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A study of the effects of in-class support on math performance of regular education students, classified special education students, and at-risk students

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A STUDY OF THE EFFECTS OF IN-CLASS SUPPORT ON MATH PERFORMANCE OF REGULAR EDUCATION STUDENTS, CLASSIFIED SPECIAL EDUCATION STUDENTS, AND AT-RISK STUDENTS

by
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ABSTRACT

A Study of the Effects of In-Class Support on Math Performance of Regular Education Students, Classified Special Education Students, and At-Risk Students

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In an effort to service special needs students, service delivery models have progressed from self-contained classrooms and separate facilities for special needs children, to resource center pull-out programs, in-class support, mainstreaming, and full inclusion.

The in-class support model, which provides a special educator or aide in the regular classroom, attempts to enhance the academic success of identified special education students in such placements.

This study focused on the effects of in-class support. The population consisted of 76, 7 to 9 year old math students in a New Jersey school district. Curriculum-based pre and post test math scores achieved by regular education students, classified special

education students in a resource center program and through in-class support, and at-risk students, were compared to determine the benefits of an in-class support program.

Results of the study indicated that the special education students and "at risk" student receiving in-class support achieved lower pretest scores, but realized gains after intervention. However, they did not score as high as their regular education counterparts or classified students in a resource center program on postests.

The study implies that although setting should be a consideration for appropriate placement, that more emphasis should be placed on instructional techniques in meeting the needs of the special education population.

MINI-ABSTRACT

A Study of the Effects of In-Class Support on Math Performance of Regular Education Students, Classified Special Education Students, and At-Risk Students

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This study focused on the effects of in-class support on the math performance of regular education, special education, and "at-risk" students of 76, 7 to 9 year olds in a New Jersey school district. Pretest and postest scores of all groups were compared, resulting in gains for all populations.

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CHAPTER 1

IDENTIFICATION OF THE PROBLEM

Identification of the Problem

Background

Diversity among people has always been an area of intense study and debate. In exploring the history of humanity, philosophers and scientists such as Hipprocrates, Plato, and Darwin examined the diversity of intellect, personality, temperament and genetics. Throughout history it has become the challenge of public education to meet the needs of a growing nation of children possessing a multitude of differences, intellectually, socially, emotionally, and culturally. But never has the impact of diversity upon public education been as monumental as it is today.

The current whirlwind that surrounds education gathered strength with the implementation and interpretation of Public Law 94-142, The Education for All Handicapped Children Act of 1975. Simply stated this law provides:

> that to the maximum extent appropriate, handicapped children, including children in public or private institutions or other care facilities, are educated with children who are not handicapped, and that special classes, separate schooling or other removal of handicapped children from the regular educational environment occurs only when the nature or severity of the handicap is such that education in regular classes with the uses of supplementary aids and services cannot be achieved satisfactorily.

Statement of the Problem

The challenges of meeting the individual needs of both regular and special education students within the parameters of P.L. 94-142 remains unresolved. The problem is multifaceted affecting students involved in regular and special education programs.

In the past the regular education program and special education programs have operated independently of one another. There has been separate funding, curriculum, teaching, administrative staff, academic standards, and facilities. Ysseldyke, Agozzine, and Thurlow (1992) compared the separateness of each system to the parallel play of young children. Although each system is aware of the other's existence, there is a lack of interaction or coordination of efforts toward a common goal. As educational reform moves forward, more sophisticated forms of interaction between regular and special education, comparable to cooperative play, need to be created to satisfy the requirements of P.L. 94-142.

In an effort to service all students in accordance with the law, special education has experienced changes through evolution. The progression of service delivery models has moved from self-contained classrooms and

separate facilities for special needs children to resource center pull-out programs, consultant/teacher models, mainstreaming, in-class support, collaborative teaching, and full inclusion. All have been attempts to bridge the gap between regular and special education classes and to provide better service to the special education population. Yet, empirical research significantly favoring one service delivery model over another appears to remain scant.

Purpose of the Study

Many students formerly involved in self-contained and resource room programs lack the basic skills and social experiences to succeed in the regular classroom without modifications to the curriculum. Yet, pull-out programs and self-contained classrooms have been viewed as stigmatic and inefficient time and cost wise. Therefore, the thrust in many school districts is toward providing more opportunities for the special education student to receive in-class support within the regular education classroom. In-class support is usually given by a special education teacher or an instructional associate or teacher's aide who assists the special education student in the regular education classroom. Collaborative teaching, one-on-one or small

group instruction, supplemental support, behavior modification, alternative teaching, reteaching, and modifications to the curriculum are some teaching strategies that are used within that regular education setting by both the regular classroom teacher and the special education instructor to enhance the success of the special education children. Although the criteria for the additional teacher varies from district to district and in each situation, ranging from a fully certified special education teacher to someone with a junior college degree and/or classrooom experience the opportunity to provide supportive instruction remains.

As school districts work toward the goal of mainstreaming and inclusion, the purpose of this study is explore the success of various service delivery models that have been utilized in special education and to determine the impact of the in-class support delivery model on the academic performance of all students involved in such programming.

Importance of the Study

Special education teachers are often responsible for teaching a variety of special needs students in different settings. They are required to play an integral part in many service delivery models and I am

interested in finding out what research shows is the most effective way of educating the special needs child. As school districts move closer to adapting the in-class support model for many special education children, I am interested in learning about its effectiveness for students involved in such programming.

Statement of the Research Questions

Question 1: Does research indicate that any one special education service delivery model such as resource center programs, self-contained classrooms, collaborative teaching, teacher consultant models, or in-class support significantly increase the academic performance of the special education student?

Question 2: Does the use of in-class support significantly improve the academic performance of:

(1) regular education students

(2) special education students, or

(3) "at-risk" students?

Statement of the Hypothesis

Hypothesis 1: I do not think that there has been substantial evidence that favors the use of any one service delivery model over another.

Hypothesis 2:

(1) In-class support does not have a significant impact on the academic success of regular education children involved in such a program.

(2) Although the use of in-class support systems may improve the academic and social transition between the special education classroom and the regular education classroom, I feel that it has little or no impact on the academic performance of the special education child who would normally receive instruction in a self-contained or resource center program.

(3) I feel that the "at risk" child could benefit by the intervention of an in-class support situation. An "at risk" child is a child who has been referred to the building PAC (Pupil Assistance Committee) for additional educational strategies or testing by the Child Study Team or a student eligible for Basic Skills.

