ABSTRACT

ROUKEMA, RONALD A. The Impact of the Support Our Students (SOS) After-School Program on the Achievement of Middle-Grade Students at Risk of Academic Failure.
(Under the direction of Paul Bitting and Peter Hessling.).

This study investigates the impact of an after-school intervention on student achievement. The study uses two-tailed $t$ tests to compare the growth in actual scale scores achieved by two groups of students taking the North Carolina End of Grade (EOG) test from 1999 to 2001. It compares the scores of those who participated in the Support Our Students (SOS) program to the scores of nonparticipating students to determine the effect that the SOS program had on student performance on the EOG test.

To conduct the research, I obtained assistance from Edstar Research in compiling a complete list of all students participating in the SOS program who were in sixth grade in 1998–1999 and who scored a level I or level II on their math/language arts EOG. The identifiers included were county, ethnicity, socioeconomic status, gender, and EOG scores for math and language arts for each of the 1998–1999, 1999–2000, and 2000–2001 school years. With the assistance of the North Carolina Education Data Center, I obtained a data set representing the stratified group of students who were level I or level II who did not participate in the SOS program.

This study’s findings are as follows:
1. Students who participated in the Support Our Students program for three years in middle school from the years 1998 to 2001 showed no significant difference in math or reading scores from those who did not participate in the program.

2. There was no significant difference in math or reading scores between participating and nonparticipating students in the minority subgroup.

3. There was no significant difference in math or reading scores between participating and nonparticipating students in the free or reduced-price lunch subgroup.

4. There was no significant difference in math or reading scores between participating and nonparticipating students in the male subgroup.

5. There was no significant difference in math or reading scores between participating and nonparticipating students in the female subgroup.

The results of this study provide educational leaders with information on how after-school programs function as a method of addressing the needs of students at risk of academic failure as defined by their progress on the North Carolina EOG tests. This study also serves to raise awareness of the larger issue of discovering and developing effective interventions for the large number of students projected to fall short of student accountability and promotion standards in the years to come.
The Impact of the Support Our Students (SOS) After-School Program on the Achievement of Middle-Grade Students at Risk of Academic Failure

by

RONALD ANTHONY ROUKEMA

A dissertation submitted to the Graduate Faculty of North Carolina State University in partial fulfillment of the requirements for the Degree of Doctor of Education

EDUCATIONAL LEADERSHIP

Raleigh

2005

APPROVED BY:

Co-Chair of Advisory Committee

Co-Chair of Advisory Committee
Biography

Ronald Anthony Roukema was born in Ringwood, New Jersey, and moved to North Carolina at an early age. He attended public schools in North Carolina for more than twenty-five years. After graduating from Pinecrest High School with a Teaching Fellows scholarship, Ron attended the University of North Carolina at Chapel Hill to earn a degree in Education with a focus on Secondary Social Studies in 1995. Following student teaching in Orange County, he moved back to Moore County to teach history at his high school alma mater. He was later granted the opportunity to teach a variety of classes at Pinecrest High School, including Civics, World History, United States Military History, United States History, and Television Productions. While teaching, he entered East Carolina University’s graduate program for school administration and married Rebecca Ashley Frye. Prior to graduating with a Masters of School Administration, he became the assistant principal for Southern Pines Middle School during its last year as a 4–8 school. In 2000, Ron moved to Durham, North Carolina, to become the Assistant Principal for Rogers-Herr Year Round Middle School and to start the Educational Leadership Program at North Carolina State University. Since then, Ron has been a principal at Eno Valley Elementary School (2001–2002), Rogers-Herr Year Round Middle School (2002–2005), and most recently Durham School of the Arts (2005–current).
ACKNOWLEDGEMENTS

I would like to begin with formally thanking the Educational Research Center housed at Duke University under the direction of Dr. Glennie and Edstar’s Dr. Donely and Dr. Johnson for supplying the much needed data for this original research.

On a personal note, I would like to take the opportunity to thank my family for understanding why I have missed countless dinners and occasions so that I may complete this work. I would especially like to thank my wife, Ashley, for her support and encouragement. Without you this would never have been accomplished.
# TABLE OF CONTENTS

List of Tables vi

## Chapter I: Introduction

- Call for Effective After-School Programs 1
- Purpose of the Study 2
- Significance of the Study 5
- Definition of Key Terms 6
- Limitations of the Study 8
- Brief Overview 9

## Chapter II: Review of Literature

- Introduction 11
- What Is the Support Our Students (SOS) Program? 12
- Why After-School Programs Are Necessary 13
- Assisting Those Who Are at Risk 16
- Strategies That Work 17
- Social Promotion 18
- The Latchkey Child 21
- Students at Risk of Academic Failure 22
- Parent Involvement 26
- Gender 29
Evaluation of Programs 30
Summary 31

**Chapter III: Research Methodology**

Research Questions 33
Population and Sample 36
Data Collection 36
Measures 37
Research Hypothesis 40
Data Analysis 43
Summary 44

**Chapter IV: Findings and Results**

Presentation of Data Analysis 46
Findings 55

**Chapter V: Summary, Conclusions, Recommendations, Reflections**

Summary 57
Conclusions 60
Recommendations 62
Reflections 64

**REFERENCES** 66
LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 1</td>
<td>Gains in Percentage Proficient by Ethnic Group 1994–1999</td>
<td>25</td>
</tr>
<tr>
<td>Table 2</td>
<td>Summary Statistics Total Group Math</td>
<td>47</td>
</tr>
<tr>
<td>Table 3</td>
<td>Summary Statistics Total Group Reading</td>
<td>48</td>
</tr>
<tr>
<td>Table 4</td>
<td>Summary Statistics Minority Math</td>
<td>49</td>
</tr>
<tr>
<td>Table 5</td>
<td>Summary Statistics Minority Reading</td>
<td>50</td>
</tr>
<tr>
<td>Table 6</td>
<td>Summary Statistics Free and Reduced Lunch Math</td>
<td>51</td>
</tr>
<tr>
<td>Table 7</td>
<td>Summary Statistics Free and Reduced Lunch Reading</td>
<td>52</td>
</tr>
<tr>
<td>Table 8</td>
<td>Summary Statistics Males Math</td>
<td>53</td>
</tr>
<tr>
<td>Table 9</td>
<td>Summary Statistics Females Math</td>
<td>53</td>
</tr>
<tr>
<td>Table 10</td>
<td>Summary Statistics Males Reading</td>
<td>54</td>
</tr>
<tr>
<td>Table 11</td>
<td>Summary Statistics Females Reading</td>
<td>55</td>
</tr>
</tbody>
</table>
Call for Effective After-School Programs

For the past decade, increasing political emphasis has been placed on educating our nation’s youth (United States Department of Education [USDOE], 1998). This emphasis has included a call for high-quality after-school programs in response to disturbing statistics demonstrating a decrease in performance, an increase in crime rate, and an increase in dropout rates when students are left unsupervised following the school day (USDOE, 2000). Support for programs that motivate and challenge students while providing a safe and responsible atmosphere during after-school hours has been overwhelming. In a 1999 poll, 92% of parents stated that children need constructive activities after school (Mott, 1999). Furthermore, 75% of taxpayers would forgo a tax cut or increase their taxes to help create high-quality after-school programs for students to attend (Fight Crime, 1999). The United States Department of Education found that Americans favored “school-based after school programs in their own community” in the year 2000 (USDOE, 2000, p. 5). In response to these indicators of support, school systems have begun searching for effective after-school programs.

The statistics relating to student retention, high-school dropouts, and juvenile crime are interwoven, with one often directly correlating to the other. In a 1996 poll of high-school dropouts, 70% cited their reason for dropping out as either fear of being retained or knowledge of being retained (Dropout Prevention, 1996). The United States Juvenile Justice Department released a study showing that 82% of all prisoners in the United States were high-school dropouts (Ballentine, 1998). In 1991 juveniles were
responsible for one out of five crimes in the United States (Ballentine, 1998). According to research conducted by the United States Department of Education and the United States Department of Justice, violent crime involving juveniles triples during the hours of 3 p.m. to 4 p.m. on school days (USDOE, 1998). In investigating solutions to circumstances producing these troublesome statistics, an increasing number of school systems have searched for effective ways to provide supervision, remediation, and encouragement designed around youth participation in structured, supervised activities immediately following school (USDOE, 1998).

**Purpose of the Study**

The purpose of this study is to assess quantitatively the impact of North Carolina’s Support Our Students (SOS) program on eighth-grade students at risk of academic failure as determined by their performance on End of Grade (EOG) testing. Because North Carolina currently requires high-stakes testing, students must perform well academically regardless of external conditions at home or in social relationships. North Carolina implemented SOS in 1994 through the North Carolina Office of Juvenile Justice in an attempt to increase student success (NCOJJ, 2000). SOS is an after-school program created for the purpose of improving academic performance and meeting the physical, intellectual, emotional, and social needs of youth (North Carolina Department of Health and Human Resources [NCDHHR], 1998).

Currently, evaluation of after-school programs is conducted primarily by state agencies, and there is little information deriving from research on after-school programs. The research that is available touts after-school programs as an effective way to assist at-
risk children in the after-school hours, yet no studies have examined students’ progress on EOG tests (USDOE, 2000; 21st CCLC, 2002; Donely & Johnson, 1999; SOS, 1999). This study examines EOG test scores as a way to explore whether North Carolina’s SOS program has a significant impact on the achievement of students at risk for academic failure and enables them to attain promotion standards. Did eighth-grade students at risk for academic failure in the areas of reading and/or mathematics who participated in the SOS program from 1998 to 2001 achieve statistically significant higher scale score growth than students who did not participate in the program?

More specifically, the following research questions were addressed:

**Question 1:**

Is there a significant difference in actual scale score growth on the North Carolina EOG mathematics tests between eighth-grade students academically at risk of failure in mathematics who participated in the SOS program and at-risk eighth-grade students who did not participate in the SOS program from 1998 to 2001?

**Question 2:**

Is there a significant difference in actual scale score growth on the North Carolina EOG reading tests between at-risk eighth-grade students who participated in the SOS program and at-risk eighth-grade students who did not participate in the SOS program from 1998 to 2001?

