics academic progress of general education students in a regular education setting? Explain.

Yes, I think it does. As a matter of fact, last year with the inclusion class in the sixth grade, particularly those grades were a little bit better than the regular ed non-inclusion classes, so I don't know if that has to do with the set up of the inclusion classes or it had to do with the qualifications of the teacher herself. We noticed that that class did a little better. Sometimes students are able to help each other out a little bit more when they know that there may be some students who are weaker in there class, they may be more inclined to help the student out and when it comes to peer tutoring, that kind of helps out their own progress.

- Q2. Is there collaborative planning between the general education and special education teacher? Explain how time is provided for planning.

Yes, well there should be in theory, the inclusion teacher should take the lesson plans of the general education teacher and modify them to match the IEP of the students who she services so there is no time built into the schedule to say this is the time you should do it, but that inclusion teacher is required to submit lesson plans as well and in order for her to submit lesson plans that she has modified, she has to have received them from the regular education teacher and we would hope that they would have had some type of conversation about those plans and not just here is the paper work and just go and do what you have to do. In addition to our weekly grade level meetings, they do have a common planning time. That common planning time isn't structured to the point where the administrative team is telling them that these are the things that you need to do at this time. That's just something that in this building has been past practice that there is certain times that you give the teachers for their own planning time to do things. If every time they meet they have to have an administrator present and an agenda and a sign in sheet, then it becomes more an administrator's meeting then it becomes a teacher meeting. We often times give out more administrivia instead of allowing them to develop themselves professionally.

- Q3. Is there consistency in keeping academic expectations for all students? Explain your answer.

Yes, I think so. A matter of fact, so many of our students, their skills are not at the level that we would expect them to be at anyway, so the difference between those

students that are classified and those who are quote unquote regular education. Sometimes the line is kind of blurry so we don't separate the special education students. Since its inclusion, it's good to look at everyone as being the same, so the expectation that I have for you when sitting in the classroom is the same expected that I have for your neighbor who just may have been classified.

- Q4. Is the placement of students with learning disabilities disruptive/not disruptive to students without disabilities while math instruction is provided? Explain.

No, and I think there are two reasons for that. One is the quality of people that we have had in the inclusion program in this school. They have been top notch people in terms of management of the students. The second reason why is the new Connected math Program is so engaging for students and very hands-on, it is very typical to what they are use to having, the notebook that they go through in about six weeks and they get a new one. They look forward to getting the new book. It is a more student friendly math program. Now how much it is aligned to the standardized tests that will be given to students is a different matter, so it is the ability to engage the students. It is very productive and that contributes to the fact that there are no problems during math instruction.

- Q5. Has staff development training been provided to successfully implement inclusion? How much training has been provided?

Yes and no, there has been some. One of our resource teachers is kind of a point person for the SLT in terms of inclusion programs. I think our school is somewhat of a model for inclusion programs in the SLT. Since one of our teachers is so closely involved with the people at the SLT and at Central Office. She kind of takes it upon herself to make sure she gets included on the agenda at certain staff development days, certain one o'clock dismissals. She will say, I need to be on the agenda and she wants to talk to not just the teachers who are cooperating with the inclusion teachers. She wants to talk to everybody because everybody deals with these students rather they know it or not from the physical ed. Teacher, music teacher and art teacher. They have to deal with these students as well. When those students are with them, the inclusion teacher is not there. That's the inclusion teachers preparation time as well, so sometimes the teacher doesn't even know that they are dealing with students who are classified, so when they find out, they are a little surprised and will say, oh, now I know why the student acts the way he does.

- Q6. Why do you believe math scores are increasing or decreasing when students with learning disabilities are included with the general education students?

I think I referred to it previously when I talked about tutoring, and peer mentoring and that kind of thing. When you are helping someone, at the same time, you are increasing your own skills and I think that has a big part in it.

- Q7. What are some of the reasons that contribute to the loss of instructional time in an inclusive setting that impacts upon math instruction?

I think we have blocked our math instructional time. Students receive two periods of math instruction each day. We try to make those two periods consecutive. Sometimes it has to be broken up by the lunch or activity. The schedule just calls for that. I think teachers have to be productive with that time; otherwise all of the students will become bored. If you try to take 30 minutes or 40 minutes of instruction and try to stretch it out into 80 minutes instead of building 80 minutes of instruction, then all of the students are going to get bored, so I think our teachers are doing a good job of planning lessons and activities that take the entire amount of time that is allotted. Therefore the students do not feel a loss of time and they have verbalized it.

- Q8. Are you fully committed to student learning that fosters mutual respect in an inclusive setting and believe that all students can benefit academically in math as well as other subjects? Explain.

I absolutely do. I think that at one of our administrative meetings last week, we were having a conversation with the director of special education who talked to us about inclusion and making sure that the appropriate settings are established for all students rather they be special needs or not, receive 504 accommodations and those small disabilities some have can be overcome, especially when we provide them with all the tools that they need. I'd like my school to be a model of that if at all possible. I tell the special education department, when we open up a new self-contained special education classroom this year that we have some extra space. I'm all for it, if all students are given the opportunity can succeed.

