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Georgia's special instructional assistance program : the impact on academic achievement

Leisa Kim Nichols

To the Graduate Council:

I am submitting herewith a dissertation written by Leisa Kim Nichols entitled "Georgia's special instructional assistance program : the impact on academic achievement." I have examined the final electronic copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Education, with a major in Educational Administration.

Mary Jane Connelly, Major Professor

We have read this dissertation and recommend its acceptance:

George Harris, Lloyd Davis, Stephanie Bellar, Gary Ubben

Accepted for the Council:

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(Original signatures are on file with official student records.)

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Associate Vice Chancellor
and Dean of the Graduate School

Georgia's Special Instructional Assistance Program: The Impact on Academic Achievement

A Dissertation

Presented for the

Doctor of Education

Degree

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Leisa Kim Nichols

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ABSTRACT

This study examined the impact of the Special Instructional Assistance program on academic achievement as reported through reading and math standardized test results on the ITBS of students from one Georgia school system. The study tracked students from kindergarten through grade three and reported the number of years the student participated in the SIA program. Test comparisons were made to determine if the number of years of participation made a significant impact on academic achievement in either reading or mathematics. Test comparisons were also made between students who were SIA participants and students who never participated in the program. Finally, third grade and fifth grade ITBS results in reading and mathematics were compared for SIA participants to determine maintenance of effectiveness.

Evaluation of the SIA program had previously included subjective measures such as teacher comments. This study evaluated the effectiveness of the SIA program utilizing objective and validated measures of achievement that are presently being requested by those in policymaking positions who influence the financial

allocations given to such programs. The study made no attempt to evaluate the methods of implementation or the eligibility and identification criteria.

The study found no significant differences in the reading or math test results among SIA participants, no matter how many years students participated in the program. These results may have been influenced by the placement process of using teacher recommendations. Students who participated for only one year may not have demonstrated the greatest need and would have shown a greater test score than the other groups. A significant difference was found, however, when comparing the reading and mathematics achievement scores between SIA and non-SIA participants. Students who had never participated in the program had significantly higher tests results for both reading and mathematics but this also may be attributable to the success of the identification process for the SIA program. The comparison of third- and fifth-grade tests results for SIA participants also indicated a significant increase in the areas of reading and mathematics. Though the reading score was still lower than the score expected for average ability students, the reading scores of the SIA participants made the same

increase as that expected of average ability students. The same was not true in the area of mathematics. The mathematics scores of SIA participants did not make the same increase as that expected of average ability students.

The main conclusions of this study were that due to program design problems such as the absence of a true experimental and control situation, this study could not demonstrate that the number of years of participation had any significant impact on academic achievement in reading or mathematics; the conclusion that student achievement improved the longer a student participated in the SIA could not be made due to the possible success of the identification process; and, even though the average standard score for SIA participants was not as great the average score expected of average ability students in reading or mathematics, SIA participants did make the same academic gains in reading as could be expected of average ability students.

Recommendations included conducting a study which can document both pre- and post-test results; measuring achievement on a yearly basis through consistent administration of a standardized achievement test such as

the ITBS; conducting a study which can examine the achievement differences between a true experimental and control group situation; comparing test results of SIA participants to non-SIA participants between third and fifth grade; examining different SIA implementation models and comparing the achievement differences of their participants; expanding this study to include a greater sampling of school systems across Georgia, but doing so only after eliminating current design problems which prohibit clear comparisons of SIA and non-SIA participants; including students who change schools during the years of possible SIA participation; and, evaluating effects of the SIA program, other than achievement differences, such as teacher morale, student discipline issues, grade retention, and student motivation.

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CHAPTER ONE

INTRODUCTION

As a part of Georgia's educational reform initiative, Georgia's Quality Basic Education Act (QBE) of 1985, the Georgia State Board of Education adopted Policy IDDH: Special Instructional Assistance (SIA) in the spring of 1987. The passing of the Quality Basic Education Act, O.C.G.A. 20-2-153 (1987), required the creation of the Special Instructional Assistance Program. The final adopted version of the SIA program, though different from the initial 1987 program description, was

> designed to serve children in grades kindergarten through five who have identified developmental delays that may prevent them from maintaining a level of performance consistent with expectations for their respective ages. Their delayed functioning is most often associated with deficient language development and cognitive development; it is not caused by a diagnosed handicapping condition (Georgia Department of Education, 1989a, p. 2).

The targeting of children who exhibited deficiencies in language and cognitive development simultaneously targeted students at risk for academic failure. Language usage and cognition and general knowledge were identified by the National Education Goals Panel as two of the six

criteria by which we can assess a child's readiness to learn (U.S. Department of Education, 1993a). Illinois recently implemented a prekindergarten program as an early intervention strategy for children demonstrating similar types of deficiencies (Illinois State Board of Education, 1993). In a 1993 position paper the Division for Early Childhood of the Council for Exceptional Children emphasized that "young children in need of early intervention services are those between birth and age eight who have disabilities, developmental delays, or who are at-risk for future developmental problems" (U.S. Department of Education, 1993b, p. 1). The SIA program was one of Georgia's early intervention strategies for at-risk students.

Background

Funding for full implementation of the SIA program has yet to become a reality. A pilot program was funded for the first two years. In 1989, the Georgia General Assembly appropriate $19.9 million for the statewide implementation of the program for kindergarten and grade one. In 1990, the SIA program was expanded to include

grade two. In 1991, grade three was added. Allocations for the program grew to an estimated $72.6 million for the 1996-97 school year with kindergarten through third grade being the only ones served.

The policy, as adopted, required local system programs to include eligibility criteria, an appropriate delivery model, and an instructional component that provided developmentally appropriate learning experiences, a parent component, a staff development component, and an evaluation instrument. Eligibility criteria varied according to the targeted grade-level but was generally based on screening methods such as parent interviews or questionnaires, teacher observations, results of standardized tests, a language evaluation, receptions of SIA services during a previous year, placement in the Remedial Education Program, and/or grade retention in the previous school year.

Appropriate delivery models included the reduced class size model, the augmented model, or a system-designed model. The reduced class size model was described as reducing the respective individual class size as specified in State Board Policy IEC by one student for every two eligible students served. The

augmented model placed ten or fewer SIA students within heterogeneous classrooms. An additional teacher, certified in early childhood, worked with the SIA students within these classes for a minimum of one hour per day. System-designed models were to be based on a well-documented, educationally-sound model, must include the instructional, parent and staff development components which reflected developmentally-appropriate practices, and could be developed to meet their unique grouping needs.

The instructional component targeted developmentally-appropriate learning experiences using instructional materials which supported these experiences. The parent component focused on providing instructional opportunities for parents, parent-teacher conferences, and parent involvement opportunities. The staff development component provided assistance in planning for, and implementing appropriate instructional and parent involvement strategies (Georgia Department of Education, 1989a).

Throughout the years of implementation, suggestions and comments were gathered from those directly involved in providing SIA services. Ongoing feedback was

solicited regarding changes needed to help the SIA program better serve students and families. This information was compiled and recommendations developed (Georgia Department of Education, 1995). Resultant SIA program guidelines reflected these recommendations.

Statement of the Problem

Georgia's SIA program was designed to influence the education of "at-risk" students in the early primary grades. Funding for this program increased over $50 million dollars from 1991 to the present. The number of students served by the SIA program more than doubled during this same period of time. Though on-going assessments of teacher feedback were an integral component of the program, at the time of this study no systematic, summative assessment of program effectiveness had been completed (State SIA Reports). The taxpayers of the State of Georgia, like other taxpayers across the United States, question the funding of all educational programs and require them to be accountable for producing results. The value of the SIA program with regard to its impact on improving student learning had not been

documented, in spite of provisions in the program evaluation component (see p. 10). The problem was that no measurable objective evaluation of the SIA program's effectiveness had been completed or documented.

Purpose of the Study

Georgia's Special Instructional Assistant Program was adopted by the State Board of Education in 1987. Excluding the pilot years, students in the fifth grade during the 1994-1995 school year were the first group to possibly participate in the SIA program all four of their primary years of kindergarten through grade three. Successive years' cumulative data made evaluating the program's effectiveness through the use of state-required, norm-referenced assessment possible. The purpose of this study was to investigate the relationship between students who did participate and those who did not participate in the SIA program.

Significance of the Study

The financial allocations for Georgia's Special Instructional Assistant program increased from almost $1 million in 1988 to over $72 million in 1996. Participation in the program grew from 17 to 168 systems and from one thousand students to almost 78 thousand students. The increase in the financial allocations indicated Georgia's commitment to reaching the equity goals established in the Quality Basic Education Act of 1985. "The actions that Georgia has taken in implementing QBE have broadened the access of Georgia's students to more and better educational offerings" (Georgia Chamber of Commerce, 1995, p. 4).