CHAPTER 2

REVIEW OF THE LITERATURE

Review of Literature

History of Special Education

The education of persons with disabilities is rich in history. Its revolves around issues such as defining and categorizing handicapping conditions and the proper placement and instruction for those persons with disabilities. In order to understand the development of the various service delivery models, a summary of significant events in the evolution of special education follows.

In the early 1900's, as a result of the development of individual intelligence testing by Alfred Binet, students predicted not to do well in public schools were set aside in special classes. These classes were modeled after such places as the Vineland Training School, a private center for retarded persons in New Jersey, and residential schools for children who were blind and deaf (Reynolds & Birch, 1988). During this same time, a similar trend toward including students with lesser degrees of limitations was also growing. Programs for blind students were extended to include students with partial sight, and day classes for hard of-hearing students that began in Massachusetts in 1913

began to expand (Reynolds & Birch, 1988). This extension of special services to include those people with less severe disabilities broadened the scope of recognition and emphasized the importance of addressing the needs of this population.

States began to provide additional funding for particular types of special education and colleges began to offer programs to train and certify teachers to instruct children with moderate and severe disabilities. By the early 1920's growing concern over the education of handicapped children motivated a group of teachers, social workers, psychologists, and physicians to establish the Council for Exceptional Children (Reynolds & Birch, 1983). This group was instrumental in beginning the movement toward a special education, administratively and instructionally separated from what came to be called regular education.

In the early 1930's Samuel Kirk played a significant part in recognizing the needs of mildly handicapped students. As part of a graduate program he began working in a school for delinquent, retarded boys using remedial teaching methods for reading generated by Grace Fernald, James Hinshelwood, and Samuel Orton with great success (Gearhart & Gearheart, 1985). He

became interested in young "mentally retarded" children who he suspected might not actually be mentally retarded. Kirk eventually became recognized as a leader in special education and in 1941 wrote:

> ...the education of exceptional children is not wholly the responsibility of any one group of teachers. Each teacher, therefore, is to some extent a teacher of exceptional children, and should utilize with some modification the techniques employed to teach...handicapped or gifted children.

Samuel Kirk later went on to use the term "learning disabilities" to describe children "who have disorders in development in language, speech, reading and associated communication skills needed for social interaction" (Gearheart & Gearheart, 1985).

It was not until the 1954 Supreme Court racial integration decision in Brown Vs. Board of Education of Topeka that separation in education was legally challenged. Defense attorney, John W. Davis argued that if separate schools for black children were unconstitutional, then separation of handicapped students would be unacceptable, as well. As a result, laws and regulations that regarded discrimination based on race, sex, age, handicap, religion, or national origin were rewritten or dropped.

In 1962 Maynard Reynolds proposed a special education continuum which later became known as the

Cascade Model (Epps & Tindal, 1987). This model is a framework that organizes special education along a continuum of instructional arrangements and focuses on the setting or place in which special education services are provided. It consists of seven levels of placement for special needs students ranging from the most restrictive to least restrictive instructional settings for special needs students. The levels are residential schools, special day schools, full-time special classes, part-time special classes, part-time resource rooms, general class with consultation, and general class (Reynolds, 1989). This model later played a significant role in mainstreaming and providing the least restrictive learning environment for special needs students.

As the information base and awareness of special needs children increased, programs to accommodate the growing population began to flourish. In fact, between 1945 and 1970 there was a 700 per cent increase in the number of children identified as handicapped and placed in special programs (Chalfant, 1989). But, in spite of the work of special education advocates, the "two-box" pattern of education, regular and special, continued until about 1970, each maintaining and developing unique structures and styles of education.

Since 1975, the passage of Public Law (P.L.) 94-142, the Education for All Handicapped Children Act has dominated much of the planning and development of special education in the United States. Simply stated, this federal legislation provides:

> ...that to the maximum extent appropriate, handicapped children, including children in public or private institutions or other care facilities, are educated with children who are not handicapped, and
> ...that special classes, separate schooling or other removal of handicapped children from the regular educational environment occurs only when the nature or severity of the handicap is such that education in regular classes with the uses of supplementary aids and services cannot be achieved satisfactorily.

In response to PL 94-142, many proposals have been made for the radical restructuring of special and general education and became known as The Regular Education Initiative (REI). Advocates of the REI suggest that students would be best served by the improvement of education for all students. (Reynolds, 1989). Proponents believe that students of every description be fully integrated into regular classes, that no student is given a label based on his disability, costs are lowered by the elimination of special budget and administrative categories, local control is favored, and the focus of education becomes excellence for all (Kauffman, 1989). Others have been

quick to criticize the REI as being a panacea for eliminating the "two-box" system that has existed for many years.

In an attempt to satisfy the needs of special needs students within the perameters of the law and the walls of our schools, much research has been conducted exploring the efficacy of several service delivery models for special education students. This paper will review the effects of mainstreaming, resource room pull-out programs, and in-class support on improving the academic performance of special and regular education students.

Mainstreaming

The history of special education, the systematic attempt to educate exceptional children, can be described by the term "progressive inclusion" (Reynolds, 1976). Handicapped children have moved from total neglect in isolated residential schools, through isolated community settings such as special classes and special schools, and have emerged in the more integrated classroom environments of today. A variety of forces have led to this dramatic change in our beliefs about educating moderately as well as severely handicapped children. Legal challenges, changing views

of leading professionals, sophistication of parent advocates, and the growing acceptance of the general public of the rights of people with disabilities have lead to the concept of "mainstreaming."

The term "mainstream" became popular in the 1970's and was used to describe the education of exceptional children in regular classes and schools by providing adaptive, specialized instruction and services there (Reynolds & Birch, 1988). During the 1970's and 1980's mainstreaming called for action on two fronts. One was "bringing the children back," a sequence of step-by-step plans for the reentry of pupils who had been enrolled in separate, segregated special education programs. A second action called for was "never moving them away," a new emphasis on enrolling, maintaining, accommodating, and supporting exceptional pupils full time in regular education curricula and setting to the greatest extent possible (Birch & Reynolds, 1981).

