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Evaluating Summer School Programs and the Effect on Student Achievement: The Correlation Between Stanford-10 Standardized Test Scores and Two Different Summer Programs

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Evaluating Summer School Programs and the Effect on Student Achievement: The Correlation Between Stanford-10 Standardized Test Scores and Two Different Summer Programs

by

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A dissertation submitted to the Education Faculty of Lindenwood University

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Declaration of Originality

I do hereby declare and attest to the fact that this is an original study based solely upon my own scholarly work here at Lindenwood University and that I have not submitted it for any other college or university course or degree here or elsewhere.

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Abstract

School districts looking for ways to minimize summer learning loss have implemented a variety of programs to combat this problem. Since No Child Left Behind and the need for school districts to meet the goals of Adequate Yearly Progress, it is no longer enough to limit summer learning loss. Now school leaders find it necessary to use the summer months to increase student achievement and prepare students for rigorous learning in the coming school year. This collaborative, quantitative study is an examination of one district's attempt to improve summer programming in order to meet the need for increased student achievement.

The district studied offered a four-week remedial summer program for many years. In response to the need to meet AYP goals, the district committee studied the summer school question and developed revised programming, such as meal times and an added enrichment class. The purpose of this study is to examine and compare achievement data from the four-week remedial summer program and the newly revised six-week summer program. For the purpose of this study, the program format was the independent variable, and the dependent variable was SAT 10 scores for students participating in both of the summer programs.

A *z*-test to find the difference in means was used to determine if 30 random students in the six-week program demonstrated a statistically significant increase in SAT 10 scores compared to 30 random students in the four-week program. Analysis of the data comparing achievement scores from the district's two summer programs suggest that student's mathematics scores can significantly be increased by participating in the six-week summer program. The district will need to explore other ways to improve Reading Comprehension and Complete Battery scores. Additional data was collected from surveys designed and conducted by the studied district. Students, parents, and teachers associated with the six-week summer program

were surveyed. Survey results strongly indicate all three groups believe the six-week summer program met their needs and support the growth of learning. A future study could compare students who did not participate in either of the summer programs to those participating in the six-week program.

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Abbreviations

ASCD	Association for Supervision and Curriculum Development
AYP	Adequate Yearly Progress
F/R	Free/Reduced Lunch Participants
GPA	Grade Point Average
HOSTS	Helping One Student to Succeed
IC	Infinite Campus Student Information System
IEP	Individualized Education Plan
MAP	Missouri Assessment Program
MO DESE	Missouri Department of Elementary and Secondary Education
NCE	Normal Curve Equivalent
NCLB	No Child Left Behind Act
NEA	National Education Association
OST	Out-of-School Programs
PDS	Professional Development School
PTA	Parent Teacher Association
SAT 10	Stanford Achievement Test
SD	Standard Deviation
SES	Socio-Economic Status
SSD	Special School District
UNESCO	United Nations Educational, Scientific, and Cultural Organization

Chapter 1: Introduction

Background of the Problem

Educators analyze academic achievement data and other student information for different reasons, but the main goal as educators is for all students to fulfill their academic potential. Since all students are different people with different learning styles, personalities, areas of strengths and weaknesses, the educational system must have programs in place to ensure that all of the varied students in the educational population are reached. Besides the students at the top of the academic scale, educators also need to focus, maybe even more so, on the students falling at the bottom of the academic scale.

When a student is not achieving academically, educators must consider many factors and ask themselves questions. Research demonstrates that one of the main contributions educators can make to ensure lower students are also achieving academic success is to increase the number of days spent in school (Fairchild & Boulay, 2002). The less time spent out of school the better; they will retain more knowledge from grade to grade because they are constantly immersed in the learning process in a safe environment, and this will hopefully help close the achievement gap between the highest and lowest learners.

Other nations have traditional school year calendars that require students to attend anywhere between 180 and 220 school days. In a study analyzed by UNESCO (2003), 33 of 43 countries studied had a school calendar over 180 days. The traditional school calendar in the United States averages 180 days per year, according to the National Center for Educational Statistics (2001-2002). In order for schools in the United States to extend their days in student attendance, many districts are finding that summer school academic programs are one option. According to Cooper (2003, Concerns Raised section, para. 2), when students are in school

during a portion of the summer months, there is not as much of a learning loss as there would be if the students took off the whole three months. This study will examine different summer school programs, and specifically focus on student results at the middle school level in one particular district in the Midwest.

Statement of the Problem

The school district being studied made a change from a four-week summer school program to a six-week summer school program to see if student achievement would increase and if learning loss would decrease. This would also help districts obtain AYP goals. Before designing the six-week program, the district initiated a study committee to research various summer programs throughout the nation and decided to make changes to their four-week program based on these results. These changes included increasing the time spent in the summer school program by adding meal times and enrichment classes. This collaborative study investigated whether the new six-week summer school program increased SAT 10 scores in the areas of language arts, math, and complete battery as compared to those same measures after only four weeks of programming. The independent variable was a six-week summer school program introduced in 2008. The dependent variable was the test data from the 2007 and 2008 language arts, math, and complete battery SAT 10 standardized tests.

In 2008, the district of study replaced the existing four-week remedial summer school program with a six-week program. In the past program, students attended remedial classes for three hours a day, totaling 60 hours of instruction. In the new six- week program, students still had remedial classes for three hours a day but also had an enrichment course for 90 minutes a day, plus breakfast and lunch. This new program had students in summer school for 180 total

hours, which is an increase of 120 hours over the old summer school model, and remedial class time increased by 30 hours.

Purpose of the study. The district being studied made a switch to the six-week program to close the achievement gap: to give all students attending the summer program the opportunity to increase their learning and, therefore, their standardized test scores. This summer program was open to all students at no cost. Students were invited based on standardized test scores or teacher recommendation. Some students attended only the 2007 or 2008 summer programs, but for this study, only those students who attended summer programs in 2007 and 2008 were selected for analysis. While there was not a specific summer school curriculum in place, it was an expectation that summer school teachers adhered to the guidelines and rigor of the district's curriculum offered during the regular school year. Fall 2007 and Fall 2008 SAT 10 scores for students who successfully completed both the four-week and six-week summer school programs were analyzed to see if there is a statistically significant increase for students attending the six-week program.

Role of the researcher. At the time of the study, the researcher worked as a middle school science teacher as well as a middle school assistant principal at one of the summer school sites for the district being studied. The researcher has since moved into the role of head principal at the same summer school site for the district being studied. In addition, the researcher is a member of the district summer program committee. The committee was formed in order to evaluate the summer program and to make recommendations to the Board of Education if modifications to the program are needed.

Alicia Bottorff was the companion researcher in this study. At the time of this study, Bottorff worked as a language arts teacher and an elementary school assistant principal. During

the summer months, Bottorff was an assistant principal at a summer program site for the district being studied. Currently, Bottorff is an assistant principal for an elementary school in the district being studied and continues to work as an assistant principal at a summer program site during the summer months. She also is a member of the summer program committee for the district being studied.

Both researchers worked in the district summer school program during the previous four-week program and the six-week program. However, during this time, the researcher and the companion researcher had not planned on conducting a summer program study. Brian Koop, the researcher, examined whether or not the new six-week program had a statistically significant increase on student achievement compared to the four-week program for the entire summer program population. Also, he investigated the perception of the change to the new six-week program in the minds of the students, staff, and the community. Alicia Bottorff, the companion researcher, focused her research on different demographic sub-groups of students to see if the six-week summer program had a statistically significant increase on student achievement when compared to the four-week summer program. Bottorff's results are discussed in Chapter 4.

Research questions. The following questions were addressed in the study:

1. Do students perform better on the SAT 10 test after attending a four week summer school course or a six-week summer school course?

2. Do students show a growth in language arts, math, or complete battery in either, or both of the summer school programs?

3. What are the opinions of the students, community, and staff of the six-week summer program?

Independent variables.

Four-week district summer school program. The 2007 program previously offered by the study district was a four-week program that consisted of three hours of instruction in math and language arts per day. Students attended this program from 8:30 until 11:30 in the morning. Program attendance lasted a total of 20 days.

Six-week district summer school program. The 2008 program provided a six-week program consisting of four and one-half hours of instruction in math, language arts, and an enrichment class per day. Students attended this summer school program from 8:30 in the morning until 1:30 in the afternoon. Total instructional time per day was four and a half hours. Program attendance lasted a total of 29 days.

Dependent variables.

Stanford achievement test series 10 scores. The dependent variable in the study was the average test score in NCE Reading Comprehension, NCE Total Math, and NCE Complete Battery. The Stanford Achievement Test was taken in the fall following each of the summer school programs.

NCE total math. The total math score includes tests taken in both math procedures and math problem solving.

NCE reading comprehension. This score evaluates how well students can read and then demonstrate knowledge about what they just read.

NCE complete battery. This is a cumulative score over all sub-tests taken within the SAT 10 achievement test. These sub-tests include: NCE Total Reading, NCE Word Study Skills, NCE Word Reading, NCE Reading Comprehension, NCE Total Math, NCE Math Problem

Solving, NCE Math Procedures, NCE Language, NCE Pre-Writing, NCE Composing, NCE Editing, NCE Spelling, NCE Science, NCE Social Science, NCE Listening, and NCE Thinking.

The study considered gains in academic achievement by comparing student scores on the SAT 10 following attendance in the first type of summer school program to scores achieved following attendance in the second type of summer school program.

Hypotheses

Null hypothesis 1. Student scores achieved on the SAT 10 following attendance in the six-week summer program will show no significant increase when compared to student scores achieved following attendance in the four week summer program, in the category of NCE Reading Comprehension.

Null hypothesis 2. Student scores achieved on the SAT 10 following attendance in the six week summer program will show no significant difference when compared to student scores achieved following attendance in the four-week summer program, in the category of NCE Total Math.

Null hypothesis 3. Student scores achieved on the SAT 10 following attendance in the six week summer program will show no significant difference when compared to student scores achieved following attendance in the four-week summer program, in the category of NCE Complete Battery.

Alternative hypothesis 1. There is a statistically significant difference in SAT 10 scores in NCE Reading Comprehension for students when comparing scores after participation in a four-week summer school program to scores after participation in the six-week summer school program.

***Alternative hypothesis 2*.** There is a statistically significant difference in SAT 10 scores in NCE Total Math for students when comparing scores after participation in a four-week summer school program to scores after participation in the six-week summer school program.

***Alternative hypothesis 3*.** There is a statistically significant difference in SAT 10 scores in NCE Complete Battery for students when comparing scores after participation in a four-week summer school program to scores after participation in the six-week summer school program.

Rationale for the Study

Districts throughout the country persistently look for ways to increase student achievement. These districts are working hard throughout the school year to raise student achievement only to see some groups of children regress over the summer months and therefore start the new school year even further behind their peers. This is one of three reasons that many school districts want to implement a summer program in order to address the issue of summer learning loss. The other two reasons are there is a need to provide support for students who are considered an academic risk and states across the country are holding school districts accountable through AYP which is outlined in NCLB. Districts must be continuously improving student achievement for all students. By addressing the issue of summer learning loss, districts are realizing that they can use the summer as a way to help students by giving them an additional educational opportunity and a safe place where they receive two meals a day.

Some districts, including the one being studied, have tried to create a summer program that maintains student achievement over the summer. In order to do this, school districts usually encourage at-risk students to attend their summer programs by offering the program at no cost, providing transportation, and offering an additional enrichment course to pique the students' interests, such as physical education or art. As a result, these students should help the district to

make AYP. NCLB not only looks at how the overall population is performing in each district but also how demographic AYP sub-groups are performing. Each student sub-group must also achieve a certain benchmark on AYP in order for the district to meet the NCLB guidelines. Increasing the student achievement of a small handful of at-risk students could make the difference in making AYP. The challenge is designing a summer program for those students who have been identified as at-risk, instead of allowing all students to attend, that will actually increase student achievement.

At the time of this study several schools in the district being studied were not meeting AYP requirements in one or more of the sub-groups defined by NCLB. The district wanted to use the summer months as a way to increase student achievement. The district already identified at-risk students by using scores on standardized measures given throughout the school year and academic performance with the classroom curriculum. At the end of the year those identified students were invited to attend a summer program to support their learning. Teachers could also recommend students who appeared to be struggling or performing below their peers. Once the students were identified, they were enrolled and scheduled into the appropriate summer classes based on the individual student's needs. With this information, the district being studied was able to provide support for these students and increase academic achievement.

Prior to the summer of 2008, the district being studied decided to evaluate the effectiveness of their four-week summer program. The district leaders examined the negative perceptions of the program from parents and students and also the lack of academic results the next school year. District personnel gathered together and analyzed other summer programs implemented by other districts around the country. From that information, the district leaders decided that a new six-week summer program would be implemented during the summer of

2008. This program had several differences from the four-week summer program. The most notable difference was that the new summer program would now be a six weeks long. It was the hope of the district that these changes to the district summer program would result in an increase in student achievement.

Generalizations.

Results of this study may be of interest to school districts of the same size and demographics. The district studied is located in the Midwest region of the United States in suburban St. Louis County, in St. Louis, Missouri. The district is comprised of four high schools (grades nine through 12), six middle schools (grades six through eight), 19 elementary schools (grades kindergarten through five), two gifted elementary centers (kindergarten through two and three through five), one individualized learning center for secondary students (grades 10 through 12), and two early childhood centers (ages three through five). The student population reported in 2009-2010 was 22,291 (MO DESE, 2009g). It was also reported that the student to teacher ratio in 2009-2010 was 15:1 (MO DESE, 2009h).

Limitations of the Study.

Time. There was approximately a three-month period that passed from the end of the summer program to when the participants took the SAT 10.

Location. Students attended one of two middle school summer school sites during the 2007 and 2008 summers. Some staff members remained the same in the 2007 and 2008 programs, but some staff members were different. Curriculums may have slightly varied from teacher to teacher, but stayed mostly the same. The SAT 10 was administered at different home middle schools and also in differently structured classrooms with different teaching styles.

Implementation. The SAT 10 was administered by many different teachers and at different locations throughout the district. While the SAT 10 comes with thorough directions on how to administer the test, and a standardized script to read, not every student took the test with the same teacher and/or in the same environment. The district being studied has a testing window, but does not specify dates or times for the test to be administered.

Maturation. Students could have possibly scored better on the SAT 10 after the six-week summer program simply because they were another year older.

Incomplete data sets. Students who did not have complete SAT 10 scores for both summer 2007 and 2008 did not have their data included in the study.

Role of the researcher. The researcher and companion researcher both worked as administrators in the studied district's summer school program. SAT 10 standardized test data was used in order to eliminate bias. Neither researcher was involved the collection of the test data.

Definition of Terms.

***Achievement gap*.** The achievement gap is a persistent, pervasive and significant disparity in educational achievement and attainment among groups of students as determined by a standardized measure (Public School of North Carolina, 2010)

***Enrichment summer school program*.** A series of one-week hands-on, interactive classes offered throughout the district's six-week summer program (Rockwood School District, 2010)

No child left behind (NCLB). Under *NCLB*, states are working to close the achievement gap and make sure all students, including those who are disadvantaged, achieve academic proficiency. Annual state and school district report cards inform parents and communities about state and school progress. Schools that do not make progress must provide supplemental

services, such as free tutoring or after-school assistance; take corrective actions; and, if still not making adequate yearly progress after five years, make dramatic changes to the way school is run (U.S. Department of Education, 2004)

***Stanford 10 test scores*.** The Stanford Achievement Test is a standardized test used to measure academic knowledge of elementary and secondary school students in the United States. The test is available in 13 levels that roughly correspond to the year in school. Each level of the test is broken into sub tests or strands covering various subjects such as Reading Comprehension, Mathematical Problem Solving, and Science. Formerly known as the SAT, it was often confused with the Scholastic Aptitude Test. It is now more commonly referred to as either the Stanford or the SAT followed by the edition number, for example Stanford 10 or SAT 10, referring to the 10th Edition (Harcourt Assessment Inc, 2004)

***Summer school program*.** School, academic course, etc., held during the summer (Collins Discovery Encyclopedia, 2005)

Summary

This collaborative study compared the relationship between the Stanford Achievement Test (SAT 10) and two structures of a summer school program. This study was conducted to see if extending from a four-week program to a six-week program produced statistically significant improvement in test scores. A summer school program can be a useful way of raising student achievement; therefore, helping districts to make AYP as defined by NCLB. The investigator of this study, Brian Koop, determined whether overall student achievement improved as a result of the new six-week program as well as the perceptions that school patrons held regarding the program, and the collaborative partner, Alicia Bottorff, analyzed the data to determine if there

was a statistically significant gain in student achievement in the African-American, White, Special Education Students, and Free and Reduced Lunch AYP Sub-Groups.

Student achievement is a high priority for all public school districts in the nation, and districts are always looking for ways to increase this student achievement through various programs and incentives. During a traditional school year, districts share ideas and best practices, and summer programs are no different. There are countless methods, strategies, and programs available for students to constantly be achieving at high levels during the summer, as well as during the school year. The district being studied made significant changes to their summer program based on current research, and this study investigated the effectiveness of those changes. The next chapter reflects current research on summer school best practices which the district examined to inform changes in the program.

Chapter 2: Review of Literature

When schools and educational systems were designed, the educational schedule needed to revolve around the growing seasons of crops. That need is not there anymore. “Today, about 3% of Americans’ livelihoods are tied to the agricultural cycle, and air-conditioning makes it possible for schools to provide comfortable learning environments year-round” (Cooper, 2003, Introduction section, para. 1). The more time a student spends in school will equal the more knowledge a student can gain, so educators ponder why students only attend school for nine months out of the year. “As freshman-level teachers know, many times students enter high school far below where they need to be to be successful. Luckily, more state leaders are recognizing that these students need extra support” (Christie, 2008, p. 157). This makes the case for offering an effective summer program in middle school even stronger.

Problems with the Traditional School Year

> Clearly, we can no longer ignore the fact that the long summer vacation period represents critical hours for learning that must be fully utilized—for those ‘beating the odds’ during the school year and for those who are not—if we are going to meet our educational imperatives in a global economy. (Miller, B., 2007, p. 7)

Facing facts, there are many students who need support from the educational system all year long. Some researchers, such as Entwisle, Alexander, and Olsen (as cited in Miller, B., 2007) referenced this as the faucet theory, whereas “learning resources are turned on for all children during the school year. But in the summertime, the faucet is turned off” (p. 7). Many problems develop for students throughout the three month summer vacation, such as summer learning loss, a large part of the fall of the new school year spent on curriculum review from the previous year, the achievement gap between middle class socio-economic students and low socio-economic

students, a lack of nutritious meals, a lack of affordable childcare for the parents, and dangerous out-of-school time from a lack of supervision. These issues will each be discussed in this section.

Summer learning loss. The biggest concern with students having three months' vacation in the summer is the amount of summer learning loss that occurs. "Children learn best when instruction is continuous. The long summer vacation breaks the rhythm of instruction, leads to forgetting, and requires a significant amount of review of material when students return to school in the fall" (Walker, 2004, p. 4). Many students do not focus as much or as hard when they have the freedom of summer, and regression is almost sure to take place.

> It's difficult to imagine a professional musician or athlete whose performance would not suffer from a three-month vacation from practice each year. Musicians who only practiced for nine months of the year and never touched their instruments during the remaining 25% of the year would be at a considerable disadvantage compared to those who honed their skills year-round. Similarly, it's reasonable to assume that professional athletes who completely abstained from exercise during the off-season would be unable to compete at optimal levels. While it's clear that everyone should experience periodic breaks from their daily routines, it is also true that prolonged periods of time without practice affects performance. Common sense suggests that consistency in training and practice is a key to achieving and maintaining high levels of professional performance. (Fairchild & Boulay, 2002, p. 2)

Some researchers term this the "summer slide". "Summer Slide is a term documenting the learning losses by students following the long summer break" (Borman, 2001, p. 27).

> Although summer school is clearly not an educational "silver bullet", proactive, multi-year programs may play a vital role in preventing summer slide, closing the test-score

> gap, and providing children the extra learning time many of them need—and all of them can use. (Borman, 2001, p. 29)

Summer learning loss can affect some academic subjects over others. "Summer loss was more pronounced for math overall than for reading overall. The authors speculated that children's home environments might provide more opportunities to practice reading skills than to practice mathematics" (Cooper, 2003, Research on Summer Learning Loss section, para. 2). Many families find it easy to read with their students or get access to a library over the summer, whereas they may not have the resources or skills to bring math into the home environment. This can also affect students' performance on standardized tests. "Students typically score lower on standardized tests at the end of summer vacation than they do on the same tests at the beginning of summer vacation" (Walker, 2004, p. 4). Because of these statistics, many teachers are finding the beginning of each school year is filled with review of the past year's academic content.