Interested groups and Georgia policymakers question the use of these funds (Clark, 1998). Many have looked for measurable evidence that financial resources were spent wisely. These groups question the validity of student progress as identified by informal teacher, administrator, and supervisor evaluations.

Research Questions

Student achievement, as measured by individual scores on the survey battery of the Iowa Tests of Basic Skills, or the school years 1995-96 through 1997-98 will be used to evaluate the SIA program. The questions to be answered are:

Question One: Do individual reading achievement scores of third grade students who participated in the SIA program differ according to the number of years of participation?

Question Two: Do individual math achievement scores of third grade students who participated in the SIA program differ according to the number of years of participation?

Question Three: Do individual reading achievement scores of third grade students who never participated in the SIA program differ for third grade students who participated in the SIA for only one year? For two years? For three years? For four years?

Question Four: Do individual math achievement scores of third grade students who never participated in

the SIA program differ from third grade students who participated in SIA for only one year? For two years? For three years? For four years?

Question Five: In comparing an individual's third and fifth grade reading achievement standard scores, was there a significant increase for students who participated in the SIA program?

Question Six: In comparing an individual's third and fifth grade math achievement standard scores, was there significant increase for students who participated in the SIA program?

Delimitations and Limitations

Delimitations

1. The survey battery of the Iowa Test of Basic Skills was administered in grades three, five and eight. While other state-developed, criterion-referenced tests were given at these levels, the standardized, norm-referenced test, the ITBS were the only tests to report individual results. Therefore, only ITBS results were used to evaluate student achievement.

2. The Iowa Tests of Basic Skills were consistently administered in the chosen school district since the spring of 1992 for grades three and five. Complete SIA class rosters for each school in the district could be found for school years beginning with 1992-93. Therefore, test results from the 1995-96 through 1997-98 school years were used.

3. This particular school system was chosen for the study due to administrative cooperation and the availability of specific test score data.

4. One elementary school in this particular system was in a "phase out" process since the 1993-94 school year. The impact of this process on the student population was significant. Therefore, the test results from this elementary school were not used.

Limitations

1. SIA rosters which identify individual student participants were not available from the state level. Therefore, study sampling came from one particular school system which agreed to participate in the study.

2. The results for students with disabilities and for students with limited English proficiency was not

included in the reported data because of state-mandated reporting requirements.

3. The survey battery of the Iowa Tests of Basic Skills was the only portion required by the State of Georgia. The battery included a reading and a mathematics subtest. For this reason, reading and mathematics achievement were the only subjects that could be compared.

4. Grades three and five were the only grades required to give a standardized norm-referenced test by the State of Georgia. These were the only elementary grades that required norm-referenced testing in school system chosen for the study. Therefore, test data could only be gathered from grades three and five.

5. By nature of the implementation models for the SIA program, students who were not identified as SIA participants very likely received the same treatment as SIA identified students. This was especially true in schools with high numbers of SIA participants. Therefore, the results given in comparison of SIA and non-SIA student test scores were evaluated carefully and could not be used to make certain generalizations.

Assumptions

It was assumed that all testing has been conducted in accordance with the procedures outlined in the Georgia Student Assessment Handbook (Georgia Department of Education, 1994) and verified by the Georgia Comprehensive Evaluation System. It was further assumed that the scoring and reporting done at the University of Georgia is valid and reliable.

It was assumed that all SIA schools implemented the program in accordance with state guidelines regarding pupil-teacher ratios and appropriate delivery and instructional models.

It was also assumed that all information furnished by the system to the state accurately reflected the number of SIA program participants and that this information was not altered on report copies supplied by the schools or systems. It was further assumed that test results supplied by the system to the researcher were not altered except to delete all personally identifiable information when necessary.

Definition of Terms

Special Instructional Assistant (SIA) Program is a program which developed as a result of Georgia's reform initiatives in the late 1980's. It was designed to serve children in grades kindergarten through five who have identified developmental delays not caused by a diagnosed handicapping condition (Georgia Department of Education, 1989b).

Norm-referenced tests are those whose scores are determined by a comparison to the performance of other people who have taken the test (Woolfolk, 1990).

Iowa Tests of Basic Skills (ITBS) is a norm-referenced test. The survey battery portion of the test is used in the State of Georgia to assess reading and mathematics in grades three, five and eight. Results are given in the form of individual student scores.

Quality Basic Education (QBE) is Georgia's reform initiative passed by the state legislature in 1985. It targets,

> the major needs and goals to be met by the public school program. These major needs include: a statewide basic curriculum; quality basic education programs; sufficient and equitable financing;

> improved statewide standards of performance; improved status and rewards for teaching; quality professional development and incentive programs; resources for continuous program improvement; complete and timely information for parents and the general public; appropriate facilities; and, provision of equal access to a quality education program for all students (Georgia Department of Education, 1985, p. 1).

Standard Score, as reported in the Interpretive Guide--Georgia Statewide Norm-Referenced Testing Program, Spring 1998, are "derived on the assumption that performance within grade level is normally distributed" (p. 1).

Procedures and Methods

The Population and Its Selection

Individual student scores in reading and mathematics achievement were chosen as the unit of study. Students were tracked throughout their years of participation in the SIA program.

A public school system in the north Georgia region was chosen as the population to be studied. Test results of this system's elementary students during the targeted school years were used, excluding special education students and those attending the "phase out" school.

Methods of Gathering Data

Permission to use SIA student rosters from 1992-93 through 1995-96 and individual test results from the 1995-96 through 1997-98 school years was obtained from the superintendent of the school system. All personally identifiable information was deleted as student involvement was tracked and the correlations reported. This data was the basis for the research sampling.

Treatment of the Data

For the school years 1995-96 through 1997-98, third- and fifth-grade ITBS scores were collected. SIA student participant rosters were collected for the school years 1992-93 through 1995-96. After determining the number of years students participated in the SIA program, analysis of variance was used to compare individual reading and math achievement scores by the number of participation years. The multiple comparisons test, the Tukey HSD, was used to determine where means were different. This information was used to answer questions one and two.

Means for reading and mathematics achievement scores between SIA and non-SIA participants was compared through

the use of the independent t-test. This information was used to answer questions three and four.

The strength of the enhancement of the SIA program was measured by comparing individual third- and fifth-grade reading and mathematics achievement scores. The dependent t-test calculated differences between third- and fifth-grade scores for students who participated in the SIA program. This information was used to answer questions five and six.

Organization of the Study

The study was arranged in five chapters: (1) Introduction, (2) Review of Related Literature and Research, (3) Methodology, (4) Findings and Analysis of the Data, and (5) Summary, Conclusions, and Recommendations.

CHAPTER TWO

REVIEW OF THE LITERATURE

Although many may consider the call for educational reform a current and modern-day challenge, it is not. The establishment of public education in America was based on the need to solve a national problem--learning to read (Johnson, Collins, Dupuis, & Johansen, 1976).

Historical Review

Warren (1990), in describing what is called the Common School movement, referred to the establishment of what today is known as "elementary schools" as "the first truly nationwide educational reform initiative" (p. 64). Murphy (1990), in his view of origins of reform, explains that

> major periods of educational reform in the United States have historically been initiated by forces external to the public schools (Coombs cited in Murphy, 1990). They generally occur in response to a crisis, perceived or real (or a mixture of both), and are designed to promote certain value positions or goals (Mitchell & Encarnation cited in Murphy, 1990, p. 7).

As the national problems changed, so did the call for educational and curricular reform.

The second period of educational reform followed the Civil War and focused on rebuilding the Union. Many argued that Secession would never have taken place in a more educated Confederacy (Warren, 1990). The industrialization of the late 1800's and early 1990's, which found school organizations rich with tainted politics, untrained and unmotivated teachers, and where disorganization reigned, provided fuel for the next reform movement--the progressive education movement.

Major national and international events such as World War I and World War II, the launching of Sputnik, United States Supreme Court rulings on racial segregation, and federal legislative contributions such as the passage of PL 94-142 in 1975 greatly influenced the next period change in American education (Johnson, et al., 1976; Meyen, 1978; Kaestle, 1990).