One of our vice principals Mr.____sat down and did a class by class analysis of student math scores. He is a math specialist and that is his forte. The first thing he looked at was what the scores we liked and what he found. He was surprised that a lot of these special education students are doing just as well or if not better than the regular education student. He said that those who did not score in the proficient range, the cut-off may have been at 125 and they were at 123 or 124. He highlighted all of those names so we could take a look to see that these students are just a couple questions or two here and there or a little bit more on the open-ended they would be in the proficient range.

Principal 2

- Q1. Does the mathematic academic progress of general education students in an inclusive setting compare to the mathematic academic progress of general education students in a regular education classroom setting?

Here at _____middle, I am going to look at what I am familiar with. The students are not performing up to the same level as the general education students, but I do see some progress. It mainly boils down to the teacher. If the teacher is really addressing the subject area, a lot of the different strategies

- Q2. Is there collaborative planning between the general education and special education teacher? Explain how time is provided for planning.

Yes, we have common grade level planning time where teachers on every grade level have a common time scheduled everyday. Teachers are to plan together so that even though one class might be special education , the other regular or bilingual, at some point during the school day they come together to plan and work out what they are going to do in each of the content areas. So everybody is pretty much covering the same thing. They just have to adapt the curriculum according to the students or to the needs of the class of students that they have.

- Q3. Is there consistency in keeping academic expectations for all students? Explain your answer.

Yes, we have our goals and we had to adhere to the No Child Left Behind Goals and to the District Benchmarks. As a school, we have set our goals at 75% mastery, so we are constantly striving to reach that goal. Every grade level has to adhere to the District and No Child Left Behind benchmarks that have been set.

- Q4. Is the placement of students with learning disabilities disruptive/not disruptive to students without disabilities while math instruction is provided? Explain.

Well it depends upon the teacher. We haven't really had this problem. The students who are in the inclusion setting, the special needs students are okay. If there are any disruptions, it is normally the developmental students who are being disruptive. But as far as I know, that is not a big issue.

- Q5. Has staff development training been provided to successfully implement inclusion? How much training has been provided?

It was provided when we first received a Capacity Grant. At that time we had a lot of training when the grant was in full speed. Over time, the staff development has dwindled and we really need more staff development. Staff development was provided for all teachers rather they were special needs or not. We mainly held

most of our training on the weekend or in the summer time, so it wouldn't disrupt the classroom, but we offered it. I've constantly looked through the literature or fliers that has come across my desk and we sent a team of teachers out last year for some inclusion training and I think what I am going to have to do in the future is to look for some sources myself because it is limited in the district.

- Q6. Why do you believe math scores are increasing or decreasing when students with learning disabilities are included with the general education students?

I think the math scores are increasing when you include the special education and general education students because now the teachers are using different strategies and techniques instead of just the traditional mode. Now they have to look at other ways in presenting the material to children and also other ways in showing students how to come up with correct answers. So, I think it has enhanced the instructional program. I feel that students are doing better than they were doing before.

Proxy: What math program are you using?

Now in fifth grade, they are using Everyday Math. Sixth seventh and eighth grades are using Connected Math. Connected Math is a little rough, because it requires that students have some foundational knowledge in math and they can read. So, when we found that we had to go back and review a lot and set aside time everyday so the teachers can review previous skills so students will be able to deal with the Connected Math Series.

- Q7. What are some of the reasons that contribute to the loss of instructional time in an inclusive setting that impact upon math instruction?

I think what contributes to the loss of time, I feel focuses on the teacher, because if they have everything well-planned and have accommodated for different things that could happen during a lesson, they can cover more but when there is poor planning or low level planning, they don't think of all the things that can happen. When things happen during a lesson, it takes away from the instructional time. If the teachers know their students and they plan accordingly, the needs of the students, they will encompass all the different things they need so that when they start, they can follow through. What happens a lot of times, the teachers are in the traditional mode and they only teach to that general group of students and then when the other groups of students in the classroom, that lower achieving level or slower working students can't grasp that concept, they don't have another strategy or technique to apply at that time. It throws them back and the teacher continues to go over the same strategy over and over again even though they see it is not working with all of the kids. They have to know when to stop and think about that old Madeline Hunter thing when she was talking about monitoring and adjusting..

Proxy: What impact would that have on planning of future in-service?

I think we need to expose teachers to different types of techniques and strategies that they can use when dealing with certain concepts that are difficult for children to grasp. Instead of using the regular traditional mode, we need to have in our repertoire of instructional strategies. In case this doesn't work, I will try this next. Have more than one way they can grasp it.

- Q8. Are you fully committed to student learning that fosters mutual respect in an inclusive setting and believe that all students can benefit academically in math as well as other subjects?

Yes, we committed to all of our students' learning that fosters respect. I want all students involved in everything here at the middle school, especially math, because that is one of the areas where we've performed the lowest out of the different content areas, but yes, I am committed to all students learning rather they are special education or general education students.

Appendix H
Focus Group Interviews

Focus Group One

Does the mathematics academic progress of general education students in an inclusive setting compare to the mathematics academic progress of general education students in a regular education classroom setting? Explain.