Review time in the fall. Many teachers have concern with how much they have to review upon students' return to school in the fall, as well. "As any teacher can attest, the early weeks of the school year are often spent reviewing material learned in the previous grade" (Miller, B., 2007, p. 8). One middle school math teacher stated, "my students need at least a month to review basic math before we can move ahead" (Black, 2005, p. 39). At Nicolet Elementary School in the Midwestern United States, students who were performing adequately in reading during first grade struggled at the beginning of second grade. A new reading assessment revealed "discrepancies of up to 17 levels in the scores from the previous year. For some first graders, the attainment of even the most basic reading skills comes later in the year than for other first graders" (Malach & Rutter, 2003, p. 50). Review is necessary for all students not involved in some sort of academic program during the summer, but even more so for

students of low socio-economic status. According to data from over 50 studies, "children from low-income families lose nearly three months of grade-level equivalency during the summer months, compared to an average of one month lost by middle-income children" (Fairchild & Boulay, 2002, p. 6).

The socio-economic achievement gap. "Overall, studies show that students from families with lower socioeconomic status (SES) have learning rates during the school year similar to their more advantaged counterparts' but fall behind during summer vacation" (Douglas, 2007, p. 39). According to Fairchild and Boulay (2002), the most significant learning losses for students from low income backgrounds are in reading comprehension and word recognition.

During the summer, students from low SES homes are not able to afford the luxuries that are provided to them during the regular school year because of the absence of funding, transportation, etc.

> On average, these kids have less access to material resources such as books and computers, fewer enriching experiences such as family trips and summer camps, as well as fewer high-quality educational interactions with their parents, whose time and energy are often consumed by the challenges of struggling with poverty, raising a family as a single parent, and countless other obstacles. (Johnson, 2000, Introduction section, para. 2)

This is not the case for all students of low SES, however. According to Fairchild and Boulay, "low-income children who spend 25-35 of their non-school hours each week in engaged learning (such as reading for pleasure and playing educational games) received higher grades in school than their more passive peers" (2002, p. 15). Summer school programs can provide the opportunities for both of these activities.

But without this extra enrichment, this achievement gap not only increases during the summer, but, "the academic gap between rich and poor children increases throughout the elementary school years" (Johnson, 2000, Introduction section, para. 3). In research conducted in 2004, Downey, Von Hippel, and Broh concluded that "nearly every minority- white and SES-based achievement gap grew faster during the summer after kindergarten than during the kindergarten and first-grade school years" (as cited in Borman & Dowling, 2006, p. 25). Without the constant reinforcement of learning in a structured environment day to day, students cease to practice the academic routines that have become engrained. According to research completed by Alexander, Entwisle, and Olson (as cited in Monrad & May, 2001), "by the end of the fifth grade, the difference in achievement between poor and non-poor students was more than 2 years in verbal achievement and 1.5 years in math achievement" (Introduction section, para. 4). This gap continues to grow year after year.

> Findings suggest that elementary students with lower SES, begin school with lower reading comprehension skills and continue to lose ground throughout elementary school due to lack of progress during the summer months. (Douglas, 2007, p. 39)

The learning loss and widening of the gap continues to grow in middle school years. When students start middle school with this achievement gap already beginning to form, it can only grow larger, sometimes with a "cumulative lag of 2 years in reading achievement" (Borman & Dowling, 2006, p. 26). Another study by Cuddapah, Masci, Smallwood, and Holland (2008) showed first-through eighth-grade data for their participants entering the ninth grade: "In year 9, the low-SES group's Reading Comprehension average lagged seventy-three points behind the high-SES group's, a large difference of roughly 0.88 SD" (p. 21). The research determined that although about a third of the difference was present prior to the students starting first grade in

1982, the remaining two thirds of the achievement difference had built up during the in-school and out-of-school experiences over the course of the subsequent eight years. Since students were tested at least once or twice a school year, the school year was determined to have little effect on the disparity of achievement scores. Students who come from a low-income environment experience the gap over and over each summer, and after many summers in a students' education, that equals a huge amount of learning loss. Barton looked at 36 states and their fourth grade data, and found that,

> between 1990 and 2000, 27 states raised average scores, 26 states raised bottom-quartile scores, and 27 states raised top-quartile scores. The bad news is that, at the fourth grade, only 14 states reduced the gap between top and bottom quartiles, only two reduced the white/minority gap, and only one reduced the gap between those eligible for subsidized lunches and those not eligible. At the eighth grade, Barton found that only eight states reduced the gap between top and bottom quartiles, no state reduced the white/minority gap, and no state reduced the gap between those eligible for subsidized lunches and those not eligible. (Bracey, 2002, p. 498)

These same research theories continue to be evident in high school experiences as well. Looking at high school graduation and involvement in college-preparatory programs, "over a third of the low SES group and just 3 percent of the high group are permanent dropouts, and while almost 60 percent of the high SES group attended four-year college by age 22, just 7 percent of low SES youth did so" (Alexander, Olson, and Entwisle, 2007, p. 171). Besides looking at college preparatory statistics, state, district, and local assessments can also provide strong information regarding the achievement gap between the socio-economic classes. According to Braswell, Lutkus, Grigg, Santapau, Tay-Lim, & Johnson (as cited in Poggi, 2004,

The Need and Demand for Additional Instructional Support section, para. 3), "results from the 2000 NEAP mathematics assessment show overall gains in fourth, eighth, and twelfth graders, average scores since 1990. However, 1996 to 2000 the percentage of twelfth graders reaching the basic level declined."

No matter what the grade level, low SES is holding students back from the education they deserve. "All lower SES students, regardless of the resources in their home, lost roughly equal amounts of math skills over the summer" (Cooper, 2003, Research on Summer Learning Loss section, para. 3). There are fewer opportunities in the home and outside of the home, as well as minimal resources to help the students practice and learn new skills. "During the summer, low-income and other disadvantaged youth fall further behind academically than their more advantaged peers—in part, due to a lack of enriching opportunities" (Wimer & Gunther, 2006, Introduction section, para. 1). Fewer opportunities causes reading performance to decline and standardized test scores to lower. "On average, middle-income students experience slight gains in reading performance over the summer months. Low-income students experience an average summer learning loss in reading achievement of over two months" (Walker, 2004, p. 4). Students score better on tests at the beginning of the summer than they do at the end of the summer because they have been immersed in classroom instruction. According to Miller, schools are not only creating an achievement gap during the summer months, they are also creating an opportunity gap.

> While their middle-class peers are engaged in activities and often enrolled in enrichment programs and camps that strengthen and reinforce all kinds of learning, the vast majority of children in lower-income communities have little or no access to such opportunities. Hence, what we have is an enormous opportunity gap. (Miller, B. 2007, p. 5)

Besides educational opportunities students are missing by following the schedule of the traditional school year, there are also many students who are not able to receive the proper nutrition during the days they are not attending school.

Lack of nutritious meals in the summer. "Large numbers of students who qualify for federally subsidized meals do not have the same level of access to nutritious meals during the summer as they do during the school year" (Walker, 2004, p. 4). Many students are in situations at home where there is no adult present due to work schedules, and no spare income to provide the nutrition needed by a growing child. According to the Food and Research Action Center (as cited in Walker, 2004), "only 1 in 5 (21.1 per 100) of the 15.3 million children who receive free or reduced-price school lunches on a typical day during the regular school year participate in federal nutrition programs during the summer". This is a large number considering all of the school aged-children in the United States. "Free and reduced-price lunches are received by only 3.2 million of 14.9 million eligible children during the traditional nine-week summer break" (Stenvall, 2001a, p. 21). If more of these eligible students were to attend a summer program, they would be able to take advantage of the nutritious meals that various government programs offer all year.

According to Fairchild, McLaughlin, & Costigan (as cited in Fairchild, 2008), "good nutrition is a vital component of a child's education because it stimulates learning, improves school attendance and behavior, and contributes to cognitive development" (Keeping kids healthy section, para. 1). If sufficient nutrition is missing for many students during the summer months, then that stimulation and contribution is missing. If students do not have access to healthy meals and physical activity in summer programs, their likelihood to become unhealthy and possibly obese can increase. According to the Food and Research Action Center (as cited in

Fairchild, 2008), "obesity is linked to lower academic achievement, depression, and chronic health problems" (Keeping kids healthy section, para. 2). Most students not in school are not monitored by an adult that can ensure proper nutrition is taking place, and also guarantee the safety of the children in general inside the homes during the summer.

Lack of affordable child care and supervision in the summer. Many families cannot afford the newly added cost of childcare in the summer months and have to provide for their families in the best way they can. In the geographic area of the study, many daycare facilities charge anywhere from $650-$1000 per month. "The lack of affordable child care may require older children in low-income families to stay at home to care for younger children during the hours in which their parents work" (Miller, K., 2007, p. 8). But some families do not have older children to create their own in-home daycare, and young children just have to stay home alone. This is not a productive solution for the children based upon studies that show out-of-school time is a dangerous time for unsupervised children and teens (Walker, 2004 p. 5). A study from the Carnegie Council showed that "they are more likely to use alcohol, drugs, and tobacco; engage in criminal and other high-risk behaviors; receive poor grades; and drop out of school than those who have the opportunity to benefit from constructive activities supervised by responsible adults" (as cited in Walker, 2004, p. 5). This is not only an issue for educators, but also for society at large.

Many neighborhoods recognize they have families in these situations but struggle with solutions. There is concern for the children put in these situations because "neighborhood safety, cohesiveness, and areas for play all influence learning and development, as do health, housing, and nutrition" (Miller, K., 2007, p. 8). If students were in school all year, instead of having this

time in the summer months to struggle with these issues, it would allow students to progress academically in a safe environment. Many children during the summer months

> come home to an empty house in an empty neighborhood. They tend not to be allowed out of the house. They tend to be afraid to answer the door and to have limited phone access, but they often have unlimited television access. This pattern translates to 15 to 20 waking hours weekly without live human contact for as many as 28 percent of the nation's young people during a time that they should be learning to develop relationships and experience their community. (Kugler, 2001, p. 4)

Members in a community want children and adults alike to feel safe in the area in which they live. "Today, more than 28 million school-aged children have parents who work outside of the home. Most voters continue to believe there is a need for some type of organized activity that provides children a safe environment and opportunities to learn" (Poggi, 2004, The Need and Demand for Additional Instructional Support section, para. 7).

Community members are striving to make neighborhoods crime free, but the temptation of the teenage hormones and unoccupied time, is making the battle tough to fight. According to Kugler (2001), juvenile crime peaks during the after school hours because students are bored, and the solutions they develop for their boredom may be intentional risks to themselves and others (p. 5). If students had a productive place to go during the summer months to continue their education, growth, and knowledge, many of these problems could be eliminated. If an educational system could be created that could "modify" the traditional school year and the time students learn, all parties involved would experience more success.

Eliminating the Summer with Modified Calendars

Using the traditional school calendar has many downfalls that are not making all

students experience success in their education. With the traditional school schedule, "there often is not sufficient time in the school day to bring all students to high levels of learning" (Miller, K., 2007, p. 1). There are many schools of thought on solving this problem, such as adding time to the school day, adding days to the school year, modifying the school calendar to expand throughout 12 months, or adding a summer school program.

Adding time to the school day. There are many school districts that have chosen to add time to their existing school days. "The James P. Timilty Middle School in Boston Massachusetts, offers 80-90 minutes classes in the core subjects and 50 minute classes in the subject areas of theater, art, and gym. The longer classes add up to about 35 extra days of schooling each year" (Chmelynski, 2006, p. 41-42). Another school district in Springfield, Missouri, tested adding more time to their day, stated by Chmelynski. "Campbell Elementary School has had good results with a voluntary extended-day program. Twice a week, participating students stay for an extra hour, mainly for extra help with communications arts and mathematics" (Chmelynski, 2006, p. 43). Unfortunately many school districts have not chosen this option even though national studies from decades ago have shown it to be necessary.

> Twenty years after *A Nation at Risk* (National Commission on Excellence in Education, in 1983) recommended extending the length of the school day to seven hours and instituting a 200-to 220-day school year, most schools still use a five-or six-hour day and a 180-day school year. (Poggi, 2004, The Need and Demand for Additional Instructional Support, para. 6)

Districts are simply not receiving the support from family and community members to add time onto the school day. When Domonique Toombs learned she would stay "for an extra three hours each day in sixth grade at Boston's Clarence R. Edwards Middle School, 'I was like, 'Wow, are

you serious? That's three more hours I won't be able to chill with my friends after school'" (Associated Press, 2009, para. 8). Adding time to the school day could be costly and unpopular when considering the other available options.

Adding days to the school year. Another strategy school districts are trying in hopes of raising student achievement and closing the achievement gap is adding more days to their school calendar. "Extended school year programs seek to increase the total amount of time students spend in school by adding instructional days to the calendar" (Fairchild & Boulay, 2002, p. 13). "Most students in the United States spend between 175 and 180 days in school each year, while students in Japan spend 240 days in school" (Fairchild & Boulay, 2002, p. 13). Students in the United States are constantly being compared to the students in Japan, and maybe the 60 extra days in school is accounting for the difference. "We all know that our students attend school far fewer days than those in Japan, Germany, Israel, Korea, and other countries, and many educators would like to similarly extend the American school year" (Stenvall, 2001a, p. 19). One district in Massachusetts decided to try the school year extension and experienced successful results. "The Revere, Massachusetts, school district extended the school year an additional 20 days into the summer last year for 130 third-graders who were reading below grade level. About 85% of the students reached or exceeded grade level for reading" (Chmelynski, 2006, p. 42). Adding days to the school calendar could be a solution to raise student achievement, but some suggest modifying the calendar in other ways.

Changing the calendar without changing the length of the school year. Another school of thought is that American students are experiencing learning loss based solely on the three month break from schooling, and that extra days or hours do not necessarily need to be added to our school year. "Many proponents of school calendar change call for modified

arrangements in which children might or might not attend school for more days, but the long summer vacation is replaced by shorter cycles of attendance days" (Cooper, 2003, Three Remedies for Summer Learning Loss section, para. 6). A meta-analysis by Cooper et al. (in press) focused on school districts that modified their school calendars but did not increase the length of their school year. The results were positive, but since all school districts are not experimenting with the calendar change, the significant impact was not a huge one. "First, 62% of 58 districts reported that students in the modified calendar program outperformed students in the traditional calendar program Second, the effect for 39 school districts favored modified calendars, but the size of the impact, though significant, was small" (Cooper, 2003, Three Remedies for Summer Learning Loss section, para. 7). The common point of success in these studies was that school districts were operating without the long summer break. According to Cooper et al. (2003) "in school year 2000-2001, more than 2.16 million students in 45 states attended more than three thousand schools that operated without the long summer break" (p. 3). Many schools followed this method, including schools in California, Hawaii, Arizona, Nevada, and Texas, but "the U.S. elementary school with the longest continuously running modified calendar is located outside St. Louis, Missouri, in the Francis Howell School District. It has been in operation for nearly 30 years" (Cooper, Charlton, Valentine, and Melson, 2003, p. 3).

However, besides the slight gains found with modifying the school calendar throughout the 12 month calendar, there are also some negatives that make this seem like it is not the best choice for students and their achievement. "A lot of teachers in our system feel like you just get things going and then you have to take a break. You have one break after another and it never stops" (Anderson & Blankenship, 2007, p. 10). The momentum of instruction and smooth transitions can be lost when there are continuous breaks built into the school calendar. Students

may not take the chunk of learning weeks seriously because they know "freedom" is just around the corner every several weeks. Another issue is the cost to run the schools during 12 months compared to 9 months. "The electricity to run our new high school for the month of August cost $20,000. That money would be much better spent serving the children" (Anderson & Blankenship, 2007, p. 10). Also, having school all year does not allow the opportunity for students to have a part-time job in the summer to help pay for some of their life expenses. "And many of the students need to work or they'll never be able to go to college. We have a lot of students in one-parent families" (Anderson & Blankenship, 2007, p. 10).

Another option, which almost every school district in the nation utilizes, is summer school. This is an extension of the regular school year and helps reduce the negative effects of having three months off from school in the summer. "If school hours are extended, time alone will not make the difference, but studies have shown that successful summer programs get children excited about learning and increase their motivation to pursue knowledge in the months and years ahead" (Miller, K., 2007, p. 12).

Benefits of Summer School Programs

"The growth of summer programs is linked to the expanding educational standards movement and, even more directly, to the current push to end social promotion" (Cuddapah et al., 2008, p. 264). Almost all of the larger school districts in the nation offer summer school programs of some sort.

> From mandatory classes for students who failed high-stakes tests to enrichment programs on virtually any topic, summer school 2001 was big nationwide. The numbers were astounding. In New York City, for example, nearly 30 percent of the public school system's 1.1 million students were enrolled in some sort of summer school program- at a

> cost of $175 million. Estimated enrollments in other large districts include 234,000 in Los Angeles, 30,000 in Baltimore, 33,000 in Washington, D.C., 50,000 in Chicago and 90,000 in Broward County, Fla. (Glass & Gursky, 2001, p. 7)

The achievement gap is something constantly seen in schools when comparing various student groups. According to Evans (as cited in Edmonds, O'Donoghue, Spano & Algozzine, 2009), "many researchers and other professionals believe that the stability of the gap between the performances of diverse groups of students is the most stubborn, perplexing issue confronting American schools today" (p. 213).

Supporting parents with intervention strategies. Schools and communities see the need to tailor their educational platform to support parents with intervention strategies for their students and design curriculum during the summer months which will help lower the achievement gap the way that the regular school curricula can not. According to Marzano (2000), "student characteristics such as home environment, learned intelligence/background knowledge, and motivation account for 80% of the variance of student achievement" (as cited in Miller, K., 2007, p. 2).

During the summer months, many parents need support with helping their students succeed educationally. A recent survey by the Academy for Education Development found that 24% of American parents want their children to learn new things during the summer, and 22% want their children preparing for school. (Walker, 2004, p. 7). Not all families and parents have the skills or the time to make sure children receive enriched experiences when school is not in session. Research shows that students from middle and upper-income households may have more opportunities, but students from lower income households may need the intervention of a structured summer school program in the schools.

> The reason summer courses tied to the state curriculum are the most effective, is that middle-and upper-income students generally have families who use a broader vocabulary and keep books in the home. They also are more likely to get their children involved in educational summer activities, like trips to museum, arts classes, or scout camps. (Buchanan, 2007, p. 34)

Also, according to Buchanan, many children from lower income homes do not have many positive things to do around the neighborhood, so if schools can offer summer school programs to *all* students, it is simply "good public policy". "Academically focused summer programs can meet parents' needs and desires to support youth with fun and enriching opportunities and promote learning when school is not in session" (Wimer & Gunther, 2006, Introduction section, para. 2). Supporting the parents as well as the students will help make the positive perception of a summer program increase.

Lowering the achievement gap. Besides increasing achievement through parental support, summer programs can help lower the achievement gap by helping to prevent learning loss, providing the time for students to gain more instruction throughout the school year, and increasing the amount of time students are engaged in learning. According to Dr. Beth Miller, the most successful summer programs "combine the best of youth development and academic enrichment" (2007, p. 11). If a student attended school in the summer, he or she "could increase the amount of time spent engaged in learning activities by as much as 30-35%" (Fairchild & Boulay, 2002, p. 7). By students attending quality summer programs, and avoiding two months of reteaching in the fall, "students would gain approximately 8-10 weeks of instructional time" (Fairchild & Boulay, 2002, p. 7).

"Summer learning programs, encompassing everything from summer camps to library reading clubs, summer schools to cultural enrichment programs, are playing an increasingly important role in lowering the achievement gap" (Johnson, 2000, Introduction section, para. 4). School districts are trying to remain creative in their summer curricular course selections, offering not only remedial courses, but also enrichment courses to cover the ever-expanding needs of all student stakeholders. One school district, the Meriwether County School District, "uses a national program called HOSTS, which provides intervention strategies to assist struggling students" (Buchanan, 2007, p. 35). Another school district offers a pre-K summer literacy program to try to lower the achievement gap.

> In recent years, both educational policy and best practices have shifted away from intervention models in which children must be experiencing academic or social difficulties to receive specialized services and toward prevention models in which children are placed into prevention programming if they are thought to be at risk for developing academic or social difficulties in the future. We reasoned that positive models focusing on increasing children's successful experiences can often effectively reduce the number of children who later require lengthy and costly individualized services. (Edmonds, O'Donoghue, Spano, & Algozzine, 2009, p. 213)

Another school district, in Texas, bases their remediation programs on students who have not achieved certain academic targets by the end of certain points in their educational careers. According to Jacobson, if elementary students do not meet reading targets by the end of third grade, they have to retake the test to enter fourth grade in the fall. " 'Our scores were pretty good this year,' said DeEtta Culbertson, a spokeswoman for the Texas Education Agency. Results show that 93 percent of 3rd graders passed the state test" (2008, p. 18). Intervention even

continues through college, where one college offers programs that offer remedial coursework during summer prior to the freshman year, to prepare at-risk students for college, and to reduce the need for offering so many remedial courses. “Pre-freshman summer programs are designed to enable students to get build academic skills, become acquainted with college resources and expectations, develop the structure and discipline needed in order to meet these expectations, and form an attachment to the institution” (Maggio, White, Molstad & Kher, 2005, p. 2). Besides the aforementioned summer school program designs, many states and districts are creating more and more specialty programs to fit the ever-changing needs of their student populations.