> The curricular reform of the late 1950's and early 1960's had a special focus on math, science, and talented children. By the mid-1960's the concern had been overtaken by another shift in the public mood. The civil rights movement, dramatized by the grassroots efforts of blacks and encouraged by the Johnson administration, resulted in a major effort to address poverty and racial prejudice through government action. Education was assigned a key role in this effort, just as it had been assigned a

> key role in solving the national problems brought about by industrialization in the 1840's, immigration and urbanization in the early 1900's, and the cold war in the 1950's.
>
> The momentum lasted until the early 1970's. Gaps between the basic skills of minority and majority students narrowed among younger students; a revolution in school integration occurred, particularly in the South; schools recognized and institutionalized the rights of women, the disabled, and non-English speaking students. But by the mid-1970's the public's tolerance for the disruptions of new programs and regulations was exhausted. Even before Reagan's electoral victory, education officials in the Carter administration were winding down massive student-aid programs, going more slowly on rights enforcement, and reducing the tangle of regulations and reporting required of local districts. A grassroots back-to-basics movement, declining college-entrance-exam scores, economic recession, and foreign competition set the stage for Terrel Bell and his Commission on Excellence in Education. The pendulum had swung again (Kaestle, 1990, pp. 26-27).

In 1981, T. H. Bell, then Secretary of Education, created the National Commission on Excellence in Education. The purpose of this commission was to examine the quality of education in the United States. The commission was charged with

> assessing the quality of teaching and learning in our Nation's public and private schools, colleges, and universities; comparing American schools and colleges with those of other advanced nations; studying the relationship between college admissions requirements and student achievement in high school; identifying educational programs which result in notable student success in college; assessing the degree to which major social and educational changes in the last quarter century have affected student achievement; and defining problems which must be

> faced and overcome if we are successfully to pursue the course of excellence in education (U. S. Department of Education, 1983, pp. 1-2).

From these charges came the 1983 report, "A Nation at Risk," which described the recommendations for changes needed in the United State's educational system. This report became the basis of educational reform for the later portion of the 1980's.

Just as each period of educational reform had its own focus or thrust, those that appeared in the 1980's were no different. "The 1980 school reform reports have emphasized school graduation requirements, student performance, and improvement of teaching" (Jordan & McKeown, 1990, p. 99).

> Over $550 million, or about 27 percent of the 1985-86 state "reform" dollars, were for school curriculum and education programs. Target areas included basic skills; mathematics, science, and computer education; early childhood education; programs for "at-risk" students; and programs for gifted and talented students. For these target groups, thirteen states allocated $67.3 million for programs to serve "at-risk" youth and twenty-three states allocated $131 million for programs to serve gifted and talented youth (Jordan & McKeown, 1990, p. 103).

Concern for a perceived lack of action toward facing many challenges identified in the National Commission on Excellence in Education's report prompted President Bush and the nation's Governors to establish a framework for

action. In 1989 the National Education Goals process began with the convening of the Education Summit with the nation's Governors. The three essential elements of this process included the establishment of Goals themselves, the creation of the National Education Goals Panel, and an on-going effort to develop world-class standards of achievement and a voluntary system for assessing their attainment (National Educational Goals Report, 1992). Clarifying the focus of current educational reform movements became essential. Once again interest in educational reform gained momentum.

Georgia's Education Reform Movement of the 1980's

Georgia, like many other states in the 1980's, faced educational reform initiatives which were born out of requirements to ensure greater fiscal equity among districts (Jordan & McKeown, 1990; Burrup, Brimley, & Garfield, 1988; Hong, 1990). Georgia's response was the enactment of the Quality Basic Education Act (QBE) in 1985.

> Georgia's Quality Basic Education Act (QBE) was enacted two years after the release of "A Nation at Risk," the 1983 national report that sounded a powerful alarm about the state of America's schools.

> Georgia acted early and decisively, in the aftermath of that report, to institute changes in its educational system (Education Improvement in Georgia, 1995, p. 3).

According to Bill Barr, acting Executive Director of the Georgia School Superintendents Association,

> the law called for a partnership between the state and local school districts to provide, an equitable public education finance structure which ensures that every student has an opportunity for a quality basic education, regardless of where the student lives, and ensures that all Georgians pay their fair share of this finance structure [20-2-131(3)] (Georgia School Superintendents Association, 1995, p. __).

As expressed by then State Superintendent of Schools, Charles McDaniel, Georgia's Quality Basic Education Act was developed as a "holistic approach toward improving education" (Georgia Department of Education, 1985).

Georgia's Quality Basic Education Act directed attention on six formal goals: (1) reducing the number of dissatisfied teachers leaving Georgia's schools; (2) decrease the percentage of students failing to graduate from high school; (3) eliminating emergency teaching certificates and waivers for teaching out of specialty; (4) decreasing the percentage of students failing the Basic Skills Test in tenth grade; (5) increasing significantly the scores of Georgia's students on the Scholastic Aptitude Test (SAT); and, (6) increasing

student mastery of basic skills in math, reading, and other subjects (Education Improvement in Georgia, 1995). In the summary report of QBE presented by the Public Information and Publications Division of the Georgia Department of Education (1985), the Quality Basic Education Act was divided into 14 parts in order to increase public understanding. While many parts dealt with changes in financing public education in Georgia, there was also a strong curriculum and educational programs component. The authorization of many new programs included the development of the special instructional assistance program. "Children in grades kindergarten through five who have been identified as having problems in developing the skills needed to perform up to expectations of their ages will be served by this program" (Georgia Department of Education, 1985, p. 3).

In 1987, the Georgia State Board of Education approved Policy IDDH (O.C.G.A. 20-2-152) which instructed the state superintendent to "provide for the operation of a special instruction program . . ." (Special Instructional Assistance Act, 1987). The Georgia General Assembly funded the SIA pilot program for the 1987-88

school year and estimated that similar appropriations would be needed for the 1988-89 school year. The only grade levels targeted by this pilot program were kindergarten and first grade (Rogers, 1987). Full funding for specific grades began in 1989 when the Georgia State Board of Education approved policy IDDH in a slightly different version than that approved in 1987 (Special Instructional Assistance Act, 1989). Yet, even now funding for the special instructional assistance program only includes four out of the six grades targeted in the initial development of SIA. The program component of the 1980's educational reform movement in Georgia was one aspect of QBE that was never fully funded. It was though, a major educational program which focused on meeting the needs of Georgia's "at-risk" children early in their educational endeavor.

At-Risk Students

The term "at-risk" is a commonly used term in a vast amount of current research. According to Germinaro, Cervalli, and Ogden (1992), "there is no prototype at-risk elementary student. Students who do not succeed in

our schools come from all social, ethnic, and racial groups" (p. 4). "One possible definition is that students who are at risk are those who, on the basis of several risk factors, are unlikely to graduate from high school" (Slavin, Karweit, & Madden, 1989, p. 5). At-risk has also been used to refer to children who may not be developmentally, cognitively, emotionally, or physically ready to make satisfactory progress at the expected rate in school. According to Pallas (1989),

> [E]arlier, risk was considered the result of only a single factor in a youth's life. Over time, policymakers and educators have identified different factors as the factor. Thirty years ago, the problems of school-aged children were attributed to cultural deprivation . . . . Subsequently, educational deprivation was considered the primary cause of at-risk status . . . . Another cause for at-risk status was thought to be the failure of all social institutions charged by society with educating youth . . . . A final definition of at-risk status is the probability that a student will fail academically, and/or drop out of school (p. 1).

Pallas also argued that a new definition is needed to adequately identity or describe the at-risk student of today.

> None of the earlier perspectives on at-risk youth conveys precisely enough the full complement of factors that put a student at risk. Since education is a process that goes on both inside and outside of schools, schools are just one of several institutions that educate--or can fail to educate--our children. Families and communities, along with schools, are the key educational institutions in our

> society. Any definition of risk needs to be sensitive to these other education forces. Thus, young people are at risk, or educationally disadvantaged, if they have been exposed to inadequate, inappropriate educational experiences in the family, school, or community (1989, p. 1).

Just as the meaning of "at-risk" has become a combination of many factors, the characteristics associated with being at-risk include many variables. These variables include social class, low family income, low parental education, single-parent family, limited-English proficiency and limited language experiences, the lack of supervision after school, having siblings who dropped out of high school, living in a community with a poor economic condition and a high crime rate, being of a particular race and ethnicity, and attending a school where over 50% of students participated in free lunch programs (Vacha & McLaughlin, 1992; Peng & Lee, 1992; Pallas, Natriello, & McDill, 1989; Pallas, 1989; Ralph, 1989).