Reynolds and Birch (1988) describe mainstreaming as taking three general forms: physical, social, and instructional. Physical space mainstreaming refers to exceptional children that are physically and visibly present and utilizing the same school facilities as nonexceptional children at the same time. Severely handicapped pupils may be given instruction in separate

rooms, but this time is not counted as physical space mainstreaming. Social interaction mainstreaming calls for incidental and deliberate social interactions planned and monitored by parents and staff to foster mutual understanding, support, and learning between exceptional and nonexceptional students. Physical space mainstreaming is a precondition for social mainstreaming. The most complex form of mainstreaming is instructional mainstreaming and encompasses the physical and social components. All students receive instruction in the same subject although they are not necessarily being taught the same things in the same ways. Instructional mainstreaming will be the focus for the review of literature and research conducted as part of this paper.

The earliest studies on the effectiveness of mainstreaming were conducted in the 1950's and 1960's. These studies compared special class and regular class placements for educably mentally retarded children. The results of these efficacy studies supported neither regular or special classes as the most appropriate placement for retarded children. The lack of evidence that was derived from these studies in support of special placements for these students served as part of the rationale for mainstreaming. In other words, in

trying to prove whether or not mainstreaming is effective, research would have to show that pullout or other special placements offer advantages to the child. If research did not support pull-out or special placements then the preferred placement is the mainstream since it is the meaning of the principle of the least restrictive environment.

The most comprehensive study on the effectiveness of mainstreaming was a synthesis or meta-analysis of studies published from 1975 to 1984 conducted by Wang and Baker (1985). During this time period the least restrictive environment principle of P.L. 94-142 was being tested and attempts were being made to provide for the integration of special and regular education programs. In that 9 year time frame there were 264 studies of mainstreaming done, but only 85 reported empirical data on the effects of mainstreaming. Of those 85 studies, 50 presented adequate data to allow comparisons with control groups and it was on those 50 studies that a detailed analysis of the information that was provided in these studies was performed (Epps & Tindal, 1987).

The analyzed studies included 3413 students, representing all grade levels from preschool through high school. The pupils were classified as either

mentally retarded, learning disabled, hearing impaired, academically handicapped, low achieving, and gifted. Analyses focused on three types of program effects; performance, attitudes, and classroom processes. The programs reported in the meta-analysis were categorized into two mainstreaming approaches; a part time approach (involving pull-out special education in a resource room) and a full-time approach (providing special education in regular classes on a full-time basis). Wang and Baker concluded from their meta-analysis that handicapped students in mainstreaming programs consistently outperformed those students with comparable special education classifications who were in self-contained settings and that mainstreaming is not particularly more beneficial for certain special education classifications. However, the use of meta-analysis as an appropriate measure of validity has met with criticism because there it is often difficult to integrate divergent research findings.

Successful mainstreaming programs have been reported in a multitude of reports and books, but few of these reports involve controlled investigations and empirical data and they lack the rigor associated with comparative studies. Instead, an effort has been made to examine the effects of mainstreaming through

comparisons and contrasts with conventional special education arrangements like self-contained classrooms, resource rooms pull-out programs, and in-class support. The balance of this study will focus on research that has been done on the benefits of these special education placement options on the academic performance of special education children.

Special Education Placement Options

Self-Contained Classrooms

The majority of the studies conducted to determine the benefits of self-contained classrooms compared the success of students placed in such settings with similar students placed in the regular classroom without additional teacher support.

A study conducted by Elenbogen in 1957 (Epps & Tindal) compared the academic and social adjustment of two groups of 13 1/2 year old EMR students. Two years prior to the study one group was placed in special classes, while the other group remained in regular classes. The results in reading and arithmetic, as measured by the Stanford Achievement Test indicated significantly higher mean scores for students in regular classes. However, this study has come under fire because of several methodological shortcomings.

Students were not matched based on achievement levels and gave the regular class placements an advantage. Also the study gives no information on the curriculums used in each setting.

A second study conducted by Mullen and Itkin in 1961 (Epps & Tindal) involved a 2 year study using 140 pairs of educable mentally retarded students in special and regular classes who were matched for age, IQ, sex, socioeconomic status, foreign language spoken at home, and reading achievement. At the end of the first year, the students in regular classes had significantly greater gains in arithmetic, but not on any other achelvement measure. However, there was no maintenance of this effect after 2 years, where there were no significant differences.

In 1965 Goldstein screened 2000 students entering first grade in 20 Illinois school districts using the Primary Mental Abilities Test (Epps & Tindal). Those children who scored below 85 were then given the Stanford Binet Intellegence Scale. 129 students scored between 66 and 85 on both measures and were randomly assigned to either a self-contained class that had specially designed curricula and trained teachers (with bachelors degrees in the education of menatally retarded students) or to regular classes. At the end

of the first year of school, students in the special classes gained 7 IQ points, while those in the regular classes gained 8 IQ points. At the end of 4 years when retested there were no additional significant gains in IQ scores. However, when achievement tests were administered at the end of the 2 years, there were significant differences between the children in special classes (experimental group) and those in regular classes (control group) for reading, with the control group scoring 0.6 and 0.3 grade equivalent scores higher. In math, there was a significant difference between groups only after the first year, with the control group scoring 0.3 grade equivalent scores higher. For the total sample, students in regular classes outscored those in special classes in both reading and math, but this advantage was not maintained.

Although the Goldstein study was a significant contribution to the literature at the time, it, too had shortcomings. Students were randomly placed in classrooms based solely on IQ scores. Children who were later placed in the special classes typically had higher than 85 IQ scores. The study does not address the effects of special class placement on students who were placed when they were over 6 years old or the

effects on pupils who were placed using selection criteria other that fairly high IQ scores. And even after all the extra programming efforts with a 15-1 student-teacher ratio in the special classes, academic gains were minimal. Speculation has been that the special class curriculum placed greater emphasis on practical knowledge, social skills, and emotional development than did the regular class curriculum. Another shortcoming is the appropriateness of using standardized achievement tests to document students' progress. It has been criticized that these tests may have been insensitive to detecting changes that have occurred regardless of the setting. Also, a variety of achievement tests were used to measure progress throughout the study, instead of one consistent measure, which may have affected the pattern of results across time. The use of grade equivalent scores was also a negative factor because this measure tends to exaggerate the significance of small differences, and may be trivial in overall effect on school success. More significantly, at the end of the 4 year project the students in the experimental group scored at 2.7 GE and 2.8 GE for the control group. These scores do not suggest that students in either group had acquired functional reading skills and that more importantly the

focus should be shifted to instructional techniques instead of setting.

In summary, the pre 1970 literature examining the performance of students in regular versus self-contained settings strongly suggests that segregated settings are either negative in their effects or unsuccessful. In many of the studies, regular class students who received no special help did better than, or as well as special class students, although neither environment is necessarily effective, since students often remained below grade-level expectations.

