IMPACT OF CALENDAR ON STUDENT ACHIEVEMENT, GENDER, AND ETHNICITY IN YEAR-ROUND SCHOOLS

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ABSTRACT

The achievement gap between Black and White students across the country continues to challenge school systems to rethink current initiatives and programs already in place. While the gap has narrowed since the late 1980s, advancement has been slow and minimal (Education Commission of the States, 2003). Present research has identified numerous factors that can be attributed to the achievement gap. While there is not one solution to closing the achievement gap, researchers indicate the need to reduce class sizes, increase parent involvement, develop year-round programs, and offer incentives to teachers in needy schools (Flannery, 2005). Year-round education is one example of the many reforms that teachers and students across the nation are involved in today (Kneese, 1996). Year-round education offers a different approach to using instructional time and restructuring the traditional school calendar. Rearranging the calendar allows for shorter breaks of time out to be offered throughout the year and eliminates the traditional three-month summer. Numerous research studies were examined to determine if there are benefits of a year-round program, the effects of implementing a non-traditional calendar to help eliminate the achievement gap, the benefits on student academic performance in Reading and Math in grades three and five; and the impact on gender and ethnicity achievement while focusing on eliminating the achievement gap. Current research indicates that year-round education and the benefits to students are inconclusive and that further research is needed (Kneese,

1996). McMillen's (2001) study reports that year-round students do not outperform traditional education students. However, certain subgroups, such as students considered at-risk, may benefit more from a year-round calendar. The year-round calendar may reduce the achievement gap (Cooper, Valentine, Charlton, and Melson, 2003). This paper focused on student achievement, gender and ethnicity in a Title I year-round setting.

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DEDICATION

I dedicate this dissertation to my two favorite guys. This dissertation is for Bill, my best friend, husband and statistician; and to my precious son, Connor, who loves to learn. Bill, I could have never done this without you. I love you with all of my heart.

CHAPTER 1

> "Time is the missing element in our great national debate about learning and the need for higher standards for all students. Our schools and people involved with them-students, teachers, administrators, parents, and staff-are prisoners of time, captives of the school clock and calendar." (National Education Commission of Time and Learning, p.7, 1994)

INTRODUCTION

Years of research have attempted to pinpoint the exact cause for the achievement gap and offer solutions to eliminate the disparity between the different groups of students. Year-round education is one attempt to help narrow the gap and address student achievement.

History of Year-Round Education

Year-round education, (YRE), is not a new program. Districts have been implementing YRE calendars since the early 20th century (McChesney, 1996). The first year-round school opened in 1904 in Bluffton, Indiana (Glines, 1995). The traditional nine-month calendar was planned around a farming society in which young people were needed to work on the family farm (Parish, 1989). School systems across the country still implement the traditional calendar that was created two centuries ago even though society as a whole has moved away from an agrarian economy. The first year-round calendar was created and developed under the direction of Superintendent William Wirt who later paved the way for the "modern" year-round education program. In 1912 in Newark, New Jersey, a year-round calendar was implemented to help immigrants learn English and to provide enrichment for students. In Aliquippa (1928) and Ambridge

(1931), Pennsylvania, year-round education was instituted to create more building space. Nashville, Tennessee developed a year-round calendar to improve the quality of education for students (Glines, 1997). Early forms of the year-round calendar did not continue through the depression years and World War II. Numerous attempts were made from 1946-1966 to revive the year-round program, but interest lagged until the late 60's. During the early 1970's, year-round education reinvented itself and was implemented primarily to address building capacity concerns (Merino, 1983). Approaching 2000 and beyond, the year-round calendar focused on student achievement as well as utilizing the building space to the greatest means (Glines, 1997). The *No Child Left Behind Act of 2001(NCLB)* demands greater expectations of all students, forcing schools across the nation to provide a variety of learning opportunities for all students. The NCLB legislation requires that all students will be proficient in Reading and Math by the year 2014. Virginia holds teachers and students regardless of their ethnicity accountable for academic growth and improvement through the use of state mandated Standards of Learning (SOLs) assessments. Each spring, SOL tests are administered to students across the Commonwealth to measure academic achievement. These tests assess the knowledge and skills that are taught throughout the school year.