In the literature review, additional questions arose concerning the effect of gender, ethnicity, and socioeconomic status on student achievement. The following
questions were explored to determine whether the SOS program significantly affects at-risk children in these categories:

**Question 3:**

Is there a significant difference in actual scale score growth on the North Carolina mathematics EOG between eighth-grade at-risk minority students who participated in the SOS program and eighth-grade at-risk minority students who did not participate in the SOS program from 1998 to 2001?

**Question 4:**

Is there a significant difference in actual scale score growth on the North Carolina reading EOG between eighth-grade at-risk minority students who participated in the SOS program and eighth-grade at-risk minority students who did not participate in the SOS program from 1998 to 2001?

**Question 5:**

Is there a significant difference in actual scale score growth on the North Carolina mathematics EOG between eighth-grade at-risk students who received free or reduced-price lunch and participated in the SOS program and eighth-grade at-risk students who received free or reduced-price lunch who did not participate in the SOS program from 1998 to 2001?

**Question 6:**

Is there a significant difference in actual scale score growth on the North Carolina reading EOG between eighth-grade at-risk students who received free or reduced-price lunch and participated in the SOS program and eighth-grade at-risk students
who received free or reduced-price lunch who did not participate in the SOS program from 1998 to 2001?

**Question 7:**

Is there a significant difference in actual scale score growth on the North Carolina mathematics EOG between eighth-grade at-risk students of the same gender who participated in the SOS program and eighth-grade at-risk students of the same gender who did not participate in the SOS program from 1998 to 2001?

**Question 8:**

Is there a significant difference in actual scale score growth on the North Carolina reading EOG between eighth-grade at-risk students of the same gender who participated in the SOS program and eighth-grade at-risk students of the same gender who did not participate in the SOS program from 1998 to 2001?

**Significance of the Study**

As a principal in an urban school, I am interested in evaluating the SOS program and assessing its impact on at-risk students. I would like to know if the program affects the EOG test scores of minorities, children of low socioeconomic status, or children of a particular gender. Because my school has limited funding and resources, I would like to know whether to focus on SOS as an intervention. Much of the research on the SOS program is provided by government agencies and newspaper reviews; yet little research is available on how at-risk students perform after participating in the intervention.

Prior studies of after-school programs have examined the emotional adjustments, peer relations, conflict-resolution skills, and school-attendance patterns of participants in
after-school programs (USDOE, 2000; 21st CCLC, 2002; Donely & Johnson, 1999; SOS, 1999). However, research is scarce on the effect of after-school programs on student achievement. The 3:00 Project in Georgia, the Boys’ and Girls’ Clubs of America’s Project Learn, and North Carolina’s SOS program have been analyzed for the effect of their programs on students’ grade-point averages. No study has yet been done that examines the scale score growth of participants at risk for academic failure relative to the expectations or standards set by any state.

The State of North Carolina currently provides grants of $7.5 million and in-kind contributions totaling more than $5 million to SOS programs established in 77 districts in the state (NCOJJ, 2000). Documentation of the benefit of this program to its population of those at risk for academic failure is necessary to judge the worthiness of the state’s large investment. This study provides local and state educational leaders with research that may help them determine if the SOS program is worth the millions of dollars spent on it each fiscal year. Furthermore, this study provides much-needed information on the effectiveness of after-school programs as a method of supporting the achievement of students at risk for academic failure. It also address the larger issue of discovering interventions for the massive number of students who are expected to fall short of standards for student accountability and eighth-grade promotion in the years to come.

**Definition of Key Terms**

This section provides definitions of key terms that appear throughout the report.
**Actual Scale Score Growth:** For the purpose of this study, actual scale score growth is the eighth-grade developmental score minus the sixth-grade developmental score.

**At risk:** North Carolina accountability standards and high-stakes testing identify any student who achieves a Level I or Level II score as being at risk of academic failure. An additional definition comes from The Bureau for At-risk Youth, which says a child may be considered at risk if reared with one or more of the following factors: poverty or economic disadvantage, physical or learning disability, limited language proficiency, being a victim of crime, being a victim of abuse or neglect, having an alcoholic or substance-abusing parent, living in geographic disadvantage, or being a victim of racial or ethnic prejudice (The Bureau for At-risk Youth, 2000).

**Developmental Scale Score:** The developmental scale score is based on the EOG Test and is determined by computing the number of items answered correctly and placing the number into the program EOG_SCAL.LSP to convert the items to developmental scale scores (North Carolina Department of Public Instruction [NCDPI], 1996).

**Expected Scale Score:** North Carolina’s accountability model holds schools accountable for the educational scale score growth of cohorts of students over time. The state expects at least a year’s worth of scale score growth for a year’s worth of schooling. A year’s worth of scale score growth is termed “expected.” The formula for Expected Growth is as follows: \( \text{Expected Growth} = b_0 + (b_1 \cdot \text{ITP}) + (b_2 \cdot \text{IRM}) \) (NCDPI, 2000a).

**Gateway Year:** In North Carolina, the EOG test is utilized to determine promotion and retention in grades three, five, and eight. In this high-stakes testing model, these years are considered gateway years.
**Latchkey:** A child who returns to a home after school that does not have appropriate adult supervision is termed a latchkey child because many of these children carry keys to open their homes.

**Minority:** Minority groups are those smaller in number than the group forming the majority of the whole (Berube, 1982). For the purpose of this study, “minority” refers to any race that can be classified as non-Caucasian.

**North Carolina End-of-Grade Testing:** North Carolina has established multiple-choice testing for students in grades 3–8. The state mandates that students attain a minimum of a Level III score on both the reading section and the math section in grades 3, 5, and 8. Retention in other grades is heavily based upon performance on EOG tests (NCDPI, 2000). The tests are standardized and administered within the last month of school to all students in North Carolina public schools.

**Social Promotion:** The practice of allowing students who have failed to meet performance standards and academic requirements to pass on to the next grade with their peers instead of completing or satisfying the requirements is called social promotion (USDOE, 1999, p. 5).

**Limitations of the Study**

The study was limited by the fact that the program and accountability model are specific to the state of North Carolina. Additionally, the formula was created to assess growth of students in a range of ability. The focus of this study is only students who did not perform at a level III; therefore the validity of the growth formula can be questioned. It is for this reason that the researcher used only the actual scale score growth to assess
improvement of students. The federal law known as No Child Left Behind requires all states to have accountability measures. Other states may be able to use the structure of this study to examine their own state-specific accountability models and the goals of their after-school programs; however, replication relies on an individual state’s accountability model. Another limitation is that only those students who were in the SOS program for three consecutive years were included in the participant group. Some students may have entered the program, shown improvement within a year, and then elected to drop out of the program.

**Brief Overview**

The goal of this study is to focus on how North Carolina’s Support Our Schools Program affects students at risk of academic failure. The SOS program is established in 77 school districts throughout North Carolina. Across the state, participants in the program are required to work on homework for an hour and then participate in structured activities for the second hour.

This study provides an in-depth understanding of after-school programs and elucidates their role in assisting at-risk students with EOG testing. The inquiry examines students who participated in the SOS program and are identified as being at risk and compares them with a random sampling of students not enrolled in the program who are also considered to be at risk. The definition of “at risk” includes not only students who are not performing well academically, but also those who are from disadvantaged families or who are members of a minority race. The study also assesses the impact of
sustained participation in the SOS program by investigating the longitudinal impact of participation for at-risk middle-school students who entered sixth grade in 1998.

As discussed earlier, the available literature concerning after-school programs continues to call for high-quality programs that can assist at-risk students in overcoming external obstacles (Mott, 1999; Fight Crime, 1999; USDOE, 2000). Children who come from certain ethnic backgrounds, socioeconomic statuses, or disadvantageous situations are often identified as at-risk students. These children are often exposed to crime, violence, or excessive independence without having the proper skills or knowledge to cope with the situations they face (The Bureau for At-risk Youth, 2000).

This study determines the impact of the Support Our School program on at-risk students throughout North Carolina by comparing the growth in their EOG scores with the growth in EOG scores of a comparable sampling of similar students who did not participate in the intervention for the years 1998–2001.
Chapter II: Review of Literature

Introduction

This literature review illustrates the need for research that compares students who participate in the Support Our Student program for the three years leading up to eighth grade with students who did not receive the intervention provided by the SOS program, focusing on race, gender, and socioeconomic status.

Research on strategies for enabling at-risk students in the after-school hours is needed; however, there is a paucity of literature dealing with the impact of after-school programs on the achievement of these students, and there is no significant research on whether after-school programs increase student achievement scores to meet state expectations and standards. Existing studies provide quantitative evaluations of programs that focus on outcomes such as decreases in discipline referrals, increases in grade point averages, and days absent from school (NCCU, 1999). Because there is limited independent research available on the impact of after-school programs, this literature review utilizes several sources from government reports and newspapers.

This section provides an in-depth discussion of the following topics:

• What is the Support Our Students (SOS) program?
• Why after-school programs are necessary
• Assisting those who are at risk
• Social promotion
• The latchkey child
• Parental involvement
• Gender

• Current after-school program evaluations

This section concludes by investigating the existing data on after-school programs and attempts to define a quality program. In order to attain a concrete understanding of after-school programs, it is necessary to examine methods used to assist students who are considered to be at risk.

What Is the Support Our Students (SOS) Program?

In 1994, North Carolina’s General Assembly approved the SOS program to assist middle-school-aged students in the after-school hours. The SOS program is a community-based after-school initiative that offers a wide range of support to students (SOS, 2000). The program’s goals include improving academic performance, reducing juvenile crime, and improving students’ attitudes and behaviors. The SOS program has “clearly defined goals to help youth who are at risk of falling through the cracks” (SOS, 2000, p. 1). SOS has more than 13,000 participants in seventy-nine North Carolina counties.