In addition to the demographic characteristics found to be related to a student's at-risk status, Germinaro, et al. (1992) found that there are also characteristics and school behaviors which are closely associated with school failure. These include attendance problems, previous school retention, prior school suspensions,

working two or more years below grade level, lack of participation in extracurricular activities, and special program placement. After reviewing many possible characteristics associated with identifying students at risk for academic failure, Peng and Lee (1992) found that not all characteristics had an equal impact. Each of the eight demographic characteristics explored by their research did indicate some degree of an at-risk status but they also found that "In fact, students' at-risk status increases when they have multiple disadvantaged characteristics . . . the critical point seems to be at the two-characteristics level . . ." (Peng & Lee, 1992, p. 5). The patterns found in their research also provide guidance in identifying and providing programs for at-risk students.

> Data show that students in poverty-stricken environments as measured by low family income, low parental education, and participation in free or reduced-price lunch programs, and students with multiple risk factors, most likely of minority students, are at a greater risk for school failure than other students, and thus should be identified at an early stage in school and be given extra help to foster their school success (Peng & Lee, 1992, p. 9).

Identifying students at an early age is an important component of programs designed to meet the needs of at-risk students. Smith (1988) found that early

intervention not only enhances a child's development by providing assistance at the most crucial learning time but is also more cost effective. But identification at an early stage is only the beginning. Determining what to do once the students have been identified is the next step.

Instructional Strategies

A wide range of instructional strategies have been investigated for use in programs designed to meet the needs of at-risk students. Most programs focus on the instructional setting or the instructional style. Aspects of the instructional setting that have been given much consideration are (1) whether or not instruction should take place in the regular classroom, (2) the effects of instructional grouping strategies, and (3) the class size issue.

The issue of where instruction should take place focuses on in-class versus pullout methods. Researchers have reported both positive and negative effects of the pullout and in-class modes of instruction. Archambault

(1989), in reviewing instructional settings for effective programs for at-risk students, found

> in general, the literature leads to the following conclusion: (1) in some cases, compensatory education in a pull-out setting results in higher student achievement than in-class instruction; in other instances, in-class instruction has a more positive effect; and in still other, and these appear to be the majority of cases, the setting for instruction has no significant effect on student achievement; (2) the findings on the cost effectiveness of the approaches are also mixed; and (3) the type of instruction delivered within a particular setting is more important than the setting itself (p. 225).

Increased posttest score performance was the most cited positive aspect. Negative effects included losses in instruction due to being pulled out of the regular class, regular classroom teacher's decreased sense of responsibility, and the possibility of students being labeled (Slavin, et al., 1989).

In a review of research, Stein, Leinhardt, and Bickel (1989) concluded that from the perspective of instruction and learning, effective instruction for at-risk students has shown that "teaching the children directly the material we want them to learn pays off, and mixed-ability small-group learning promotes improved achievement" (p. 185). Instructional grouping options include homogeneous and heterogeneous groupings as well

as in-class versus between-class ability grouping. It has been argued that ability grouping "allows teachers to increase the pace and level of instruction of high achievers and provide more repetition, review, and remediation for low achievers" (Archambault, 1989, p. 242). Kulik and Kulik (cited in Archambault, 1989) explained that "critics argue that ability grouping confers unnecessary distinction on those in the fast track while placing a stigma on those in slow groups" (p. 242). Heterogeneous ability grouping was viewed as a positive benefit to student achievement by Wilkinson (cited in Swing & Peterson, 1982) but Slavin (1986) reached a different conclusion. Archambault (1989), in the review presented by Slavin, et al. (1989) explained this difference.

> One possible explanation is that Wilkinson draws heavily on studies in reading, whereas Slavin focuses only on mathematics. More important than this, however, is the fact that much of the research cited by Wilkinson deals with observations that students in low reading or math groups learn less than students in higher groups, not less than other low-achieving students in contrasting arrangements (Slavin, et al., 1989, p. 245).

Rowan and Guthrie (1989), in reviewing research on quality Chapter 1 programs discovered some interesting aspects of these programs. "There was one uniform

characteristic of Chapter 1 instruction in the schools in this study. All of the Chapter 1 projects offered instruction in small groups" (p. 216).

The issue of class size, and its impact on student progress, is another aspect of the instructional setting that has been the center of much controversy. In 1985, Tennessee implemented a project which was designed to determine the effects of reduced class size on the achievement and development of students in kindergarten through grade three. The results of Project STAR (Student Teacher Academic Ratio) have yielded much research information. Jacobs (1990) analyzed first year kindergarten results for student participants and found that a positive relationship did exist between small class size and reading readiness achievement. Further research by Bain and Jacobs (1990a) found similar results but also recognized the variables of students receiving free or reduced cost lunches and student attendance in school. Achilles (1993) compared student achievement (as measured by test results) and found that students in small classes had the highest test outcomes. Similar results were found by others (Achilles & Lintz, 1991; Nye, Achilles, Boyd-Zaharias, Fulton, & Walkenhorst,

1992b; Nye, Achilles, Boyd-Zaharias, Fulton, & Walkenhorst, 1992c; Nye, Achilles, Boyd-Zaharias, Fulton, & Walkenhorst, 1992d; Bain & Jacobs, 1990b; Pate-Bain, Achilles, Boyd-Zaharias, & McKenna, 1992; Word, Johnson, Pate-Bain, Fulton, Boyd-Zaharias, Lintz, Achilles, Folger, & Breda, 1990). Nye, Achilles, Boyd-Zaharias, Fulton, and Walkenhorst (1992a) concluded that the positive effects remained for up to two years after leaving the program and returning to a regular classroom. Tomlinson (1990) came to the opposite conclusion and summarized that findings show there is no support for positive achievement effects of small class instruction except for disadvantaged minority students.

Rowan and Guthrie's (1989) research review also cited a meta-analysis of studies of class size.

> . . . Glas, Cahen, Smith, and Filby (1982) presented a curve that traced the effects on learning of reductions in group size. This curve suggested that reductions in class size had minimal effects until instructional groups reached a size of about ten students. Below this number, reductions in class size tended to have larger effects. This same meta-analysis also suggested that reductions in class size had larger effects when the reduction occurred for longer periods of time (p. 199).

Cahen, Filby, McCutcheon, and Kyle (cited in Slavin, et al., 1989) found that small group instruction

increased student achievement. Doss and Holley (cited in Slavin, et al., 1989) argued that,

> (b)ased on Glass and Smith's (1979) meta-analysis of class size and achievement, . . . reducing class size to fifteen and delivering instruction within the regular classroom would not only redress some of the problems occurring within pullout programs, but would also improve student performance (p. 231).

The class size level that produces the most dramatic effects on student achievement is another controversial issue. Archambault's (1989) research review found a 1978 review by the Educational Research Service which concluded that "research provided no clear-cut guidelines for optimum class size" (p. 237). This did not contradict the research that smaller class sizes had a positive impact on student achievement, but rather emphasized that the maximum class size for this impact to take place was not conclusive. Glass and Smith (cited in Slavin, et al., 1989) recommended a class size of fifteen or fewer students.

Increased student achievement is not the only positive effect of small class sizes. Higher teacher morale, positive attitudes toward students, job or performance satisfaction, decrease in student discipline, positive student attitudes, reduction in grade retention, increase in student participation, increased student

motivation, a higher quality of cognitive and task monitoring, and an increase in individualization of instruction are among those most noted (Glass & Smith, cited in Slavin, et al., 1989; Cahen, Filby, McCutcheon, & Kyle, cited in Slavin, et al., 1989; Carter, cited in Slavin, et al., 1989; Achilles, 1996). Johnston (1990) found that small class settings, or regular class settings that incorporated the use of a teacher's aide, allowed for an environment which was more conducive to providing developmentally appropriate activities.

The way in which a student learns, also called a student's learning style, is another instructional area which should receive some attention when focusing on the appropriate instructional strategies for teaching at-risk students. According to Germinaro, et al. (1992),

> There is some evidence to suggest that at-risk students may have measurable different learning styles. In fact, at-risk students may have predominant learning modalities that differ significantly from traditional teaching styles. In a recent study, at-risk learners were identified as having poor to fair auditory and visual learning capabilities. However, a very large percentage of these students demonstrated high preference for tactical and kinesthetic learning experiences (pp. 6-7).

Providing students with a variety of learning experiences is important to meeting the instructional needs of at-

risk learners. Recognizing that students learn in different ways in an important step.

In summary, research studies have identified many characteristics of students considered "at-risk". Studies have also determined instructional techniques and settings which provide an opportunity for optimum success in teaching students in the at-risk category. Georgia's SIA program has incorporated many of these components but has no research to evaluate the effectiveness of combining them in such a program. This study will provide a beginning for such an evaluation.