In 1976 Myers compared the academic performance of educably mentally retarded students placed in 3 types of setting; special day school, self-contained classes and regular classes in rural Alabama. The Wide Range Achievement Test was used to measure academic achievement. It was found that there was no significant differences in grade-level gain scores among the three settings. Myers also divided the three groups of students by IQ scores using the Slosson IQ Test. Significant differences were noted in grade-level scores between the low IQ group (Slosson IQ of 49-70) and the high IQ group (Slosson IQ of 71-85). In both reading and spelling, low IQ students in the special

school demonstrated greater gains that either the special class or the regular class group. For the high IQ students remaining in regular class, gains were greater in reading than students in self-contained classrooms. For arithmetic there were no significant differences among the three treatment conditions for either low-IQ or high-IQ students. The data suggests that in this sample, low-IQ students made more academic gains in the regular class, but not significantly more than gains made in the special school.

Although not directly related to class placement, but adding a new independent variable to determining the success of special needs students, Haring and Krug in 1975 conducted a study that had implications for the academic achievement of students eventually placed in the regular classroom. Their study involved the effectiveness of various teaching strategies utilized in the special class setting and what effect they had on subsequent achievement in regular classes. Interventions included contingency management, daily measurement and graphing of students academic performance and the use of plan sheets that described specific operations for teaching. The results of their study indicates that the special class (or precision teaching model) may be effective in preparing

exceptional children for placement in regular classes. However, the study does not determine whether these students could make progress in regular classes of an extended period of time without additional support services.

Resource Rooms

A variety of resource program models became popular in the 1970's and 1980's as a result of the implementation of P.L. 94-142's Least Restrictive Environment clause as well as previous research that suggested that the benefits derived by most students taught in special classes were not readily apparent.

A resource program can provide 3 types of services; (1)assessment of the student's aptitude, achievement, and/or effect, (2)direct instruction in the form of analytic, remedial, developmental, or compensatory teaching and/or socio-economic behavioral management, and (3)consultation support for classroom teachers and parents in the form of behavioral, organizational, medical mental health, process, clinical, or collaborative consultation (Wiederholt & Chamberlain, 1989). For the purposes of this study concentration will be on the resource program as a source of instructional services provided by the

special education teacher to the classified student in a pull-out program conducted in a separate room with a small group of children.

A number of studies have been conducted on the efficacy of resource room pull-out programs. These studies have compared resource programs to full-time placement of students in special classes and/or general classes and student growth in only a resource placement.

A significant study was conducted in 1971 by Sabatino that evaluated the academic achievement of children who were identified as having learning disabilities, but who received no special form of classroom management and those who were placed in a self-contained special class, a resource room for 1 hour each day (Plan A), or a resource room (Plan B) for 1/2 hour each week. Subjects were matched on chronological age, sex, IQ, and perceptual impairment, but not on achievement. On the reading subtest of the WRAT there were highly significant differences in academic gain. Plan A students gained 1.9 age equivalents compared to 1.4 for self-contained, 1.2 for Plan B, and approximately 0.1 for control pupils. However, a different set of results was obtained when the students were given the reading comprehension

subtest of the Gilmore Oral Reading Test. In these results, students in the self-contained class gained 2.0 age equivalents, Plan A students 1.5, Plan B 1.0, and 0.3 for the control group. The results of this study could support either a special class over a resource room or vice versa depending upon which measure you use.

The results of the studies on the academic performance of students in resource room pull-out programs are conflicting and suffer from serious methodological flaws. In the studies treatment interventions were not adequately defined, students were not assigned randomly to different treatment, weak experimental designs were used, and the testing methods used to assess growth were questionable (Wiederholt & Chamberlain). This suggests that future studies should focus on not just the setting itself, but characteristics of the learning environment such as number of students in the setting, homogeneity of the students' abilities, severity of learning and or behavioral problems, teacher abilities, and curricular demands (Wiederholt & Chamberlain).

As more research is conducted it becomes apparent that a certain placement option does not guarantee the presence of effective instructional practices.

Although all of the studies that have been discussed thus far delineate different special education placement, the research did not delineate those instructional components that led to positive change in the performance of special education students regardless of the setting. From all of the studies it cannot be concluded that educational setting alone determines the success of instruction. Instead, certain features of educational interventions systematically affect outcomes, but are not unique to one setting in particular. Therefore, research should also examine the relationship of the characteristics of different learning environments and instructional methods found relatively effective with mildly handicapped students such as direct instruction, cognitive training, peer tutoring, curriculum based measurement, and cooperative learning.

In-Class Support

The use of in-class support has developed as a direct result of the thrust toward mainstreaming students with learning disabilities. Moving these students out of self-contained classrooms and pull-out programs into regular education classes with the support of special education staff exemplifies the true meaning of Least Restrictive Environment. It serves to optimize the special education teacher for the benefit of not only the special education student, but also for the general education population, and those students who might be considered "at-risk". However arbitrarily assigning the special needs student to a regular classroom without a basic plan for education could be detrimental to academic progress. Instead, several models to enhance the performance of mainstreamed special education students have been implemented to support the efficacy of in-class support systems.

Adaptive Instruction Approach

In response to the Regular Education Initiative, Margaret Wang designed and implemented a research-based innovative education program called the adaptive instruction approach. This was an alternative for serving students who require greater than usual education and related service support within general

education settings. The adaptive instruction approach recognizes that students learn in different ways and at different rates and that teachers must accommodate all students' diverse learning needs.

Adaptive instruction as an alternative intervention for integrating students with special needs in general education classrooms require a re-evaluation of educational philosophy, curriculum, instructional practice, staffing patterns and professional roles, and school-wide organizational and administrative supports. Philosophically, this approach recognizes that all children are "special" and that even though students are classified in various categories of mild or moderate handicaps that they should be successfully integrated in general education settings on a full-time basis with coordinated "special" education and related service supports. The general education teacher is responsible for teaching all students, including those with special needs, with ongoing support provided through specialized professional staff and resources. With regard to the curriculum, a variety of materials and learning activities are used to enhance motivation and achievement. Teacher-prescribed and student-initiated learning activities build on social skills. Student's

roles in instruction through peer tutoring and cooperative learning encourage self-responsiblity. Teachers are required to become acutely aware of the students' learning styles and adjust and modify their instruction and learning activities to fit these styles. It requires assessment and reassessment of the students' progress and finding ways to improve instructional effectiveness. In order for the adaptive instruction approach to be effective, both general and special education staff work collaboratively either as consultants or spend concentrated time serving individual students needing intensive instruction in the regular classroom.