Different Ideas for the Design of Beneficial Summer School Programs

Every school district throughout the nation is made up of widely different student populations. This diversity must be considered when programs are designed to fit the educational needs of each school district. “President Bush has called for increasing flexibility for states and districts to help turn around their struggling schools by allowing them to tailor interventions to each school and to measure individual students’ achievement growth over time” (Fitzgerald, 2008, 2008 State of the Union Analysis section, para. 2). Also, according to Fitzgerald, student growth from year to year is a valid measure of learning and local schools should be able to choose the best intervention for improvement. Many schools, over 90% according to Fairchild and Boulay (2002, p. 11), favor summer school programs that focus on academic remediation to close the achievement gap, but there are also programs that offer specialized curricula, educational field trips, university/community partnerships, or project-based learning.

Academic remediation. “Summer school programs which focus on lessening or removing learning deficiencies do have a significant positive impact on the knowledge and skills of participants” (Fairchild & Boulay, 2002, p. 11). School districts need to design their summer

school programs using teacher reports as well as state, district, and classroom assessments that provide evidence to support the need for academic remediation. “Many programs serve youth who did not meet certain minimum levels on standardized tests and remedial summer programs offered instruction in math and language arts” (Wimer & Gunther, 2006, Promoting Learning section, para. 2).

Many districts offer remedial summer programs to all students in a district, while others target the students that will attend the program. According to Poggi (2004), there are positives and negatives to targeting kids. Positively, students will receive services, but negatively, they may feel labeled or punished (Issues and Challenges Faced by Decision Makers section, para. 3).

The most common academic remediation practice for summer school is to target at-risk populations in the school district. According to Edmonds et al.(2009), one example includes a summer intervention program for children coming from preschool and starting kindergarten. These students were in the bottom quartile determined by student data and received interventions to prevent from being at-risk for literacy problems during the traditional school year. (p. 214-215). The results of the study were promising and demonstrated that summer intervention, even before formal schooling begins, is a successful path for student academic achievement. Another program, the “Gear-Up” program in Washington helps identify seventh and eighth grade students who need help in school.

> Four-to-six week summer programs for identified incoming high school students were put into place to provide extra help---double doses of math and reading/literacy. There is careful monitoring through meaningful advisory programs (e.g., an “advocate” for every family) and a goal of an annual increase in the number of students taking Algebra I in 8th grade. Besides the summer intervention, the district also provides lower teacher/students

> ratio in 9th grade, common planning time for 9th grade teachers, and transition classes for English and mathematics using a block schedule. (Christie, 2008, p. 158)

This program shows that just offering school in the summer can not be the only intervention taking place. Districts also need to provide support with teacher collaboration time and smaller class sizes. Districts also need to look at standardized data and reflect on the data after the program is implemented, as well. According to Buchanan (2007), in California's Natomas Unified School District, the district examined student data to invite struggling students to receive extra assistance. (p. 31-32).

Some school districts have gone even farther than simply targeting students for summer academic remediation; they have mandated requirements that students must pass summer school and a standardized assessment to move on to the next grade.

> In Louisiana, it's the law: Students in grades 4 and 8 are required to pass both the math and language arts portion of the Louisiana Educational Assessment Program (LEAP) before they can be promoted. Those who do not take the test in the spring or who do not pass the test can attend summer school before being re-tested. (Glass & Gursky, 2001, p. 7)

Another school district in Texas, the Corpus Christi Independent School District, has had a program where students have to pass nine of ten standards to be promoted. "If they only pass eight, they have to go to summer school to master the final two- or repeat the course. The attention to specific standards, as opposed to a more general summer class, helps students focus on the work they need to do" (Glass & Gursky, 2001, p. 8).

Furthermore, in Georgia, a "largely low-income district began a summer program to help children get through Georgia's end-of-grade getaways, which require students in grades three,

five, and eight to pass state tests before they are promoted" (Buchanan, 2007, p. 35). "Almost 38 percent of eighth graders and about 28 percent of fifth graders did not pass the tests for their levels. That's about 82,000 students for the two grades" (Jacobson, 2008, p. 18). This stretches much further than just the southern part of the United States; school districts on the east coast are jumping on board as well.

> Delaware began requiring every student who fails the mandatory state test at the end of grade three, five or eight to attend summer school and retake and pass the test in order to be promoted to the next grade. School districts are required to offer summer school for failing students. (Denton, 2002, p. 4)

This is also the case for the whole state of Virginia. "In Virginia, every student who does not pass all required assessments by the end of grade three, five or eight must attend a summer school program or must participate in an unspecified 'alternative support program' that does not necessarily have to include summer school" (Denton, 2002, p. 4). In Johnston County, North Carolina, there is also an effective system in place for helping struggling students. According to Denton (2002), the district identifies students based on their standardized test scores and requires minimum scores to be obtained by third through eighth graders. If students are required to attend summer school, teaching strategies will differ from those used during the year.

A popular form of academic remediation for many districts' summer school programs includes a focus on literacy interventions and supports because literacy is seen as the base foundation for the knowledge of all other subjects.

> An example of this type of programming effort was seen in Luftig's (2003) study of 209 first-fourth-grade students who were from low-SES backgrounds and were not retained or referred for special education services. These children participated in a 2-3 week summer

> literacy intervention that was either (a) school sponsored or (b) private and for profit; an average of 19 students from each grade were placed in a control group receiving no intervention services. After completing the intervention, the intervention groups in each grade performed higher than the control group on a posttest measure of literacy skills. Specifically, over the summer months, the students in the intervention groups maintained or increased their literacy skills, whereas the students in the control group regressed. In addition, there was no difference among students who participated in either the school-sponsored intervention program or the private, for-profit intervention program. (Edmonds et al., 2009, p. 214)

This study proves that interventions can help even the lowest readers in a variety of settings. A similar program was introduced in West Virginia. "The WV Reads program was established to provide summer school to students with reading problems. The program uses strategies based on research, has measurable goals and benchmarks, and identifies other resources to be used in addition to state funds" (Denton, 2002, p. 5).

Starting intervention early in children's lives proves to have worked in the Opening the World of Learning: A Comprehensive Early Literacy Program. "Children participated from 8:00 a.m. to 5:00 p.m. 5 days per week. The schedule on each day involved 3 hours of intensive literacy instruction grounded in the program" (Edmonds et al., 2009, p. 215).

> The present results illustrate that clearly defined, well-structured literacy activities can be successfully implemented and evaluated, resulting in important improvements in the early literacy skills of young children who are otherwise unlikely to experience systematic educational programming during the summer before beginning formal primary schooling. (Edmonds et al., 2009, p. 218)

Another successful program in early literacy intervention is the Teach Baltimore program. "Strong components of the Teach Baltimore prototype include small-group or individualized instruction, early intervention during the primary grades, parent involvement and participation, and careful scrutiny for treatment fidelity, including monitoring to ensure that instruction is being delivered as prescribed" (Borman & Dowling, 2006, p. 30). "Improvements in early literacy skills (i.e., letter naming, picture naming, identifying sounds, and rhyming words) were consistently larger for children who participated in summer school than for their peers who did not receive additional or special intervention" (Edmonds et al., 2009, p. 219). Helping students that struggle with academics will help the achievement in not just the summer programs, but with all students' academic experiences.

Designing specialized curricula. Many districts have gone even further than just offering literacy interventions; they have designed specialized curricula. "KidzLit targets literacy by exposing youth to engaging books and by encouraging them to express their feeling and grapple with big ideas through discussion, drama, art, movement, and writing" (Wimer & Gunther, 2006, Promoting Learning section, para. 3). Programs that involve students in academics and social experiences promote successful learning and a positive self image. By offering academic and enrichment classes at the same time it will "attract students with otherwise full schedules" (Stenvall, 2001b, p. 36). A successful example is the Continued Connections Program.

> After review of a map of the school's attendance boundaries, the addresses of the target population were plotted. Five geographically central locations were identified, one for each day of the week. The program involves an RV, which was brightly decorated, and it was supplied with the materials necessary to conduct a guided reading lesson, administer

> a running record, and replenish the ZIP! (a school wide reading reinforcement effort in which students took leveled trade books home that were congruent with the day's guided reading instruction) program bag with new texts leveled specifically for each student. Parents were informed of the program through a formal meeting held at the school and by means of an informative brochure translated in Spanish and Hmong. During the program, each child met with a teacher who constructed a lesson based on information from a three-ring binder that identified the students' reading level and summarized any difficulties the student had experienced with the reading process following the last reading assessment before the end of the school year. Of the target children who participated in Continued Connections, 76% improved upon or maintained their end-of-first-grade reading level. This compares to 59% for target students who did not participate in Continued Connections (some were enrolled in summer school) and only 22% who maintained or improved the summer before. (Malach & Rutter, 2003, p. 51-53)

Educational field trips. Having outside organizations involved in schooling during the summer not only makes the students more interested to attend the program, it also allows them to experience things going on in the areas where they live, in which they might not otherwise have participated. "Educational field trips to places like museums or aquariums can complement the learning taking place in the programs" (Wimer & Gunther, 2006, Promoting Learning, para. 4). "Students should take weekly field trips to museums and participate in cultural events offered throughout the community" (Fairchild & Boulay, 2002, p. 19). Having a hands-on, kinesthetic experience will benefit students with various learning styles learn and retain the new information.

Forming partnerships. Options other than just visiting various sites for educational learning opportunities include actually partnering with a community organization or a university. Partnerships such as these may help "to prevent summer loss in reading among low-income students" (Walker, 2004, p. 6).

> In a 2003 study completed by Schachter, of a summer literacy camp program in Los Angeles, CA, it was discovered that when reading instruction and tutoring were integrated into a summer camp atmosphere, disadvantaged first-grade children from schools whose reading test scores were below the 25th percentile made significant gains compared to students who did not attend the summer intervention. (Walker, 2004, p. 6)

Students sometimes feel empowered when they are able to learn outside of their regular school setting. They do not feel the extra educational time is a punishment but rather a privilege and an excitement. Experiencing educational opportunities in a university setting also excites the students, and encourages them to attend college, and gives them a feeling that they "know" the higher educational system. At one university, "twelve second-year university teacher preparation candidates planned and implemented a 3-week ESLP experience (Extended Summer Learning Program, a university working with a secondary school) for middle school students. They taught in teams of four for 1 week each" (Cuddapah et al., 2008, p. 267). First-year teacher prep candidates assisted for no pay, but earned field experience credit.

> Data from school records for first semester attendance and GPAs of each student participant at the end of his or her first fall semester were collected. Student attendance data were reasonably impressive, averaging only 2.7 days of absence during the 92-day semester. Comparing this to the school's previous year's attendance rate of 96%, which met district standards, the ESLP students, for the first semester, had a slightly higher

> attendance rate of 97%. The students' average GPA of 2.33 was also encouraging considering that many of these students had previously experienced widespread academic failure in middle school. Particularly noteworthy was that 5 of the 17 students had GPAs of 3.0 or better. (Cuddapah et al., 2008, p. 271)

Project based learning. Another method of sparking interest in a summer or extracurricular learning program includes the involvement of project based learning. Project based learning can go in many directions, such as bookmaking, games, or other fun learning activities. "Using book making to build participants' literacy skills, or hands-on science projects can spark interest in science and learning more generally" (Wimer & Gunther, 2006, Promoting Learning, para. 5). Project based learning can also help teachers in creative lesson planning for students. "Teachers can take advantage of research-based games and other activities to help build vocabulary, which is one indicator of academic background knowledge" (Miller, K., 2007, p. 3). All in all, summer learning is not just about retaining information; "it is about problem solving, analyzing, and synthesizing information, generating new ideas, working in teams, learning to be with all kinds of people—all skills that help build learning in a broad way" (Miller, K., 2007, p. 14).

Common Challenges to Implementing High Quality Summer Programs

Examining the positive impacts summer school can have on students makes one question why all schools are not entertaining this option. But the reality is that there are many challenges to implementing high quality summer programs, such as enlisting parent support, designing summer programming with intentionality, building connections with the students, recruiting highly skilled staff members, lacking of student desire to attend, and scant resources.

Enlisting parent support.

> In Georgia, the news that summer school will be necessary for some students has not been received well by parents who are already upset by problems with the state's social studies scores. Last month, state schools Superintendent Kathy Cox threw out the social studies results on the CRCT because the failure rate was as high as 80 percent in the 6th and 7th grades. (Jacobson, 2008, p. 18)

Although an increased amount of learning time makes sense as a solution, many parents are hesitant to continue their students in an educational system that seems to have failed them. Another issue with parents supporting a summer programs deals with the activities offered in the program. "A recent survey of parents conducted by the Academy of Educational Development found that nearly half of American parents (43%) just want their kids to have fun and relax during the summer" (Fairchild & Boulay, 2002, p. 13). Therefore a summer program needs to not only communicate the academic value of the summer program, but also the social benefits as well. If families know that students will also have fun and enriching experiences while enhancing their learning, they make more of a commitment to the program.

Designing a summer school program with intentionality. In order to meet the needs of these summer school parents, educators need to design summer school programs with intentionality. School leaders need to communicate their purpose and objective for the summer school programs with their stakeholders, and obtain buy-in from all involved. Many districts have not clued in to this point. "Many schools offer one-shot remedial summer courses, but few use summer school to prevent summertime achievement gaps from occurring in the first place" (Black, 2005, p. 40). Some districts are going into the summer school process backwards. "In many school districts, mandatory summer school programs are designed as single-summer

remedial programs rather than as long-term solutions to the cumulative impact of summer learning loss" (Fairchild & Boulay, 2002, p. 3). If summer school is to make an impact, it cannot just be a one time incentive; it has to be a continuous effort of improved learning for our students.

"High quality summer programs must become a significant and central component in school reform efforts" (Fairchild & Boulay, 2002, p. 3). Currently, many programs do not connect to the "regular" school year and the "regular" instructional programs or curriculum. Many involve "loose organization and little time for advanced planning" (Fairchild & Boulay, 2002, p. 11). "Summer school programs need to set goals for summer school, and continuously plan and design programming with this goal in mind" (Wimer & Gunther, 2006, Challenge 1 section, para. 2). Programs should include formative assessments during frequent checkpoints of the program and "put priority on student mastery of reading and math skills" (Christie, 2003, Strengthening Summer School section, para. 8). This will allow students, teachers, and families to gauge the student success throughout the program and not wait until the summer session is over. "If the program's mission is to keep youth from failing in school or to ensure their proficiency in certain subjects, activities should be purposely designed to achieve these goals" (Wimer & Gunther, 2006, Design Activities section, para. 1). Aligning curriculum with standards (national, state, or district) can ensure this is happening in the summer programs being offered.

Building connections with students. Districts also need to hire staff and publicize the summer program in a way that builds "positive and individualized connections with youth" (Wimer & Gunther, 2006, Challenge 2 section). Youth need to feel connected to their environment and see the purpose and importance for learning to *want* to attend the program.

"Summer school is a hard sell with camp, parks, fishing, swimming, hanging out" (Chmelynski, 1998, p. 48). Influencing students that learning can take place along with the summer activities they like to be involved with outside of school can make a huge impact by "facilitating trust between staff and youth, making youth more excited about and engaged in the program, and allowing staff to tailor programming to youth's interests and needs" (Wimer & Gunther, 2006, Challenge 2, para. 2). Districts have to give staff members the opportunity to make that connection with the student population, so all parties involved in the summer program can experience success. "In many staff evaluations, staff reported not having enough information on participating students' backgrounds and needs" (Wimer & Gunther, 2006, Challenge 2 section, para. 3). School districts can help all involved by establishing these connections between teacher and the student population attending the program. Wimer and Gunther suggest "having small staff-to-student ratios" (2006, Challenge 2 section, para. 4) and "developing mechanisms to provide staff with accurate information on students' needs and backgrounds" (Wimer & Gunther, 2006, Challenge 2 section, para. 5). But that is not all; school districts also need to recruit and develop highly trained staff to teach the summer program. This is critical because many districts cannot find the staff who is interested in giving up their summer to teach these students that need the instruction the most.

Hiring highly skilled staff. "Many schools reported trouble filling all teaching slots because so few teachers wanted to teach summer school. These schools had no opportunity to be selective" (Denton, 2002, p. 9). According to Stenvall (2001a), "there are personal and family adjustments that must be made. Also, there are teachers who look forward to the long break to attend university classes or take a summer job" (p. 21). Some educators go into the profession because of the love of children, of course, but also for the extended vacation in the summer.

When teaching all year starts to become a requirement, there are some that just will not be interested. They might want to vacation with their families or participate in a summer job that explores a personal hob by or interest. One way that could possibly combat this challenge is to "engage community members, groups, and institutions in programming" (Wimer & Gunther, 2006, Introduction section, para. 3). This could take away some of the summer competition with other programs if they were to combine their programs with offerings in the summer school educational setting, and would also help youth see other adult members of the community as positive role models.

Lacking of student desire to attend. Besides finding interested, dedicated teachers to participate in the summer school program, districts also need to find those same interested, dedicated students. A major challenge schools face is that students do not have the desire to attend summer school.

> One middle school program staff member explained: The simplest way to turn away kids in their early teens from your program is to give them hoops to jump through that involve (1) communicating with parents, and (2) doing something on their own away from their peers. Teenagers operate on the spur of the moment and travel in clumps, so plan your program around those two "givens" and principals will succeed. (Kugler, 2001, p. 38)

Students need planned activities that engage learning but also allow for social opportunities. "Some program evaluations found that when programs emphasized remediation and conducted it in a dry, rote manner, youth tended to become disengaged and attendance flagged" (Wimer & Gunther, 2006, Challenge 7 section, para. 1).

Student desire can also increase if the program is promoted in such a way that the students have the choice to attend the program, and it is advertised so students know the benefits and

successes they will experience while in the program. According to Stenvall, only about 20% of the original 50% of students who enroll in summer school make it to the end of the program. "That means about 10 percent of the students who need extended learning actually receive it" (2001a, p. 20).

Limited resources. Scant students in summer school programs are not the only challenge; "relatively scant resources are earmarked for summer learning experiences" (Miller, 2007, p. 6). Although public school districts are federally and state funded, if economic distress is present in the community, funding for summer school and summer school transportation is one of the first things to be cut. "An instructional leader that conducted a 10 day summer program said that no one in the district thought that a 10 day program was sufficient; it was simply all that they could afford to provide with available funds" (Monrad & May, 2001, Discussion section, para. 2). This funding shortage could also be a reason it is difficult to find highly skilled staff for employment in the programs. "Many programs do not pay teachers at levels comparable to what they earn during the school year" (Denton, 2002, p. 9).

Budget issues for summer school affects districts all over the nation, in rural, urban, and suburban districts. "No state funding is earmarked specifically for summer school to help struggling students in Alabama, Mississippi, Oklahoma and Tennessee. Local school districts that want to provide summer schools must find other ways to pay for them; some districts charge tuition" (Denton, 2002, p. 6). Also, states in budget crisis, such as Illinois have to make mandatory cuts and the summer school programs are being affected. "Typically, about 25,000 Chicago elementary and middle school students and 13,000 high school students take summer school classes for promotion purposes. Summer classes instead are being reserved largely for high school students who need to pass the state's graduation exam" (Jacobson, 2008, p. 18).

Characteristics of Successful Summer School Programs

Even with all these challenges, it is possible for districts to design successful summer school programs, and there are many components such as hiring high quality teachers, adequate and reliable funding, an emphasis on reading and math, innovative teaching, a focus on student achievement, planning the program early, small group instruction, parental involvement, operating part of the day for many weeks, the recruitment of students, and being accessible for parents that need to be considered.

Hiring high-quality teachers. Hiring high-quality teachers is the strongest component of developing and retaining a successful summer school program. These teachers "focus on understanding the content and structure of the summer curricula, instructional planning, and strategies, and monitoring what students know and/or their progress" (Wimer & Gunther, 2006, Challenge 3, para. 5). Instructional planning is critical for summer programs because at times a full semester or even year of curriculum is crunched into a six-week format, and teachers have the opportunity "to tailor instruction to meet the individual students' needs and interests" (Fairchild & Boulay, 2002, p. 17). This definitely calls for essential learning targets to be developed, as well as a formative pacing guide for instruction.

To ensure this high-quality standard, training also comes into play. The greatest teacher may still need some support in condensing the curriculum. "In the Anchorage School District, teachers were required to attend two days of teacher in-service before the start of summer school. Training was done by the literacy teacher and past practitioners of summer school wrote the revised curriculum" (Opalinski, Ellers, & Goodman, 2004, p. 34). The teachers should also have a connection to the students in the program and the program itself. "Content taught during the extended learning period must be taught by qualified instructors who are familiar with and can

be held accountable for improving student achievement. Providers must offer evidence that competent staff is employed for delivering the services" (Poggi, 2004, Issues and Challenges Faced by Decision Makers section, para. 4).