- 4: It varies on the student's IEP's in classification. Often you have a student who has a behavior disorder and, but is academically above average in the regular classroom setting, so that it varies and so with my experience, I think autistic and ED students do better academically in an inclusion setting because they are eager to please.
- 5: I also feel that additional support staff makes a difference in the inclusion education where you can supplement the learning and I feel like it is a more supportive environment and I feel like it compares because it gives every student the resources of the additional teacher.
- 6: The regular students that actually are in the classroom setting, I think Sometimes the inclusion students actually impede their progress because you are moving at a slower pace.
- 3: I actually agree with that, being that I am in an inclusion classroom. There tends to be time where trying to cater to the special needs of inclusion students does kind of take back some time from the regular education students. Also, regular education students, it helps them to develop a sense of nurturing because they tend to take care of some, certain inclusion when they actually find out they are inclusion, because they find a way of finding out. When they find out, they tend to take care of them and every now and then you see them in the hallways and see people bothering them, they seem to stick up for them a little more, whereas I tend to believe if it was a regular education student or somebody that they knew, they would say, just handle it on your own.

Is there collaborative planning between the general education and special education teacher? Explain how time is provided for training.

- 11: Yes, we do plan between general education and special education and our prep periods, we do provide the same information and just to make sure that even though special education students are at a slower pace, at least they will have the progress chart in terms of how we are moving. But at least we will be on the same page. We will not be there at the same time, but at least

we will be on the same page.

- 7: I agree with speaker number 11 and also the fact that our lesson plans are modified for those special education students do that they will be on target with the general education students.

Is there consistency in keeping academic expectations for all students? Explain your answer.

3: I don't think so. Is there consistency is kind of hard, because you might have a situation where some of the inclusion students are performing better in certain areas that the regular education students and it comes a time and you don't have the IEP's right in front of you. You might forget who's inclusion and who's not inclusion and based on that, expectations can change because I know all of the expectations are suppose to be sky high for the children at all times, but sometimes where you tend to say especially for the sake of the general education students who need to move on to the next topic. There are times you tend to say okay I will come back to that later and hopefully the special needs teacher in the classroom can cater to their needs more specifically.

2: I believe that there is suppose to be consistency for expectations for all students to have growth, but for inclusion students, just incremental growth is an achievement because they are moving at a slower rate

11: No, there is not consistency in academic expectations for our students because of the changing of the academic criteria. For example, in mathematics, eighth graders, this year are starting a new math, which is totally, even though they have had it for two years and this is the first year that teachers are teaching it. It becomes a little more expectation becomes a little more, in terms of, not problem solving because they have been problem solving for two years, but the problem now is maintaining and learning the number sense and number operations, those algorithms are missing which are very vital on the standardized tests. Not only the general education students, but the inclusion students as well.

12: I don't think there is consistency in keeping academic expectations. I believe that there should be an Utopian situation, but I think based again on their IEP's what percentage of what students are suppose to learn, I believe the teacher may be drawn into perhaps lightening the academic load for that particular student.

In addition to that, I also think that the process in which the students are classified also has a say so on that, because we have so many students again who are inclusion, special needs, but do academically better than students who are regular education students. So you have to look at that also, how the students are

classified. Maybe sometimes the student is well-behaved, but yet needs to maybe be in the classification program. So I don't know if there is consistency when you especially look at everyone as the same or are you going to cater to specific needs and if that is the case, to have consistency in academic expectations.

7: No, there isn't consistency in keeping academic expectations for all students, but we are moving towards that. For example, our special education students' grades such as on the SPA Test are being mainstreamed with the general education students as well as with the GEPA. So, no there isn't consistency, but we are moving towards that so that once they leave this institution here they can be mainstreamed into high school and further on.

Is the placement of students with learning disabilities disruptive/not disruptive to students without disabilities while math instruction is provided? Explain.

1: I think this goes along with speaker number four's earlier point that we have to kind of separate what we are saying about learning disabilities because there are students who are classified who are put into inclusion classes that have different disabilities and learning disabilities on their own and are not disruptive. More of the students with behavior disabilities can be disruptive and I think that it is a little leading question to ask about students with learning disabilities because learning disabilities are completely separate from disruptive behavior because we have disruptive behavior from regular students so that we should not be comparing learning with disruptive behavior.

4: In alignment with speaker number one, unfortunately, schools have combined students with multiple different disabilities. I think we should have more BD classes and ED classes and a combination of autistic and mild learning disabilities and they can turn an entire classroom upside down in five seconds and it is like a domino effect and some of the students who are not classified have a tendency to want to argue with this particular student so then you have lost twenty minutes of instruction as a result of a certain disability.

12: I kind of look at that question a little differently. I saw it as, do students with special needs interrupt the academic flow in the classroom. I don't think so particularly those students with learning disabilities allow regular education students to teach and exemplify how well they understand the lesson, so when you have a student with a disability at your table, and they ask the teacher or inclusion teacher to help them and you can refer them to a regular education student who understands. It allows you to see that the regular education student comprehends the objective for that day or for however and a lot of times you see that students learn from each other better sometimes than from their teacher because they relate to each other and speak the same language. So in that case, do they disrupt the academic flow in the class, I don't think so. Now if the question is if they are

disruptive, I think I agree with speaker number one and four. But I look at the question from that standpoint.

9: I would like to comment. I found that students especially with speech impairment disabilities are better in math and are a challenge to a regular education student in math class.