The adaptive instruction approach has been used in setting up models within the regular classroom to meet the objectives. Findings from 38 empirical studies of programs using the adaptive instruction approach were synthesized in a meta-analysis study conducted by Waxman in 1985. Eight widely implemented programs (ALEM, the Bank Street Model, Behavioral Analysis Model, Direct Instruction, Individualized Guided Education, the Mastery Learning Approach, Team Assistance Individualization, and the Utah System) were selected for investigation from among current instructional models that include the goal of providing

for individual differences. The overall finding from the study was that programs and classrooms featuring the greatest use of adaptive instruction practices were also associated with academic and social outcomes that are linked to effective instructional and classroom management practices.

Although the 7 common features of adaptive instruction programs were reflected in all of the programs included in the study, there is also considerable variety among programs in the specific design features and implementation strategies utilized to achieve ther goals. One finding was the programs that feature student choice, task flexibility, systematic teacher monitoring, peer tutoring, student initiated requests for assistance from teacher, a wide variety of curriculum materials, and task specific instructions tended to produce student outcomes that included high levels of self-management, more substantive than management-related interactions with teachers, and frequent work in small groups. No single feature, however, seemed to distinguish effective programs from less effective programs. Instead, it was the combination and coordination of several features in carefully implemented programs that appreared to produce a wide range of positive student outcomes.

The most widely recognized adaptive instruction program is the Adaptive Learning Environments Model (ALEM). It is a highly structured educational approach to individualizing basic skills instruction. Over the course of nearly two decades, the ALEM has been widely implemented by schools as a core general education program, and/or as a mainstreaming program for mildly or moderately handicapped students (students classified by schools as learning disabled, educable mentally retarded, or socially/emotionally distrubed.) The ALEM has been advocated as an effective approach for structuring educational services in order to accomodate the full-time mainstreaming of most elementary school children identified as mildly handicapped (Wang, Peverly, & Catalano, 1987). This full-time mainstreaming means the academic and social integration of special needs students in the regular class. They share equally with their general education peers all available learning resources and opportunities on a full-time basis, reducing the need for special schools, special classes, and pull-out programs for exceptional students. Full-time mainstreaming would be accomplished by the regular teachers's using consultation/ collaboration with special education staff on an "as needed" basis. In addition, special education teachers

provide direct instructional services for special education students in regular classes, although the general education teacher functions as the primary instructor for both the general education and special education students.

The Adaptive Learning Environment Model (ALEM) consists of three primary components, the Prescriptive Component, the Exploratory Component, and a Self-Schedule System. Each student's educational plan is tailored to his particular learning needs. The Prescriptive Component delivers individualized progress plans that consist of a highly structured prescriptive component for basic skills mastery basic skills and includes teacher directed lessons and independent practice activities by way of "prescription sheets" of daily assigned tasks in Reading and Math. The Exploratory Component consists of multilevel and multiactivity tasks in the form of learning centers to be accomplished by students either independently or in small groups. Students may be asked to engage in exploratory activities such as writing a play, working on a group science project or playing a vocabulary game. The Self-Schedule System allows the student to manage their own learning by scheduling and prioritizing the tasks within allotted times by way of

a hierarchy of self-responsibility skills, a self-schedule board, and self-schedule sheets. This system works simultaneously with the prescription sheets.

Three major studies were conducted to to determine the implementability and effectiveness for the ALEM model in a variety of school settings with diverse groups of students.

The first study was conducted in 1980 with 138 kindergarten through third grade teachers in 10 school districts (Wang & Birch, 1984b). This study centered around the feasibility of implementation of the ALEM and how the implementation related to student achievement. Each of the sites represented a wide range of ethnocultural, socioeconomic, and georgraphic characteristics and included inner-city, suburban, rural, and Applachian areas. Each site had also participated in a project that involved the full-time mainstreaming of mildly handicapped and gifted students.

Implementation scores were found to be in the average to high range, however what is more significant is that improvements in the degree of implementation also led to changes in classroom processes such as increased student initiated interactions with teachers

for instructional purposes and increased student independence along with decreased disruptive behavior (Wang, Peverly, & Catalano). More importantly, this study focuses on student achievement. Standardized achievement test scores for kindergarten through third grade students were collected at the end of each year. In examining math and reading scores, student achievement was evident in the distribution of scores within the top and bottom quartiles, suggesting a trend of decreasing percentages of students with scores ranked below the 25th percentile and increasing percentages of students with scores ranked at or above the 75th percentile.

A second study compared the effects of the ALEM when used as a full-time mainstreaming program for mildly handicapped students with the effects of a resource room approach for students with similar special education classifications (Wang, 1982). Data was collected on 179 general education and special education students randomly assigned to ALEM and non-ALEM classes in one school during the 1980-81 school year. There were a total of 52 special needs students, 33 of which were learning disabled. Each day all students in the ALEM classes received instruction together in all subject areas on a full time basis with

specialized staff available for consultation and support services. The teaching team in the ALEM mainstreaming class consisted of two teachers and one instructional aide. On the other hand, handicapped students from non-ALEM classes spent each morning receiving math and reading instruction in the resource room from a special education teacher and returned to non-ALEM classes in the afternoon for social studies, science, and language arts, with content and materials identical for ALEM and non-ALEM classes.

Mean percentile scores on the Stanford Achievement Test in math and reading were compared for the handicapped, general education and gifted students in both the ALEM and non-ALEM classes that were administered in both the fall of 1980 and again in the spring of 1981. Most significant data showed that in the fall, the ALEM handicapped students scored slightly lower (25th percentile in reading, 29th percentile in math) than their non-ALEM handicapped peers (32nd percentile in reading, 34th percentile in math). By spring, however, the ALEM students had made greater gains in reading (21 vs 7) and nearly comparable gains in math (18 vs. 17).