A high-quality staff is also a consistent staff. "Maintaining consistency of staff from day to day and week to week, allowing relationships between volunteers (teachers) and students to develop and grow throughout the summer is beneficial for children's development" (Johnson, 2000, Foster a Sense of Community section, para. 2). Every new school setting starts with the bonding of student and teacher, so it is imperative that teachers are coming to school everyday to represent the educational support system for the student. "Summer programs represent an unhurried opportunity for children and youth to develop strong relationships with adults and peers, and the can also provide a sense of having a valued place in a larger community" (Miller, K., 2007, p. 12). If students were not in school during the summer, they may not be receiving any positive adult interactions at all, which could drastically change their path. "Young people need consistent, ongoing adult guidance and support in all developmental domains if they are to achieve productive adulthood" (Fairchild & Boulay, 2002, p. 7).

Many cities and states have developed creative ideas to attract these high-quality teachers to their summer programs, such as "in New York City, the United Federation of Teachers negotiated a contract that pays summer school teachers $32 per hour. They also hope to add the opportunity for teachers to gain pension credit" (Pipho, 1999, p. 7). High-quality teachers are typically "more experienced teachers (who would typically take summer off) through special incentive packages, such as extra compensation for experience" (Wimer & Gunther, 2006, Challenge 3 section, para. 2), so it is important for districts to offer a reason to teach in the summertime.

High quality teachers ensure the success of a program, but a program also has to have adequate and reliable funding to exist.

> If schools or districts believe that extended academic support can raise student achievement and close achievement gaps, then they must consider these programs essential and reallocate resources to provide the services. This may mean changing staff schedules by alternating starting and end times, redesigning the school day for specific students, or abandoning programs that are not able to demonstrate results. (Poggi, 2004, Issues and Challenges Faced by Decision Makers section, para. 8)

Many districts have set aside money for summer programs, increased the amounts allotted to or added a budget line to their district budget for summer school expenses, and/or taken advantage of Federal programs, such as matching grants or Title I money.

Adequate and reliable funding. "Florida, Georgia, Kentucky, North Carolina, South Carolina, and Texas have programs to provide schools with funds to help at-risk students, and these funds may be used for summer schools" (Denton, 2002, p. 6). Many districts are seeing the need for summer programs and are leaning in this direction. According to Poggi, "at least 26 states plan to increase funding for extra learning opportunities" (2004, The Need and Demand for Additional Instructional Support section, para. 11). Districts need the money not just to pay the staff, but also to provide teacher training, and strategies and programs that would ensure summer success. "One question on a survey asked instructional leaders to identify strategies that would improve the effectiveness of their summer school programs. Almost 80% of the instructional leaders identified needed strategies that would require additional funding" (Monrad & May, 2001, Discussion section, para. 2) Additional funding would also ensure low student to teacher ratios and teacher training in the latest technology (Denton, 2002, p. 12).

If districts cannot afford to set aside funding for summer school, many Federal programs and incentives are available. “Districts often turn to such money pots as local levy funds, Title I money, state allocations, and even private sources” (American School Board Journal, 2001, p. 7). Many federal politicians have a vested interest in education and continuing education and are willing to support programs and endeavors that will provide these funds.

> Democratic presidential candidate and U.S. Sen. Barack Obama of Illinois is co-sponsoring the Summer Term Education Programs for Upward Performance Act of 2007. The legislation would authorize $100 million to be divided among five states selected by the U.S. secretary of education for summer programs that combine fun and academics for children eligible for the federal free-lunch program. States would have to match the federal contribution of $1,600 per child per summer. (Cech, 2007, p. 15)

Besides just the funding, there are sources that will contribute money to scholarship programs, which can even further support the cause for summer program education. “President Bush has called on Congress to fund $800 million of scholarships for 21st Century Learning Opportunities, which will give students the opportunity to attend high-quality after-school and summer school programs aimed at increasing student achievement” (Fitzgerald, 2008, State of the Union Analysis, para. 10).

Some districts are even paying their students to attend the program since “a majority of programs require attendance from students who do not score above certain thresholds on standardized tests” (Fairchild & Boulay, 2002, p. 11). In Buffalo, New York, a high school is paying students minimum wage to attend a six week summer school program. “James Foxworth, 14, said, ‘He’d be doing nothing all summer if he were not earning $900 to prep for high school course work during the six week program’. This program was paid for by a grant through

Buffalo Employment Training Services" ("Should You Pay", 2001, p. 6). In another area of the country, "students received incentive, like gift cards for local restaurants, for good attendance throughout the program" (Cuddapah et al., 2008, p. 268). These are radical approaches, however; most districts try to impress the intrinsic value of the summer program.

Emphasis on reading and math. Another component of success for a summer program would include content emphasizing reading and math. "Teachers can benefit from experience in dealing effectively with reading and math in the intense and individually oriented setting of summer school, and their improved skills also will bring results during the regular school year" (Denton, 2002, p. 14). One of the main goals of summer school is to prevent learning loss from school year to school year, so carryover of skills during the summer can only be positive. "International comparative investigations, such as the Third International Mathematics and Science Study have shown that countries in which students spend more days and more time in school on mathematics and science instruction demonstrate higher achievement in those subjects" (McMillen, 2001, p. 67). Therefore, giving students the opportunity to expand their knowledge in these areas will allow districts to close their achievement gap and improve educational quality (Borman, 2001, p. 28).

Innovative teaching. The course work for these content areas must be presented in innovative and creative ways, however. Otherwise, districts will lose their audience, and student desire to attend will decrease. Districts should "design activities that are hands-on and focused on active learning" (Wimer & Gunther, 2006 Challenge 7 section, para. 3). Students learn better by doing, instead of just reading a textbook in the traditional classroom; that obviously did not work for them during the regular school year. "Programs need to ensure an engaging curriculum

and so must go beyond simply repeating instruction that students did not get the first time" (Christie, 2003, Other Issues section, para. 1).

Curriculum needs to take on meaning in these students' lives for them to honestly connect with it and have the desire and appreciation for learning.

> Connect the subject matter to real-life situations. Find books about baseball to read and use baseball statistics in math instruction for a student who lives and breathes the sport. Use musical themes to engage a student who constantly drums on his desk or incorporate a lot of physical movement to reach the aspiring dancer. (Denton, 2002, p. 14)

All of these methods can connect these students in ways they may not have connected before, and will help increase their student achievement.

Focus on student achievement. Student achievement is definitely a goal districts should use as a measurement when gauging the success of their summer program. Districts should evaluate their programs year after year with input from all their stakeholders (students, staff, and parents) and determine whether the program has been successful, or if changes need to be made.

Districts should ask themselves the following questions:

- Can the district and/or provider product evidence of effectiveness, that is, demonstrate improved student achievement for the same type of population that will be served in the program?
- Is the program balanced? If the program simply teaches to the test, the benefits may not last.
- Can the district and/or provider achieve the goals of the program?
- How much time and effort will be needed from the district staff to ensure program success?

- How will student progress be monitored and communicated?
- How will consistently qualified and effective staff be recruited and supported?
- Where will funding come from, and is it sustainable over time?
- What are the advantages and disadvantages of working with for-profit organization, nonprofit organization, and district-developed programs? (Poggi, 2004, Issues and Challenges Faced by Decision Makers section, para. 5)

Based on the answers to these questions, districts can evaluate what is and is not working, and what changes need to be made in the program.

Pre and post testing of students in the summer program can also provide for an evaluation of student achievement. These tests can "assess progress, for curriculum with demonstrated effectiveness in accelerating student learning, for manipulatives and instructional supplies, for transportation funding, and for professional development for teachers" (Monrad & May, 2001, Discussion section, para. 4). Several districts have already designed their summer programs with these assessments in place. "In Anchorage, the curriculum areas were developed around weekly themes or objectives, which were aligned with curriculum standards, so all of the teaching was standards-based" (Opalinski et al., 2004, p. 36). "In 2005, 79 percent of Meriwether County students who failed the state Criterion-Referenced Competency Test passed after attending summer school" (Buchanan, 2007, p. 35). Student achievement should be the main focus of the summer programs and schools should do all they can to maintain this focus.

Plan the program early. Planning the summer program early and connecting it to part of the regular school will lead to successes during the summer months. "There needs to be a consistent, formal, and specific communication between extended and regular school day staff" (Poggi, 2004, Components of Effective Extended Academic Programs section para. 7). This

provides "critical information about youth's academic and social situations" (Wimer & Gunther, 2006, Challenge 4 section, para. 1), and will assist summer staff in providing individualized, tailored instruction to give the summer students success.

Small group instruction. "One advantage to summer programs- no matter whether the emphasis is on remediation or enrichment- is typically smaller class size, which means that teachers can give more individual attention to students" (Monrad & May, 2001, Discussion section, para. 3). At times, students who are not interested in learning, or who are having difficulties learning prefer to be in large classes so they can blend in and not have to put forth the effort. When teachers have the ability to focus on a smaller group of students, it leads to success for everyone. "Classes are smaller in size than a regular classroom, so the students receive more one-on-one attention and experience smaller teacher ratios" (Miller, K., 2007, p. 2). When students experience this smaller connection with staff, they are apt to be more connected with the learning and more capable of success.

Parent/community involvement. Students are not the only stakeholders that provide a summer program with success, however; parent/community involvement and participation is essential for a program to be successful. Starting with parents, "linkages between families and summer programs may also benefit parent involvement in children's education and help parents better support their children's learning and development at home" (Wimer & Gunther, 2006, Challenge 5 section, para. 2). To create and sustain the home-school connection with students makes a tremendous impact on what they can achieve in a summer session. "Asking parents to be partners in supporting their children's learning and development and to sign contracts with the program pledging their participation" (Wimer & Gunther, 2006, Challenge 5 section, para. 7) will help their children have regular attendance and therefore regular participation. "Inviting

parents and families to participate in program events and opportunities can make parents more likely to be involved" (Wimer & Gunther, 2006, Challenge 5 section, para. 4).

Many districts have also created programs to have community organizations involved in partnerships with the schools during the summer school program.

> West Virginia's Energy Express, a summer learning program partnering with the Summer Food Service Program sponsored by the US Department of Agriculture. Reach Out and Read, a national program aimed at promoting early childhood literacy, has volunteers read books to children while they wait in doctors' waiting rooms, and instructs physicians to talk with parents about reading with their children. Houston READ Commission reaches out to the children of students in its adult literacy programs. The library program in Columbus has formed relationships with organizations like the YMCA and Boys & Girls Clubs, which pull in many at-risk kids who would not normally take part in a summer reading program. St. Louis Public Library's summer reading club reports that one of its most exciting developments is a growing partnership with the public schools in that city. Staff at 80 summer schools work closely with the library program, and has even assigned three full-time staff members to work specifically on bringing the summer reading club to its at-risk summer students. (Johnson, 2000, Form Partnerships with Other Services section, para. 2)

Local colleges also have interest in partnering with summer school programs in the area, and this is a benefit because "colleges can provide an excellent source of program staff, classroom space, and laboratory facilities" (Wimer & Gunther, 2006, Challenge 6 section, para. 3).

Another program, mentioned previously in this paper, "Teach Baltimore is an academically intensive summer program that recruits and trains outstanding university students to provide approximately eight weeks of reading and writing instruction to low-income elementary students" (Fairchild & Boulay, 2002, p. 17). When students positively connect to outside organizations and volunteer groups while accessing their education, they see their academic achievement as part of a bigger picture in the community.

Operating part of a day for many weeks. Teach Baltimore is an example of a successful summer school program because "summer achievement is higher in districts where programs operate part of a day for many weeks" (Black, 2005, p. 39). In the district studied, the summer school program changed in 2009; it went from a three-hour/day, four-week program to a five-hour/day, six-week program. "Stretching summer school out longer 'reduces the gaps' between the regular school year and provides students with more continuity in learning" (Black, 2005, p. 39). Other districts have also followed that lead. "North Carolina's Johnston County school district has academy summer sessions that run five hours a day, five days a week, for most of the summer, with the last session ending about two weeks before the new school year begins" (Black, 2005, p. 39). This trend is not only on the coast, but also in the Midwest. "Chicago has the Summer Bridge program which includes seven weeks in intensive remedial classes during the summer" (Chmelynski, 1998, p. 47). Some districts are doubling the length of their summer school program in order to increase student achievement. "Officials of the Virginia district added math classes to the reading classes that were available to previous years. In recent years, the district has gradually increased the number of weeks the program is offered to six, from three" (Zehr, 2008, p. 11). Many districts that have extended their summer programs are experiencing gains in academic achievement of students.

Recruitment of students. Allowing for this scheduling for district summer programs can give students more exposure in school which allows them to increase their achievement and feel better about the educational time they spent during the summer months. "Students stated that they enjoyed the summer program, found it interesting, and generally had fun during the class sessions" (Stone, Engel, Nagaoka, & Roderick, 2005, p. 942).

> According to one 7th grade student, 'usually when you think of summer school, you think boring and you think it is a waste of time. To be truthful, I liked summer school because I learned a lot of stuff I thought I could never learn. Before summer school, I did not care about learning and school. But now I really feel confident about school and my future'. (Opalinski et al., 2004, p. 34)

Program accessible for parents. Making the program "accessible and convenient for parents" (Johnson, 2000, Make the Program Accessible and Convenient for Parents section, para. 1) is another component a summer program needs to be successful. According to Johnson (2000), districts should work around family's schedules, provide a convenient location and transportation, provide meals, and include family and community members in assemblies, field trips, and events. Students need to do their part in the learning, but parents also need to be involved in conversations about how their children are doing in school and what their achievement may look like in the upcoming school year.

Summary

The issue of increasing student achievement is one that has gained a great deal of attention from researchers and stakeholders of educational systems. Studies offer a wide variety of factors that contribute to the relationship between summer school and increased student achievement that range from school initiatives to student initiative. Although there are factors

beyond those listed in this chapter that have an effect on the relationship between summer school and student achievement, the majority of the research shows hiring high-quality teachers, providing adequate and reliable funding, an emphasis on reading and math, innovative teaching, a focus on student achievement, planning the program early, small group instruction, parent/community involvement, operating part of a day for many weeks, the recruitment of students, and making the program accessible for parents to be some of the key factors. The next chapter compares two different summer school programs implemented by one district in consecutive years in order to increase student achievement.

Chapter 3: Methodology

This mixed methods, comparative study analyzed the relationship between the type of summer school program attended and middle school student performance on Stanford Achievement Series 10 Test (SAT 10) scores in Reading Comprehension, Mathematics, and Complete Battery. The purpose of this study was to identify if the six-week summer program was more successful than the four-week summer program at raising student achievement, as measured by SAT 10 test scores.

Data were collected and analyzed from one school district which had recently changed from a four-week summer program to a six week summer program in an attempt to raise student achievement. Each fall, all students in the district population participate in SAT 10 testing, so scores were available for those students participating in both types of summer school programming. Scores in NCE (Normal Curve Equivalent) Total Math, NCE Reading Comprehension, and NCE Complete Battery were compared. These areas were chosen because both summer school programs were designed to improve student achievement in these three areas. Analysis of these scores will reveal whether the six-week summer school program was more beneficial in raising student achievement than the four-week summer school program.

The SAT 10 is a standardized assessment that allows for objective measurement of student achievement. SAT 10 scores were chosen as the evaluation tool for assessment of summer program structure and implementation because it is a nationally standardized test, and the district being studied administers the SAT 10 at the beginning on each new school year, relatively close to the conclusion of the summer school sessions. A comparison of scores from the SAT 10 following each of the different summer school programs can be used to examine the relative effectiveness of the two programs in terms of their support for student achievement.

Analyzing achievement data collected following each summer school program may provide information allowing the district to make an informed decision about which type of summer program to implement in the future. By identifying the summer program that creates the greatest gain in student achievement, as measured by the SAT 10, the district can be confident of implementing the program that best supports student achievement. The district must rely on student achievement data in order to make an informed decision on which summer program to implement in the future.

Implementing the most effective summer program will hopefully decrease summer learning loss for those students attending the summer program and support greater academic achievement. This study provided an analysis of SAT 10 scores following student attendance in two differing summer school programs, in order to determine which brings the most benefit to students in terms of academic achievement.

Research questions. The following questions were addressed in the study:

1. Do students perform better on the SAT 10 test after attending a four-week summer school course or a six-week summer school course?
2. Do students show a growth in language arts, math, or complete battery in either, or both of the summer school programs?
3. What are the opinions of the students, community, and staff of the six-week summer program?

Independent variables.

Four-week district summer school program. One program previously offered by the study district was a four-week program that consisted of a total of three hours of instruction in

math and language arts per day. Students attended this program from 8:30 in the morning until 11:30 in the morning. Program attendance lasted a total of 20 days.

Six-week district summer school program. The second program, more recently offered by the study district, provided a six-week program consisting of four and one-half hours of instruction in math, language arts, and an enrichment class per day. Students attended this summer school program from 8:30 in the morning until 1:30 in the afternoon. Total instructional time per day was four and one half hours. Program attendance lasted a total of 29 days.

Dependent variable.

Stanford achievement test series 10 scores. The dependent variable in the study was the average test score in NCE Reading Comprehension, NCE Total Math, and NCE Complete Battery. The Stanford Achievement Test was taken in the fall following each of the summer school programs.

NCE total math. The total math score includes tests taken in both math procedures and math problem solving.

NCE reading comprehension. This score evaluates how well students can read and then demonstrate knowledge about what they just read.

NCE complete battery. This is a cumulative score over all sub-tests taken within the SAT 10 achievement test. These sub-tests include: NCE Total Reading, NCE Word Study Skills, NCE Word Reading, NCE Reading Comprehension, NCE Total Math, NCE Math Problem Solving, NCE Math Procedures, NCE Language, NCE Pre-Writing, NCE Composing, NCE Editing, NCE Spelling, NCE Science, NCE Social Science, NCE Listening, and NCE Thinking.

The study considered gains in academic achievement by comparing student scores on the SAT 10 following attendance in the four-week summer school program to scores achieved following attendance in the six-week summer school program.

Methodology

Data were analyzed using a *z*-test to determine the difference between means for each of the selected measures: NCE Reading Comprehension, NCE Total Math, and NCE Complete Battery. In this case, the *z*-test was run in order to compare the mean between the two samples, scores after completing the four-week summer program and scores after completing the six-week summer program. In addition to using a *z*-test to evaluate the difference in achievement scores following the two summer programs, survey results were used to show the perception of the students, parents, and teachers who participated in the new summer program. The district being studied created the surveys to gather feedback from stakeholders about the new program and collect opinions regarding any needed changes. Survey topics included the enrollment process, effectiveness of the communication from the district, academic progression, enrichment classes, transportation, effectiveness of the program, and ways to improve the summer program. The surveys were distributed and results were acquired by means of a questionnaire website called SurveyMonkey.com. Students participating in the summer school program were given time in class to complete the survey. Summer school teachers were also emailed the on-line survey link and asked to take the teacher summer school survey. The district being studied conducted six surveys – three to evaluate the high school programs and three for evaluation of the elementary/middle school programs. At both the elementary/middle school level and high school level, the district created a student survey, parent survey, and teacher survey. For the purpose of this study, only responses from the three elementary/middle school surveys were considered, and

these surveys were completed by students, parents, and staff involved in the 2009 six-week elementary or middle school programs. Although both elementary and middle school responses are included in this data, those responses are considered because the elementary summer program also offered six weeks of academic and enrichment classes and allowed students to purchase breakfast and lunch. Thus, perceptions of the elementary summer program could extend to the middle school as well since similar modifications were made in both.

Hypotheses

Null hypothesis 1. Student scores achieved on the SAT 10 following attendance in the six-week summer program will show no significant difference when compared to student scores achieved following attendance in the four week summer program, in the category of NCE Reading Comprehension.

Null hypothesis 2. Student scores achieved on the SAT 10 following attendance in the six week summer program will show no significant difference when compared to student scores achieved following attendance in the four-week summer program, in the category of NCE Total Math.

Null hypothesis 3. Student scores achieved on the SAT 10 following attendance in the six week summer program will show no significant difference when compared to student scores achieved following attendance in the four-week summer program, in the category of NCE Complete Battery.

Alternative hypothesis 1. There is a statistically significant difference in SAT 10 scores in NCE Reading Comprehension for students when comparing scores after participation in a four-week summer school program to scores after participation in the six-week summer school program.

***Alternative hypothesis 2*.** There is a statistically significant difference in SAT 10 scores in NCE Total Math for students when comparing scores after participation in a four-week summer school program to scores after participation in the six-week summer school program.

***Alternative hypothesis 3*.** There is a statistically significant difference in SAT 10 scores in NCE Complete Battery for students when comparing scores after participation in a four-week summer school program to scores after participation in the six-week summer school program.

Participants.

The study sample was selected from two middle schools in the district being studied, a large suburban school district. The district has six middle school sites; however, only two of these sites are used for the summer school program. Therefore, all middle school summer school participants attend one of these two sites. The district being studied is located in a suburb of St. Louis, Missouri. The approximate enrollment at the middle school level, grades 6 through 8, is 5,100 students. In addition to the study sample all of the teachers, students, and parents associated with the 2009 district summer school program were surveyed on their opinions of the six-week summer school program.

Demographics.

Table 1 represents district student demographics for the years 2007 and 2008 respectively.