In response to a nationwide trend, communities across the United States are assisting at-risk children in school and providing supervision through after-school programs. According to Working for Children and Families: Safe and Smart After-School Programs, “time spent in a quality after-school program has effects on the cognitive and emotional development of children” (USDOE, 2000, p. 7). North Carolina’s SOS program, funded through a variety of grant sources, was created to assist urban students and families who lack the resources for proper after-school care by establishing after school learning opportunities for children and youth (SOS, 2000). The SOS programs
also require inclusion of at least four additional enrichment activities (SOS, 2000). The program is guided by strict regulations that require each site to start with an hour of homework time followed by structured activities. Activities may include but are not limited to dance clubs, drama clubs, intramural sports, or music activities (SOS, 2000).

Why After-School Programs Are Necessary

The need to supervise children after school is illustrated by the amount of juvenile delinquency that occurs during after-school hours. A 1993 study by the Durham Interagency Council on Community Education and Recreation found “that youth who drink begin at age 11 in the home when the parents are not home; that the first sexual intercourse usually takes place in the girl’s home after school; that 50% of teenage pregnancy occurs within six months of active intercourse; and that 40% of pregnant teens drop out of school” (Donely & Johnson, 2000, p. 4-5). Supervision should be accompanied by instructional support. Research indicates that grade retention can increase discipline problems and dropout rates as well as hurt long-term student achievement (Simmons, 1999; National Association of School Psychologists [NASP], 2000; Simmons, 1998; Wood, 1999). These independent problems are effectively addressed by proper encouragement and supervision during the after-school hours (USDOE, 2000). Based on these considerations, school systems have actively turned toward constructive programs in the hours immediately following school.

To understand how after-school programs can assist students at risk of academic failure, we must first define the factors that put a child at risk. Close examination of identified at-risk children helps identify means of targeting them and assisting them.
Many students are considered “at risk” based on socioeconomic backgrounds, single-parent homes, or speaking English as a second language. They are considered more “likely to engage in at-risk behavior and are more vulnerable to the dangers that still exist in too many neighborhoods and communities” (USDOE, 2000, p. 8). This includes an “estimated seven million, and up to as many as fifteen million ‘latchkey children’ who, on any given day, go home to an empty home after school” (USDOE, 2000, p. 6). These at-risk students are more likely to be retained, commit crime, and drop out of school (USDOE, 2000).

A large percentage of at-risk children are of middle school age. Approximately “thirty-five percent of all twelve year olds are left by themselves regularly while their parents are at work” (USDOE, 1998, p. 6). At this age, children are especially susceptible to suggestion. “Youth ages 10-16 who have a relationship with a mentor … are forty-six percent less likely to start using drugs and twenty-seven percent less likely to start drinking alcohol” (USDOE, 2000, p. 5). A 1994 Carnegie Foundation study provides insight into how many children spend their time. According to the study, “40 percent of their non-sleeping time is spent in four potentially problematic ways: alone, with peers, without adult supervision, or with adults who might negatively influence their behavior” (Ballentine, 1998, p. 2). Furthermore, a 1990 study found that “27 percent of eighth graders spent 2 or more hours alone after school and that low income youth were more likely than others to be home alone for 3 or more hours” (Ballentine, 1998, p. 2). Latchkey children also spend less time engaged in academic endeavors. “The most common activity for children after school is watching television. After school and in the evenings, children watch, on average, about 23 hours per week of television” (USDOE,
2000, p. 5), leaving only a minimal amount of opportunity for homework or enrichment activities. Early identification of students who are considered at risk can make targeted assistance more effective.

The increasing number of single-parent homes, together with the rising number of affected students, has contributed to the need for structured after-school activities. Many communities have adopted after-school programs to assist with the escalating number of at-risk students. Programs assisting students with their academic progress can reduce the dropout rate and make school more rewarding (21st CCLC, 2000). The underlying hypothesis on which local and county officials rely to counteract the problem of unsupervised teenagers is clarified in the report Preventing Crime: What Works, What Doesn’t, What’s Promising, by the National Institute of Justice (1997). Ballentine summarized the report in this way: “[B]y applying the critical mass theory to juvenile crime trends … when a critical mass of unsupervised teenagers during high crime hours is achieved, crime rates will escalate. The converse should also be valid: when a critical mass of productive after school programs is achieved, crime rates should decrease, especially when such programs are part of a comprehensive strategy” (Ballentine, 1998, p. 5).

Communities and local officials have invested in a variety of programs attempting to eliminate the projected high number of at-risk students returning to empty, unsupervised homes. According to an article in the Greensboro News and Record, an estimated 93,000 students do not pass the EOG each year (Social Promotion, 1998). This research assesses the academic assistance that the SOS program gives to at-risk students.
Assisting Those Who Are at Risk

Students who are considered to be at risk do not necessarily fit an exact profile. It is important to remember that the at-risk factor is not a result of the child’s action; rather, it is created by exposure to circumstances beyond the child’s control—circumstances such as poverty, crime, neglect, racial or ethnic prejudice, or geographic disadvantages (Bureau for At-risk Youth, 2000). Schools are challenged to create strategies to assist these students. In a 1994 Harris poll of teachers, more than half of the respondents cited “children who are left on their own after school” as the primary explanation for students’ difficulties in the classroom (USDOE, 1998, p.5).

The American Psychological Association (APA) has reported that teenagers are 2.5 times more likely to be victims of violent crimes than are persons over the age of 20 (APA, 1993). In 1999, the APA reported that students who reported that they considered themselves a part of their schools’ communities were less likely to commit violent crimes than students who reported that they did not feel connected to their school. By involving at-risk students in after-school programs, schools provide opportunities for these students to become successful. High-quality after-school programs assist students with “peer relations, emotional adjustment, conflict resolution skills, grades, and conduct in school” (Baker & Witt, 1996; Kahne, Nafaoka & Brown, 1999; Posner & Vandell, 1999, p. 14).

It is also imperative to note that students should not be identified as being at risk based solely on the quantitative measure of family income. Research indicates that “how teenagers perform in school, and the peers they hang out with after classes, have more influence than their race or family-income level” (Portner, 2000 p. 1). A teacher,
principal, or program director can use working knowledge about the children to explore possible ways to assist them.

One strategy used to assist students who are identified as being at risk is creating opportunities in the after-school hours. An effective way to assist students who need immediate or extra help is to provide services “such as after school tutoring programs and summer school, so they can be promoted on time” (Clinton, 1999, p. 2). An environment that provides safe student enrichment and learning can give at-risk students opportunities to develop. After-school programs also remove students from external influences that hinder appropriate child development. As noted in the introduction, the findings from a joint study between the Department of Justice and the Department of Education state that in order to prevent at-risk students from being victimized by or participating in violent crime, it is necessary to provide a safe, structured environment that is accessible to children during the hours of 3–6 p.m. (USDOE, 1999).

**Strategies that Work**

After-school programs are designed to facilitate student academic success. Previous studies conducted by North Carolina Central University and the Mott Foundation concluded that students who attend after-school programs show gains in grade-point average and experience a reduction of out-of-school suspension rates (Mott, 1998; NCDHHR, 2000). However, what makes these programs effective is not clearly understood. In 1990, Wlodkowski and Jaynes stated that education does not need more programs, but rather more effective programs.
Students must be given the opportunity to participate in programs that utilize proven strategies for facilitating academic and behavioral excellence. Programs that run during the school day, like Success for All, have been working in Philadelphia, Pennsylvania, and Berlin, Maryland, in assisting at-risk students experiencing academic failure (Slavin et al., 1996). The Success for All program provides prompt intervention in areas where students need assistance most, using certified teachers as reading tutors. McLaughlin and Vacca (1992) found that students in the Success for All program scored at a higher level (by one year and two months) than members of a control group who were not tutored in reading. In a 1989 study, Stein, Leinhardt, and Bickel maintained that the key factor in assisting low-achieving students is the individual teacher. Further studies in 1997 indicated that the teacher is the most important factor when evaluating differences in student academic growth from year to year (Wright, Horn, & Sanders, 1997). Effective teachers are able to discern the students’ needs and foster their abilities to result in positive outcomes (Keaster, Schisler, & Keaster, 1993).

**Social Promotion**

Within education, there has long been a tradition of social promotion—the practice of promoting students from one grade to the next regardless of their ability to accomplish the work required at the previous level (Rhee, 1999). In the 1930s, educators began to focus more on children’s emotional developmental needs; as a result, educators began choosing to promote failing students with their peers and have them receive remedial assistance for academic weaknesses. During the 1960s, social promotion became more widely used as psychologists explored the harmful emotional effects of
retention. Several recent studies further support the hypothesis that retention affects students negatively and may cause an increase in discipline and dropout rates (Simmons, 1999; NASP, 2000; Simmons, 1998).

However, many students promoted for social benefit were left lacking the skills to be successful at the next level of education. Many of these students dropped out of school or were not prepared for the workforce upon exiting the educational system (Rhee, 1999). In the 1990s, efforts to stop social promotion encouraged wide discussion of how to prepare students for the next grade. The North Carolina State Board of Education wanted to see an end to social promotions statewide by the spring of 2003 (Rhee, 1999).

According to Phillip Kirk, chairman of the State Board of Education, “The decision to end social promotion is in response to the desires of parents who want their children to do better in schools; to the concerns of educators who want students to be more responsible for learning; to community expectations for better prepared graduates; and to the commitment to be First in America in education” (NCDPI, 2000b, p. 1).

In 1992, North Carolina instituted high-stakes testing for students in grades 3, 5, and 8. North Carolina uses the EOG test to determine if a child can be promoted to the next grade level. If a child does not earn a Level III in reading and mathematics while in a gateway year, the child is retained in that grade (North Carolina State Board of Education, 1998). North Carolina is not alone in the movement to end social promotion. In 1996, Colorado lawmakers approved the Basic Literacy Act restricting the promotion of third-graders who could not read at their grade level. Illinois, Texas, and Florida all created their own legislation restricting promotion (“Help where,” 1998). In September
1997, the American Federation of Teachers released the first study finding that social promotion is a common practice across the United States.