The third ALEM study was conducted from 1982-1984 in a large urban school system over two school years

and explored the feasibility of implementing ALEM in urban schools as an alternative intervention for integrating mildly handicapped and general education students in regular classes (Wang, et al., 1984) Using scores from standardized achievement tests, average gains for both general and special education students in ALEM classes were found to be at or above the expected one-year gain in grade equivalent. The mean gains for general education students were 1.67 in math and 1.19 in reading. Although the gains for the special education students were not found to be significantly beyond the national norm they were greater than the expected gains for students with comparable special education, handicapped classifications. 42.3% of the fourth grade special education students had math scores at or above the 75th percentile and 28.6% had reading scores at the same level. Further evidence of the program's impact is found in the fact that approximately 30% of the mainstreamed special education students participating in the study were recommended by teachers as potential candidates for declassification, compared to the average rate in self-contained, special education classes of 2.8%.

While much has been written about the ALEM's successes and protential for reshaping services to handicapped children concerns have been voiced by a number of educators and researchers who have carefully reviewed the ALEM research, found some discrepancies, and urged caution in the application of these studies to restructuring education.

Clark & Bott (1991) assessed the effectivenss of ALEM since they were instrumental in implementing this model at two separate sites. One criticism of the model is that it is involved and that teachers must be trained to use it in order for it to be effective. Recommendations have been made to train a large number of trainers who would in turn train teachers, however, Wang and Vaughn (1987b) have stated, "The delivery of training is primarily the responsibility of school and district administrators and the person responsible for the coordination of implementation planning." Another alternative that they suggested was that college or university education faculty, in collaboration with local districts, could become experts in the program and be trainers. In both sites that Clark and Bott were involved in the pre-implementaion training time was inadequate to the amount of adjustment that needed to be made to the existing programs to accommodate ALEM.

Particularly, the preparation of prescription sheets and self-schedule sheets that tied to the scope and sequences of skills of the curriculum materials as well as preparing learning centers was very time-consuming. The training materials also did not cover the basic knowledge that the teachers had to have about the needs and characteristics of students with disabilities. The individual teachers' abilities to diagnose and prescribe for students with learning difficulties and deliver instruction using various techniques such as direct instruction is not addressed. Also regular and special education teachers usually need special training to operate effectively as consultants and collaborators (Idol & West, 1987) and this area also needs to be addressed .

In another attempt to successfully integrate learning disabled students into a full time regular education class using in-class supports, Zigmond and Baker in 1987 developed a model, Mainstream Experiences for the Learning Disabled (MELD) which relied on supplemental assistance and support being offered by the special education teacher as a co-teacher within the mainstream. This model is based on the premise that if teachers change grouping patterns for instruction, teach literacy skills using

graphic organizers and cognitive strategies, and monitor student reading achievement through administration of curriculm-based measures that special education students could benefit significantly in the mainstream.

The research was conducted in an urban school district with approximately 40,000 students in grades K-12 with approximately 3% being identified as learning disabled. The target school for the study was located in a primarily black neighborhood serving 266 students in grades K-5 during the 1987-1989 school years. Two self-contained, special education classroom in the school served 22 learning disabled students at the inception of the MELD project. 13 students spent Year 1 of the project in a self-contained classroom and Year 2 fully mainstreamed. All but 2 students were black ranging in age from 5.6 to 10.4 years and 11 were boys. Full-scale WISC-R data ranged from 75 to 122 with standard scores in reading ranging from 40 to 78 and were equivalent to reading levels in the kindergarten to pre-first grade range.

Three measures of achievement were used. California Achievement Test (CAT) Scores were obtained, curriculum -based measurements were collected twice a week and final grades for both years of the study were

also used for comparisons. The study indicated that the amount of teacher-directed instruction during reading time and adult monitoring was greater in the mainstreamed classrooms with more emphasis on the use of textbooks (active engaged reading) rather than on workbooks, as in the self-contained setting. In math, learning opportunities were similar in both the special education class and in the mainstream with instruction being organized around the use of math workbooks. In both settings, students spent about 60% of their time in teacher directed math activities.

Results of the study show that when the special education students were returned to a full-time mainstream program with in-class support that in spite of different learning opportunities in the mainstream, these students failed to make discernible progress on academic skills as measured by standardized achievement tests, they earned lower grades, and the advantages of the mainstream were not reflected in greater gains on CBM measures (Zigmond & Baker). However, regardless of the results, the researchers felt that given more time to implement MELD, more challenging opportunities in the mainstream along with the social, less stigmatic atmosphere of the mainstream and higher expections for

academic achievement and school appropriate behavior would provide a more positive mainstreaming experience.

Summary

Research to date neither unequivocally supports not clearly rejects any one service delivery system for all mildly handicapped and at risk students. All delivery service models have in some way been effective for some students and have failed with others. The most effective ways to address the needs of learning disabled students depends on a variety of factors. The complexities of the learning problem, the attitudes of students, parents, and professionals, and the resources available to the student are all important aspects of the dilemma that should not be minimized.

In addition, it seems consistent that in all of the studies mentioned that treating the setting in which instruction is conducted as an independent variable is not as important an issue as previously thought. Instead, the setting does not seem to have as important an effect in determining the success of the student achievement as does what constitutes effective education within a setting. It seems that only indirectly can educational setting be considered influential in the development of program options for

special needs children. In determining the academic success of students, focusing attention on the instructional methods used in teaching both regualr and special populations narrows the gap between regular and special education.

CHAPTER 3

DESIGN OF THE STUDY

Design of the Study

Setting

This experiment was conducted to determine if the use of in-class support can significantly benefit the academic performance of regular education, special education, and/or "at-risk" children in Math. It was conducted in regular education math classrooms at one grade level in a school district in New Jersey.

Subjects

Four different groups of children were compared in this experiment. Group 1 consisted of 76 regular education children in four class settings containing no classified or at risk children. This was considered the control group. The experimental group of children were 2 members of a self-contained special education classroom who received in-class support within the regular education class for Math. These special education children were Group 2. The class of which they were members was referred to as the In-Class Support class or Class C. The other members of this In-Class Support class were considered part of the regular education population in Group 1 unless otherwise specified. Group 3 consisted of a child who received small group

supplemental instruction in a Basic Skills math program on a daily basis in addition to being a member of the In-Class Support class. Group 4 consisted of 3 members of a Resource Center program who received pull-out replacement instruction of the regular education curriculum in a small group setting with a Special Education teacher. No academic levels or I.Q. scores were available for this study.

The children in Group 1 were instructed by regular education teachers. The children in Groups 2 and 3 were instructed by a regular education teacher and a person administering the in-class support who is a certified Special Education teacher. She offered alternate teaching methods and learning experiences for concept clarification and reinforcement to either a small group or individuals on an as-needed basis to all of the members of the In-Class Support group. The children in Group 4 were instructed by a Special Education teacher.