CHAPTER THREE

METHODOLOGY

The purpose of this study was to evaluate the effectiveness of Georgia's Special Instructional Assistance Program (SIA). Quantitative methods were used to investigate the relationship between students who participated in the SIA program and students who did not participate. It was important to assess comparisons of SIA students according to their number of years of participation, and to compare tests results of non-participants to participants by the number of years they received treatment, to determine if these variables impacted student success in either reading or mathematics. It was also important to explore the relationship between a student's progress at grade three and then again at grade five. This chapter describes the procedures used in the study. The sections include research design, sample selection and data collection, methods and procedures, and data analysis.

Research Design

The study employed a causal-comparative research design which used evaluations with historical records. Standardized test results from the Iowa Tests of Basic Skills (ITBS) were used as the comparative norm. The research was quantitative, the data used being: (1) class rosters of students in kindergarten through third grade, (2) rosters of students who had participated in the SIA program, and (3) standardized test results for these same students. These three sets of information for the school years 1992-93 through school year 1997-98 were used. Once permission and sources had been obtained, the number of years of a student's participation in the SIA program was determined. Test results for both reading and mathematics at grades three and five were matched to the student.

These statistics were coordinated, placed in a format which ensured anonymity, and analyzed. Comparisons of SIA participants reading and mathematics scores were made according to the number of years of participation.

SIA participants and non-SIA participants were compared in the areas of reading and mathematics. ITBS results of SIA participants were categorized according to the number of years of participation and then compared to those of non-SIA participants. Finally, the reading and mathematics scores of SIA participants were compared at both third and fifth grade.

Sample Selection and Data Collection

One public school system in Georgia was chosen as the sample population to be studied. According to the 1996-97 Georgia Report Card, the system had seven K-5 elementary schools, a total K-12 enrollment of 8,655, twenty-eight percent of students eligible to receive free or reduced priced lunches, and twenty-five percent of the population in the SIA program (see Apendix A for sample entry). The SIA population of the seven chosen elementary schools ranged from 14 percent to 51 percent of the total population. The average SIA population was 25 percent of the total system, elementary school enrollment. Because the program was not a state mandated

program, this school district may not have been representative.

Once permission had been obtained from the Superintendent of Schools, the third- and fifth-grade Iowa Tests of Basic Skills (ITBS) mathematics and reading scores of all K-5 elementary school students during the targeted school years of 1995-96 through 197-98 were gathered. Class and SIA rosters for the school years 1992-93 through 1995-96 were obtained.

First, all kindergarten students from the 1992-93 school year were identified and tracked through the fifth grade. The number of years the students participated in that school's SIA program was determined by using this tracking procedure. A total of four years of participation in the SIA program was possible. Next, the third- and fifth-grade reading and math ITBS standard scores for those students were recorded.

In order to assure confidentiality, data were reordered from their original format. Incomplete student records were deleted. After this process was complete, data analysis began.

Methods and Procedures

After receiving permission from the Superintendent of Schools, an application for involving human subjects (Form A) was submitted to the Office of Committee on Research Participation (CPR) at The University of Tennessee at Knoxville. Upon approval from the CRP Office each elementary school was contacted (see appendix for permission form). The schools were asked to submit a copy of their SIA and class rosters for the school years 1992-93, 1993-94, 1994-95, and 1995-96. Copies of the spring 1996 and spring 1998 ITBS results for math and reading of individual students from each school were requested and obtained from the Curriculum Director's office.

Once rosters and test results were received, all data had to be correlated. This correlation included the tracking of students from kindergarten through the third grade. The total years of participation in the SIA program was calculated: one year, two years, three years, four years, or never participated in the SIA program. Next, individual test results from the third- and fifth-grade ITBS in the areas of reading and math

were matched to each student. Standard scores were reported for both the areas of total reading and total math. "Standard scores are derived on the assumption that performance within grade level is normally distributed" (Intrepretive Guide, 1997, p. 1).

After the process of matching and correlating student data was completed, the procedure of providing for anonymity started. This procedure included several steps. First, student data was reorganized into groups according to the number of years of participation. Students who had participated in the SIA program for four years were grouped together, those who participated for three years were grouped next, followed by those with two years of participation, one year of participation, and finally those who did not participate in the SIA program at any point in grades kindergarten through three. Next, all student names were removed from the data collection forms for each school. Students were then assigned a three-digit identification number.

Since the data were still grouped in individual school units all data needed to be combined into one spread sheet. After this combination, the data were again reorganized, grouping those with like-years of

participation together. (All students with four years of participation were grouped together, with three years of participation grouped together, etc.) After this final grouping, new three-digit identification numbers were assigned beginning with the number one hundred and one.

All gathered data continued to be reported on the SIA student information sheet. Incomplete data were eliminated by deleting all students who did not have third-grade ITBS results. Students who had third-grade, but not fifth-grade, test results remained in the data bank because this data could be used to answer questions one, two, there, and four. Since consecutive identification numbers were not necessary, identification numbers remained the same. Using the reorganized information, statistical analysis of the data could now begin, with anonymity assured.

Data Analysis

Using the statistical calculation available through the Microsoft EXCEL spreadsheet program, the statistical treatment for questions one and two ("Do individual reading achievement scores of third grade students who

participated in the SIA program differ according to the number of years of participation?" and "Do individual mathematics achievement scores of third grade students who participated in the SIA program differ according to the number of years of participation?") included an analysis of variance. Since two or more sample means were compared on one independent variable in this study, one-way analysis of variance (ANOVA) was employed to compare the effect of one-, two-, three-, and four-years of participation in the SIA program. This procedure was used to determine whether there were overall differences between or among groups that might be significant. Table 1 shows the ANOVA data analysis being compared.

TABLE 1

ANOVA DATA ANALYSIS: SIA

PARTICIPATION COMPARISONS

READING				MATH			
Compared to:				Compared to:			
1 year	2 yrs	3 yrs	4 yrs	1 year	2 yrs	3 yrs	4 yrs
2 years		3 yrs	4 yrs	2 years		3 yrs	4 yrs
3 years			4 yrs	3 years			4 yrs

In order to test for significant differences between the experimental and control groups, the independent t-test was used. This allowed for testing whether there was a significant difference between those who never participated in the SIA program (control group) and those who participated one year, two years, three years, or four years (experimental group). This information was used to answer questions three ("Do individual reading achievement scores of third grade students who never participated in the SIA program differ from third grade students who participated in SIA for only one year? For two years? For three years? For four years?") and question four ("Do individual math achievement scores of third grade students who never participated in the SIA program differ from third grade students who participated in the SIA for only one year? For two years? For three years? For four years?").

The change in test results between the third and fifth grade of SIA participants was tested for statistically significant differences using a dependent t-test. This information was used to answer research question five ("In comparing an individual's third- and fifth-grade reading achievement standard scores, is there

a significant increase for students who participated in the SIA program?) and question six ("In comparing an individual's third- and fifth-grade math achievement standard scores, is there a significant increase for students who participated in the SIA program?".

Summary

This study employed quantitative research methods, statistically comparing the impact of the Special Instructional Assistance program on student achievement. The sample consisted of all elementary students of one north Georgia school system who were in kindergarten during the 1992-93 school year. Statistical treatment of the data included an analysis of variance and Tukey HSD, the independent t-test, and the dependent t-test utilizing the statistical process of the Microsoft EXCEL spreadsheet software program. The study evaluated the impact of the SIA program on student achievement in reading and math as measured by the Iowa Tests of Basic Skills. The number of years students participated in the program was considered as well as the change in ITBS scores of SIA students from the third to the fifth grade.

CHAPTER FOUR

FINDINGS AND ANALYSIS OF DATA

Individual student achievement, as measured by individual test scores from the Iowa Test of Basic Skills (ITBS) of students from seven elementary schools in one north Georgia school system were used to evaluate the impact of the state's Special Instructional Assistance (SIA) program. How the evaluation was achieved was the subject of the preceding chapter. Following are the findings of that evaluation and the analysis of the findings, organized in terms of the research questions.

Research Question 1: Do individual reading achievement scores of third grade students who participated in the SIA program differ according to the number of years of participation?

Participation in the SIA program was possible for four years: kindergarten, first grade, second grade, and third grade. The use of analysis of variance was chosen to determine if the mean of any particular year was significantly different from another year to indicate an

influence on reading achievement as measured by the test score.

Reading test scores were designated as the dependent variable. Independent variables included the number of possible years of participation in the SIA program: one year, two years, three years, four years, or no years of participation. As shown in Table 2, the F value of 1.476 was found to have a significance level of .226. Therefore, the F ratio was not statistically significant at the .05 level. Differences between groups were compared using the Tukey HSD. When comparing the effect of the number of participation years on test scores, the significance level far exceeded the .05 level for all comparisons of 1 year, 2 years, 3 years, and 4 years. Therefore, the null hypothesis that no difference exists between the number of years of participation in the SIA program, for actual participants and as measured by the total reading score, was accepted.