10: Okay, I looked at this question also in a different manner. I think there are positives and negatives. First of all, positively we have already heard that you can assess the students based on the fact that you can see if students without learning disabilities can help those students with disabilities. Okay, that is a positive and you can also be able to see the student in a role as an instructor, see the student in the role of assisting and helping another student and that allows for groups to function in the room. It also allows negatives. A negative can be the fact that everyone knows that if you have a room full of students who do not have learning disabilities, you are able to progress at a much faster rate. You will be able to do things more quickly. So I think that it is a give and a take. It is positive and a negative. The good thing is that the child who the learning disability is assisted because they have a student who may translate things closer to their language than necessary the teacher speaks when giving instruction. That's a positive. But a negative is the fact that the student who is giving the help or the assistance also is receiving some hindrance because that student could have also progressed at a higher rate.

11: I also agree with speaker number 12. I looked at the question differently. Based on my experience two years ago teaching inclusion students, I just, I noticed that it is not so much a disruptive force, ah maybe disruptive is not the word I would look for. I think what I noticed and what was commented to me through my general education students was that they are getting special treatment. I didn't understand that statement until I found out from my students that they refused to do work in the classroom and when they refused to do work in the regular setting of the classroom and nothing is said to them then that is a disruptive force. If the teacher does not say anything to them, however, I noticed with that, they are not allowed to get a grade less than a C which some students, general education students felt was very unfair. In saying that, I feel it becomes a disruptive force in the classroom. That's what was told to me two years ago and there was nothing that I could do about it because that's what was told to me through the teachers so that's where I would feel it would be disruptive because here general education students are working hard trying to maintain a C, where if inclusion students who don't do any work at all will still get a C. So that's where I feel it would be a disruptive force.

12: I just want to speak to speaker number eleven and speaker number 10 comments about the negatives. I agree with speaker number 11. There is pressure to pass a student regardless of how well they progress but I do believe you can fail a student if but you have to document that student and that documentation can be

a lengthy process and a very detailed process. But it is necessary, then it needs to be done. And that can justify and or set negative impact. I also was to speak to negative quality of hindering or holding back a regular education student that speaker number 10 spoke to. I think that again in all these questions, what's implied that there's been a 100% perfect job classifying students. Even in regular education classes, there are students who don't understand and other students have to help so I think you see this same model, the same paradigm in even the gifted and talented classes whereas some of them are even far and above, quote on quote gifted and talented where some are far and above other students but they will go back and help so I think the model is used. It's just that now we are talking about a learning disabled student and their enabling that student to learn. I think there is potential for positive even in that.

Has staff development training been provided to successfully implement inclusion? How much training has been provided?

11: No, we have not received staff development training. I think we would only benefit from it so that and that way we can become more prepared and aware of our student situations. I don't think that looking through cum cards really everything. I think we need more documentation on how to go about the correct way to document those students who need in terms of what do we do to place students if we feel they have a learning disability.

6: Even though I was able to adjust, let me say this, being a regular classroom teacher, I did not receive sufficient training in working with inclusion students. I was just, we talked about it at faculty meeting and at general meetings, but I did not receive the training that I thought I actually needed to work successfully with inclusion students.

7: I did receive staff development training for the inclusion setting. In terms of how much time was provided, there were follow-up sessions during staff development training. There was time from morning at 8:30 and ending at 2:45 or 3:00 depending upon how lively the sessions were. But there were always follow-up sessions afterwards and through those sessions it did both, it activated prior knowledge that I had for this training for teaching special education students and also it was a collaborative teamwork between my partner and myself. So yes, staff development training was provided.

3: I have received staff development on inclusion once. One time and this isn't the only time here and I have been in inclusion for more than one year. And the training would help. The training that we did receive one time, I think really helped but the special needs teacher in the classroom might receive training but they were not trained on it. That's why they are special needs teachers. The regular education teacher, I believe would need some extra training on these sensitive areas and like I said, I received one inclusion workshop, one.

4: I concur with speaker number three. We have had training once and I think that was when I first became an inclusion teacher and then when I received a new inclusion partner. However, if you are talking about we're learning when we did the CO'NECT Design, we had workshops often and staff development. It was on a consistent basis and as inclusion teachers we do not have on-going training on a consistent basis.

2: As a regular education teacher, I've had inclusion students in my classroom and I did not feel I was trained to really deal with those types of students particularly those students who have severe behavior problems and I always thought that when an inclusion student was put into your classroom there should be another qualified teacher to deal with that student if the regular education teacher did not have that training.

9: Yes, I did receive developmental training here going back when it started off as a district or school initiative and the emphasis was on training. This past year we have not received any special additional training as far as I know.

8: In line with what my colleague number nine just spoke about, that leads some questions dealing with adequacy of training, training of support staff and the continuity in the training. We look at the question, has staff development training been successfully implemented. When listening to the responses of other speakers, I can say no. In our particular institution, but these things could be abated if there is follow up and continuity and the support staff. I think there is a problem with the support staff in the classrooms.

13: I agree with speaker number 2 as well about no adequate training being given and being a regular education teacher it is hard to make those modifications when you haven't been trained how to do so. It's sort of like a work in progress as a regular education teacher to deal with these students with these IEP's and how to get them ready not only for daily education but standardized assessments, which no modifications are actually made.

3: Speaking to what the proxy said about personal aides, we or I haven't received a lot of personal aides or personal help for my inclusion students in the past two years. That would make a total difference. I am positive that the first year I did it; I was part of the inclusion program. I had about two or three personal aides because two or three students actually needed it. That made a big difference, however it seems as if there is a shortage or shortage of training time or what have you, but I don't think we get one this year.