Instruments

The materials used were a district-wide math curriculum. The instruments used to measure the academic success of the students was a comparison of the publisher's curriculum based pre and post test scores for all students involved in the study.

Within each lesson, the following teaching procedure was used. Initially, the teacher reviewed the previous day's lesson with the class, either through a reteach worksheet or by involving the children in a discussion providing examples through classroom participation. Then the new concept was introduced. The new concept was taught by using cooperative learning activites with manipulatives or eliciting discussion and think-aloud activities. The children reached conclusions by utilizing deductive reasoning and prior knowledge to come up with methods and alternative methods for problem solving. The teacher then offered a logical strategy for solving the problem. The children were taught the process to reach the desirable goal, but the emphasis was on process, rather than on the correct answer. The children were then provided opportunities for practice, either through workbooks, or engaging them in other individual or group activities. The teacher then conducted an informal assessment based on this information and had the option of breaking the class into groups for reteaching, practice, or enrichment. The lesson was then summarized and homework was assigned.

Procedures

All pre and post test scores for Chapters 1 through 8 were collected for all subjects involved in the study. The variables compared were overall class performances, performance of the regular education population, special education population both in in-class-support and resource center, and the "at-risk" population. Performance differentials of Groups 2 and 3 within the In-Class Support group were also studied.

Analysis

Initially the pre and post test scores collected from the 4 classrooms which comprise Group 1 were compared. This excuded the children in all other groups and in essence was a comparison of the performance of the regular education population across this grade level.

Secondly, the performance of the control group, Group 1 was compared to Group 2, Group 3, and Group 4. The performance of the special education students receving in-class support was compared to those receiving the same instruction in a Resource Center program. The performace of the entire special

education and at-risk population was compared to the control group, as well.

CHAPTER 4

ANALYSIS OF THE DATA

Analysis of the Data

Introduction

In order to determine the effects of in-class support on the Math performance of regular education students, classified special education students, and at-risk students several comparisons are necessary. Initially pre and post test math scores for Chapters 1 through 8 were collected for the entire grade level population consisting of regular education, special education, and at-risk students. The following discussion will analyze the data that was collected in order to draw conclusions about the effects of in-class support.

Presentation and Statistical Analysis of Control Group Data

The control group, Group 1, consisted of 76 subjects between 7 and 9 years old heterogeneously grouped in 4 regular education classes in a New Jersey school district. Figure 1 represents the pre and post test Math scores for each class. Please note that although Class C is the in-class support class, the scores of the classified students and the at-risk student are not included in the calculation of this data.

Figure 1: Mean Pre and Post Test Scores by Chapter and Class for the Control Group, Group 1, of the Study

	Class A			Class B			Class C			Class D		
	Pre	Post	Ch	Pre	Post	Ch	Pre	Post	Ch	Pre	Post	Ch
Chapter												
1	88	99	+11	83	98	+15	84	99	+15	86	96	+10
2	92	93	+1	88	95	+7	93	97	+4	87	97	+10
3	84	93	+9	88	95	+7	77	87	+10	82	81	+9
4	90	99	+9	84	98	+14	84	97	+13	89	96	+7
5	81	100	+19	81	90	+9	79	96	+17	81	95	+14
6	62	84	+22	60	86	+26	73	92	+19	71	92	+21
7	31	88	+57	29	91	+62	51	96	+45	56	94	+38
8	82	93	+11	87	94	+7	89	96	+7	89	95	+6
Overall	76	94	+18	74	93	+19	79	95	+16	78	95	+17

For the control group, Group 1, mean pretest scores ranged between 74 and 79. Mean postest scores ranged between 93 and 95.

of points increase between pre and posttest scores ranged between 16 and 19 points. The average increase between pre and postest scores for the 4 classes was 17.5 points.

Presentation and Statistical Analysis of Data for Classified Students Receiving In-class Support within Class C, Group 2

This group consisted of 2 classified students included in a regular education math class with in-class support provided by a special education teacher.

Figure 2: Mean Pre and Postest Scores by Chapter for Group 2

	Pretest	Postest	Change
Chapter			
1	94	96	+2
2	48	88	+40
3	53	68	+25
4	60	84	+24
5	30	60	+30
6	38	92	+54
7	25	85	+60
8	62	72	+10
Overall	50	81	+31

For Group 2 the mean pretest score was 50 for the students in this group. The mean postest score was 81. The points increased between pre and post test scores for this group was 31.

Presentation and Statistical Analysis of Data for At-Risk Students, Group 3

This group, Group 3 consisted of a member of Class C, who received Basic Skills supplemental instruction in a small group for Math in addition to being part of the regular education class.

Figure 3: Mean Pre and Post Test Scores for Group 3

	Pretest	Postest	Change
Chapter			
1	30	96	+66
2	80	85	+5
3	75	90	+25
4	88	92	+4
5	45	80	+35
6	36	80	+44
7	30	85	+55
8	52	68	+16
Overall	55	85	+30

The mean pretest score was 55 and the mean postest score was 85 showing a 30point increase between pre and postest scores.

Presentation and Statistical Analysis for Resource Center Students

This group, Group 4 consisted of 3 students who received replacement instruction by a Special Education teacher using the regular district Math curriculum in a small group classroom setting.

Figure 4: Mean Pre and Postest Scores for Group 4

	Prestest	Postest	Change
Chapter			
1	51	100	+49
2	47	100	+53
3	53	99	+46
4	53	98	+45
5	60	97	+37
6	58	88	+30
7	43	98	+55
8	58	100	+42
Overall	53	98	+45

The mean prestest score was 53 and the mean postest score was 98 showing a 45point increase between the pre and postest scores.

Presentation and Statistical Analysis for Comparisons Between Groups

In order to draw conclusions about the effectiveness of in-class support, the mean pre and post test scores of each group participating in the study as well as the per cent change was compared.

Figure 5: Comparisons of Group scores

	Group 1			Group2			Group 3			Group 4		
	Pre	Post	Ch.	Pre	Post	Ch.	Pre	Post	Ch.	Pre	Post	C
Overall	77	94	+18	50	81	+31	55	85	+30	53	98	

Recap of performance of Class C regular education students who received in-class support

Mean Pretest Score	79
Mean Postest Score	95
Mean Change	+16

CHAPTER 5

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Problem Summary

Throughout history educators have been faced with the challenge of meeting the academic needs of both special education and regular education students. As special needs students are increasingly being educated alongside their non-handicapped peers, several service delivery models in special education have been utilized to best meet their needs. These include self-contained classrooms, resource center programs, and most recently the in-class support model. Yet, research results are conflicting and unclear as to which setting most significantly improves the academic performance of both special education as well as regular education students.