Table 1

Demographics: Study Site School District and District Middle Schools

	School District		District Middle Schools	
Year	2007	2008	2007	2008
Enrollment	22,245	22,412	5335	5298
% Asian	4.3	4.6	3.9	4.4
% African-American	11	11.2	12.5	11.7
% Hispanic	1.5	1.7	1.6	1.7
% Indian	0.2	0.2	0.1	0.2
% White	83	82.3	81.9	82
% Free / Reduced Lunch	13.1	13	14.5	13.4

* January Membership Data is used as the denominator when calculating the percent.
Note. From Missouri Department of Elementary and Secondary Education (2009 A-G)

The data in Table 2 represents the combined demographics of both middle school summer school sites for the years 2007 and 2008. These figures represent summer school students at the middle school level only. In addition, these demographics may contain information for students who do not attend any of the district's sites during the regular school year. Children are able to attend a district summer school site if they live in the district's attendance area, even if they attend a private school during the current school year. However, only a select few take advantage of this offering. It should also be noted that summer school

demographics are not consistent with the demographics during the regular school year because the district is targeting at-risk students.

Table 2

Demographics: Summer Program at the Middle School Level

Year	2007	2008
Enrollment	442	423
% Asian	3.8	2.3
% African-American	48.9	56.3
% Hispanic	1.6	1.4
% Indian	0.7	0.5
% White	45	39.5

Note. Provided by the district participating in this study (2010)

Companion Research

Many studies have examined the phenomena of summer learning loss and analyzed the structure and content of summer school programming. One major aspect that the studied district was examining the number of days that the summer program should be implemented. The studied district changed from a four-week program to a six-week program with the primary goal of reducing learning loss. Several studies support summer learning as a means of reducing summer learning loss, and one important study noted: "stretching summer school out longer 'reduces the gaps' between the regular school year and provides students with more continuity in

learning" (Black, 2005, p. 39). There is another study by Cooper that goes onto talk about just how many additional days would need to be added to the school year in order to make a difference in student achievement. Copper noted: "Hazleton and colleagues based on work by Karweit 1984 suggested that '35 extra days would be needed to produce a noticeable change in student achievement'" (Cooper, 2003, Three Remedies for Summer Learning Loss section, para. 3). In Cooper's study he is discussing extending the regular school year, but this could also be interpreted as creating a summer program as an extension of the school year. According to his study a school district should create a summer program that is at least 35 days long.

More specific to this study is Alicia Bottorff's research. She also performed a summer program study using the same study district and population as in this study. Bottorff's focus was determining which demographic sub-groups of students demonstrate the greatest achievement gains from the six-week summer school program. Her results are discussed in Chapter 4.

Sampling Procedure

SAT 10 scores were gathered for all students participating in the study district's summer school programs at the middle school level in both 2007 and 2008. Participation in the district's summer program was strictly voluntary. The scores were collected by the district being studied and downloaded from their student data collection system and formulated into an Excel spreadsheet. Scores for all SAT 10 sub-categories were provided. However, only the NCE Reading Comprehension, NCE Total Math, and NCE Complete Battery were used for analysis. These scores were chosen since language arts and math were the focus of both middle school summer programs. After the list of students was provided, those students who did not have test scores for both 2007 and 2008 were eliminated from the list. This was done in order to address limitations of the study. It also helped to increase the generalization of the results. Once all of the

students with incomplete data were removed, the remaining 161 students were assigned a number between 1 and 161. From this list, a mathematical website was used as a tool to randomly select 30 students for participation in the study. An analysis of their SAT 10 data was completed to assess the effectiveness of the 2007 summer school program offered for four-weeks. The randomizing website was then used to select 30 different students whose data were analyzed to assess the 2008, six-week program. The 30 students selected for the 2008, six-week summer program were not any of the 30 students randomly selected to represent the 2007, four-week summer program.

External Validity of the Study

External validity is a measure of how well the results of a study can be generalized beyond the sample tested. In this case, there is little threat to external validity because participants were unaware that they were part of a research study. In fact, the data were collected after the students had already participated in both summer programs and also taken the SAT 10 in both the fall of 2007 and the fall of 2008. At no time were students asked to participate in either summer program due to the fact that research was being conducted. The only people within the district being studied who were aware of the study were the researchers and the district testing coordinator.

One area of concern regarding external validity may be multiple-treatment interference. When the district chose to change from a four-week summer program to a six-week program, the number of student attendance days was not the only program change. For example, the time the students were in class each day changed. Instead of attending two 90 minute classes, the students in the six-week program were attending three 90 minute classes. This third class was an enrichment course. Enrichment classes are electives, and the purpose of the enrichment addition

was to increase student motivation for attending summer school by providing an element of choice. In addition to the longer day, the new six-week program offered breakfast and lunch for the students. Meal times were not offered in the four-week program. Since there was more than one change to the new program it may be that the combination of these changes makes a difference. We are unable to define one change having a greater effect than another.

A final area of concern may be the length of time between measurement and treatment effect. Students who received the treatment of summer school learning were not assessed by the SAT 10 for at least two months after the summer program ended. After two months, the effectiveness of the treatment may have had time to dissipate. Treatment effect results would be clearer if the SAT 10 had been administered closer to the end of the summer program.

Considerations in the Study Procedure

The type of middle school summer program attended was the independent variable and achievement scores from the SAT 10 administered in 2007 and in 2008 served as the dependent variable. In 2007, a four-week summer school program was in place; while in 2008, a six-week program was implemented with the goal of raising student achievement.

Scores were used from the categories, NCE Reading Comprehension, NCE Total Math and NCE Complete Battery within the SAT 10. The Stanford Achievement Test was used as the dependent variable because it is an objective measure of student achievement and it is routinely administered by the district being studied. Although there is about a two-month gap between completion of the summer program and the administration of the SAT 10, this is the first standardized test that students take during the normal school year. It is given early enough in the year that the scores on the test can be primarily attributed to what the students already know and less to what they have learned since the beginning of the current school year. In addition, scores

are typically reported to the school district within two months of the completion of the SAT 10. This is beneficial to districts so that the feedback can be used to better evaluate and educate their students as soon as possible. Although important achievement data is revealed in each of the SAT 10 sub-tests, NCE Reading Comprehension, NCE Total Math, and NCE Complete Battery were the three categories that the researchers believed to show the greatest impact and relate best to both summer programs offered by the study district. Both summer programs were designed with an emphasis on math and reading. NCE Total Math and NCE Reading Comprehension were the best two categories that measured the emphasis of both summer programs. The category of NCE Complete Battery was chosen with the idea that one or both of the summer school programs may have been more successful at promoting overall general knowledge to the groups of students. Analysis of Complete Battery scores will help analyze any overall learning losses or gains.

Summer school programs were offered to students at the elementary, middle, and high school levels during both the 2007 and 2008 summer. The middle school level was chosen as the focus of this study for a number of reasons. First, at the middle school level there was the least amount of age diversity. There are only three grade levels supported at the middle school level in contrast to four at the high school level and five at the elementary level. Second, there were only two summer program sites for each summer. While high school also offered two sites each summer, elementary offered five sites. Finally, middle school was chosen because of the summer school program time structures that were put into place. Middle school went from a basic four-week summer program in 2007 to a six-week summer program in 2008. At the elementary school level, the district had been implementing a six-week program for both the 2007 and 2008 summers and at the high school level the summer program went from a four-week program in

2007 to two three-week sessions in 2008. While the high school summer program in 2008 is still a six-week program, students are not obligated to attend both sessions. In addition, all of the courses taken at the high school level are for credit which is not the case at the middle school level.

Reliability and Validity of Instrumentation

The Stanford Achievement Test, edition 10 (SAT 10), was created in 2003. It was created in order to "build upon the strong standard of reliability, validity, and technical excellence for which the *Stanford Achievement Test* Series is known" (Harcourt Assessment Inc., 2004, p. 5). With an ever changing world, the tests used to assess the progress of students must also change. The creators of the SAT 10 or Stanford Achievement test pride themselves on the reliability and validity of the exam. Research was done to ensure that the Stanford-10 was as reliable and valid as it could be. The definition that the Stanford Achievement test uses is based on the *Standards for Educational and Psychological Testing*. The publishers of The SAT 10, Harcourt, view validity as "an integrated and unifying concept as it relates to the development and evaluation of Stanford 10" (Harcourt Assessment Inc., 2004, p. 45). In addition, "Harcourt's judgments about test validity are based primarily on the following sources of evidence of validity: test content, response processes, internal structure, relationships to other variables, convergent and discriminate analysis, test criterion relationships, consequences of testing" (Harcourt Assessment Inc., 2004, p. 45). Harcourt uses reliability data combined with validity evidence in order to create the SAT 10. It is because of these high standards, scores from the Stanford Achievement Test can be used to make informed decisions about improving student achievement.

Threats to Internal Validity

When examining internal validity, there are seven main areas that need to be examined. These seven areas are time, location, implementation, and maturation, data collection, the role of the researcher and the online surveys. First, with regards to time, the SAT 10 was given to students early the following school year in which they completed the summer school program. In each case, the students completed the summer school program and then were out of school for about one month. The students then started and attended the regular school year for about one month before the SAT 10 was administered.

The second issue involves location. The students in this study did receive about one month's worth of instruction from different teachers at different locations. Not all of the subjects in this study attend the same middle school or have the same teacher during the regular school year. The district being studied has six middle school sites. The participants may or may not have attended the district's summer program at the school in which they regularly attend during the normal school year. However, some students attended one of the district summer school sites during the summer months and then returned back to their regular school year site once the school year began where they were administered the SAT 10. The subjects in this study ultimately went to different schools and received some instruction from different teachers at the beginning of the regular school year before taking the SAT 10. However, the SAT 10 was given within two months of the new school year, so this should have had minimal effect on the outcome of the SAT 10 scores.

A third threat to internal validity is implementation. While the SAT 10 provides administrative directions and expectations, the students received these directions from many

different teachers and took the assessment at one of the six different middle school locations. Also, the district does not have a clear testing schedule as to exact days and times that schools must give the SAT 10. Instead, the district has a testing window in which all middle school students must complete the assessment. A fourth threat to internal validity is maturation, and it is possible that the students scored better on the SAT 10 after the 2008 summer program because they were a year older. While they did not take the same test as in the fall of 2007, they were more mature and may have been more inclined to try harder on the SAT 10.

A fifth threat to the internal validity of this study is the way in which the data was collected. The district's testing coordinator was contacted and asked to provide SAT 10 scores for all those students who attended both the 2007 and 2008 district middle school summer programs. While the data was provided by the district's testing coordinator, it is assumed that the data was extracted with the terms that were provided to the testing coordinator. Student names were not provided in order to meet confidentiality expectations.

A sixth threat to internal validity is the role of the researcher. Since the researcher and the companion researcher both worked in the summer program, SAT 10 data was used to eliminate any bias. In addition, neither researcher knew about the study at the time of the 2007 and 2008 summer programs.

A final threat is the on-line surveys that the district being studied administered to the students, teachers, and parents involved in the 2009 summer school program. Students were given time to complete the surveys in class. However, the parent survey was emailed to those parents with students participating in the summer school program. It is possible that some of the parents did not have an email address or regular access to a computer and therefore were unable to express their opinions about the six-week summer school program.

Efforts to Control Limitations of the Study.

Incomplete data sets. Only the students who participated in both summer school programs were selected for this study. Selected students were assigned a random number by the district testing coordinator, and individual SAT 10 data was synchronized to correspond to those random number assignments. Once those test scores were received, all students who did not have complete SAT 10 scores for both 2007 and 2008, were deleted from the list. Since two groups were going to be randomly selected from the original list, it was necessary to exclude any participants who did not have complete data for both 2007 and 2008.

Confidential treatment of data. At no time was any personalized student data communicated to any other person. In fact, the data was extracted by the testing coordinator of the district being studied based on the parameters provided for this study. Each student who met the parameters was assigned a number code known only by the testing coordinator who paired SAT 10 data to the proper number codes. At no time were student names ever mentioned or given. The students' test data was strictly confidential and cannot be traced back or matched to any student's name. The results of the on-line surveys conducted by the district were tabulated by SurveyMonkey.com. The district then provided the researchers with the results. At no time were survey responses matched up with a particular person.

Summary

This study investigated the relationship between the type of summer school program and student achievement on the SAT 10. More specifically, the SAT 10 sub-test of NCE Reading Comprehension, NCE Total Math, and NCE Complete Battery were utilized. SAT 10 data was collected from students participating in both the four-week summer program and a six-week summer program in a large suburban school district located in St. Louis, Missouri. The student

demographics of the district being studied consist of 82.3% White, 11.2% African American, 4.6% Asian, 1.7% Hispanic, and 0.2% Indian. (MO DESE, 2009g). However, the student demographics of the district are much different at the middle school level during the summer programs. The demographics for the summer programs are 56.3% African American, 39.5% White, 2.3% Asian, 1.4% Hispanic, and 0.5% Indian. All students who did not have complete 2007 or 2008 Stanford Achievement Test scores were excluded since their data was incomplete. A two-tailed *z*-test to check for the difference in means was ran in order to evaluate the relationship between the type of summer program attended and the student achievement on the SAT 10 following the summer program. In addition, data collected through a district survey regarding the student, parent, and teacher perceptions of the new summer program were qualitatively analyzed. The organization of this study was used in order to limit the threats to internal validity in the areas of time, location, implementation, and maturation. This discussion continues in the next chapter which analyzes the statistical data related to this study.

Chapter 4: Results

This study utilized SAT 10 data to analyze the outcome of two middle school summer school programs. In 2007, the district being studied had a four-week, remedial summer program to assist students who were struggling academically. In 2008, this district implemented several changes in their summer program. The most significant change was extending the four-week program to six weeks. Other changes included providing the time and opportunity to purchase breakfast and lunch and extension of the school day to allow students a choice of elective, enrichment coursework. The enrichment classes were not designed to cover core curriculum, but were instead designed to engage students in a topic of study they found personally interesting and did not necessarily cover a particular section of the district curriculum. With these changes the district hoped to realize a statistically significant improvement in student achievement measures when compared to achievement outcomes from the previous, four-week summer program.

The SAT 10, which the district being studied administers every fall, was used to measure student achievement in this study. The primary reason this test was chosen was because it is the first nationally recognized test to be given to students after the students participated in the summer program in the district of study. The three SAT 10 sub-tests used to evaluate the effectiveness of the summer programs were NCE Reading Comprehension, NCE Total Math, and NCE Complete Battery. Results from the three sub-tests were examined because the district being studied put an emphasis on language arts and math in both the 2007 and 2008 summer programs included in this study.

Participants

The district being studied is a large suburban school district located in St. Louis County, Missouri. While this district consists of six middle schools, only two of those schools are used as summer program sites. The same two sites were used in 2007 and 2008. The total middle school population for the district is roughly 0.1% Indian, 1.6% Hispanic, 4.2% Asian, 12.1% African-American, and 82% White: however, demographics for students attending the district's summer programs differ. The population of summer school students was roughly 0.6% Indian, 1.5% Hispanic, 3.1% Asian, 42.1% White and 52.7% African-American. Since summer school is offered to academically struggling students, these demographics strongly suggest that an achievement gap exists within the district being studied. In fact, this achievement gap was a major impetus in the district's decision to implement modified summer school programming in 2008.

Table 3 represents the demographics of the randomly selected students analyzed in this study. There were 161 students who participated in both the 2007 and 2008 and had complete SAT 10 scores for both years. Of those 161 students, 30 were randomly selected to represent the 2007 summer program, and another 30 were randomly selected to represent the 2008 program.

Table 3

Demographics: Random Students to Represent each Summer Program

	Summer Program	
Year	2007	2008
Sample Size	30	30
African-American	20	21
White	10	9
Qualify for Special School District Services	9	9
Qualify for Free and Reduced Lunch	16	22

Note. Calculated by data provided by the district participating in this study (2009)

Mixed Methods, Comparative Study

Research questions

This study addressed the following questions and subsequent hypotheses.

1. Do students perform better on the SAT 10 test after attending a four week summer school course or a six-week summer school course?

2. Do students show a growth in language arts, math, or complete battery in either, or both of the summer school programs?

3. What are the opinions of the students, community, and staff of the six-week summer program?

Results

The results found in this study were determined using a two-tailed *z*-test for the difference between means. Three SAT 10 sub-tests were used to evaluate the 2007 and 2008 summer programs that the district being studied has implemented in recent years. In a companion study using data from the same district, Alicia Bottorff focused on how different sub-groups performed on these same three sub-tests. Bottorff's analysis focused on the performance of student sub-groups for the same three sub-tests of the SAT 10. Her findings will be covered later in this chapter. Finally, the district being studied distributed an electronic survey to all 2009 summer school students, teachers and parents in order to gather feedback about the new summer school program. The respondents were not necessarily the same people who participated in the 2007 or 2008 summer programs. However, this survey data is valuable in understanding the view of those who participated in the new summer program. These survey results are also discussed later in this chapter.

NCE reading comprehension. Table 4 represents the *z*-test calculations for the SAT 10 scores on the NCE Reading Comprehension sub-test. The scores of the 2008 randomly selected student group are compared to those of the 2007 student group.

Table 4

NCE Reading Comprehension

	2008	2007
Mean	40.34	34.87
Known Variance	283	237
Observations	30	30
Hypothesized Mean Difference	0	
z	1.313852	
P(Z<=z) two-tail	0.188896	
z Critical two-tail	1.959964	

Note. Confidence Level = .95

In the area of NCE Reading Comprehension, the hypotheses examined were as follows: H_o: Student scores achieved on the SAT 10 following attendance in the six-week summer program will show no significant increase when compared to student scores achieved following attendance in the four-week summer program, in the category of NCE Reading Comprehension. H_1: There is a statistically significant increase in SAT 10 scores in NCE Reading Comprehension for students when comparing scores after participation in a four-week summer school program to scores after participation in the six-week summer school program.

In this case the *z* critical two-tail value is 1.959964. The *z*-test value for this sample was 1.313852. Since the *z*-score value falls between the two critical values, the researcher did not reject the null hypothesis for the Reading Comprehension sub-test. This indicates the longer summer program in 2008 did not create a significant increase in student achievement in the area of NCE Reading Comprehension measured by the SAT 10.

NCE total math. Table 5 represents calculations of the *z*-test value on the SAT 10, NCE Total Math sub-test. Scores for the randomly selected group representing 2008 students were compared to the scores for the randomly selected group of 2007 students to assess whether or not a statistically significant increase in student achievement for NCE Total Math had occurred.

Table 5

NCE Total Math

	2008	2007
Mean	37.73333	29.36667
Known Variance	168	87
Observations	30	30
Hypothesized Mean Difference	0	
z	2.869743	
P(Z<=z) two-tail	0.004108	
z critical two-tail	1.959964	

Note. Confidence Level = .95

In the area of NCE Total Math, the hypotheses examined were as follows: H_o: Student scores achieved on the SAT 10 following attendance in the six week summer program will show no significant increase when compared to student scores achieved following attendance in the four-week summer program, in the category of NCE Total Math.

H_1: There is a statistically significant increase in SAT 10 scores in NCE Total Math for students when comparing scores after participation in a four-week summer school program to scores after participation in the six-week summer school program.

The *z* critical two-tailed score for this test was 1.959964. The *z*-test value was 2.869743. Based on these results, the null hypothesis is rejected in favor of the alternative hypothesis.

Students participating in the 2008 summer program show a statistically significant increase in achievement on the SAT 10, NCE Total Math sub-test.

Since the alternative NCE Total Math hypothesis is supported, each SAT 10 math sub-test was analyzed to determine if one or both of the math sub-tests showed a statistically significant increase in student achievement, driving the improvement in NCE Total Math scores. The two math sub-tests on the SAT 10 are Math Problem Solving and Math Procedures.

Table 6 shows the results of a two-tailed *z*-test used to evaluate student performance on Math Problem Solving for the 2007 student group and the 2008 student group. The 2008 students' group scores showed statistically significant improvement in the area of Math Problem Solving, and this increase helped drive the noted increase in NCE Total Math scores for the 2008 study group.

Table 6

NCE Math Problem Solving

	2008	2007
Mean	37.91667	31.51333
Known Variance	148.5	115.49
Observations	30	30
Hypothesized Mean Difference	0	
z	2.158604	
P(Z<=z) two-tail	0.030881	
z critical two-tail	1.959964	

Note. Confidence Level = .95

The null hypotheses for this test was as follows: H_o: Student scores achieved on the SAT 10 following attendance in the six-week summer program will show no significant increase when

compared to student scores achieved following attendance in the four-week summer program, in the sub-category of NCE Math Problem Solving. Results support the NCE Total math alternative hypothesis. The *z* critical two-tailed score for this test was 1.959964. The actual *z*-test value is 2.158604; therefore, the null hypothesis was rejected. This test reveals a statistically significant increase in student achievement in the area of Math Problem Solving, which contributes to the observed increase in scores on the NCE Total Math scores earned by the 2008 study group.

Table 7 provides data relevant to a *z* critical two-tailed test which was calculated to analyze the scores on the SAT 10 Math Procedures sub-test. Again, the scores of the 2007 randomly selected summer program students were compared to scores for the 2008 study group.