10: I was just going to concur and just add that it seems that there needs to be special attention given to the personal aides, support staff, because the fact that they are working with children and it seems as though they get the job and they have to do on the job training. Some take on the zealous or the onus to go out there and get additional help and support that is needed and others do not and that

creates a problem all of its own because when you are managing a classroom as a teacher and you have to manage another adult in the room because they don't have the skills to necessarily to deal with the particular students and their deficiencies, and that creates a whole new avenue and attention is taken off of instruction.

Why do you believe math scores are increasing or decreasing when students with learning disabilities are included with the general education students?

11: Just to put it plain and simple, they are increasing with the inclusion students or special needs students because of the teacher that we have here at the school. It's the teaching; it is not anything different. We are probably getting our point across to the students better than any other institution.

8: If the scores are increasing, I believe it has a lot to do with the IEP's or us being able to understand the various learning styles of the students that we are now addressing in the classroom. In all classroom, we deal with students with functional multiple levels and we adjust our instruction accordingly. It's just that with these types of students that we have to attack those avenues and approach it in that manner rather than a child is tactile, rather a visual learner and we have lesson that touch every one of those areas.

7: I agree with speaker number eight and speaker number eleven, but what I would like to add, there is a direct correlation between the math scores, increasing math scores of special education students. At least in my years of teaching here, math is dealing with concrete operations and with special needs students, as speaker number four pointed out, there are certain various ways that they are able to internalize information for themselves so that they can convey what we want them to know. And because math is a concrete operation, it is much more easy to grasp because you have to actually go by what is being said and taught, therefore they are able to grasp these concepts, number one. Number two, with special needs students; their IQ's in concrete operations are much more higher than general education students from various studies that I have read. So therefore, I can say with the years that I have been teaching herewith my class, the scores have increased and should I give an example. There was a student and I forgot his name who had a speech impediment and what my colleague and I found out over the years, students with speech impediment, at least with this one in particular, I would like to say his math scores were impeccable. But yes, he could not express himself externally to draw out anything, but when it came down to concrete operations he was right on the money. He was able to do his work and surpass his general education peers. So I can concurrently say, the math scores have increased.

1: I think this is a point to kind of reiterate something that speaker number twelve had said earlier. Idealistically speaking, students learn better from students

and when they hear, when they are talking with each other about problems and hearing ways other students are trying to solve problems they retain more and also in an inclusive setting, students even regular education students will hear multiple ways of explaining problems based on the IEP's. So I think idealistically, it would be a situation where you would see increasing scores. Looking from the data and I'm not positive rather that's happening, I can see a situation where it could be done properly.

12: I think that if we compare the scores of special needs students relative to each other, I think we see an increase and I think that increase is facilitated by the fact that you have teachers who have been teaching in that particular area for years now. I think when you change up, you have an inclusion setting with a teacher and the next year you have another teacher and another, and then you don't see those scores. I think here, we tried to and attempted to maintain consistency with regular education and special needs teachers and I think that when you go back to the training question even though we not have been trained, on the job training is what we receive because you have been there consistently and you kind of know how to deal with things so I think that is one thing. I also think that vertical teaming where an eighth grade inclusion and regular education teacher can go and talk with the seventh grade inclusion teacher and regular education teacher who also communicate with the sixth grade regular and special education teacher. You have a history of what is going on and you have a rapport with that teacher. So when those factors are keyed in, academic achievement should improve.

10: I just wanted to add a few things to the discussion. First of all, you have an atmosphere to learning that exposes the students who are at the lower end of the spectrum to a higher level and whenever you do that you raise the bar on their desire to achieve. And then when you throw it in with multiple adaptations whereby you are seeing that different methods are being used to help different students and you have other students in the room, who might have had difficulty grasping the concept but because of the availability of resources of multiple adaptation, it allows for even that to increase in the room. But also, the fact that you are providing additional support with inclusion there are two teachers in the room rather of one. And regardless of saying there are additional problems because the addition of inclusion students, the realization is having two teachers in the room will assist in helping those who are the lowest because two can do more work than one. And then looking further at this matter, I think that the scores of the kids who are a part of the special education population, I would think would improve, and the cost effectiveness of seeing that perhaps the scores of the regular education students might somewhat dip, might be far outweighed by the fact that increasing the special education might raise the standards as a whole.

1: I just want to ask a question because it seems that what I am hearing, a lot of people are talking about the improvement of the scores of special education

students that are included and I was just thinking, that the focus was on the scores of the general education students and I hadn't, except for the brief comment right there had heard that general education students might dip a little and be outweighed by the increase of inclusion students. If someone could just speak to the scores of the general education students.

11: To answer speaker number one's question. On this past year, we the eighth grade team, our math scores on the GEPA has put our school into the top 10 in the district which means that we were at the bottom, the bottom level last year in terms of GEPA. Even though, again, I will stick with what I stated that not just from eighth grade, I would like to say that it started from the fifth grade and they maintained and everything was reviewed and our goal is and still will be to reach new heights and that's what we did. We did that last year even though we were at the bottom of the barrel, we still made improvement and this is just regular education and we made improvement and we are now 59% almost 60% which is unheard of for our school in a long, long time. So we are very proud of our students who helped catapult us into the top 10 and now everyone in the district is looking for us to do even better. That's what we are here to do. So again, I say it is through our colleagues.