As accountability standards for students are examined, it is also imperative to look at the effects of retention. The trend toward increased accountability is returning the responsibility of educating students back to the teacher. However, the end of social promotion has had devastating side effects. The practice of “retention increases discipline and drop out problems while actually hurting long-term student achievement” (Simmons, 1999, p. 15). In an attempt to assist at-risk students, school districts have struggled to identify and provide remediation for low-performing students. “State educators have stressed that struggling students must be given intense remediation” (Simmons, 1999, p. 1). In 1998, the cost in teacher salaries of educating previously socially promoted students was estimated to be close to $200 million (Social Promotion, 1998).

Furthermore, political attention, like that provided by Governor James Hunt of North Carolina, has lent impetus to attempts to end social promotion. Governor Hunt stated: “We must stop promoting students who haven’t learned and we must stop graduating students who aren’t ready. . . . What is right is to identify the students who need help, figure out what they need and focus on giving them the help they need” (USDOE, 1999, p. 1). Educational leaders are charged with the task of identifying these students and implementing interventions to better educate them, empowering them to succeed.

To assist students at risk for academic failure, communities can provide them with additional academic support and assistance through after-school programs. After-school programs provide opportunities for extended learning and academic enrichment (Boyer,

“Quality after school programs . . . not only decrease the number of latchkey children, but also provide educational and social support systems to help children develop into well-educated responsible adults” (Donely & Johnson, 1999, p. 1). After-school programs often offer needed assistance as described above; however, the identification process does not always successfully identify students in need. In schools across North Carolina, parental involvement affects whether students attend after-school programs. An evaluation of after-school programs’ impact on at-risk students can assist with increasing the number of at-risk students who participate in after-school interventions.

**The Latchkey Child**

There are approximately 28 million children with working parents in the United States. Of these, between seven and fifteen million are considered “latchkey” children (United States Census Bureau, 2000). After-school programs can reduce the number of students returning to empty homes. To assist students who are at risk for academic failure, schools can provide additional academic support and assistance through after-school programs. Through these enrichment opportunities, students are encouraged to be self-confident and become more likely to perceive themselves as academically successful. As seen in the Georgia 3:00 program, teachers act as parent substitutes, supplying motivation and encouragement, factors that may otherwise be absent at home (SOS, 2000). The United States Department of Education has stated that “ninety-one percent of adults say it is important to them personally to ensure that children in their
community have access to after school programs” (USDOE, 2000, p. 6). Researchers state that youth left unsupervised are at risk for adopting deviant behaviors harmful to themselves and their communities (Bronfenbrenner, 1986; Furby & Beyth-Marom, 1990; Galambos & Maggs, 1991; Schwartz, 1996; Steinberg, 1986).

**Students at Risk of Academic Failure**

The problems of academically challenged students worsen with each year the students’ needs are not addressed (Bergman & Schuder, 1993). As evidenced by the 93,000 students projected to fall short of North Carolina’s accountability standards, our educational system is not adequately serving our population of students at risk of retention (Social Promotions, 1998). Wang, Reynolds, and Walberg (1995) state that the educational system for students at risk for academic failure is disjointed, superficial, and unsuccessful.

The NASP (2000) reported that students most likely to be at risk of being retained possess one or more of the following characteristics: are male, black, or Hispanic; have late birthdays or delayed development; have parents with low educational attainment; come from single-parent households; live in poverty; have attention problems; or are transient. Heubert and Hauser (1998) found that the retention rate for boys is upwards of 10% higher than it is for girls. Brodinsky and Keough (1990) state that the characteristic most prevalent in students at risk of academic failure is lack of community and low self-esteem.

Research illustrates a strong correlation between poverty and low academic achievement (Jones & Carter, 1994). Thompson (1998) explained that at-risk students
would likely be living in poor counties. Additional research indicates that at-risk learners
tend to come from low-income homes and economically disadvantaged backgrounds
(Kaufman & Frase, 1990; Slavin, 1989). This type of background can mean having
inadequate health care and nutrition, having fewer resources and opportunities for
academic growth, and being transient (Johnson & Viadero, 2000a). The Children’s

Minority students currently score lower than white students on achievement tests
in vocabulary, reading, and mathematics, as well as on aptitude tests (Jencks & Phillips,
1998; Manzo, 2000; NASP, 2000). Referred to as the *achievement gap*, this disparity has
become the focus of national attention now that social promotion practices are on the
wane (Manzo, 2000). This disparity is evidenced in the state of North Carolina, as 48% of
black students passed the required reading and mathematics EOG tests in the 1998–1999
school year, compared to 80% of their white counterparts (Manzo, 2000; Simmons,
2000).

Viadero (2000) finds no definitive explanation for the disparity in achievement
scores between minorities and whites, but she has reported some possible correlation
variables. She has found the following to be possible causes of the achievement gap:
poverty, lack of challenging academic coursework in predominantly minority schools,
peer pressure, transient populations, parenting, lack of access to preschool opportunities,
derqualified teachers, low expectations for achievement, and test biases. Hendrie
(1999) has identified possible causes as socioeconomic standards, teacher expectations,
peer culture, student motivation, and lack of parental involvement (1999).

There is evidence that the disparity in achievement is narrowing (Manzo, 2000). Though only 48% of minority students were proficient in reading and mathematics in grades 3–8 for the 1998–1999 school year in North Carolina, this represented an increase of 15% since the 1993–1994 school year (Manzo, 2000). Furthermore, African-American and Native American students’ pattern of gains shows they are making gains that exceed the state average gain, while white students’ gain is approximately the same or slightly less than the statewide gain. Hispanic and Asian-American students’ gains are below state average (NCDPI, 2000b). However, there still remains nearly a 30% gap in performance between white students and minorities. The narrowing of the gap is not significant in light of reported student gains (North Carolina Justice & Community Development Center [NCJCDC], 2000). An article in Educational Week concludes that “Statewide and across the board, the average scores are going up, but the gap has remained very persistent” (Manzo, 2000, p. 2). Student gains by ethnic groups are shown in Table 1.
Table 1. Gains in Percentage Proficient by Ethnic Group, 1994–1999

<table>
<thead>
<tr>
<th>Ethnic group</th>
<th>Amount of gain by EOG subject areas</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mathematics</td>
</tr>
<tr>
<td>American Indian students</td>
<td>22.3</td>
</tr>
<tr>
<td>Black students</td>
<td>16.5</td>
</tr>
<tr>
<td><em>All students</em></td>
<td><em>13.6</em></td>
</tr>
<tr>
<td>White students</td>
<td>13.0</td>
</tr>
<tr>
<td>Hispanic students</td>
<td>8.2</td>
</tr>
<tr>
<td>Asian students</td>
<td>5.7</td>
</tr>
</tbody>
</table>

(NUCDPI, 2000c, p. 2)

Whatever the causes for the achievement gap, Greg Malhoit, Executive Director of the North Carolina Justice Center, states, “As we enter this new century, the achievement gap is no longer acceptable or excusable. It is time for our state and local education leaders to commit and take action to address the most pressing issue we face in public education today” (NCJCDC, 2000, p. 1).

Teacher education programs are taking the lead in training teachers who can successfully close this gap by meeting the needs of diverse learners and at-risk students (NUCDPI, 2001). Institutes of higher learning such as Winston-Salem State University, UNC-Charlotte, Elizabeth City State University, Greensboro College, Davidson College,
North Carolina Central University, UNC-Wilmington, and UNC-Pembroke have initiated programs and partnerships to address the needs of at-risk children and close the achievement gap (NCDPI, 2001).

**Parent Involvement**

An important component in any child’s education is parental involvement. Parents have the potential to control the environment and other factors that create at-risk situations for students. The discussion of parenting is connected closely to the dilemma presented in the 1966 Coleman Report, which concluded that schools had little impact on student achievement. For more than two decades, educators attempted to overcome these findings and assist students. In the 1990s, “new statistical methods, new data, and a handful of genuine experiments have suggested that additional resources may in fact have sizable effects on student achievement” (Jencks & Phillips, 1999, p. 9).

A child’s ability to succeed at a task is directly related to parental encouragement and early teaching. “Many of the children who persist at a difficult task will probably eventually succeed, and their original perceptions of themselves as being capable of mastering tasks will be confirmed” (Schickedanz, Schickedanz, Forsyth, & Forsyth, 2001, p. 464). Parental encouragement of children to persistently attempt to complete a task can lead to higher levels of performance (Kanfer & Heggestad, 1999; Wagner, 1999). Student desire to attempt a task and remain engaged in the task is a “very good predictor of academic achievement” (DeBaryshe et al., 1993, p. 29). In a single-parent low-income home, these skills may not be properly developed.
Today, children spend more time at home alone due to changes in the workplace. In 1996, a “typical married couple family worked 247 hours (over six weeks) more per year” than in 1989 (Bernstein, Rassell, Schmitt, & Scott, 1999, p. 1). This increase of work time contributes to the number of children left unsupervised during after-school hours. In 1999, there were approximately eight million children ages 5 to 14 who spent time without adult supervision on a regular basis (Miller, 1999). These students spend their time at home mainly in unproductive ways. Children between the ages of 2–17 spend an average of “4.8 hours per day or 33.6 hours per week” watching television, watching movies, or playing computer games (Stanger & Grindina, 1999, p. 4). Compare this to the 39 minutes a day that boys between the ages of 9–12 spend studying (Hofferth & Sandberg, 1998).

The use of after-school programs or Head Start programs may be a substitute for a lack of parenting practices. Efforts to “change parenting practices may be the single most important thing we can do to improve children’s cognitive skills” (Jencks and Phillips, 1999, p. 9). Until these changes are effected, it is necessary to continue using programs that assist students who exhibit a high need of cognitive development.

In October of 2001, Department of Defense (DOD)-run schools were recognized for closing the achievement gap and assisting students who are regularly considered at risk. Forty percent of students at DOD schools are minorities, more than half of whom qualify for free or reduced-price lunch (Viadero, 2001). These students also have a high mobility rate, similar to many at-risk students; 35% of the students move within the course of one year, a mobility rate comparable to that found in urban schools (Viadero, 2001). Even with all these factors, DOD schools are still showing success. Perhaps the
success stems from a “standing order to personnel that their ‘place of duty’ during a parent-teacher conference time is at their children’s school” (Viadero, 2001, p. 2). Clearly, the involvement of parents contributes greatly to student success in DOD schools.