Table 7

NCE Math Procedures

	2008	2007
Mean	39.06333	30.33667
Known Variance	209.3	107.81
Observations	30	30
Hypothesized Mean Difference	0	
z	2.684133	
P(Z<=z) two-tail	0.007272	
z critical two-tail	1.959964	

Note. Confidence Level = .95

The null hypothesis for this test was as follows: H_o: Student scores achieved on the SAT 10 following attendance in the six-week summer program will show no significant increase when compared to student scores achieved following attendance in the four-week summer program, in the sub-category on NCE Math Procedures. The Math Procedures *z*-test indicates support for the

alternative hypothesis for the NCE Total Math test. The *z* critical two-tail score was 1.959964. The *z*-test value was 2.684133 which is greater than the *z* critical value. Therefore, the null hypothesis was rejected, and the evidence shows student scores from the 2008 summer program demonstrate a statistically significant increase over scores from the 2007 study group.

Student SAT 10 scores for the 2008 summer school subjects showed a statistically significant increase in both Math Problem Solving and Math Procedures. This led to a statistically significant increase in NCE Total Math. For this reason, the alternative hypothesis was supported for the category of NCE Total Math.

NCE complete battery. The final area analyzed was NCE Complete Battery. This measure provides an overview of student performance on the SAT 10. All sub-tests are taken into consideration when calculating this score. Table 8 shows the analyzed data when comparing Complete Battery scores for the randomly selected 2007 summer program students and the randomly selected 2008 summer program students.

Table 8

NCE Complete Battery

	2008	2007
Mean	39.40333	36.04333
Known Variance	149	82
Observations	30	30
Hypothesized Mean Difference	0	
z	1.21086	
P(Z<=z) two-tail	0.225949	
z critical two-tail	1.959964	

Note. Confidence Level = .95

In the area of NCE Complete Battery, the hypotheses examined were as follows: H_o: Student scores achieved on the SAT 10 following attendance in the six week summer program will show no significant increase when compared to student scores achieved following attendance in the four-week summer program, in the category of NCE Complete Battery. H_1: There is a statistically significant increase in SAT 10 scores in NCE Complete Battery for students when comparing scores after participation in a four-week summer school program to scores after participation in the six-week summer school program.

The *z*-test value of 1.21086 falls between the two-tailed critical *z* values of 1.959964 and -1.959964. In this case, the researcher does not reject the null hypothesis. The 2008 summer program students did not show a statistically significant gain in student achievement in the area of NCE Complete Battery.

Companion Research

In the companion study, Alicia Bottorff analyzed student achievement data from the two summer programs in the district being studied. The same populations were used; however, random groups were generalized for Bottorff's analysis. In addition, the Bottorff analysis focused on SAT 10 performance by specific student sub-groups participating in the two summer school programs offered in the district being studied. The four sub-groups analyzed were African-American, White, those who qualify for special education services, and those who qualify for Free and Reduced Lunch (F/R Lunch) services based on their families' socio-economic status. The same three SAT 10 sub-tests were used in the Bottorff study: NCE Reading Comprehension, NCE Total Math, and NCE Complete Battery. Although the randomly selected student groups differed between the two studies, the results are remarkably similar.

Bottorff's data analysis supported the null hypothesis for all sub-groups in the area of NCE Reading Comprehension. In addition, she found a statistically significant increase in the area of NCE Total Math for just one of the sub-groups. This sub-group was the African American group, and the results for the African American sub-group may be seen below in Table 9.

Table 9

NCE Total Math African-American Sub-group

	2008	2007
Mean	35.77333	30
Known Variance	111	114
Observations	30	30
Hypothesized Mean Difference	0	
z	2.108123	
P(Z<=z) two-tail	0.03502	
z critical two-tail	1.959964	

Note. Confidence Level = .95

The null hypothesis for this sub-test were as follows: H_o: For the sub-group of African American students, scores achieved on the SAT 10 following attendance in the six-week summer program will show no significant increase when compared to student scores achieved following attendance in the four-week summer program, in the category of NCE Total Math. With the *z*-test value of 2.108123, the test data confirm a statistically significant increase in scores for African American students in the 2008 summer program as compared to those in the 2007 summer program. These results support the alternative hypothesis positing a statistically

significant increase in SAT 10 scores in NCE Total Math for students who participate in a six-week summer program instead of a four-week summer program.

Bottorff went on to analyze data from both the NCE Math Procedures sub-test and the NCE Math Problem Solving, 2008 African American sub-group showed a statistically significant increase in student achievement for the sub-test NCE Math Procedures. However, the African American group's scores did not show a statistically significant increase in the area of NCE Math Problem Solving. Table 10 shows the results for the African-American sub-group for the NCE Math Procedures sub-test.

Table 10

NCE Math Procedures African-American Sub-group

	2008	2007
Mean	38.61667	30.53667
Known Variance	135	162
Observations	30	30
Hypothesized Mean Difference	0	
z	2.567993	
P(Z<=z) two-tail	0.010229	
z critical two-tail	1.959964	

Note. Confidence Level = .95

The null hypothesis for this sub-test were as follows: H_0: For this sub group of African American students, scores achieved on the SAT 10 following attendance in the six-week summer program will show no significant increase when compared to student scores achieved following attendance in the four-week summer program, in the category of NCE Math Procedures. The

African-American sub-group had a *z*-test value of 2.567993 for the NCE Math Procedures sub-test. Again, this data supports the alternative hypothesis predicting a statistically significant increase in NCE Total Math scores for students attending a six-week summer school program rather than a four-week summer program.

One other sub-group showed a statistically significant increase in student achievement for the NCE Complete Battery. The Special School District sub-group scores passed the z-test for NCE Total Battery as seen in Table 11.

Table 11

NCE Complete Battery SSD Sub-group

	2008	2007
Mean	36.36	30.57
Known Variance	144	117
Observations	30	30
Hypothesized Mean Difference	0	
z	1.962994	
P(Z<=z) two-tail	0.049647	
z Critical two-tail	1.959964	

Note. Confidence Level = .95

The *z*-test value for this test is 1.962994 which means there was a statistically significant increase in student achievement in the area of NCE Complete Battery. The null hypothesis for this sub-test was: H_o: For the sub-group of special education students, scores achieved on the SAT 10 following attendance in the six week summer program will show no significant increase when compared to student scores achieved following attendance in the four-week summer program, in the category of NCE Complete Battery.

Although the data suggests to not reject the null hypothesis in this study, the results from Bottorff's study do show a statistically significant increase in scores on the NCE Complete Battery for the sub-group of special education students only.

As a result of the statistically significant difference regarding the increase in student achievement scores in the area of NCE Complete Battery for the special education student sub-group, Bottorff analyzed all sub-tests of the SAT in order to identify other areas of statistically significant academic improvement. This additional analysis was completed only for the special education group as they were the only sub-group to show a statistically significant increase in scores on the NCE Complete Battery sub-test. Bottorff's additional analysis revealed the increase in NCE Total Battery scores for the 2008 special education sub-group was driven by a statistically significant increase in scores on the 2008 NCE Math Procedures sub-test. Table 12 shows the results of the *z*-test for this sub-test.

Table 12

NCE Math Procedures SSD Sub-group

	2008	2007
Mean	39.13667	31.72
Known Variance	218	157
Observations	30	30
Hypothesized Mean Difference	0	
z	2.09775	
P(Z<=z) two-tail	0.035927	
z critical two-tail	1.959964	

Note. Confidence Level = .95

The null hypothesis for this sub-test was: H_o: For the sub-group of SSD students, scores achieved on the SAT 10 following attendance in the six-week summer program will show no significant increase when compared to student scores achieved following attendance in the four-week summer program, in the category of NCE Math Procedures.

The *z*-test value of 2.09775 for this test suggested that the null hypothesis was rejected because data reveals a statistically significant increase in scores on the NCE Math Procedures sub-test for the 2008 SSD sub-group. The documented increase in scores for this sub-group in the area of NCE Math Procedures appears to be responsible for the noted findings of the increase in the special education sub-group scores in student achievement for the area of NCE Complete Battery.

Survey Results

In 2009, the district being studied conducted six surveys following implementation of their six-week summer school program. Surveys were given to students, parents, and teachers affiliated with the 2009 summer school program. Two different student surveys were administered. One survey was created for the elementary/middle school students while the other was for the high school students. The format of creating two separate surveys for the elementary/middle school level and high school levels was also followed for the parent survey and the teacher survey. All surveys were conducted on-line. The 2009 district summer program was identical to the six-week summer program implemented by the district in 2008 and is being evaluated for evidence of increased student achievement by this study. The surveys were designed to gather feedback on the program to ascertain perceptions on the effectiveness of the program and to solicit suggestions for possible program improvements. All of the questions from

each of the three elementary/middle school surveys as well as additional survey results not discussed in this chapter are located in the appendix.

Student surveys. Teachers provided class time for completion of the 2009 Summer School Student survey; teachers were asked to inform students that the survey was not mandatory and emphasized all answers were confidential. While over 700 students completed every question on this survey, roughly 240 students indicated that they were at the middle school level. These students account for 32.8% of the answers on the student survey. All of the other students indicated that they attended the elementary school summer program.

The bar graph in Figure 1 demonstrates student opinion regarding the six week length of the summer school program. Although only 33% of the responses represent middle school students, since the elementary and middle school programs are virtually identical, the results are assumed to be applicable to both the elementary and middle school summer programs.

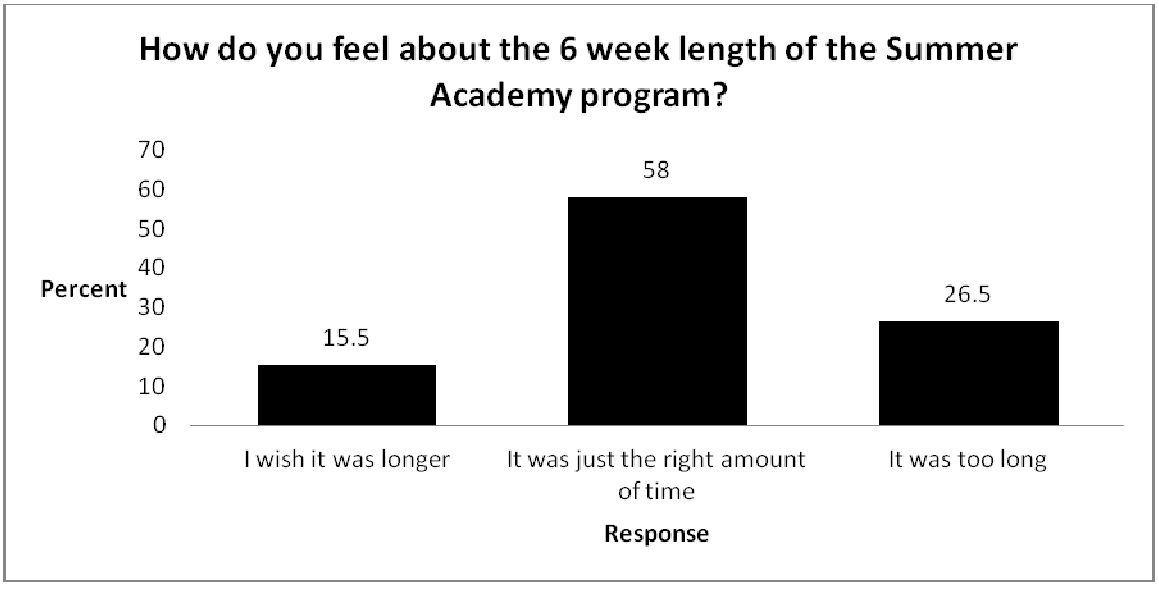

Figure 1. Length of Summer Program

The six-week length of the district's summer school program was perceived as "just right" or a bit too short for 73.5% of survey respondents. Just 25.5% felt that the program lasted too long.

The next survey question analyzed asked if students felt they had enough time each day to learn the material being presented. Figure 2 shows the student survey results. Again, roughly 33% of all of the answers provided were from middle school students.

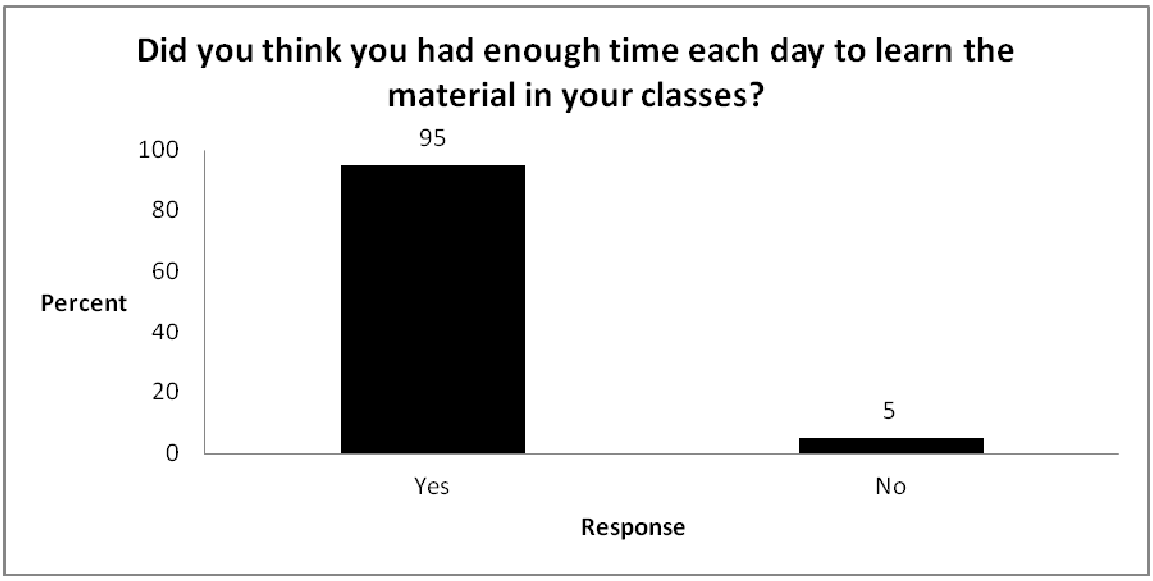

Figure 2. Adequate Amount of Instructional Time

These results show that 95% of the students believed they had adequate time to learn the material presented by their teachers. Since this question did not ask if the day was too long, the 5% who responded negatively may have felt the day was too short or too long.

Overall, the data suggested that students felt both the six-week program length and the four and one-half hour day effectively met their needs. Overwhelmingly, the students seemed to think that the length of day fosters their learning.

Parent surveys. The parent survey was provided on-line to those parents who had a child attend the 2009 district summer program. The elementary and middle school survey was

combined. A second survey was directed to the parents of high school students. Roughly 28% of the parents who participated in the parent survey represented parents of middle school students that attended the 2009 summer program.

Figure 3 displays responses representing parent opinion on the effectiveness of the 2009 summer program in supporting their child's learning. Parents were able to select an answer that indicated that their child did not participate in academic classes. They were still able to participate in the district survey because their child would have only attended the enrichment classes provide through the district summer program. Most students participated in at least one academic class.

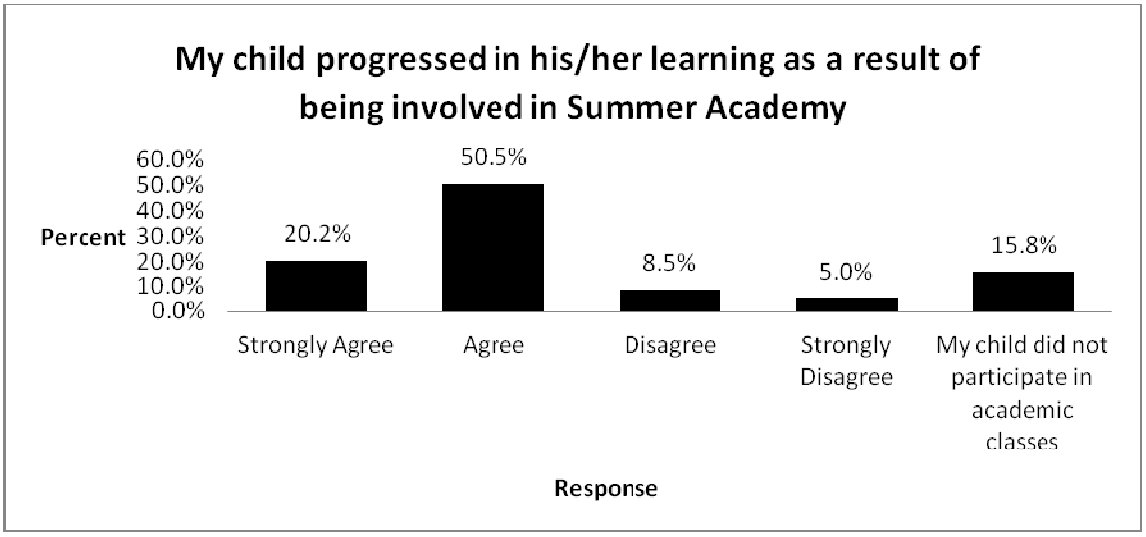

Figure 3. Progression in Learning

Just over 70% of the parents responding to this survey believed the district summer program supported their child's learning while less than 14% did not feel their child progressed. It is obvious, for the most part, parents believe the 2009 summer program enhanced their child's learning.

Parents were also asked if the district summer program met their needs. The results for this question are displayed in Figure 4. Please recall that approximately 28% of the respondents represent middle school parents.

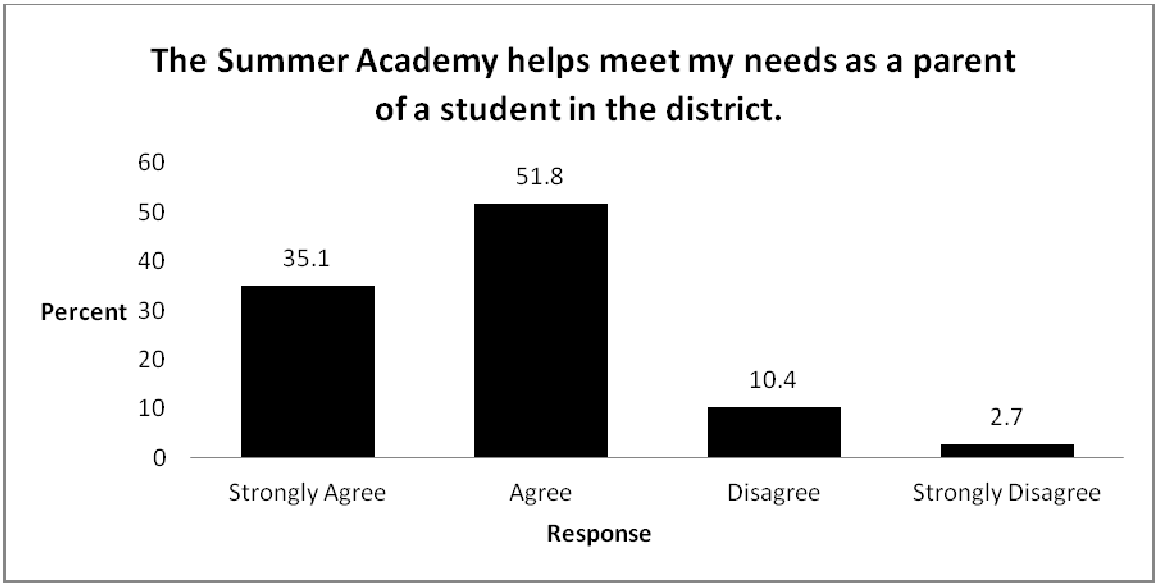

Figure 4. Meets Parent Needs

Less than 14% of the parents taking this survey disagreed or strongly disagreed with this statement. Over 86% of the parents taking this survey agreed with the statement that the six-week program met their needs as a parent with over 35% of those parents strongly agreeing with the statement.

In general, responses to the parent survey indicated a high degree of satisfaction with the district's summer program in terms of both their child's needs and their own. Approximately 14 % of the parents responding to the survey did not feel their needs were met; in addition, 13.5% of the parents did not believe their child's needs were met. It is safe to assume the same parents were dissatisfied for themselves and their child. In future surveys, the district should ask the follow up questions to discern the source of such dissatisfaction. The overall results, in which 86% of parents expressed personal satisfaction with the program and 70% believe their child

progressed in the program, indicated an overall positive opinion of the six-week summer school program.

Teacher surveys. Full and part-time 2009 summer program teachers were asked to respond to an on-line teacher survey and the district compiled the results. Separate surveys were designed for teachers at the high school and those working in the elementary/middle school program. The results discussed here are from the elementary/middle school teacher survey only. About 38% of the teachers who took this survey indicated that they taught at a middle school summer program site.

One question asked teachers if the program allowed enough time to assess their summer school students' strengths and weaknesses. Teachers were able to agree or disagree with the statement. The results are depicted in Figure 5.