8: In response to speaker number one. I read this question differently. Why do you believe math scores increasing or decreasing when students with learning disabilities are included with the general education students? I don't feel that this is an indictment on the learning disabled students bringing scores up or down with general education students. The question is speaking to overall scores, combined scores, it's not relevant to either learning disabled students or general education students. This question is looking for justification or evidence as to if the scores are increasing or decreasing in that whole population.

What are some of the reasons that contribute to the loss of instructional time in an inclusive setting that impact upon math instruction?

3: Some of the reasons that instructional time can be loss is just that, small things. The special needs teacher not be there at that moment and you need to cater to this special needs student or just trying to stop an altercation where one of the special needs students might be bothering another student. Sometimes, tempers flare with regular education students, so if you combine some kids. I spoke earlier about some students caring more about other students, so if that's the case, you might have an instance where one kid is picking on another kid and one kid is picking on an inclusion kid and two or four regular education kids might say, you don't need to do that, mind your own business. You have that dynamic going on in the class. I can deal with that with other classes. There are also instances where some students might, just like a regular education class in that since. Some students just might not get it as fast as others. You might have to find a different way of explaining it for different types of learners. I don't think it is just an inclusion problem actually, now that I say it out loud.

8: I empathize with speaker number three as it applies to taking care of behavioral issues in the classrooms. As we all know as educators, it is just not in inclusion classrooms but this question brings into mind instructional time not what we all deal with. Instructional time in an inclusive setting has a lot to do with teacher preparation. Teachers must prepare for shortcomings with students, learning to collate data and learn to have some ways to facilitate, worksheets or stations where you can remediate children based on your knowledge of what their shortcomings are academically. That way you do not have to use your instructional time to slow down, just deal with that one child.

7: I agree with speaker number eight, but also, I would like to add that when reading the IEP's, all of the special education students have special needs that have to be attacked. For example, there will be some students who will not be able to write quickly, so therefore extra time must be provided for those students to catch up, number one. Number two, because of the fact that when you are team teaching in an inclusive setting, there are modifications that need to be made to the lesson plans in order for these students to grasp what is being taught to them because I still maintain that math is a concrete operation which they are capable of grasping. That's just about it.

5: I try not to be too verbal, because I haven't taught inclusion in a few years. When I did teach inclusion, I didn't receive the training until after the fact. However, I do have to say that a lot the problems that have been identified today are not particularly relevant to inclusion classrooms. Many times in instruction in regular education classes as well as special needs environment, you have students who are not at the same pace as other students. You must take into consideration that you have transfer students, students who have the inability or shortcomings have not been identified. You also have students who are waiting to be classified, many different factors inside a regular education classroom that you have to take under consideration, the same issues that you go through in a regular education classroom. So again, it's not like I want to be the devil's advocate, but all of these things are true in both settings. I really don't see how we can focus on one area or the other.

12: I agree with speaker what speaker number five just said. I think that the difference is that when you talk about special needs environment, you are talking about a state-mandated situation where if I have a regular education classroom and I have a transfer student or students who have not been classified, I'm assuming that they were getting an education in the other classroom and they are coming in somewhere close speed and to make modifications for them is not state-mandated. Now being a good teacher, you are going to do that anyway, I agree. But I think when you are talking about someone's particular IEP or their particular situation and you need to modify and I think speaker number eight hit it on the nail that you have to prepare. So it takes a lot of time to prepare, but it helps for instructional time.

Are you fully committed to student learning that fosters mutual respect in an inclusive setting and believe that all students can benefit academically in math as well as other subjects?

10: I think the answer would have to be yes, that we are committed to the fact that the students in an inclusive setting will be able to benefit academically rather than in an inclusion or regular education. Benefit certainly because the non-inclusion students are able to take on a different role that he or she may not be accustomed to just in a regular education classroom, where he or she either fosters a role as protector or fosters a role of a teacher or a learner. So there are definitely advantages and we are committed.

11: Yes, I would be fully committed to student learning in any environment. I feel that regardless of the disability or special requirement is needed, all of our children should have an education. At the same time, we need to and I might be a little biased in saying this, just from the experience here in our institution, there needs to be more emphasis on mathematics. I see the scales in terms of literacy as taking precedence before mathematics and I, if you really think about it. As I think you need both to be successful in this world and to be able to relate and that may be a problem if you really think about it. As I think about this question and why our students are lacking in mathematics, maybe it is because we are not putting enough emphasis on mathematics. I feel if we take the time out and balance the power of the scale, I think our scores will be up there with the literacy students academically and when they take the standardized tests.

13: As a literacy teacher, the reason more of a literacy focus in this day and time is the literacy level is so low in our community, we have to foster a literacy rich environment in these times. Our children are more swifter with adding and subtracting because of the environment that they are in. They learn how to count before they learn how to read or write. So I feel as though school as districts are centers of education. We have to be literacy based and a writing based focus because if we don't give them the skills they need to read and write they will have difficulty in mathematics with word problems and what have you and open-ended questions and there is writing that has to go along with mathematics as well. So yes I have neutral respect. So I think if we come together and deal with things, we have a term called balanced literacy. If we had a term called balanced education, then everything would be okay.