TABLE 2

RESULTS OF ANALYSIS OF VARIANCE FOR READING SCORES

AND THE NUMBER OF YEARS OF SIA PARTICIPATION

Source of Comparison	Mean Difference	Standard Error	Significance	Sum of Squares	df	Mean Square	F	Significance of F
Between Groups				904.101	3	301.367	1.476	.226
1 year to:								
2 years	7.05	4.475	.398					
3 years	5.21	4.646	.676					
4 years	8.20	3.998	.177					
2 years to:								
3 years	-1.84	4.475	.977					
4 years	1.15	3.810	.990					
3 years to:								
4 years	2.99	3.998	.878					

*indicates significance

Research Question 2: Do individual math achievement scores of third grade students who participated in the SIA program differ according to the number of years of participation?

The use of analysis of variance was also chosen to determine if the mean of any particular year was significantly different from another year to indicate an influence on mathematics achievement as measured by the total math test score. Mathematics test scores were designated as the dependent variable. The independent variables included each year of participation in the SIA program--one year, two years, three years, four years.

As shown in Table 3, the F value of 2.205 was found to have a significance level of .093, which was not statistically significant at the .05 level. Differences between groups were compared using Tukey HSD. The comparisons of one year, two years, three years, and four years were not found to be significant when compared to each other. Their significance levels far exceeded the .05 level of significance. Therefore, the null hypothesis that no difference exists between the number of years of participation in the SIA program, for actual participants and as measured by the total math score, was

TABLE 3

RESULTS OF ANALYSIS OF VARIANCE FOR MATH SCORES

AND THE NUMBER OF YEARS OF SIA PARTICIPATION

Source of Comparison	Mean Difference	Standard Error	Significance	Sum of Squares	df	Mean Square	F	Significance of F
Between Groups				1103.231	3	376.744	2.205	.093
1 year to:								
2 years	7.08	4.003	.295					
3 years	5.05	4.190	.625					
4 years	9.19	3.645	.063					
2 years to:								
3 years	-2.03	4.003	.958					
4 years	2.11	3.429	.927					
3 years to:								
4 years	4.14	3.645	.669					

*indicates significance

accepted. These results may have been a function of the selection process and not the treatment.

Research Question 3: Do individual reading achievement scores of third grade students who never participated in the SIA program differ from third grade students who participated in SIA for only one year? For two years? For three years? For four years?

In the spring of 1996, there were 277 student test results in the subtest area of reading for the sample population being studied. Of those 277 student test results, 178 students never participated in the SIA programs, 19 students participated only one year in the SIA program, 22 students participated two years, 19 students participated three years, and 39 students participated for all four years in the program. Students who never participated in the SIA program had somewhat higher test results in 1996 than those who had participated in the program for any amount of time. Table 4 shows that there was a statistically significant difference, using a .05 level of significance, between the mean scores of the SIA participants, no matter how

TABLE 4

INDEPENDENT T-TEST RESULTS FOR 1996 READING SUBTEST

SCORES OF STUDENTS BY YEARS OF PARTICIPATION

Group	N	Mean	Standard Deviation	Standard Error of Mean	t	df	Significance (2-tailed)
Never Participated	178	192.74	16.05	1.20			
Participated One Year	19	179.68	11.68	2.68	-3.446	195.000	.001*
Participated Two Years	22	172.64	18.41	3.83	-5.451	198.000	.000*
Participated Three Years	19	174.47	13.92	3.19	-4.770	195.000	.000*
Participated Four Years	39	171.49	12.91	2.07	-8.886	66.472	.000*

*indicates significance

many years, and those who never participated in the program. Therefore, the null hypothesis that no difference in reading test scores exists between non-SIA participants and participants for any of the four possible years, was rejected.

Levene's Test for Equality of Variances showed that there was not a significant difference in the variances of the groups--no participation and participation for one year, no participation and participation for two years, or no participation and participation for three years. Levene's Test for Equality of Variances did show a significant difference in the variance of the two groups--no participation and participation for four years--at the .05 level of significance. Adjusted for the non-equality of variance that Levene's Test found, the difference was still significant.

Due to the inherent nature of the identification process of students participating in the SIA program, it was expected that there would be a significant difference between SIA and non-SIA participant scores for some amount of time. It was unknown at that point, if any, the SIA students would begin to close the academic gap

or, at least, slow the widening of this gap. Comparisons of means between the mean reading scores of SIA and non-SIA students showed a t value of significance existed at all four levels of participation. Students who never participated in the SIA program had a mean score of 192.74. Of the SIA participants, students in the program all four years had the lowest mean score, 171.49, and students in the program for only one year had the highest mean score, 179.68. This might be explained by the fact that students participating for only one year may have made significant academic progress. They may simply not have been recommended by the classroom teacher for participation in the program for the following school year. Another explanation could be that the initial academic deficits of students placed in the program for four years may have been so great that more than four years was needed for the gap to decrease significantly.

Research Question 4: Do individual math achievement scores of third grade students who never participated in the SIA program differ from third grade students who participated in SIA for only one year? For two years? For three years? For four years?

In the same year, the spring of 1996, the same sample population reported 275 scores for the subtest area of mathematics. This sample included 177 scores of students who never participated in the SIA program, 19 scores for students who participated one year, 23 scores for those who participated two years, 19 who participated three years, and 37 scores of students who participated all four years. Participants in the SIA program had a lower mean mathematics score than those who never participated. Table 5 shows that there was a statistically significant difference, at the .05 level of significance, between the mean scores of those who never participated and those who participated for any amount of time. Therefore, the null hypothesis that no difference existed in the math scores between non-SIA and SIA participants was rejected.

TABLE 5

INDEPENDENT T-TEST RESULTS FOR 1996 MATH SUBTEST SCORES

OF STUDENTS BY YEARS OF PARTICIPATION

Group	N	Mean	Standard Deviation	Standard Error of Mean	t	df	Significance (2-tailed)
Never Participated	177	193.85	14.23	1.07			
Participated One Year	19	184.95	11.62	2.67	-2.632	194.000	.009*
Participated Two Years	23	177.87	16.30	3.40	-4.980	198.000	.000*
Participated Three Years	19	179.89	9.74	2.23	-5.632	27.047	.000*
Participated Four Years	37	175.76	12.58	2.07	-7.167	212.000	.000*

*indicates significance

Levene's Test for Equality of Variances showed that there was not a significant difference in the variances of the groups--no participation and one year of participation, no participation and participation for two years, and no participation and four years of participation. Levene's Test for Equality of Variances did show a significant difference in the variances of the two groups, Three Years of Participation and No Participation. Adjusted for the non-equality of variance that Levene's Test found, the difference was still significant.

A significant difference existed between SIA and non-SIA participants in the area of mathematics, also. The number of years a student participated in the program did not change this difference. The mean score for non-participants was higher, 193,85, than students who received any SIA treatment. Of the students in the experimental group (SIA participants), students with one year of participation had the highest mean score, 184.96, and those with four years of participation had the lowest mean score, 175.76. One explanation of this difference could be that the Four-year Participant Group was the

group that most needed SIA services, since the students were recommended for the SIA program in kindergarten, first, second, and third grade.

Research Question Five: In comparing an individual's third and fifth grade reading achievement standard scores, is there a significant increase for students who participated in the SIA program?

Reading scores on the Iowa Test of Basic Skills, reported as standard scores, were compared for eighty-four students in the sample who had participated in the SIA program at some time between their kindergarten and third grade years. Third grade and fifth grade scores were compared to determine if an increase existed. The mean score increased by more than twenty-nine points by the fifth grade.

According to the results reported in Table 6, the change in ITBS reading scores between the third and fifth grades was found to be statistically significant at the .05 level of significance. The increase in scores was significant on a two-tailed t-test for paired samples with 83 degrees of freedom, a t value of -25.575, and a significance of .000. Therefore, the null hypothesis,

TABLE 6

T-TEST RESULTS FOR PAIRED DIFFERENCES IN TOTAL READING SCORES BETWEEN THIRD AND FIFTH GRADE

Group	N	Mean	Standard Deviation	Standard Error of Mean	t	df	Significance (2-tailed)
Third Grade Scores	84	174.80	14.45	1.58			
Fifth Grade Scores	84	204.39	17.41	1.90			
Third Grade to Fifth Grade	84	-29.60	10.61	1.16	-25.575	83	.000*

*indicates significance

that no difference exists between the third-grade and fifth-grade reading sores of SIA participants, was rejected. An increase did exist between third- and fifth-grade for SIA participants.