The growth of year-round education has exploded over the past eighteen years. In 1985-1986, there were sixteen states that had at least one year-round school. Sixty-three school districts had a year-round school during the 1985-1986 school year, but seventeen years later that number has grown 934% to 651. During the 2002-2003 school year, 46 states had year-round schools. Over the seventeen-year span, the

number of students enrolled in a year-round setting had increased by 441% since 1986 (National Association for Year-Round Education, NAYRE). In 2003 there were 2,320,730 students enrolled in a year-round program (NAYRE, 2005). Currently in Virginia there are six school districts implementing a year-round calendar with a total of 26 year-round schools in the Commonwealth (Virginia Department of Education, 2006). According to the NAYRE year-round education is as follows:

> Year-round education reorganizes the school year to provide more continuous learning by dividing the long summer vacation into shorter, more frequent breaks…Students in a year-round program attend the same classes and receive the same amount of instruction as students on a nine month calendar (usually 180 days)…The year-round calendar is organized into instructional blocks and vacation periods that are evenly distributed across the 12 months.

Statement of the Problem

In January 2001, the Bush administration initiated the *No Child Left Behind* (NCLB) legislation that demanded greater accountability from schools and success for all students across the country. To meet such demands, school systems are being forced to examine different practices and programs to ensure that all students are successful. Year-round education is one way that school divisions are attempting to address the need for improving academic success and meeting the demands of the *NCLB* legislation.

Across the Commonwealth of Virginia, the Standards of Learning have impacted students and the school curriculum. The Virginia State Board of Education, through the

Standards of Learning and Standards of Accreditation (2000), has implemented a rigorous accountability system for both schools and students. Year-round education claims to enhance student learning by providing students a schedule that minimizes learning loss (Kneese, 1996). Cooper et al. (2003) claims that the traditional three-month summer vacation has a negative affect on special needs students, English as a Second Language (ESL) students, and at-risk students. Prior studies conducted by Cooper (1996) indicate that summer learning loss equaled at least one month of instruction, especially in the content areas of Math and spelling. Year-round schools today focus on achievement issues (Ballinger, 1995), attendance and discipline according to Heaberlin (2000). According to Sexton (2003) and Cooper et al. (2003), further studies should focus on research to determine the academic success or lack of student academic achievement in year-round schools versus traditional schools. Sexton (2003) also indicated further research should examine data from formative assessments to determine the impact of learning loss.

Calendar Options

Implementing a year-round calendar following a multi-track schedule can increase the capacity of a building and also reduce the class size. A year-round multi-track calendar has students assigned to one of several tracks that are staggered according to attendance (Kneese, 1996). Originally the multi-track calendar was implemented to educate the growing student population. Times have changed and without money to build new schools, districts are forced to find alternate ways to house students in appropriate settings. Academic achievement, school district overcrowding and professional development are among the reasons for experimenting with a non-

traditional calendar. There are more than 30 different forms of the year-round calendar that are being implemented around the country today (Kaufman, 1993). The needs and resources of the school district dictate the type of calendar that is chosen. A year-round calendar is designed to assist diverse school populations and the needs of the students within those buildings (Kaufman, 1992). It also addresses two critical issues: (1) maximizing the use of instructional time, (2) and effectively utilizing the facilities to allow for more efficient use. This study focused on the first, maximizing the calendar to improve academic achievement. Those who favor restructuring the calendar indicate the lack of continuity in learning through the course of the three month long summer vacation and fixed schedules that force all courses into the same time frame as evidence indicating the need of change (Huyvaert, 1997).

Year-round education is becoming increasingly popular due to higher educational standards sweeping the nation and the demand for academic excellence (Kneese & Knight, 1995). School restructuring has been a means of addressing current trends in education. *A Nation At-Risk*, from the National Commission on Excellence in Education (1983) and *Action for Excellence*, by the Task Force on Education Economic Growth of the Education Commission of the States (1983), call for reforms to raise educational standards (Carnoy & Levin, 1985). Among the reforms suggested is the demand for more effective use of instructional time and time spent on instruction (Carnoy & Levin, 1985). School systems around the nation are implementing programs designed to maximize the use of instructional time. Advocates of year-round education believe that reorganizing the time spent in school versus adding additional hours to the day is one solution to improving student academic performance (Huyvaert, 1997). These

advocates believe that shorter periods of academic learning blocks followed by a short break will increase retention of knowledge (Hazleton, Blakely, & Denton, 1992).