2: I see this question in a very different way. I am committed to fostering respect and not only inclusive students but students in general. I believe that any student has the potential to learn what they need to learn. In my years of teaching, when I am getting into a math lesson, I've had students say, Mr._____, why should we learn this and my answer is very simple.... Because you are able to, because you can and I think in that focus, students should learn to respect education for education sake no matter what the subject is.

1: I think all the teachers here are committed to our students , but on the other hand I have to question how committed is this system to letting us do that because I feel we have already heard that being an inclusion teacher already takes extra preparation time that these students need us to do. Just preparation for them and it seems the focus is more on making sure that it is appearing as though we are committed and making sure all the paper work is filled out to make sure other people see that we are committed which, takes away time for our actual commitment to students. So while the teachers would love to put more emphasis on their ability to help these students benefit. There are things that take away from our ability to do it.

8: Yes, I am committed, if all safeguards have been put in place as it applies to student mix being appropriate. And that all students can and will benefit from the safeguards. The training, the resources, that are needed and the support from the administration are there.

Proxy: Do you feel that some of the in-service days where you have grade in-service that you might benefit from more training on how to work with inclusion students, how to plan, how to modify instruction and also have in-service training for all support personnel?

8: I think that would be prudent in particularly for teachers who are not instructing inclusion type students or special needs students because there are students in general education classroom who have not been identified and this would also help with their instruction.

11: I would like to add on that we need the support in order for us to uh. I know the teachers are committed and again I think it was speaker number one who said are they, going to allow us to do. Allow us to teach them, and have our students learn we need the support from our administration, staff. I'm not saying our, really Vice Principals or Principals, I think it goes beyond that. I think that we should have the voice that should be heard because we are the ones in the classrooms. Just think if they can hear us and understand where we are coming from and why we are successful then I think that we can all have an academically sound environment. We need to have input. I think it is a big issue. I used the Connected Math Program as an issue. To be honest with you, I don't like it. It teaches the students how to problem solve. Yes they need that everyday but we do not teach them the algorithms so how can we implement that. That's a serious problem and for them to throw it at us without any training I thought that was ludicrous.

Focus Group Two

Does the mathematics academic progress of general education students in an inclusive setting compare to the mathematics academic progress of general education students in a regular education classroom setting? Explain.

1: It can. There are some things that I have seen in that setting. Sometimes the special needs setting there are different classifications so that could be a problem. You have emotionally disturbed and several classifications, neurological impaired, so if that special needs teacher is dealing with different types of classifications, then you are put in a situation where some of the children are having discipline problems. It could be a challenge. It was difficult in the particular circumstance. You still have to teach. I have been in different settings over the course of my career and I think a lot has to do with the teachers being committed to make sure the students get taught. Sometimes you know you have to just change your strategies. You know you can work it, if you make it work. But, you really have to have two teachers that are committed to the education of the students, because as you know, in the public school system, everything is not perfect, but we have to put the children first and so take it from there.

2: In an inclusive setting, general education students in my opinion advance a little slower than in a regular class setting.

3: Yes, many times I have experienced regular education students with various learning abilities. Inclusion only fosters an appropriate atmosphere.

4: General education students in an inclusive class setting do not advance as quickly academically because fewer skills are taught and there is the burden of behavior problems.

Is there collaborative planning between the general education and special education teacher? Explain how time is provided.

4: In my opinion, collaborative planning is not taking place with the general ed. and special ed. teachers.

3: There should be, but there is not. Successful planning requires fifty minutes of collaborative efforts.

2: Yes. General and inclusive teachers plan together during their prep periods. They decide on what strategies they can implement to meet the needs of all children.

1: Yes. I got along with the special ed. teacher, so we found a need to collaborate. It was needful. What I would do was to give her my plans and so her plans would piggyback my plans. When I got ready to turn in my plans, I would give her my plans and allow her to modify her plans for me. And what was good, when I had some students who were exceptionally low or were not classified, she was willing to take them as well and

put them in small groups. So, certain things are not legal or set in stone, but if the people involved are looking at the best interest of the students, then you just have to go the extra. With our particular administrator, we had some preps so you could use that. She definitely worked in your planning if you needed it.

Is there consistency in keeping academic expectations for all students? Explain your answer.

3: Yes, I have worked in an inclusion setting where inclusion students were meeting the standards.

1: That's personal. In my particular circumstance, yes. My expectations are to do your best. Those are my personal expectations, that my students do their best. So if your best is an A and you give me a B, I'm upset. If your best is a C and you worked hard for that C, as far as I'm concerned, that's an A. So, yes, I can say there is consistency because actually the expectations are the same.

4: I believe that there are no academic expectations for all students. Students with behavioral issues, attendance issues and inclusive issues are not required to meet the same standards.

2: Yes, because all students are required to meet the same standards.

Is the placement of students with learning disabilities disruptive/not disruptive to students without disabilities while math instruction is provided? Explain.