Review of Research Questions

This study explored whether research indicates that any one special education service delivery model significantly increased the academic performance of the special education student by examining the efficacy of resource center programs, self-contained classrooms, and in-class support models. The focus of this research project was on whether the use of in-class support significantly improved the math performance of

regular education, special education, or "at-risk" students.

Review of Hypotheses

Two hypotheses were proposed at the inception of this project. The first hypothesis involved the research studies that have been previously conducted on special education service delivery models. It was my feeling that after examining literature on the subject, that there would be no substantial, conclusive evidence that favored one service delivery model over another.

In addition, my second hypothesis stated that in-class support does not have a significant impact on the academic success of regular education or special education students, but that it could improve the performance of the "at-risk" population.

Summary of Study Results

In summarizing the results of this study it will be necessary to discuss the results of each population separately and then to compare the performance data between populations.

For the control group of 76 regular education students divided between four heterogeneous classes, mean pretest scores ranged between 74 and 79, a 5 point spread. Mean postest scores ranged between 93 and 95,

a 2 point spread. The number of points increased between pre and postest scores ranged between 16 and 19 points, a 3 point spread, with the mean percent increase between pre and postesting being 17.5 points. This information seemed to indicate that each regular education class appeared to be evenly matched in prior knowledge for pretesting results. It also appears that as a result of intervention, each class made similar gains in postesting.

With regard to the students receiving in-class support within the regular education classroom, the mean pretest score was 50, the mean postest score was 81 with a 31 point gain. In comparing pretest scores for regular and special education students, results suggest that the special education students possessed significantly less prior knowledge than the regular education students. In postesting, the difference between the mean of 81 for the special education students and 94 for the regular education students is 13 points, a rather significant difference in success levels. This information may indicate a need for special instructional techniques to be utilized for the special education population more appropriate to their learning styles.

More imporantly, however, it appeared that the special education population made more significant gains between their pre and postest scores. Where the control group realized a mean 18 point gain between pre and postesting, the in-class support students realized a 31 point gain. This information may indicate a need to broaden the knowledge base of the special education student at lower grade levels as a way of increasing pretest scores.

Analyzing the results of testing for the "at-risk" population, the mean pretest score was 55, the mean postest score was 85, with a 30 point increase after intervention. These results were strikingly similar to the results of the special education children receiving in-class support.

The fourth population that was considered in this study, but not part of the original hypothesis, was a group of special education students who received the same curriculum in a resource center from a special education teacher outside of the regular classroom. The test results of this group were obtained incidentally, however may be the most significant results in the study. The mean pretest score for this group was 53, quite close to those of the in-class support group, and "at-risk" group. However the mean

postest score was 98, more than 17 points higher than the in-class support group, 13 points higher than the "at-risk" group and even 3 points higher than the mean score for the regular education population. The resource center students showed the largest incease between pre and postest scores or 45 points. These test results may indicate a need to re-evaluate the efficacy of resource center programs that are currently being phased out in favor of in-class support programs. The value of a special education teacher working with a small group of children in an isolated setting may need to be reassessed. A teacher in this setting can give undivided attention to a limited population of special needs students being attuned to learning styles, providing oportunities for reteaching and practice, and adjusting and monitoring the lesson, as necessary, based on the progress of a small population.

Relationship of Results to the Hypotheses

The results of my study support my initial hypothesis. After extensive research I found that even though many studies have dealt with various service delivery models, the amount of empirical data strongly supporting any one special education service model over another is limited. Instead, research tends to focus on

the types of teaching strategies and instructional practices that have proven most successful with special education students rather than the actual settings in which the strategies are implemented.

The second part of my hypothesis which deals with the success of regular education, special education, and "at-risk" students involved in in-class support proved partially true. While students in each population did show gains in test scores, the postest scores of the in-class support students and "at-risk" students were significantly lower than those of the regular education population. In addition, it appears that the "at-risk" population did not significantly benefit by the in-class support as expected, when compared to the other populations.

Implications for Special Education Instruction

I feel that although this study had many limitations, which will be discussed in the next section, several things can be learned from it. Most importantly, the study seemed to suggest that here are many ways of successfully meeting the

needs of the special education student be it in a self-contained classroom, in-class support or in a resource center program. The fact remains that the future is optimistic for challenged children and that they can succeed in a variety of settings.

Secondly, the results of the study indicate that because special education students can succeed in a variety of settings that, as previous research indicates, it would be important to focus on instructional techniques and teaching strategies for the student. As suggested in the adaptive instruction approach, areas of student responsibility, self-management skills, peer tutoring, and systematic teacher monitoring may provide a new avenue for special education students. Such teaching methods as direct instuction, diagnostic-prescriptive teaching, focusing on learning styles, and precision teaching may also provide a new focus for special education teachers.

Low pre-test scores in this study may indicate a need to broaden the knowledge base of special education students, providing more experiences for them at an earlier age for concept building. As we move toward the area of whole language and precursor skills in reading and math this broadening may be accomplished.

The validity of this study raised the question of testing itself for special education students. Although assessment techniques are in order to gauge progress, the idea of rigid testing practices may not be valuable for this population of students. Alternate assessment methods should be examined.

Limitations and Recommendations

The most obvious limitation of this study is the number of subjects involved. I feel that the study itself holds much value, but I would like to see it repeated on a much larger scale to include students in self-contained classrooms and to include other subject matter, particularly reading.

It would be valuable to document the type of instruction that was utilized in each classroom and to vary the interventions.

This study dealt solely with the academic effects of the in-class support situation, but did not touch on the social benefits of such a placement. This aspect of inclusion should be studied, as well.

Conclusion

This study compared the effects of in-class support on the math performance of regular education students, classified special education students, and

at-risk students. It also incidentally compared the success of resouce center students, as well. Statistical findings showed that even though the in-class support students and at risk students did not score as high as their non-handicapped peers, they significantly increased their knowledge in the in-class support situation.

On a broad scale, this study, along with the multitude of research, indicates a sincere and concerted effort on the part of both regular and special educators to find the best possible settings and techniques to meet the challenges of special needs children.

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