In an attempt to find strategies to close the achievement gap between minority students and white students, the NCDPI (2000b) conducted studies showing that the most effective programs included the following elements:

- focused instruction to master basic competencies;
- district-wide pacing guides;
- professional development opportunities;
- benchmark testing;
- data disaggregation;
- one-on-one tutoring during the school day;
- small-group acceleration sessions;
- homogeneous grouping;
- an atmosphere of high expectations;
- leadership that tolerates different teaching styles;
- celebrations of achievements.

In order to effect student learning, schools must “focus on what really matters: high standards, a challenging curriculum, and good teachers” (Haycock, 2001, p. 58).

Further recommendations for increasing the achievement of students at risk for academic failure are to minimize absenteeism and transience; to maintain a stable, competent staff; to raise the capacity of the staff; to enable educators to teach diverse learners; and to
recruit faculty who reflect the diversity of the student body (NCDPI, 1998). The Support Our Students after-school programs utilize these strategies as a means of increasing student achievement.

**Gender**

Another factor contributing to success in school is associated with teacher response “to failure among boys compared to girls” (Schickedanz et al., 2000, p. 468). Earlier beliefs, like those supported in a study conducted by Dweck (1978), stated that teachers are likely to attribute a boy’s poor performance to failure to put enough effort into the work, while a girl’s failure is attributed to her inferior intelligence. Since Dweck’s study, the federal government passed the legislation known as Title IX, which restricts federal funds to schools that deny opportunities to female students. In 2000, a USDOE study of 12th-grade students found that females reported that math and science are harder and considered less desirable classes to take (USDOE, 2000b). According to aggregated results of NAAEP, SAT, and AP tests, boys receive higher math and science scores than girls do (USDOE, 2002). There is still much debate over whether gender plays a role in the success of students.

Carol Gilligan and Nell Noddings support the idea that to counter gender bias and assist underachieving minorities, strategies like peer tutoring, mentoring, and coaching must be used to level the playing field (Gilligan, 1982; Noddings, 1986). These strategies can assist students, especially females, with overcoming hidden factors impeding gender achievement (Schickedanz et al., 2000). An additional obstacle for after-school programs is that minority males are twice as likely to be retained as females (USDOE, 1999). My
desire to use the SOS after-school program dovetails with my interest in the SOS program’s ability to assist females and minority students. To assess the impact of SOS program on gender and minority students, these two categories were considered in the study.

**Evaluation of Programs**

The primary goal of after-school programs is to create an environment that is safe and secure for students (USDOE, 2000). The programs that are school-based also look to integrate academic remediation or enrichment into the programs as a way to assist students in overcoming academic shortfalls. The ultimate goal of after-school programs is to provide assistance that is both effective and quality-driven (SOS, 1999).

To achieve these goals, the state of Georgia developed the 3:00 Project. In 1994, the Georgia School Age Association (GSAA) received funding for the development of the project (Bockrath, 1999). The three main goals of the program were safety, learning, and supervision (Bockrath, 1999). The 3:00 Project was conducted in twelve school districts and was evaluated with qualitative surveys. In the opinion of the majority of respondents in eight stakeholder groups (students, parents, site coordinators, staff, teachers, principals, advisory council members, and community resources), the program successfully achieved the goals of safety, learning, and supervision (Bockrath, 1999).

More than half of the students in the program improved their grades in at least one subject (Carlisi, 1996). However, no data were collected on how the academic performance of students who participated in the program compared with the performance of students who did not participate in the 3:00 Project.
According to the Institute of Studies for Minority Issues, North Carolina after-school programs participating in the SOS program were mandated to develop and implement an evaluation tool that assessed the effectiveness and efficiency of the program (NCCU, 1999). As suggested by the USDOE, the evaluation was a quantitative study (USDOE, 2000). However, lack of data returned from outlying counties resulted in inconclusive findings (SOS, 1999).

In surveying the existing literature on after-school programs, it became obvious that the USDOE and the U.S. Justice Department drove researchers primarily toward quantitative evaluations for single-year progress of students (USDOE, 2000). Using data for three consecutive years (1998–2001) of participation in the program allows this study to determine if the intervention provided by the SOS programs caused an improvement in a students’ academic performance through the middle-school years.

Summary

The literature review has demonstrated the need for effective independent evaluations of after-school programs. As illustrated in the review, three factors other than academics need to be considered when examining the challenges facing children at risk of academic failure. “Of particular concern is the fact that across all of these measures, grade retention varies substantially by family income and parent education. . . . Retention also is more than twice as likely among boys as among girls, and more than twice as prevalent among African American students as among white students” (USDOE, 1999, p. 4).
Also, due to data constraints, program evaluations are generally conducted for progress in any given year, not for consecutive years longitudinally inspected. Current studies do not evaluate after-school program participants compared to like populations of nonparticipants. The questions for this study were designed with the knowledge gained from the review of the literature.
Chapter III: Research Methodology

Research Questions

This study was designed to assess the impact of the Support Our Students (SOS) after-school program on students who are considered at risk of academic failure. These students scored a Level I or Level II on either the math or reading portion of the North Carolina End of Grade (EOG) test in sixth grade. The study compares the mean developmental scale score growth for eighth-graders who participated in the SOS after-school program for three consecutive years with a control group comprising a sample of at-risk eighth-grade students who did not participate in the intervention.

According to North Carolina’s accountability program, students are expected to make at least one year’s scale score growth for each year in school. Students who are at risk have failed to make projected growth in the past; however, they may now be learning at a normal rate. The researcher assessed actual scale score growth for a three-year period for sixth-grade students who scored a level I or Level II in 1999. The information at this stage provides a simple comparison of the group that was involved in the SOS program with students who in the sample who did not participate in the SOS program.

As illustrated in the literature review, three factors other than academics need to be considered: gender, minority status, and socioeconomic status. These factors were used to compare participating students with a like sample of at-risk children who did not participate in the intervention. The comparison was made to determine if the SOS program affected the participant group more positively than the at-risk children as a whole. More precisely, the research addressed the following questions:
Question 1:
Is there a significant difference in actual scale score growth on the North Carolina EOG mathematics tests between eighth-grade students academically at risk of failure in mathematics who participated in the SOS program and at-risk eighth-grade students who did not participate in the SOS program from 1998–2001?

Question 2:
Is there a significant difference in actual scale score growth on the North Carolina EOG reading tests between eighth-grade students academically at risk of failure in reading who participated in the SOS program and at-risk eighth-grade students who did not participate in the SOS program from 1998–2001?

In the literature review, additional questions arose concerning the ways that gender, ethnicity, and socioeconomic status affect student achievement. The following questions were explored to determine whether the SOS program significantly affects at-risk children in these categories:

Question 3:
Is there a significant difference in actual scale score growth on the North Carolina EOG in mathematics between eighth-grade at-risk minority students who participated in the SOS program and eighth-grade at-risk minority students who did not participate in the SOS program from 1998–2001?

Question 4:
Is there a significant difference in actual scale score growth on the North Carolina EOG in reading between eighth-grade at-risk minority students who participated
in the SOS program and eighth-grade at-risk minority students who did not participate in the SOS program from 1998–2001?

**Question 5:**

Is there a significant difference in actual scale score growth on the North Carolina EOG in mathematics between eighth-grade at-risk students who received free or reduced-price lunch and participated in the SOS program and eighth-grade at-risk students who received free or reduced-price lunch who did not participate in the SOS program from 1998–2001?

**Question 6:**

Is there a significant difference in actual scale score growth on the North Carolina EOG in reading between eighth-grade at-risk students who received free or reduced-price lunch and participated in the SOS program and eighth-grade at-risk students who received free or reduced-price lunch who did not participate in the SOS program from 1998–2001?

**Question 7:**

Is there a significant difference in actual scale score growth on the North Carolina EOG in mathematics between eighth-grade at-risk students of the same gender who participated in the SOS program and eighth-grade at-risk students of the same gender who did not participate in the SOS program from 1998–2001?

**Question 8:**

Is there a significant difference in actual scale score growth on the North Carolina EOG in reading between eighth-grade at-risk students of the same gender who
participated in the SOS program and eighth-grade at-risk students of the same gender who did not participate in the SOS program from 1998–2001?

**Population and Sample**

The population for the study is all sixth-grade students identified as being at risk in 1999 by the North Carolina EOG test. The population was narrowed and divided into two sample groups. The experimental group was composed of all sixth-grade students in North Carolina who participated in the SOS program during the 1998–2001 school years who received either a Level I or Level II on the EOG test for reading or math in sixth grade. Only students who had complete data for 1998–1999, 1999–2000, and 2000–2001 and who participated in the SOS program were considered for the experimental group of this study. This experimental group was compared with a random sample of eighth-grade students who did not participate in the SOS program from 1998–2001 who received either a Level I or Level II on the EOG test for reading or math in sixth grade. The random sample was composed of a demographic group symmetrical with the intervention sample. The North Carolina Educational Research Data Center at Duke University provided the data for the random sample.

**Data Collection**

The North Carolina Department of Public Instruction (NCDPI) in Raleigh collects data from all SOS programs throughout North Carolina. The data collected by the NCDPI include demographic, socioeconomic, and EOG test scores for every child in the program. The data for this project were made available to Duke University through a
grant sponsored by the Kellogg Foundation. In North Carolina, students in grades 3–8 take the EOG to measure academic success.

To determine scale score growth, it was necessary to collect scores from 1998–1999 to establish a baseline for the scores collected in 2000–2001. This longitudinal comparison assessed how the SOS intervention affects at-risk students over a given period of time. The same information was needed for the random sample of students who did not participate in the intervention. The information came from the state with no identifiers to ensure anonymity of all the participants. This information was accessed through the North Carolina Educational Research Data Center at Duke University.

**Measures**

As discussed in the literature review, the North Carolina EOG test is administered in grades 3–8. Dr. Laura Kramer, senior psychometrician for the NCDPI Division of Accountability, has validated the EOG test (L. Kramer, personal communication, June 18, 2001). The test items are extensively reviewed for construct and content validity and psychometric properties by DPI curriculum staff, Technical Outreach for Public Schools (TOPS) curriculum staff, North Carolina educators, and content and psychometric experts.