1: That really depends on the type of classification. If you have different classifications that the teacher has to deal with, I know because I was a sub for a while too. And so I know that special ed. teachers, they always had to call on me to work with the special ed and what I noticed were the different classifications, neurologically impaired, emotional disturbed and several types of classifications that as far as I know in special education and so the way the teacher is supposed to deal with that is my understanding and I could be wrong. They are not supposed to be mixed like that. Now I could be wrong, but when you are dealing with someone who is emotionally disturbed and are in an inclusive setting, it almost defeats the purpose because somebody who is emotionally disturbed in my professional opinion should be in a smaller setting. So put them in a situation that is inclusive kind of defeats the purpose of why they are classified. So that could be the problem especially when you have students who are not classified, but they have discipline problems as well. A situation like that can be disruptive. On the same token, that is not set in stone. In education, all things are not set in stone. This is the end to be all but it doesn't work like that when you are dealing with people. It can be disruptive. A lot has to do with the approach of the teacher and how the administrators deal with it as well.

4: The teacher must address the needs of the students with disabilities. As long as there are no major behavioral problems, students with disabilities do not disrupt the instruction in math.

3: Students with learning disabilities do not impede general education students from progressing in the classroom.

2: No, I don't believe that the disability is the key. Sometimes the disruptive behavior comes from the regular ed. students.

Has staff development training been provided to successfully implement inclusion? How much training has been provided?

1: I haven't been trained. I learned from the school of experience.

4: I have not had any training to successfully implement inclusion.

2: I haven't had any training. Additional training would be helpful for general education teachers.

3: Yes, I know that I have had several workshops on successful inclusion classes.

Why do you believe math scores are increasing or decreasing when students with learning disabilities are included with the general education students?

4: The increase or decrease of the scores of the general education students in inclusive classes depends on the disabilities of the students, their behavior, and the structure of the class.

2: I believe scores are increasing because of the additional staff member working interactively with small groups.

1: I felt that students are not able to do as much as they could have had they have been in a general education setting because there were a lot of known discipline problems that were in that particular class. In addition to the ones that were inclusion who were having some problems as well as emotionally, so I felt that they didn't get as much from it. Because there were a lot of stimuli going on, it made it difficult because you are dealing with students who have not been classified but yet had discipline problems in the past and then because of that setting you had students who didn't have problems. They had to change a little in order to survive. So I don't think they did as well as they could have even though I had some students that did very well, so I had four or five who did well anyway. Those students who were more advanced, I had to group them and take them as far as I could take them. Personally, my conscience wouldn't let them suffer. It took more out of me and the other teachers as well. We did the best that we could and some went on to algebra. It is like six in one hand and a half dozen in the other hand.

3: I think teachers have to utilize more lab sheets and devote more time to inclusive students. General education students are doing better in math because there are two teachers who can assist all students.

What are some of the reasons that contribute to the loss of instructional time in an inclusive setting that impact upon math instruction?

4: Loss of instructional time occurs when behavior is an issue, the level of the general education students and the amount of time the teacher has to address specific issues.

3: One of the reasons might be the failure in communicating IEP's to the regular education teacher or the lack of resources in the classroom. There are also behavioral disorders of students which are not always inclusion.

2: Teachers have to do some re-teaching of math skills and provide inclusion students with additional time to master skills which sometimes takes away from the instructional time.

1: It has to discipline. One of the keys, two of the keys, there are more than two keys, but there are two main keys that helps as far as teaching is concerned. Teaching is an art and a science. From the scientific prospective, proper planning, having plans depending upon what you are going to do and having a formal discipline plan is essential so the thing about it when you are dealing with special ed., some of the problems that they may have as far as not being able to, like having problems with their nerves, some behavior of somebody. In special education, they can not help it. I know that they can't help it. You know that they can't help it and all of the adults know that they can't help it or I'm sure they can control themselves to a point but there is a certain level that they can't control. It's hard to explain that to a child, so that's where it can affect classroom management. It affects classroom management. In order to meet that discipline, we have to have discipline. You are trying to be fair because you know what is going on and certain things it doesn't pay to do to this child. The other ones won't understand, so that can definitely affect your classroom management. Because you can't tell these children what is going on, that they are classified and why you can't discipline them in the same way. Children don't understand. They just know that we are all children and you let them get away with murder and that's what it looks like to me. So that will definitely affect your classroom management. Their perception of what you are doing even though you are being fair how you perceive it.

Are you fully committed to student learning that fosters mutual respect in an inclusive setting and believe that all students can benefit academically in math as well as other subjects?

3: Yes, I believe that in any type of academic setting students are placed in, they can learn from each other.

1: Oh yes, yes, yes, I am fully committed. Yes, to me it doesn't matter rather it is _____, that is why I decided to teach because the pay was great, the opportunity _____ and so yes, they can benefit academically as well as others. They need that. The whole ideal that we have special education is that we believe they can learn. I tell students that I am not a special education teacher, but I do have the qualifications to diagnose that you need extra help and that special education teacher has been specially trained to help to meet your academic needs. So I don't believe that there are any dumb children. I believe that you can be lazy and have some type of disability, but I believe they can learn math or at least try to teach them as much as you can. I think we have the obligation to teach you as much as you can and I think dealing with one of the first questions you asked me, I was talking about expectations. That applies to any classification, general, special ed., do your best. That applies; I mean I just want you to do your best. I don't think you can ask anything else from the child. I believe all children can do their best. I believe that.

4: I am fully committed. I strongly believe that all students benefit academically in math as well as other subject areas when teachers are given the proper academic environment that supports the learning.

2: Yes, I am committed.

3: Yes, in any type of setting students are placed in, they all can learn from each other.