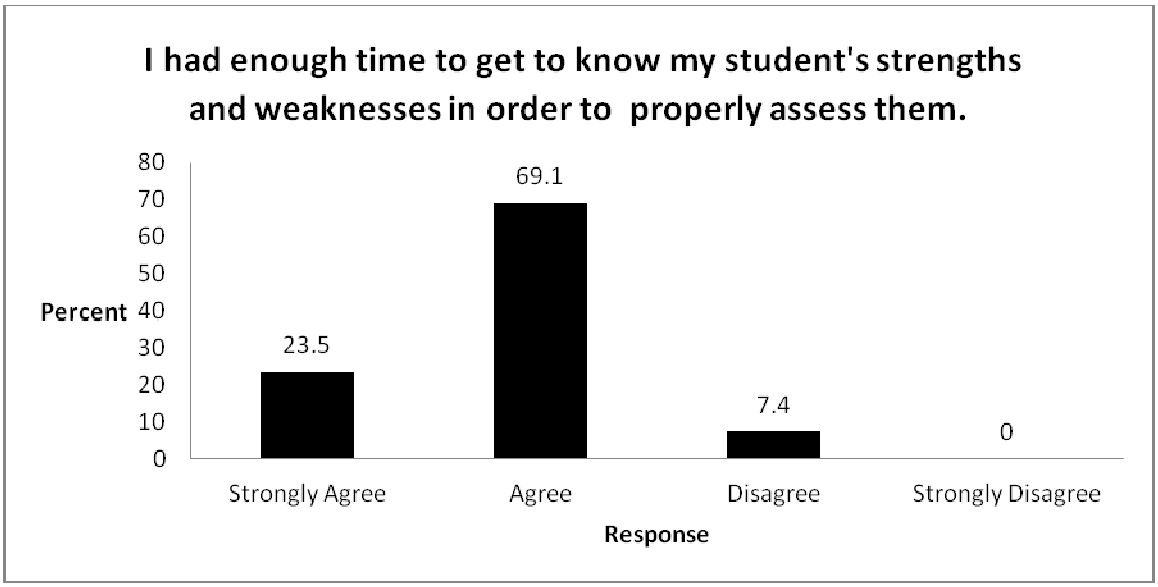

Figure 5. Knowing Student Strengths and Weaknesses

A vast majority of teachers, nearly 93%, felt the six-week program allowed ample time to assess student strengths and weaknesses. Not one teacher strongly disagreed with the statement.

Six weeks seems to be an appropriate amount of time for teachers to evaluate and address the student learning needs.

Figure 6 illustrates teacher responses to a query regarding the time allowed for each daily period of instruction. This question focuses on the length of the summer school day whereas Figure 5 focused on the number of weeks of the summer program. Remember, approximately 38% of the respondents taught at the middle school level.

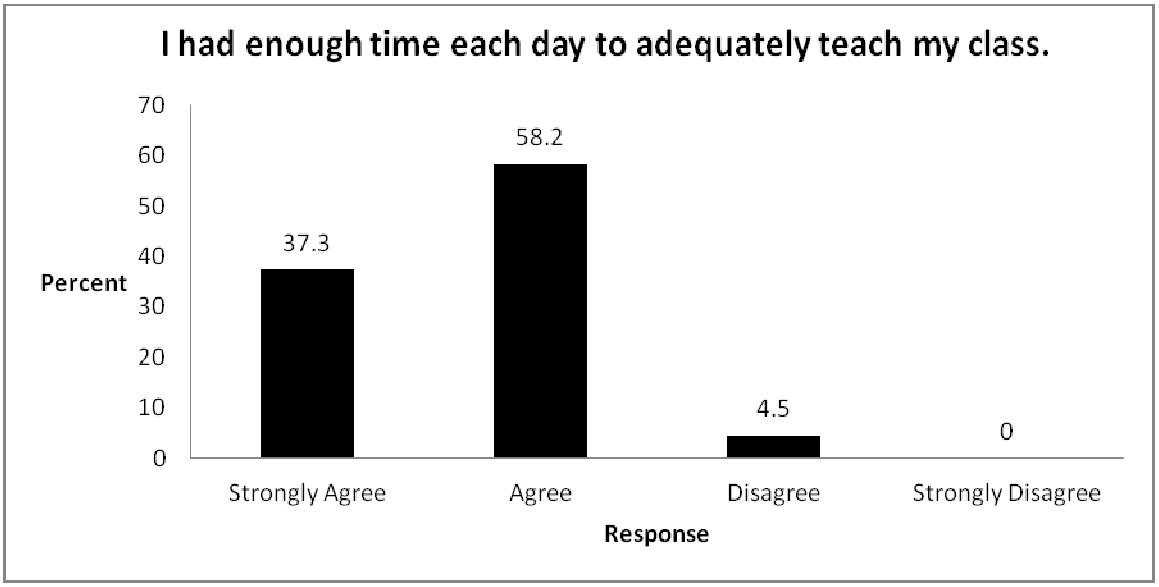

Figure 6. Time to Teach Intended Curriculum

As Figure 6 clearly demonstrates, 95% of the teachers felt the 90 minute instructional block provided enough time to adequately teach their classes. Again, not one teacher strongly disagreed with this statement. Only 4.5% of the teachers taking this survey disagreed with this statement. These results are a strong indication that the district has provided an appropriate amount of time in the school day for teaching the intended curriculum.

One further question analyzed from the teacher survey addressed the issue of summer learning loss. Teachers were asked if they thought the district summer program helped minimize

summer learning loss and prepared students for the upcoming school year. Roughly 38% of the teachers who answered this question on the survey indicated they taught at the middle school level.

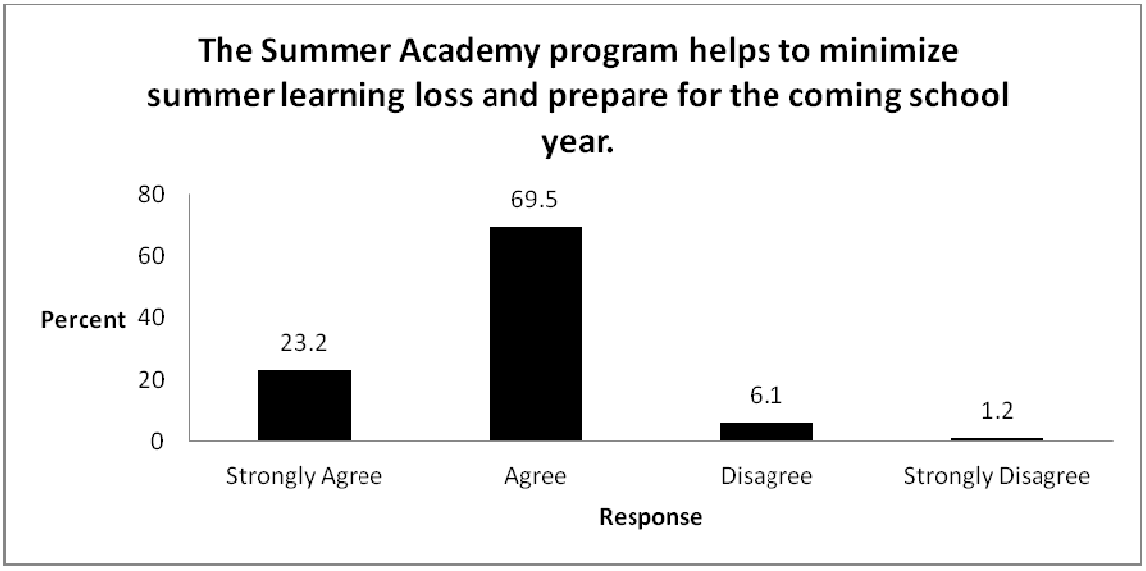

Figure 7. Minimize Summer Learning Loss

Approximately 23% of teachers strongly agree and about 70% of teachers simply agree that summer academy minimizes learning loss and prepares students for the upcoming school year. Only 7.3% of the teachers either disagreed or strongly disagreed with this statement. Clearly teachers believe the district summer program minimizes summer learning loss and prepares students for the upcoming school year. This is a good sign that the district is meeting the needs of the students who attend the summer program.

Overall results from the teacher survey were positive. Almost all of the teachers who took the survey indicated they believe they had enough time to evaluate their students' strengths and weakness. In addition, they felt the 90 minute block allowed ample time to teach the intended curriculum. What is even more exciting and relevant to this study is the fact that almost 93% of the respondents believe that the district summer program minimized summer learning loss and

effectively prepared the students for the upcoming school year. These results indicate that the district has made positive and effective changes to their summer school programming.

Summary

The district being studied, a large suburban district in St. Louis, did experience a statistically significant improvement in student achievement following implementation of a six-week summer school program. Specifically, analysis of SAT 10 scores following the six-week summer program revealed statistically significant increases in the area of NCE Total Math, NCE Math Procedures, and NCE Math Problem Solving when compared to student performance following participation in the district's four-week summer school program.

A two-tailed *z*-test to assess the difference between means was applied to SAT 10 data collected from the 2007 summer program students and the 2008 summer program students for NCE Reading Comprehension, NCE Total Math, and NCE Complete Battery. In the area of NCE Reading Comprehension, no statistically significant increase in student achievement was found for students participating in the 2008 summer program, so the null hypothesis was not rejected. Analysis of the results from the sub-test NCE Complete Battery also found no statistically significant increase in student achievement, and the null hypothesis was not rejected. However, there was a statistically significant increase in student achievement in the area of NCE Total Math for students participating in the 2008 summer program. In this case, the null hypothesis was rejected. Since NCE Total Math represents sub-tests for Math Procedures and Math Problem Solving, further analysis of these sub-test results were examined to pinpoint exactly why NCE Total Math showed a statistically significant increase in student achievement.

A concurrent study of student sub-groups conducted by Alicia Bottorff uncovered similar results. Bottorff's data revealed a statistically significant increase in NCE Total Math scores for

the sub-group of African Americans. Further investigation of scores for the African American sub-group showed a statistically significant increase in scores on the NCE Math Procedures sub-test but no significant increase for the NCE Math Problem Solving Test. In addition to these findings, Alicia Bottorff noted a statistically significant increase in scores on the NCE Complete Battery for the Special School District sub-group. In order to determine the source of the increase in NCE Complete Battery performance, scores for each sub-test of the SAT 10 were analyzed. The results of this analysis revealed a statistically significant increase in scores on the NCE Math Procedures sub-test for the SSD sub-group. While there was not a statistically significant increase found on the NCE Total Math sub-test for this sub-group, these findings do support the increase in student achievement indicated for the NCE Complete Battery Test category.

Finally, this study examined data collected from parent, student, and staff surveys administered by the district at the close of the six-week summer program in 2009. Responses to these surveys showed students, parents, and teachers felt the six-week program was beneficial to student learning and allowed enough time in terms of length of day and number of weeks to support learning. A majority of the students felt they had enough time to learn the material presented to them. Most parents were satisfied that the new program met their needs as a parent and also improved their child's learning. In addition, most teachers agreed they had enough time to assess and teach their students. Finally, teachers felt the six-week program was effective in halting summer learning loss and preparing students for the upcoming school year.

Overall, this study exposed positive results with regard to student achievement for those who attended the district's six-week summer program. In addition, students, parents, and teachers regarded the program as a whole quite positively. The results of this study and implication for further research are discussed in the next chapter.

Chapter 5: Discussion

This study analyzed student scores on the SAT 10 following completion of both a four-week summer program and a six-week summer program. Mean scores were compared to determine whether a statistically significant increase in student achievement followed the six-week summer program as compared to the four-week program. The length of the summer program was chosen as the independent variable because the district being studied recently replaced its four-week summer program with a six-week summer program assuming the change would have a positive impact on student achievement for summer program participants. SAT 10 scores served as the dependent variable because the SAT 10 is the first standardized test administered to students in the district at the start of each new school year.

It is important to evaluate how changes in district programming impact student achievement. The district being studied made deliberate changes to their summer program and assumed such changes would have a significant impact on student achievement and AYP goals. The specific changes implemented were based on the findings of a district committee convened to research effective summer school programs across the nation. The analysis of SAT 10 scores to determine whether or not a statistically significant increase in student achievement followed the transition to a six-week summer program allows district officials to evaluate the effectiveness of the new summer program.

This study showed that the six-week summer program did produce an increase in student scores on certain SAT 10 sub-tests. The SAT 10 sub-test that showed a statistically significant increase was the NCE Total Math sub-test. This information is valuable to the district being studied because it clarifies areas of success and areas which need further changes to support student achievement.

NCE Total Math was the only sub-test analyzed that showed a statistically significant increase in student achievement on the Stanford Achievement Test following the six week summer program. In fact, further investigation revealed a statistically significant increase in student achievement for both the NCE Math Problem Solving sub-test and the NCE Math Procedures sub-test. Unfortunately, student scores did not show a statistically significant increase for the SAT 10 sub-tests of NCE Reading Comprehension or NCE Complete Battery. However, in Alicia Bottorff's concurrent study of sub-groups within the same population, the special education sub-group showed a statistically significant increase in NCE Complete Battery. Careful analysis of all sub-tests in the Complete Battery determined the NCE Math Procedures was the only SAT 10 sub-test with scores showing a statistically significant increase. Other data from Bottorff's study revealed a statistically significant increase in African American scores in the area of NCE Math Procedures which supports the findings from this study.

Data from the district's 2009 summer school survey indicate a high degree of satisfaction with the six-week program among students, parents, and teachers. Students and parents felt as though the new program met their needs. Also, teachers expressed overwhelming approval, noting the six-week program allowed enough time to assess their students, enough time to plan and teach the extended curriculum, and supported a reduction in summer learning loss for programming participants. The 2009 survey responses clearly support the perception the district's six-week summer program had a significant positive effect on student achievement.

While the newly designed six-week summer program offered more instructional time, the results showed that only mathematics was affected in a statistically significant way. This is similar to the findings in the literature review. Extended summer learning, more often than not, will show a positive increase in the area of mathematics. However, districts across the country

implementing a summer program typically do not see the same results in the areas of reading and writing. While student reading and writing levels might not decline, they are not increasing either. Extending the number of contact hours is not enough to increase reading comprehension. The district made some other changes to the new six-week summer program, such as providing meals for purchase and the opportunity to take an enrichment class. It was the hope of the district that these changes would help their students to be more engaged in the summer learning. While it may have helped, none of the strategies implemented with the six-week summer program were able to increase reading comprehension and complete battery scores. If the district hopes to increase the literacy of their students, they must look at the way in which the reading curriculum is delivered.

Implication for Effective Schools

This study analyzed SAT 10 scores, and the analysis revealed certain gains in student achievement following participation in a six-week summer school program. Specifically, data shows a statistically significant increase is student achievement in the area of NCE Total Math. In addition, survey responses from students, parents, and teachers overwhelmingly expressed approval of the new six-week program and noted the structure seemed quite effective at meeting student needs. The results of this statistical analysis and review of survey responses will be extremely valuable to the district being studied as they evaluate the summer school program and consider ways to improve it in the future.

The literature review in Chapter 2 of this paper mentioned several school program structures designed to increase student achievement. Evaluation of various programs reveals students were most likely to improve in mathematics following participation in a summer course. Those results were replicated by this study which analyzed scores from the SAT 10, a nationally

recognized and extremely reliable measure of achievement. By using a nationally recognized achievement test, the district of study can be assured the results are reliable indicators of student achievement by which to evaluate the effect of their six-week summer program on student achievement. In addition, the results of the 2009 survey designed and administered by the district made it overwhelmingly clear that the students, parents, and teachers found the six-week summer program to be beneficial.

A few students, parents, and staff were not satisfied with the structure and implementation of the six-week summer school program. Some of the questions on the parent, teacher, and student surveys allowed for comments to be made for clearer communication. Parents who had concerns with the six-week program expressed the need for improvement in two areas. The first of these areas is the enrollment process. The district being studied has the teachers and counselors at each middle school recommend students who would benefit from the six-week summer program. An enrollment form is then mailed home, and parents are asked to fill the form out and return it to their child's school counseling department. Some parents felt this procedure was confusing, stating that they were not aware that their child was recommended for the summer program. Others said there was a lack of communication after the enrollment cards were returned. Those parents were not sure if their child was accepted or what classes they would be attending. The district needs to improve communication with parents throughout the enrollment process. A second area of concern for some summer program parents was transportation of students. Parents who had children riding the school bus noted it took a few days for bus issues to be resolved. It is probable that transportation issues would be resolved through better enrollment practices and better communication with parents.

Some teachers noted in survey responses that it was difficult to make educational gains with their students due to sporadic attendance. The district being studied does not have an attendance policy in place for the six-week summer program at the middle school level. Students may miss days due to appointments and vacations. Sporadic attendance makes it difficult for teachers to assess the needs of their students, raise student achievement, and build positive relationships.

A general concern from students who expressed dissatisfaction with the six-week summer program on the survey was that it was "boring". While not very specific, this response does allude to the fact that some students are not being challenged by the six-week summer program. Since the six-week summer program does not have built-in plan time for lesson development, all class preparation must be done on the teacher's own time. The fact that lessons must be planned outside of the summer school day could be one reason teachers are not always providing lessons students find intriguing.

Recommendations

Factors to include in future studies. After analyzing the SAT 10 results, this study found the district's six-week summer program did in fact raise student achievement. However, this was true only in the area of mathematics. In analyzing these results one factor to keep in mind is learning regression. Most students in this study were low performing students, which is most likely why they were participating in the summer school programs. While these students are normally expected to score lower on assessments such as the Stanford Achievement Test, it is possible that they scored well *by chance* on one or both of the Stanford Achievement Tests they took after completing each of the summer school programs.

Future studies should include a quasi-experimental study between a random group of students who participate in the six-week summer program and a random group who do not participate in a summer program of any kind. These groups should be similar demographically. Including demographically similar non-summer school students would clarify whether or not a summer program limits learning loss as well as increases student achievement for those participating in the program. In addition, the district should continue to administer the survey asking for parent, teacher, and student feedback about the six-week summer program because it does a good job of communicating stakeholder's opinions of the six-week summer program. However, the district may want to create more specific questions about the six-week summer program, so that they can get a true sense of what is working and what is not.

The literature review indicated mathematics is a curricular area that consistently shows the greatest increase in student achievement following participation in summer programs. The district needs to evaluate the six-week program and implement changes to support an increase in student achievement in the areas of reading and writing. Few districts have created summer programs able to statistically increase student achievement in these areas. Of course, many summer programs, including the six-week summer program in this study, have been successful in limiting summer learning loss for mathematics, but most schools would prefer to facilitate increases in achievement rather than just halting learning loss.

In order to efficiently support learning, districts must deliberately select students to participate in summer programs. This study and its review of the literature provide evidence that students with lower socio-economic backgrounds and struggling learners experience greater learning loss and, consequently, benefit the most from a summer program. It is important for a district to identify these students and enroll them in summer programs to support learning and

enhance school achievement. Schools should also provide summer programming to meet the needs of learners who do not struggle academically and, therefore, do not require remediation. Enrichment classes should be offered for these learners to spark interest and maintain skills over the summer months. Staff development for summer school teachers should ensure they understand the curriculum and expectations of those participating in these courses.

The results of this study would be more valuable if the researchers had been able to assess the students' learning immediately before and immediately after the six-week summer program. Pre- and post-assessments would allow a more accurate measure of student achievement which could be directly attributed to the summer program. One important element to remember is even after the summer program ends, a few weeks of summer vacation remain. Even this small amount of time outside of the school setting could cause the students learning to regress.

Summary

The six-week summer program did produce an increase in student achievement as measured by Stanford Achievement Scores. The curricular area with a statistically significant increase in student achievement was mathematics. While students did not show a learning loss in the areas of reading comprehension and complete battery, neither did they show a statistically significant gain in achievement. It is important to remember that many districts support summer programs in order to increase student learning instead of simply maintaining the current level of student knowledge. Overall, parent, teacher, and student surveys indicated all parties were satisfied with the six-week summer program. In particular, parents were happy with their child's education, and teachers felt as though the six-week program limited student learning loss and met the needs of their students. The data shows that only mathematics had a statistically

significant increase in student achievement while reading comprehension and complete battery show neither a statistically significant gain nor loss. Collecting opinions from parents, teachers, and students will be imperative to continued improvement in the six-week summer program.

The district should conduct further research to support development of the six-week summer program in order to support significant student achievement gains in other curricular areas such as reading and writing. One possibility is for the district to adopt a summer literacy curriculum all of the summer program teachers could follow. Those teaching reading and writing courses in the summer program should be trained in order to implement intensive reading intervention strategies.

The district must also consider reviewing some of the six-week summer program policies, starting with the communication regarding enrollment. Inviting students to enroll is an excellent opportunity for the district to make a good impression and communicate the importance of the six-week summer program. Clear communication about the enrollment process will ensure parent support and prevent problems down the road with transportation or attendance. Next, the district needs to create and implement an attendance policy. Although students do not earn graduation credit through participation in the summer program, they should be held accountable for their learning. Finally, teachers need to be given time during the summer program day in order to plan engaging lessons for their students. Paid planning time will support quality lesson designs.