Content validity was built into the EOG development process, as North Carolina educators wrote test items in alignment with the North Carolina Standard Course of Study. Construct validity, or the extent to which the test may be used to measure a theoretical construct or trait, was measured by examining the correlation between the EOG and similar, established tests. Correlation tests used were the North Carolina Open-
The test items were assembled into field tests that were in accordance with test specifications developed by the NCDPI curriculum team. After the field tests were developed, they were reviewed and then administered to a stratified random sample of students selected from across the state to represent the gender, ethnic, and regional diversity in North Carolina (NCDPI, 1996).

According to Dr. Kramer, the field test data were then returned and analyzed, using both classical and item response theory methods (personal communication, June 18, 2001). Cronbach’s coefficient alpha was used for internal-consistency reliability. Reliability is measured by the consistency of scores obtained through a test-retest or alternate-form testing method. Reliability coefficients on the EOG fall between 0.91 and 0.94. Test items that appeared to have a degree of guessing, or that seemed too difficult or too easy, were removed from the item bank (L. Kramer, personal communication, June 18, 2001). The Mantel-Haenszel statistic was used to test items for cultural bias. Test items were sent to a separate bias review committee selected to represent the diverse populations in the state. Any items determined to have biases were removed. Finally, each psychometrically sound item was reviewed again, along with any comments collected in the field test by DPI and TOPS curriculum staff, to confirm pedagogical soundness. Using the remaining items, equivalent, parallel test forms were constructed and reviewed by a group of North Carolina educators considered content experts, and by curriculum and testing teams. Test forms were then printed and administered in the field (L. Kramer, personal communication, June 18, 2001).
The test provides a developmental scale score that is based on the EOG test and is determined by computing the number of items answered correctly. The number correct is then converted to the developmental scale scores (NCDPI, 1996). The state expects at least a year’s worth of scale score growth for a year’s worth of schooling. The developmental scores in the pre- and post-test are placed in the expected growth formula. The formula is as follows: Expected Growth = \( b_0 + (b_1 \cdot \text{ITP}) + (b_2 \cdot \text{IRM}) \) (NCDPI, 2000a). The formula abbreviations are defined as follows:

- \( b_0 \) is the North Carolina average rate of scale score growth in a respective grade and subject.
- \( b_1 \cdot \text{ITP} \) is an estimate for “true proficiency” of the students in a cohort. It is computed by subtracting the 1994–1995 North Carolina averages from the cohort scores.
- \( \text{ITP} = (\text{LocalReadingScaleScore} + \text{LocalmathematicsScaleScore}) – (\text{NorthCarolinaReadSS} + \text{NorthCarolinaMathematicsScaleScore}) \). The estimate for “true proficiency” is Reading = .22 for all grades, and Mathematics = .26 for all grades.
- \( b_2 \cdot \text{IRM} \) is an estimate for the movement of students’ scores due to regression to the mean. The index for regression to the mean (IRM) is computed by subtracting the 1994–1995 North Carolina averages from local test scores (reading and mathematics).
- \( \text{IRM (Reading)} = \text{LReadSS} – \text{NCReadSS} \), and \( \text{IRM (Mathematics)} = \text{LmathematicsSS} – \text{NCMathematicsSS} \). The estimate for regression to the mean in
Reading is -.60 for all grades, and Mathematics is -.58 for all grades (NCDPI, 2000a).

The above formula works well when comparing large numbers of students with diverse testing ranges (level I 242 – level IV 276). Because this project focused only on at-risk children (level I and level II), the testing formula cannot accurately assess growth. To assess growth, the researcher used mean growth of actual scale scores for the sample population as well as for the control group. The mean of the actual scale scores for the intervention group as well as the control group provided insight into the amount of growth made (D. Aman, personal communication, August 30, 2004).

**Research Hypothesis**

Students at risk for academic failure are, by definition, behind their peers and traditionally are not achieving acceptable scale score growth. Students at risk of academic failure who participate in SOS are expected to show significantly greater scale score growth, thus illustrating a positive correlation between the program and student achievement. Longitudinal research is necessary to determine if longer exposure to the after-school intervention has a greater impact. In this study, the tests compare the actual growth in scores of the eighth-grade at-risk students in the SOS program and eighth-grade at-risk students who did not participate in the program. There are eight hypotheses in this study, broken into four subsets. The actual scale score growth for mathematics and reading on the EOG tests were compared in each of these subsets. The four subsets are as follows: three years in the intervention, gender, minority, and socioeconomic status.
Hypothesis #1

*The null hypothesis* is that students who participated in the SOS program for three years will show no significant difference in mathematics compared to those who did not participate in the program.

*The alternative hypothesis* is that students who participated in the SOS program for three years will show a significant difference in mathematics compared to those who did not participate in the program.

Hypothesis #2

*The null hypothesis* is that students who participated in the SOS program for three years will show no significant difference in reading compared to those who did not participate in the program.

*The alternative hypothesis* is that students who participated in the SOS program for three years will show a significant difference in reading compared to those who did not participate in the program.

The second part of the study comprised a comparison of like groups sorted by the three factors outlined in the literature review: gender, race, and socioeconomic status. Students were compared to at-risk eighth-grade students who did not participate in the SOS program using a two-tailed test of significance. The beginning assumptions were as follows:

Hypothesis #3

*The null hypothesis* is that males and females who participated in the SOS program will show no significant difference in mathematics compared to those who did not participate in the program.
The alternative hypothesis is that males and females who participated in the SOS program will show a significant difference in mathematics compared to those who did not participate in the program.

**Hypothesis #4**

The null hypothesis is that males and females who participated in the SOS program will show no significant difference in reading compared to those who did not participate in the program.

The alternative hypothesis is that males and females who participated in the SOS program will show a significant difference in mathematics compared to those who did not participate in the program.

**Hypothesis #5**

The null hypothesis is that minorities who participated in the SOS program will show no significant difference in mathematics compared to those who did not participate in the program.

The alternative hypothesis is that minorities who participated in the SOS program will show a significant difference in mathematics compared to those who did not participate in the program.

**Hypothesis #6**

The null hypothesis is that minorities who participated in the SOS program will show no significant difference in reading compared to those who did not participate in the program.

The alternative hypothesis is that minorities who participated in the SOS program will show a significant difference in reading compared to those who did not participate in the program.

**Hypothesis #7**

The null hypothesis is that students of low socioeconomic status who participated in the SOS program will show no significant difference in mathematics compared to those who did not participate in the program.
The alternative hypothesis is that students of low socioeconomic status who participated in the SOS program will show a significant difference in mathematics compared to those who did not participate in the program.

Hypothesis #8

The null hypothesis is that students of low socioeconomic status who participated in the SOS program will show no significant difference in reading compared to those who did not participate in the program.

The alternative hypothesis is that students of low socioeconomic status who participated in the SOS program will show a significant difference in reading compared to those who did not participate in the program.

Data Analysis

The entered the data provided by the North Carolina Department of Public Instruction into a spreadsheet. First the data were disaggregated to determine scale score growth. The growth was determined, and the findings were imported into the Statistical Package for the Social Sciences computer program. The information was analyzed using a two-tailed $t$ test of significance, which determines the significance level of differences between two means. The two-tailed $t$ test of significance is preferred because the impact of the program may not occur in the predicted direction (Borg & Gall, 1989).

In order to avoid creating a Type I error, the error rate, or alpha, was set at .05. Using a two-tailed $t$ test requires that power be increased to avoid the possibility of making a Type II error. The power was high because the population of the study included all at-risk sixth graders in North Carolina for the year 1999 who participated in the SOS program for the following two years. The differences between the scale score growths of
the two sample groups were compared. If the findings were statistically significant, then
the null hypothesis was rejected (Borg & Gall, 1989).

Summary

This study focused on eighth-graders in the state of North Carolina who were
considered at risk of academic failure at the end of the 1998–1999 school year and who
participated in the SOS after-school program for three consecutive years. These students
were compared using a two-tailed t test of significance to a random sample of at-risk
eighth-graders who did not participate in the SOS program. Subgroups for the study
include gender, race, and socioeconomic status. To ensure that the random sample did not
include any data that were in the experimental group, it was necessary to use the
following indicators:

1. Local education agency identification number
2. Local school identification number
3. Local city name
4. Geographical region of participation
5. Number of years of participation in SOS program
6. Grade level in 2000–2001 school year
7. Gender
8. 1998–1999 EOG Reading developmental scale score
9. 1998–1999 EOG Reading level
10. 2000–2001 EOG Reading developmental scale score
11. 2000–2001 EOG Reading level
15. Exemplary growth developmental scale score for Reading 2000–2001
16. Difference between Expected Reading developmental scale score and Reading 2000–2001 developmental scale score
17. 1998–1999 EOG Mathematics developmental scale score
18. 1998–1999 EOG Mathematics level
19. 2000–2001 EOG Mathematics developmental scale score
20. 2000–2001 EOG Mathematics level
25. Difference between Expected Mathematics developmental scale score and Mathematics 2000–2001 developmental scale score

The data set of program participants was provided by Donely and Johnson, and the North Carolina Educational Research Data Center provided a sample of students who did not participate in the program. The number of students who failed the sixth-grade EOG test in 1998 exceeded 32,000. The two data sets were compared, and any identical data were removed. Once all repetitive data were removed, the remaining data were sorted to create a random sample for the control group.
Chapter IV: Findings and Results

Data Analysis

The analyses of the data will be presented in this chapter. Each research question is stated, and the statistical information and analyses are reported. Actual scale score growth was used for all statistical procedures. Actual scale score growth is represented by the eighth-grade developmental score minus the sixth-grade developmental score (North Carolina Department of Public Instruction [NCDPI], 1996). All eight research questions required the use of two-tailed t tests. The data were computed using Statistical Application Software (SAS) 9.1 software to test the significance of the difference in means between actual scale score growth of students in the Support Our Students (SOS) after-school program and actual score growth of students not in the SOS program in the End of Grade (EOG) mathematics and reading tests. Sample numbers, actual growth in scale score means, actual developmental scale score standard deviations, standard error, t values, and p values are reported for each question and outcome measure.