Next the increase was compared to the increase expected for the average student. According to the Interpretive Guide of the Georgia Statewide Norm-Referenced Testing Program, Spring 1998, the median standard score for third-grade students was 185. The average standard score for SIA participants was 174.80. The median standard score for average ability fifth-grade students was 214. The average standard score for SIA participants in fifth grade was 204.39. Therefore, SIA students in this study made about the same growth as average ability students between third- and fifth grade, as measured by the ITBS.

The focus of the SIA program is to provide appropriate instructional opportunities for students with cognitive delays which, in turn, will allow the students to work at the same academic level as their peers. In order to meet this goal, students in the SIA program need to make significant academic gains. The significant

increase in reading scores indicates that progress was made. When compared to the expected growth of the average student, SIA students made the same growth, 29.6 points for SIA students and 29 points was expected for the average ability students. SIA participating students did not make less-than-average growth that could be expected of below-average students. While the median score of SIA participants was 10.2 points below the median score of the average ability students, and since the only test results available are between the third- and fifth-grade years, the comparison of growth made earlier than third grade cannot be made.

Research Question Six: In comparing an individual's third and fifth grade math achievement standard scores, is there a significant increase for students who participated in the SIA program?

Eighty-three test results on the total math portion of the ITBS were reported for the population being sampled. These students had participated in the SIA program for at least one year and had both third- and fifth-grade test results reported. According to Table 7, the math scores increased from a third-grade mean score

TABLE 7

T-TEST RESULTS FOR PAIRED DIFFERENCES IN TOTAL MATH SCORES BETWEEN THIRD AND FIFTH GRADE

Group	N	Mean	Standard Deviation	Standard Error of Mean	t	df	Significance (2-tailed)
Third Grade Scores	83	179.00	12.97	1.42			
Fifth Grade Scores	83	202.28	18.45	2.02			
Third Grade to Fifth Grade	83	-23.28	12.76	1.40	-16.621	82	.000*

*indicates significance

of 179.00 to a fifth-grade mean scores of 202.28 for a pair samples test mean of -23.28. The comparison of third- and fifth-grade mathematics scores was statistically significant, at the .05 level of significance, on a two-tailed t-test for paired differences with 82 degrees of freedom, a t value of -16.621, and a significance of .000. Therefore, the null hypothesis, no difference exists between the third- and fifth-grade math scores of SIA participants, is rejected. An increase in the math score for SIA participants did exist.

Next the increase was compared to the increase expected for the average student. The median standard score for third-grade students of average ability was 185. SIA students had an average score of 179. At third grade the difference between these two was 6 points. At fifth grade the expected score of average ability students was 214. SIA participants had an average score of 202.28 for a difference of 11.72 points. Between third and fifth grade, the gap between SIA participants and that expected for average ability students increased for math.

When comparing the level of growth for SIA participants for both reading and math, the increase in math mean scores was not quite as high as the reading score increase, 23.28 points for math compared to 29.60 points for reading. Average ability students made a gain of 29 points for both reading and math.

CHAPTER FIVE

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

Georgia's Special Instructional Assistance (SIA) program developed as a result of educational reform initiatives of the mid-1980's. The program, though never fully funded for grades kindergarten through fifth grade, was implemented in grades kindergarten through third for students identified as having developmental delays. Mandatory components of the SIA program included the areas of instruction, parent and staff development, and program evaluation. Instruction and parent and staff development were designed as a part of the implementation of the program, but evaluation has been inconsistent and focused primarily on subjective information such as teacher observation.

The number of students participating in the SIA program changed significantly between 1988 and 1996, and, in turn, so did the financial resources allocated to the program. Student participation grew from one thousand to

almost 78 thousand, and the program cost grew from $1 million to over $72 million. This type of increase, especially such a financial increase, raised questions regarding the appropriate use of state funds. Legislatures, policymakers and special interest groups began looking at the SIA program.

In the early 1990's, Georgia's educational initiative redirected its assessment methods to include the implementation of the Iowa Tests of Basic Skills (ITBS) at grades three, five, and eight. Though the state never directed that the ITBS be used to evaluate the performance of students in the SIA program, this change did allow for the limited use of standardized test results in the evaluation process.

This study examined the impact of the Special Instructional Assistance program on academic achievement as reported through reading and math standardized test results on the ITBS of students from one Georgia school system. The study tracked students from kindergarten through grade three and reported the number of years the student participated in the SIA program. Test comparisons were made to determine if the number of years of participation made a significant impact on academic

achievement. Test comparisons were also made between students who were SIA participants and students who never participated in the program. Finally, third grade and fifth grade ITBS results in reading and mathematics were compared for SIA participants to determine maintenance of effectiveness. Statistical treatment of the data included independent t test, the one-way analysis of variance (ANOVA), and the t test for paired samples.

Evaluation of the SIA program had previously included subjective measures such as teacher comments. This study evaluated the effectiveness of the SIA program utilizing objective and validated measures of achievement that are presently being requested by those in policymaking positions who influence the financial allocations given to such programs. The study made no attempt to evaluate the methods of implementation or the eligibility and identification criteria. This study's findings may be summarized as follows:

1. In comparing the impact of the number of years a student participated in the Special Instructional Assistance program, whether one year, two years, three years, or four years, no significant difference was found between the reading test scores of students. The mean

score of students in the Participated One Year Group was slightly higher than the mean score for the Participated Two Years, Participated Three Years, and Participated Four Years Groups, but not significantly so. Students in the SIA program for only one year may have had less of a "need" for intervention and therefore less of a deficit in their test scores. Students who were recommended for the program for four years may have had the greatest need and therefore would show a lower test score than the other groups.

2. The comparison of math score means for SIA students according to the number of years of participation found no significant difference. The mean math score for students of the Participated One Year Group was greater than the mean score for the Participated Two Years, Participated Three Years, or Participated Four Years Groups, but the difference was not significant. Again, students in the program for only one-year may have been observed as needing to participate in the program less than any other group.

3. Though no significant difference was found between the mean reading scores of students who participated in the SIA program, the results are

different when comparing to reading scores of students who never participated in the SIA program. The mean reading score of the group Never Participated was significantly higher when compared to the means of groups of students who did participate. This may be attributed to the good student identification process of teachers in recommending the at-risk students for participation in the SIA program.

4. In comparing the math mean scores of students who participated in the SIA program to the mean score of the individual groups of students who never participated, a significant difference was found. The smallest difference was found between the group Participated One Year and the group Never Participated, but the difference was still significant. Again this may be attributed to the success of identifying students for the SIA program.

5. There was a finding that the reading scores of SIA participants increased from the third grade to the fifth grade. This increase was the same as the expected growth for average ability students. Students who had participated in the SIA program remained 10.2 points below the expected standard score of average ability students but did not fall any further behind.

6. Progress in math was also indicated for students who had any participation in the SIA program. A difference was found between the means at third and fifth grade. This increase, though, was not as great as the expected growth of the average ability students--29 points. The standard score of SIA participants only increased 23 points. While the difference at third grade level between the two groups was only 6 points, the difference by fifth grade was just over 11 points.

Conclusions

Using the research findings, the following conclusions were drawn relative to the impact of the Special Instructional Assistance Program on standardized test scores on the Iowa Tests of Basic Skills.

1. Due to program design problems such as the absence of a true experimental and control situation, this study could not demonstrate that the number of years a student participated in the SIA program had any significant impact on a student's academic achievement in either reading or math. Students who participated only one year in the SIA program had the highest mean of all

the groups. The conclusion that academic achievement in reading improved the longer a student participated in the program cannot be made.

2. Eligibility in the SIA program was based primarily on teacher recommendation. Students in the program for one year may not have been recommended again if the teacher observed significant academic improvement. Therefore, students in the program for four years must have demonstrated a greater academic deficiency. The conclusion that academic achievement improved the longer a student participated in the program cannot be made.

3. Students who participated in the SIA program continued to make normal academic progress in both reading and math between third and fifth grades. SIA participation made the same academic gains in reading as could be expected of average ability students. SIA participants did not make the same gains in math as that expected of the average ability student. The average standard score for SIA participants in reading and math in both third- and fifth-grade was not as great as the score expected of average ability students. The lack of data regarding previous growth does not allow this study to draw a conclusion regarding academic growth prior to

third grade. The data does, however, allow us to determine that SIA participants were not, by third or fifth grade, scoring as well as that expected of the average ability student.

Comparison with Other Research

There were no other studies that have evaluated the impact of the SIA program on academic achievement. There have been, however, studies that have evaluated several components of the SIA program.