Overall, the six-week summer program was effective at raising the math scores for those who participated in the program. In addition, the district clearly targets the students who need the summer program the most. The district has a strong foundation in place, so thoughtful improvements are the next step. The reading and writing curriculum needs to be addressed and

some of the current six-week summer program policies as well. Also, in order to develop a clear picture of the effects of the six-week summer program, the district should test the students both immediately before and after their participation. Once these issues are resolved, teachers, parents, and students will have the tools needed to increase student achievement in all areas. Following a deliberate process like this will allow the district to improve student achievement measures and support attainment of AYP goals mandated by the NCLB act.

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Appendix A

Statistical Tables

Descriptive Statistics

Table A1

z-Test: Two Sample for Means

NCE Total Math White Sub-Group Results

	2008	**2007**
Mean	34.8	33.16667
Known Variance	160	174
Observations	30	30
Hypothesized Mean Difference	0	
z	0.489511	
P(Z<=z) two-tail	0.62448	
z Critical two-tail	1.959964	

Note. Confidence Level = .95

Table A2

z-Test: Two Sample for Means
NCE Total Math SSD Sub-Group Results

	2008	**2007**
Mean	34.07667	28.70667
Known Variance	194	110
Observations	30	30
Hypothesized Mean Difference	0	
z	1.686934	
P(Z<=z) two-tail	0.091616	
z Critical two-tail	1.959964	

Note. Confidence Level = .95

Table A3

z-Test: Two Sample for Means
NCE Total Math Free and Reduced Lunch Sub-Group Results

	2008	**2007**
Mean	34.57667	30.70667
Known Variance	111	114
Observations	30	30
Hypothesized Mean Difference	0	
z	1.413124	
P(Z<=z) two-tail	0.157619	
z Critical two-tail	1.959964	

Note. Confidence Level = .95

Table A4

z-Test: Two Sample for Means
NCE Math Problem Solving African-American Sub-Group Results

	2008	**2007**
Mean	34.90333	32.13667
Known Variance	170	121
Observations	30	30
Hypothesized Mean Difference	0	
z	0.888323	
P(Z<=z) two-tail	0.374367	
z Critical two-tail	1.959964	

Note. Confidence Level = .95

Table A5

z-Test: Two Sample for Means
NCE Complete Battery African-American Sub-Group Results

	2008	**2007**
Mean	38.48	34.61333
Known Variance	101	107
Observations	30	30
Hypothesized Mean Difference	0	
z	1.468472	
P(Z<=z) two-tail	0.141976	
z Critical two-tail	1.959964	

Note. Confidence Level = .95

Table A6

z-Test: Two Sample for Means
NCE Complete Battery White Sub-Group Results

	2008	**2007**
Mean	39.73333	34.65
Known Variance	83	140
Observations	30	30
Hypothesized Mean Difference	0	
z	1.864476	
P(Z<=z) two-tail	0.062255	
z Critical two-tail	1.959964	

Note. Confidence Level = .95

Table A7

z-Test: Two Sample for Means
NCE Complete Battery Free and Reduced Lunch Sub-Group Results

	2008	**2007**
Mean	38.15333	35.53
Known Variance	101	107
Observations	30	30
Hypothesized Mean Difference	0	
z	0.996282	
P(Z<=z) two-tail	0.319113	
z Critical two-tail	1.959964	

Note. Confidence Level = .95

Table A8

z-Test: Two Sample for Means
NCE Reading Comprehension African-American Sub-Group Results

	2008	**2007**
Mean	38.17667	34.30667
Known Variance	330	196
Observations	30	30
Hypothesized Mean Difference	0	
z	0.924227	
P(Z<=z) two-tail	0.355368	
z Critical two-tail	1.959964	

Note. Confidence Level = .95

Table A9

z-Test: Two Sample for Means
NCE Reading Comprehension White Sub-Group Results

	2008	**2007**
Mean	42.02333	35.19333
Known Variance	273	229
Observations	30	30
Hypothesized Mean Difference	0	
z	1.669665	
P(Z<=z) two-tail	0.094986	
z Critical two-tail	1.959964	

Note. Confidence Level = .95

Table A10

z-Test: Two Sample for Means
NCE Reading Comprehension SSD Sub-Group Results

	2008	**2007**
Mean	34.84333	29.33667
Known Variance	248	143
Observations	30	30
Hypothesized Mean Difference	0	
z	1.52532	
P(Z<=z) two-tail	0.127179	
z Critical two-tail	1.959964	

Note. Confidence Level = .95

Table A11

z-Test: Two Sample for Means
NCE Reading Comprehension Free and Reduced Lunch Sub-Group Results

	2008	**2007**
Mean	39.50333	35.33
Known Variance	330	196
Observations	30	30
Hypothesized Mean Difference	0	
z	0.996669	
P(Z<=z) two-tail	0.318925	
z Critical two-tail	1.959964	

Note. Confidence Level = .95

Appendix B

Survey Questions

Elementary/Middle School Student Survey Questions

1. What grade level are you enrolled in during Summer Academy?

2. Please select your Summer Academy location.

3. Please select the time(s) each day that you attend Summer Academy (select all that apply).

4. Please select the Summer Academy class(es) you attended this summer (select all that apply).

5. Have you ever participated in the District's Summer Academy before this year?

6. How do you feel about the six-week length of the Summer Academy program?

7. Did you think you had enough time each day to learn the material in your classes?

8. If you participated in any of the enrichment classes throughout the day (Blocks A, B or C), did you like the different topics for the enrichment classes?

9. What topics would you like to see offered as enrichment classes in the future during Summer Academy?

10. Would you recommend Summer Academy to a friend?

11. Do you have any suggestions on how we can make the District Summer Academy even better for next year?

Elementary/Middle School Parent Survey Questions

1. In which grade level was your child enrolled for the District's Summer Academy (please note that students were enrolled into Summer Academy based on the grade they will be entering in the 2009-10 school year)?

2. Please select your child's Summer Academy location.

3. Please select the Blocks of time each day that your child attended Summer Academy (select all that apply).

4. Please select the Summer Academy classes attended by your child.

5. Is this your family's first experience with the District's Summer Academy?

6. Please rate your experience with the enrollment process for the District's Summer Academy.

7. After enrolling your child, how satisfied were you with the communication from your Summer Academy location leading up to and during the program?

8. If you drove your child to Summer Academy, how satisfied were you with the pick-up/drop-off process at your location?

9. If your child participated in academic classes (math or reading/language arts), please rate your level of agreement with the following statement: My child progressed in his/her learning as a result of being involved in the District's Summer Academy.

10. If your child participated in any enrichment classes, please rate your level of agreement with the following statement: The Summer Academy enrichment classes provided a valuable experience for my child.

11. Please rate your level of agreement with the following statement: The District's Summer Academy helps meet my needs as a parent of a student in the District.

12. How likely would you be to recommend Summer Academy to other families?

13. Do you have any suggestions on how we might improve the District's Summer Academy program?

14. District residents please answer this question: If transportation for the District's Summer Academy was available, how likely would you be to use it?

15. District residents - If you answered either 'Very likely' or 'Likely' to question 14, please answer the following question: If there was a nominal fee for transportation, how likely would you be to use it?

16. Do you have any other comments?

Elementary/Middle School Teacher Survey Questions

1. What grade level(s) did you teach during Summer Academy (select all that apply)?

2. Please select your Summer Academy location(s)(select all that apply).

3. Please select the time(s) each day that you taught during Summer Academy (select all that apply).

4. Please select the Summer Academy class(es) taught (select all that apply).

5. Have you ever taught for the District's Summer Academy before this year?

6. For academic classes only - please rate your level of agreement with the following statement: I had enough time to get to know my student's strengths and weaknesses in order to properly assess them.

7. For academic classes only - please rate your level of agreement with the following statement: I had enough time each day to adequately teach my class.

8. For academic classes only - please rate your level of agreement with the following statement: I was given adequate preparation time and provided sufficient materials with which to teach.

9. Would you consider teaching academic classes (math or reading/language arts) for the District's Summer Academy next year?

10. Would you consider teaching enrichment classes either all day or during Block C for the District's Summer Academy next year?

11. Please rate your level of agreement with the following statement: The District's Summer Academy program helps to minimize summer learning loss and prepare students for the coming school year.

12. Do you have any suggestions on how we can improve the District's Summer Academy for next year?

Appendix C

Statistical Figures

Descriptive Statistics

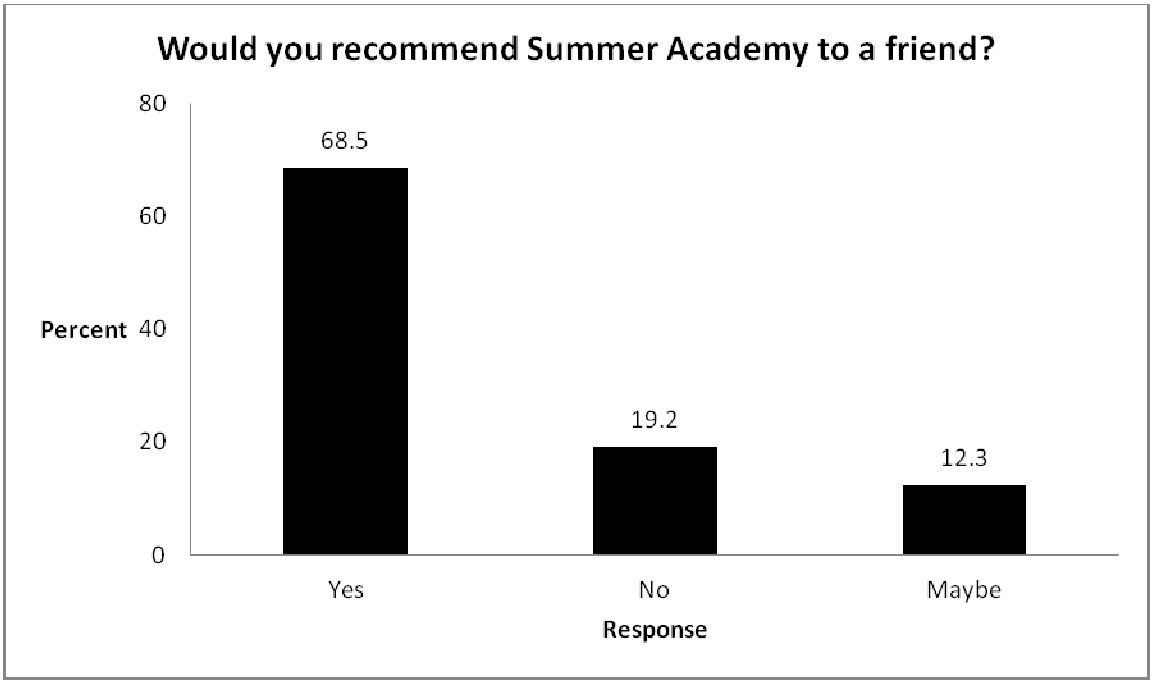

Figure C1. Recommend to a Friend

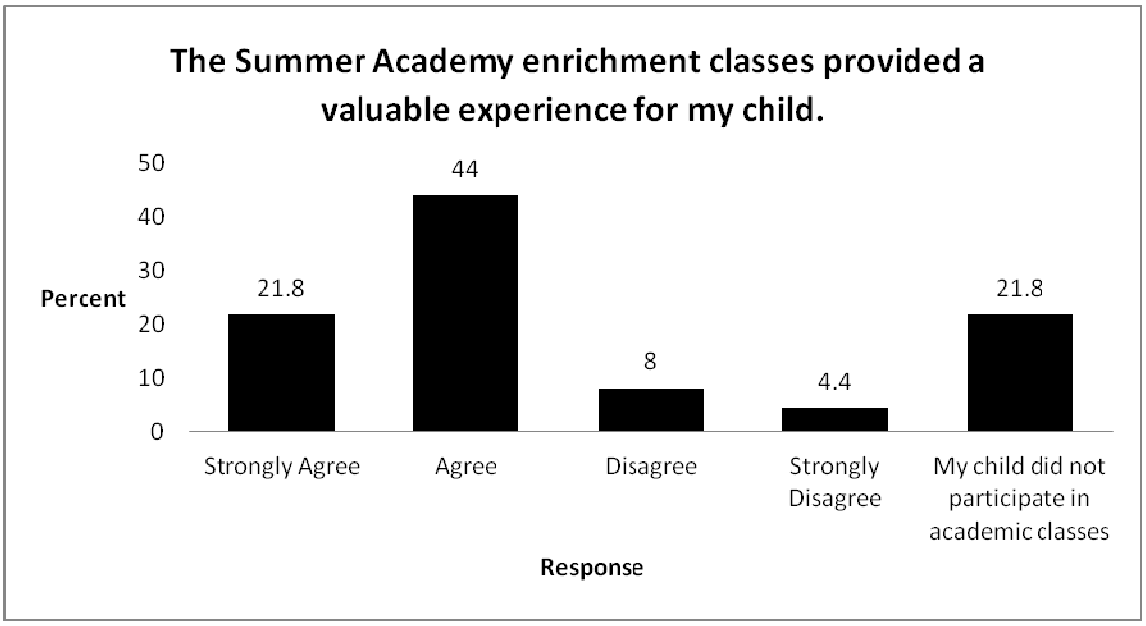

Figure C2. Enrichment Classes Provide Valuable Experience

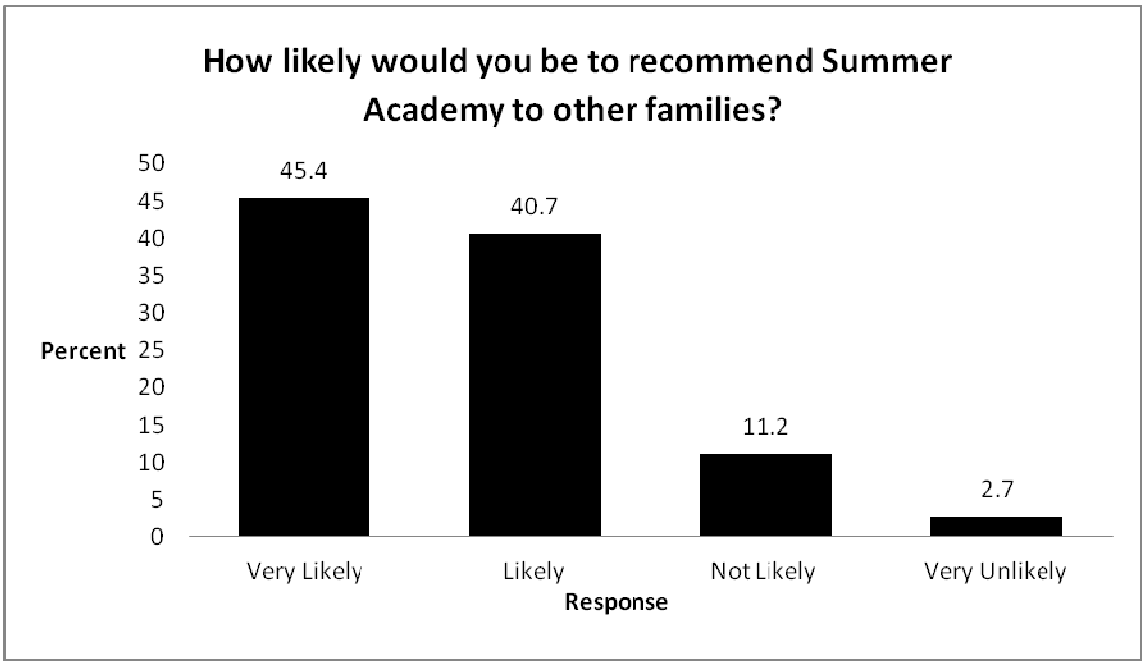

Figure C3. Recommend to Other Families

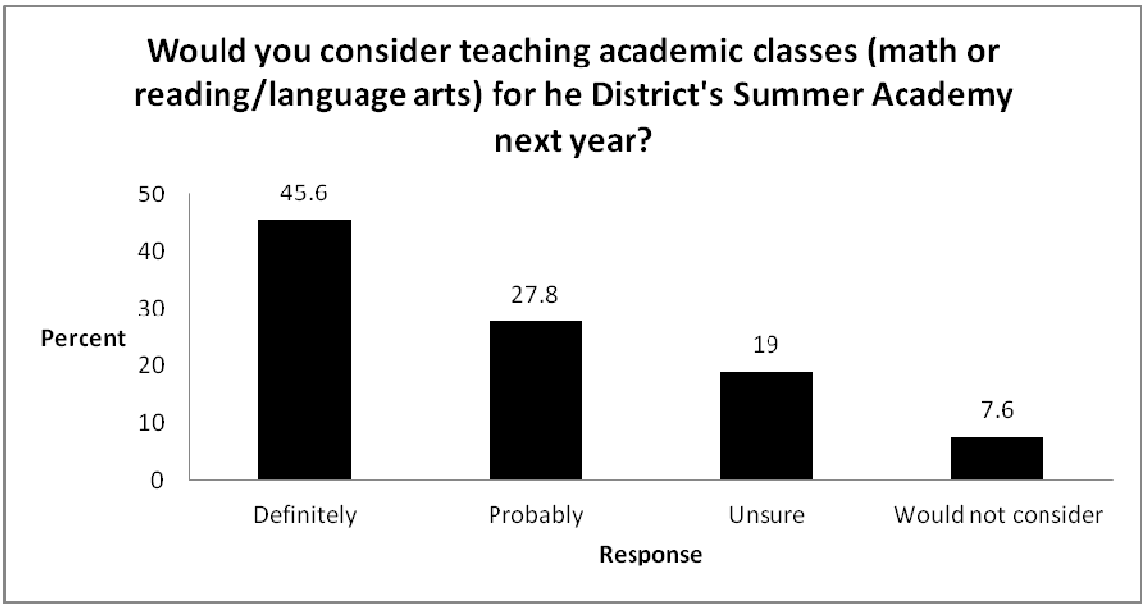

Figure C4. Teach Again Next Year

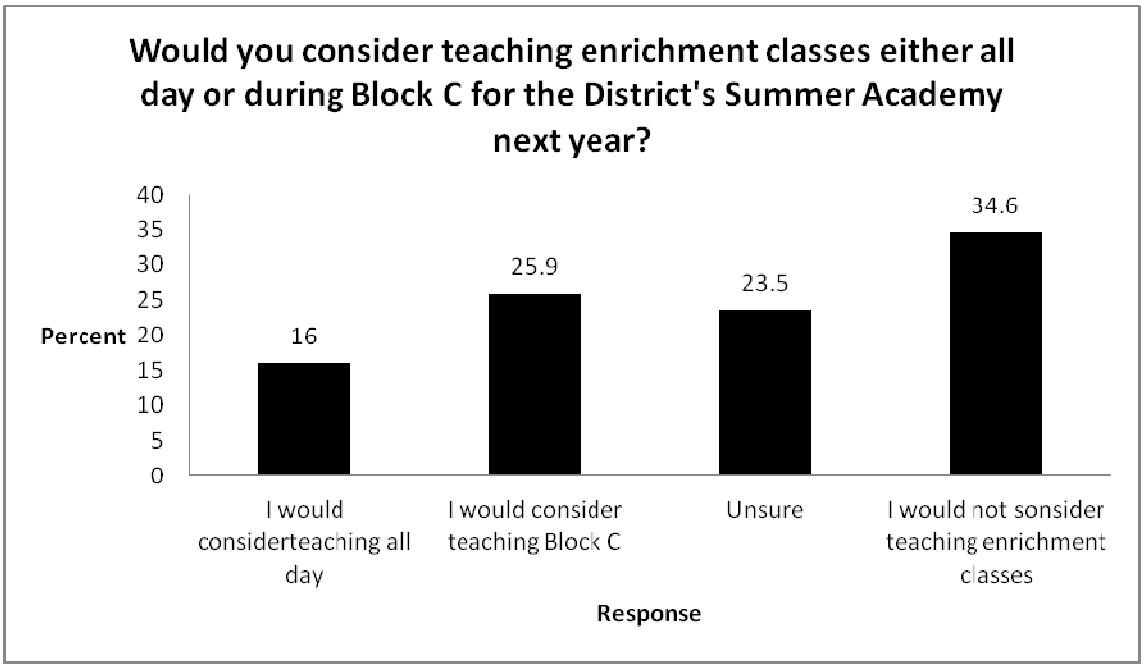

Figure C5. Teach Enrichment Class Next Year

Appendix D

Approval Forms

09-05

IRB Project Number

Lindenwood University
Institutional Review Board Disposition Report

To: **Brian Koop and Alicia Bottoroff**
CC: Dr. Vitale

Congratulations! I have reviewed this revised proposal for research and it has been accepted. Thank you for the hard work that has gone into this proposal and good luck with your data analysis.

Dr. Colleen Biri 12/10/2008

Institutional Review Board Chair Date

Vitaé

Brian Koop currently teaches sixth grade science and serves as the science curriculum leader at Rockwood Valley Middle School, in the Rockwood School District. In addition to teaching science, Brian Koop is an administrator for one of the Rockwood Summer Academy sites. He serves on both the District Rockwood Summer Academy Committee as well as the Rockwood Insurance Committee. Specific areas of interest are curriculum and analysis of assessment data.

Educational studies resulted in a Master of Arts Degree in administration from Lindenwood University and a Bachelor of Science in Education Degree from Missouri State University.