Question 1:

Is there a significant difference in actual scale score growth on the North Carolina EOG mathematics tests between eighth-grade students academically at risk of failure in mathematics who participated in the SOS program and at-risk eighth-grade students who did not participate in the SOS program from 1998–2001?
Results of the $t$ test indicated that for all students in math the mean difference between the actual scale score growth of SOS participants at risk in reading and the actual scale score growth of non-participants is -0.557. The total number of complete data used for this $t$ test for reading is 205. The $p$ value is 0.426 and the $t$ value is -.805. The summary statistics are reported in Table 2.

Table 2. Summary Statistics Total Group–Mathematics

<table>
<thead>
<tr>
<th></th>
<th>Number in Sample</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>In SOS</td>
<td>205</td>
<td>8.624</td>
<td>7.087</td>
</tr>
<tr>
<td>Not in SOS</td>
<td>205</td>
<td>9.181</td>
<td>7.050</td>
</tr>
</tbody>
</table>

**Question 2:**

Is there a significant difference in actual scale score growth on the North Carolina EOG reading tests between eighth-grade students academically at risk of failure in reading who participated in the SOS program and at-risk eighth-grade students who did not participate in the SOS program from 1998–2001?

Results of the $t$ test comparison for students at risk in the area of reading indicate students who participated in the SOS program for three consecutive years compared to the random sample of students who did not participate experienced a mean difference of -0.312 on the reading portion of the EOG. The $p$ value is 0.588 and the $t$ value is -0.542. The summary statistic results are reported in Table 3.
Table 3. Summary Statistics Total Group–Reading

<table>
<thead>
<tr>
<th></th>
<th>Number in Sample</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>In SOS</td>
<td>205</td>
<td>8.566</td>
<td>5.717</td>
</tr>
<tr>
<td>Not in SOS</td>
<td>205</td>
<td>8.878</td>
<td>5.952</td>
</tr>
</tbody>
</table>

*Question 3:*

Is there a significant difference in actual scale score growth on the North Carolina EOG in mathematics between eighth-grade at-risk minority students who participated in the SOS program and eighth-grade at-risk minority students who did not participate in the SOS program from 1998–2001?

Results of the *t* test comparison for minority students at risk in the area of mathematics indicate students who participated in the SOS program for three consecutive years compared to the random sample of minority students who did not participate experienced a mean difference of -0.515 on the math portion of the EOG.

To answer this question, only those who are categorized as minority were compared. The minority representation of the SOS program was 167 participants. The *p* value is 0.503 and the *t* value is -0.671. The summary statistic results are reported in Table 4.
Table 4. Summary Statistics Minority–Mathematics

<table>
<thead>
<tr>
<th></th>
<th>Number in Sample</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>In SOS</td>
<td>167</td>
<td>8.868</td>
<td>7.100</td>
</tr>
<tr>
<td>Not in SOS</td>
<td>167</td>
<td>9.383</td>
<td>6.929</td>
</tr>
</tbody>
</table>

Question 4:

Is there a significant difference in actual scale score growth on the North Carolina EOG in reading between eighth-grade at-risk minority students who participated in the SOS program and eighth-grade at-risk minority students who did not participate in the SOS program from 1998–2001?

Results of the $t$ test comparison for minority students at risk in the area of reading indicate students who participated in the SOS program for three consecutive years compared to the random sample of minority students who did not participate experienced a mean difference of -0.701 on the reading portion of the EOG. The $p$ value is 0.277 and the $t$ value is -1.089. The summary statistic results are reported in Table 5.
Table 5. Summary Statistics Minority–Reading

<table>
<thead>
<tr>
<th></th>
<th>Number in Sample</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>In SOS</td>
<td>167</td>
<td>8.437</td>
<td>5.831</td>
</tr>
<tr>
<td>Not in SOS</td>
<td>167</td>
<td>9.138</td>
<td>5.926</td>
</tr>
</tbody>
</table>

**Question 5:**

Is there a significant difference in actual scale score growth on the North Carolina EOG in mathematics between eighth-grade at-risk students who received free or reduced-price lunch and participated in the SOS program and eighth-grade at-risk students who received free or reduced-price lunch who did not participate in the SOS program from 1998–2001?

Results of the $t$ test comparison for free or reduced-price lunch students at risk in the area of mathematics indicate students who participated in the SOS program for three consecutive years compared to the sample of students who did not participate experienced a mean difference of -0.597 on the math portion of the EOG. The number of students receiving free or reduced-price lunch in the SOS program was 196 participants. The $p$ value is 0.399 and the $t$ value is -0.845. The summary statistic results are reported in Table 6.
Table 6. Summary Statistics Free and Reduced-Price Lunch–Mathematics

<table>
<thead>
<tr>
<th></th>
<th>Number in Sample</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>In SOS</td>
<td>196</td>
<td>8.745</td>
<td>7.014</td>
</tr>
<tr>
<td>Not in SOS</td>
<td>196</td>
<td>9.342</td>
<td>6.969</td>
</tr>
</tbody>
</table>

**Question 6:**

Is there a significant difference in actual scale score growth on the North Carolina EOG in reading between eighth-grade at-risk students who received free or reduced-price lunch and participated in the SOS program and eighth-grade at-risk students who received free or reduced-price lunch who did not participate in the SOS program from 1998–2001?

Results of the $t$ test comparison for free or reduced-price lunch students at risk in the area of reading indicate students who participated in the SOS program for three consecutive years compared to the sample of students who did not participate experienced a mean difference of -0.306 on the reading portion of the EOG. The $p$ value is 0.605 and the $t$ value is -0.518. These summary statistic results are reported in Table 7.
Table 7. Summary Statistics Free and Reduced-Price Lunch–Reading

<table>
<thead>
<tr>
<th></th>
<th>Number in Sample</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>In SOS</td>
<td>196</td>
<td>8.582</td>
<td>5.734</td>
</tr>
<tr>
<td>Not in SOS</td>
<td>196</td>
<td>8.888</td>
<td>5.968</td>
</tr>
</tbody>
</table>

*Question 7:*

Is there a significant difference in actual scale score growth on the North Carolina EOG in mathematics between eighth-grade at-risk students of the same gender who participated in the SOS program and eighth-grade at-risk students of the same gender who did not participate in the SOS program from 1998–2001?

Results of the *t* test comparison for male students at risk in the area of mathematics indicate students who participated in the SOS program for three consecutive years compared to the random sample of male students who did not participate experienced a mean difference of -0.609 on the math portion of the EOG. The number of males who participated for three consecutive years in the SOS program was 115. The *p* value is 0.490 and the *t* value is -0.692. The summary statistic results are reported in Table 8.
Table 8. Summary Statistics Males–Mathematics

<table>
<thead>
<tr>
<th></th>
<th>Number in Sample</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>In SOS</td>
<td>115</td>
<td>8.348</td>
<td>6.532</td>
</tr>
<tr>
<td>Not in SOS</td>
<td>115</td>
<td>8.957</td>
<td>6.807</td>
</tr>
</tbody>
</table>

For gender it was also necessary to run a random $t$ test for females. Results of the $t$ test comparison for female students at risk in the area of mathematics indicate students who participated in the SOS program for three consecutive years compared to the random sample of female students who did not participate experienced a mean difference of -0.489 on the math portion of the EOG. The number of females who participated for three consecutive years in the SOS program was 90. The $p$ value is 0.665, and the $t$ value is -0.433. The summary statistic results are reported in Table 9.

Table 9. Summary Statistics Females–Mathematics

<table>
<thead>
<tr>
<th></th>
<th>Number in Sample</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>In SOS</td>
<td>90</td>
<td>8.978</td>
<td>7.762</td>
</tr>
<tr>
<td>Not in SOS</td>
<td>90</td>
<td>9.467</td>
<td>7.376</td>
</tr>
</tbody>
</table>
Question 8:

Is there a significant difference in actual scale score growth on the North Carolina EOG in reading between eighth-grade at-risk students of the same gender who participated in the SOS program and eighth-grade at-risk students of the same gender who did not participate in the SOS program from 1998–2001?

Results of the \( t \) test comparison for male students at risk in the area of reading indicate students who participated in the SOS program for three consecutive years compared to the random sample of male students who did not participate experienced a mean difference of -1.287 on the reading portion of the EOG. The \( p \) value is 0.111 and the \( t \) value is -1.601. The summary statistic results are reported in Table 10.

Table 10. Summary Statistics Males–Reading

<table>
<thead>
<tr>
<th></th>
<th>Number in Sample</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>In SOS</td>
<td>115</td>
<td>7.904</td>
<td>5.822</td>
</tr>
<tr>
<td>Not in SOS</td>
<td>115</td>
<td>9.191</td>
<td>6.356</td>
</tr>
</tbody>
</table>

Results of the \( t \) test comparison for female students at risk in the area of reading indicate students who participated in the SOS program for three consecutive years compared to the random sample of female students who did not participate experienced a mean difference of -0.933 on the reading portion of the EOG. The \( p \) value is 0.252 and
the \( t \) value is 1.149. The findings for this test were significant. The summary statistic results are reported in Table 11.

Table 11. Summary Statistics Females–Reading

<table>
<thead>
<tr>
<th></th>
<th>Number in Sample</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>In SOS</td>
<td>90</td>
<td>8.478</td>
<td>5.401</td>
</tr>
<tr>
<td>Not in SOS</td>
<td>90</td>
<td>9.411</td>
<td>5.498</td>
</tr>
</tbody>
</table>

**Findings**

The key findings of this chapter are as follows:

1. Students who participated in the SOS program for three years in middle school for the years 1998–2001 had no significant difference in math or reading EOG score growth from those who did not participate in the program.

2. Students in the minority subgroup did not have a significant difference in math or reading EOG score growth from minority students who did not participate in the program.

3. Students in the free or reduced-price lunch subgroup did not have a significant difference in math or reading EOG score growth from students who received free or reduced-price lunch and who did not participate in the SOS program.