Archambault (1989) reviewed instructional settings of programs for at-risk students and discovered conflicting results, especially when comparing achievement results of students receiving in-class instruction to those receiving instruction in a pullout setting. This study found no positive impact on academic achievement for students participating in the SIA program.

Stein, Leinhardt, and Bickel (1989) found that mixed ability small-group learning promoted improved achievement. Slavin, Karweit, and Madden (1989) in reviewing Wilkinson's (cited in Swing & Peterson, 1982)

and Slavin's (1986) previous research concluded that Wilkinson found a positive achievement benefit to heterogeneous grouping because the focus had been primarily on reading. Slavin did not find the same positive benefit, possibly because the focus had been on mathematics. This study did not report a positive academic impact in reading or mathematics at the third grade level when comparing SIA to non-SIA participants. Fifth grade scores of only SIA participants did show a significant gain in both reading and mathematics when compared to students' third grade scores.

Both implementation models of the SIA program included an aspect of class size reduction. The augmented model, by placing another certified teacher in the classroom for only a portion of the day, and the reduced class-size model, that kept class size lower than state requirements for the entire day. Research results, which centered around the reduced class size aspect of Tennessee's Project Star (Student Teacher Academic Ration) found positive impact on academic achievement (Jacobs, 1987; Bain & Jacobs, 1990a; Achilles, 1993; Achilles & Lintz, 1991; Nye, 1992b; Nye, 1992c; Nye, 1992d; Pate-Bain, 1992; Word, 1990). This study was

unable to determine a positive impact on academic achievement in reading or in mathematics, especially when comparing the result of SIA participants to non-participants. One problem with comparing the SIA and non-SIA results in this study was that, due to the heterogeneous make-up of SIA designated classrooms, some non-SIA participants may have received the same treatment.

Tomlinson (1990) concluded that there was no support for positive achievement effects of small class instruction except for disadvantaged minority students. While this study did not research the implication of ethnicity on achievement results, students identified as SIA participants would be considered disadvantaged. This study, though, did not support Tomlinson's findings since positive achievement results were not found for SIA students when compared to non-SIA participants.

This study did find a statistically significant difference between the third-grade and fifth-grade reading and math scores of SIA participants. The students continued to make significant academic progress. Nye (1992a) found that the positive impact of reducing

class size remained after two years of leaving the STAR program and returning to a regular classroom.

Recommendations

1. It is recommended that a study be conducted to document both pre-test and post-test results, allowing researchers to examine the change in academic achievement after treatment has been given. If the level to be measured continued to be achievement as measured by the ITBS, then the ITBS should be given to students entering kindergarten.

2. It is recommended that achievement, as measured by the ITBS, be examined on a yearly basis. The ITBS needs to be given each spring and in grades K-5 to measure the difference in reading and math achievement from the previous year instead of at grade three and five only.

3. It is recommended that a study be conducted to document the difference, if any, in achievement between a true experimental and control group comparison. The lack of controls in the evaluation component of the program

does not allow for a true comparison between students who received the treatment and those who did not.

4. It is recommended that the third and fifth grade test results of students who did not participate in the SIA program be examined. These results then need to be compared to the same results of students who did participate in the SIA program.

5. It is recommended that a study be conducted to examine different SIA implementation models and compare the achievement differences of students who participated in a particular model. The SIA program has included two implementation models, the reduced-class size model and the augmented teacher model, and achievement of students participating in these models should be compared. Data, as reported at the present, does not allow for this comparison.

6. It is recommended that, after significant changes have been made in SIA program implementation that allow for clear comparisons of SIA and non-SIA participants, and allow for true comparisons of the different implementation models, this study be expanded to include a greater sampling of school systems across Georgia.

7. It is recommended that similar research be conducted at the state level to include students who change schools during SIA participation. Many possible candidates for the sample in this study were eliminated due to the inability of tracking the years of participation. Including this information in a study could prove to be valuable.

8. It is recommended that effects, other than achievement effects, be studied to determine other impacts of the SIA program. Teacher morale, teacher attitudes toward student discipline, student attitudes toward school and learning, grade retention, student discipline, and student motivation are among the recommended items to be evaluated.

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APPENDICES

APPENDIX A

1996-97 GEORGIA PUBLIC EDUCATION REPORT CARD

CATOOSA COUNTY SCHOOLS - 623

1996-97 GEORGIA PUBLIC EDUCATION REPORT CARD
CATOOSA COUNTY SCHOOLS - 623

The Georgia Public Education Report Card is designed to assist systems and schools in educational improvement. This report card contains a variety of data elements. An explanation of the terms is provided as a companion to the report card data. Please refer to the definitions for the most effective use of the reported data.

STUDENT DATA

K-12 Enrollment, by Race/Ethnicity and Sex

Total	Black	White	Hispanic	Asian	American Indian	Multi-racial	Male	Female
8,655	81	8,464	29	51	10	20	4,421	4,234
	0.9%	97.8%	0.3%	0.6%	0.1%	0.2%	51.1%	48.9%

Enrollment in Pre-Kindergarten

Enrollment (PK)	91
Enrollment in Special Education (PK)	42

Enrollment in Selected Programs

Program	Program Enrollment	% of Student Population
Gifted (Grades K-12)	460	5.3%
Non-Vocational Labs (Grades 9-12)	2,070	89.0%
Vocational Labs (Grades 9-12)	1,821	78.3%
Alternative Programs (Grades 6-12)	70	1.6%

Enrollment in Compensatory Programs

Program	Program Enrollment	% of Student Population
Special Education (Grades K-12)	750	8.7%
English to Speakers of Other Languages (ESOL) (Grades K-12)	0	N/A
Remedial Education (Grades 2-5, 9-12)	282	5.6%
Special Instructional Assistance (SIA) (Grades K-3)	736	25.1%

Title I (Grades K-12)

Number of schools with:	
Schoolwide program	0
Targeted Assistance program	7
No Title I program	5

K-12 Students Eligible to Receive Free/Reduced Lunches

Number	Percent
2,472	28.6%

Dropout Rate

	Number	Percent
6-12	168	3.5%
9-12	164	6.5%

Retained Students, by Race/Ethnicity and Sex

Total	Black	White	Hispanic	Asian	American Indian	Multi-racial	Male	Female
258	6	250	2	0	0	0	150	108
	2.3%	96.9%	0.8%	0.0%	0.0%	0.0%	58.1%	41.9%

Prepared by Georgia Department of Education

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APPENDIX B

RESEARCH STUDY DATA USE PERMISSION FORM

_____ School System gives the authorization for use of student test data from the Iowa Test of Basic Skills test for years 1993, 1994, 1995, 1996, 1997 and 1998 under the following conditions:

1. No student names or other identifying data will be used in this study.
2. Neither the school nor the system will be associated with particular test score.
3. The data will be kept in a secure location, with only the researcher(s) having access to documentation.
4. The documentation will be destroyed at the conclusion of the research project.

The school system wishes to receive a copy of the finished study.

Yes No

**The school system may withdraw or refuse to participate without penalty.
Once participation begins, withdrawing will require written notification. Notification should be addressed to: Kim Nichols (current address).
Questions regarding research procedures can be directed to Kim Nichols (telephone number).

_____ _____
Name of person authorizing data use Title

_____ _____
Signature of person authorizing data use Date

_____

_____ _____
Address Signature of Researcher

VITA

Leisa Kim Youngblood Nichols was born in Birmingham, Alabama, on June 16, 1959. She attended elementary school in Birmingham, Alabama, and high school in Crossville and Hartselle, Alabama. She graduated from Morgan County High School in Hartselle, Alabama, in 1977. She attended Valdosta State College in Valdosta, Georgia and in 1980 she transferred to the University of Hawaii, where she received a Bachelor of Education degree in 1981. Requirements for a Master of Arts degree, with a major in elementary education, were completed in 1984. She was graduated from The University of Tennessee, Knoxville, in the spring of 1999 with a Doctor of Education degree.

Her teaching career began in private schools in Alabama in 1982. Her career continued with employment in DeKalb County Schools in 1983 then with the Catoosa County, Georgia, Public Schools in 1985. She served as an elementary teacher for five years before accepting a graduate assistantship for one year at The University of Tennessee, Knoxville, program located on the campus of The University of Tennessee at Chattanooga. In 1991, the

author returned to teaching with Catoosa County, Georgia, Public Schools at West Side Elementary School. In the summer of 1992, the author became the Assistant Principal of West Side Elementary and was named Principal in April, 1997.

The author is a member of the National Association of Elementary School Principals, National Education Association, Georgia Association of Educators, Catoosa Education Association, Georgia Association of Educational Leaders, Catoosa Educational Leaders Association, the Association for Supervision and Curriculum Development, and Delta Kappa Gamma Society International.