4. Students in the male subgroup did not have a significant difference in math or reading EOG score growth from male students who did not participate in the program.
5. Students in the female subgroup did not have significant difference in math or reading EOG score growth from female students who did not participate in the program.
Chapter V: Summary, Conclusions, Recommendations, Reflections

Summary

The purpose of this study was to assess the impact of North Carolina’s Support Our Students (SOS) program on at-risk students who participated in the program over a three-year period. The study was designed to give educational leaders a body of research for reference before making decisions regarding interventions for students at risk for academic failure. The study analyzed the actual scale score growth gains of middle-grade students in the SOS program compared to a random sample of students who did not participate in the SOS program through the use of North Carolina’s End of Grade (EOG) tests in both mathematics and reading. The following inquiry was investigated in this study: Is there a significant difference in actual scale score growth on the North Carolina EOG mathematics and reading tests between eighth-grade students academically at risk of failure who participated in the SOS program and at-risk eighth-grade students who did not participate in the SOS program from 1998–2001?

The main concepts were explored in an in-depth literature review that generated additional concepts and theories concerning at-risk students and conditions that may contribute to academic difficulties. Subjects researched included tutoring programs, parental involvement, learning by gender, and other after-school programs.

The literature review explored the complexity of being at-risk and the negative impact of low academic achievement. Low-achieving students are at risk for dropping out of school and living a life of poverty, outcomes that can in turn have a negative impact on our society.
A support network for at-risk children as proposed by the United States Department of Instruction, the North Carolina Department of Juvenile Justice, the North Carolina Department of Public Instruction, and Twenty-First Century Community Learning Centers, accompanied with instructional practices designed to improve the academic achievement of at-risk children, exists in North Carolina’s SOS program. The research set out to determine the impact of the SOS program on students at risk as identified by North Carolina testing.

In 1990, Wlodkowski and Jaynes stated that education needs not more programs, but rather more effective programs. This and other studies identified in the literature review indicated that educators need to better investigate how to develop extended day programs for low-achieving students. Studies of after-school programs examined correlations between attendance in after-school programs and better peer relations, increased self-esteem, improved school grades and conduct, and increased homework completion rates. No studies could be found that examined the correlation of the achievement of academically at-risk students in after-school programs with state standards to determine if after-school programs are a viable option for improving standardized student achievement scores. More research is needed to determine which existing programs are effective, thus equipping educational leaders to make the best possible allocations of resources.

To obtain the data for this study, the researcher used the records of middle-grade students participating in North Carolina’s SOS program for the 1998–2001 school years who did not score a level III or IV in either reading or mathematics. A random sample of 205 students was compiled from the more than 32,000 middle school students who did
not participate in the SOS program during the years 1998–2001 who did not score a level III or IV in either reading or mathematics on the North Carolina EOG test. The data were compiled, and an Excel spreadsheet was used to determine the actual scale scores growth of the students. The data were then entered into SAS 9.1 software to run a two-tailed $t$ test.

The eight research questions were tested for significance using a two-tailed $t$-test to compare the means of the students’ actual scale score growth from their 1998 school year to their actual scale score on the 2001 EOG. To determine if students in the SOS program experienced significantly higher actual scale score growth, a sample of at-risk students was compared in the independent $t$ test of means. The data were used to compare students’ actual scale score growth in the categories of minority (non-white), socioeconomic status, and gender. The data obtained through the statistical procedures yielded the following interpretations:

1. Middle-grade students who were academically at risk of failure in the areas of reading and mathematics who participated in the SOS program did not score significantly differently from the random sample of at-risk students who did not participate in the SOS program for three consecutive years.

2. Minority students who were academically at risk of failure in the areas of mathematics and reading who participated in the SOS program did not score significantly differently from the sample of at-risk minority students who did not participate in the SOS program for three consecutive years.

3. Students receiving free or reduced-price lunch who were academically at risk of failure in the areas of mathematics and reading who participated in the SOS
program did not score significantly differently from the sample of at-risk students receiving free or reduced-price lunch who did not participate in the SOS program for three consecutive years.

4. Male students who were academically at risk of failure in the areas of mathematics and reading who participated in the SOS program did not score significantly differently from the sample of male at-risk students who did not participate in the SOS program for three consecutive years.

5. Female students who were academically at risk of failure in the areas of mathematics and reading who participated in the SOS program did not score significantly differently from the sample of female at-risk students who did not participate in the SOS program for three consecutive years.

Conclusions

Given the limitations and assumptions of this study, the following conclusions can be drawn:

1. The North Carolina SOS program does not seem to be affecting students who are academically at risk in the middle grades as measured by North Carolina’s EOG tests. In the period between 1998 and 2001, middle-grade students at risk of academic failure who participated in the SOS program did not experience significantly higher or lower actual scale score growth on their EOG tests than at-risk students who did not participate in the program.

2. Minority middle-grade students at risk of academic failure in math or reading who participated in the SOS program are not narrowing the achievement gap
between their performance on the EOG test and the level at which the state
expects them to achieve in the areas of mathematics or reading. Therefore,
minority students academically at risk will need other supports to increase
their actual scale score growth.

3. Students receiving free or reduced-price lunch who participated in the SOS
after-school program and who are at risk of academic failure in math or
reading are not narrowing the achievement gap between their performance on
the EOG test and the level at which the state expects them to achieve in the
areas of mathematics or reading. Therefore, students receiving free or
reduced-price lunch and who are academically at risk will need other supports
to increase their actual scale score growth.

4. Male students at risk of academic failure in math or reading who participated
in the SOS program are not narrowing the achievement gap between their
performance on the EOG test and the level at which the state expects them to
achieve in the areas of mathematics or reading. Therefore, male students
academically at risk will need other supports to increase their actual scale
score growth.

5. Female students at risk of academic failure in math or reading who
participated in the SOS program are not narrowing the achievement gap
between their performance on the EOG test and the level at which the state
expects them to achieve in the areas of mathematics or reading. Therefore,
female students academically at risk will need other supports to increase their
actual scale score growth.
**Recommendations**

Considering the findings of this study within the time frame studied, the following recommendations are suggested:

1. Educational leaders should seek out strategies in addition to the SOS program for addressing the academic needs of middle-grade students at risk of academic failure.

2. Educational leaders should continue to aggressively seek out means of addressing the academic needs of the middle-grade student at risk of academic failure. New approaches could be developed to increase the actual scale score growth of the middle-grades at-risk student. More specifically, successful intervention programs could be focused on the needs of students at risk in reading only, both mathematics and reading, or sixth-grade at-risk students, especially in the after-school hours.

3. Additional research should be conducted to determine whether the SOS after-school program can adjust its tutorials to focus on assisting at-risk students with increasing their actual scale score growth. The inclusion of proven test-assistance programs may increase after-school programs’ beneficial effects.

4. Additional research should be conducted to determine whether interventions such as teacher expectations, differentiated learning, tutoring programs, parental involvement, or other special programs enable North Carolina students at risk of academic failure to exceed state scale score growth expectations, thereby enabling them to meet state benchmarks set at Levels III and IV on the EOG test.
5. Additional research should be conducted to assess improvements in self-esteem, work ethic, and organizational abilities of at-risk students who participate in the SOS program compared with those who do not.

6. Outside agencies should make additional resources available for educators to address issues that may contribute to students being identified as academically at risk.

7. A qualitative case study should be conducted to examine how SOS programs are structured at the school level.

8. Additional research should be conducted that focuses on the interaction of the relevant variables. For this research, a larger sample would assist with assessing the interactions of such variables as black and male, white and poor, etc.

As educational leaders, we must continue to implement aggressive intervention programs that address the needs of student populations at risk of academic failure to ensure student successes. Students at risk of academic failure who participated in the SOS program for three consecutive years did not show a significant difference in scale score growth from students who did not participate in the intervention. This said, it is also necessary to state that neither group showed enough improvement to enable it to no longer be considered academically at risk at the conclusion of the three year period. Students at risk of academic failure who participated in the SOS program in 1998–2001 neither increased nor decreased the gap in achievement between their actual and expected scores on the North Carolina EOG test. Therefore, the majority of the students in the control group and the experimental group required summer school and faced possible
retention in 2001. Although this study did not control for other interventions used with its population, it can be concluded that as students progress in grade level and participate in the SOS program, they begin to stabilize their scores relative to scale score growth but do not show the aggressive gains necessary to achieve the performance levels mandated by the state to avoid retention.

Educational leaders must implement intervention programs to aggressively assist at-risk students. The call for more effective programs requires that educators look to existing programs and work to make them more effective. This study indicated that over 32,000 students statewide failed to meet state standards and therefore faced retention. The cost of remediation supplies, space, and teacher salaries can be estimated at close to $80 million nationwide (Social Promotions, 1998). Educational leaders could implement intervention programs that would aggressively and effectively enable students at risk of academic failure to exceed necessary scale score growth scores and close the gap on their peers, thereby allowing them to pass promotion standards. The SOS program may benefit from improved techniques and a focus on supporting tutorials to assist with success on EOG tests. It is hoped that study and subsequent research will contribute to the knowledge base necessary for educational leaders to make informed decisions on program funding and use of programming. Further, it is hoped that this study will assist in supporting the knowledge base concerning interventions for students at risk of academic failure.

Reflections

Based on the quantitative findings above, one would deduce that the SOS program has no significant academic impact on the EOG scores of at-risk students. As a
practitioner, I have utilized the SOS program in a highly structured fashion. I recruit students who scored Level I or Level II on their EOG tests and expose them to remediation that addresses the gaps in their learning. The structure required by the SOS program simply states students will receive one hour of homework time and one hour of structured activities (NCDHHR, 2000). If a student participates in the SOS program for one year, he or she will be exposed to approximately two hundred and eighty hours of time that can be used for remediation. Logically, with the proper use of time, a student in the SOS program should be able to excel compared to a student not given the additional assistance. Based on my observations, however, I have concluded that this is not the case. I believe that additional research needs to investigate the structures for the homework time each afternoon. To assist the SOS program with boosting student achievement on EOG tests, school sites should be observed and best practices analyzed. Evaluators like Donely and Johnson are invited to use this research as a baseline to drive future research into how to utilize the program to further assist students with regard to end-of-grade testing.
REFERENCES