Advantages of Year-Round Education

There are numerous stated benefits of YRE. The flexibility of the calendar provides for a more continuous learning schedule, therefore reducing the need to review at the beginning of the school year. Intersessions can be offered to remediate or challenge students. During intersessions, teachers also have the option of teaching other grade levels or experimenting with new curriculum ideas (Kneese, 2000). Like summer school, teachers may have an entirely different age groups and ability levels. Intersessions provide the opportunity to work with different aged students or different ability levels. Elementary teachers in a traditional setting typically only teach one class or grade level per year. In some school districts teachers are given the option to split a nine-month contract with another teacher allowing them to pursue other options. Frequent breaks in the YRE calendar allow teachers more time for planning and organizing materials (Shields & Oberg, 2000). Teachers credit the continuous schedule of the intersessions with student improvement. According to Cooper et al. (2003) a more noticeable improvement in academic achievement may be noted in at-risk students. However, it was noted that the existing research regarding at-risk student achievement contains design flaws that provide inconclusive results.

Other studies, however, indicate advantages to implementing a year-round calendar. A report compiled by various school districts around the country found three specific advantages that are evident in YRE programs (McChesney, 1996). The results indicated that due to the shortened summer vacation, less time was needed to review

curriculum. Students in academic danger are targeted through remediation. These remediation classes are offered during the intersessions. Intersessions allow students to catch up at the end of the forty-five day period versus waiting until June to attend summer school and attempting to relearn material taught in the beginning of the school year. Lastly, the report indicated that many of the schools on a year-round calendar have higher test scores, lower dropout rates, lower absenteeism, less vandalism, and improved self-esteem (McChesney, 1996).

Disadvantages of Year-Round Education

Opponents of year-round education cite numerous reasons that a year-round calendar is not beneficial. According to Peltier (1991), families with children participating in both year-round and traditional schedules cause numerous scheduling conflicts. While one child is on summer vacation, the other child will be attending school. Others claim daycare arrangements become increasingly difficult when dealing with a year-round calendar (Glass, 1992).

The cost of implementing a year-round calendar can be very expensive. Peltier (1991) stated that in order for school districts to actually save money the year-round calendar would have to operate at full capacity throughout the entire year. Intersessions would also be mandatory to keep the facility use at full capacity. School districts often overlook the additional cost of transportation, building maintenance, and higher electric bills (Merino, 1983). Other cost factors include teacher salary adjustment for those that teach intersession classes (Peltier, 1991). Opponents of year-round education indicate a lack of communication between the school district, school faculty and the student body (Peltier, 1991). Fewer opportunities for staff to work together are another frequent

concern. Without the traditional summer break, teachers often find it difficult to pursue college coursework often required by their districts. Heaberlin's (2000) study reported that opponents of YRE maintain four characteristics that were consistent in the literature that was reviewed opposing year-round education. The four opposing dominant characteristics were: childcare, continuing teacher education, children on different calendars, and facility maintenance.

Purpose of the Study

The purpose of this study was to examine the relationship between student achievement in grades three and five in Reading and Math in Title I year-round and Title I traditional schools. Few studies have examined the impact of a year-round calendar on at-risk student achievement (Kneese, 1996; Palmer, E. & Bemis, A., 1999). In a personal phone conversation with Dr. Charles Ballinger (May 5, 2005), he specified that further research is needed in the areas of student achievement, attendance for both students and teachers, and examining the dropout rates of students participating in a year-round program. "When the top two researchers in the country, Carolyn Kneese and Harris Cooper, indicate the need for more research, then you know that more research is definitely needed" (Ballinger, 2005). During our conversation he indicated that current studies have yielded more positive results in the past 10 years than previous studies from the past 10 to 20 years. Recommendations for future research from Dr. Kneese's study state that additional research should examine the effect of a year-round calendar and the impact on gender. In e-mail correspondences, This study examined the impact of a year-round calendar in a Title I school on the achievement of at-risk students in grades three and five in Reading and Math, and on gender and ethnicity.

Limitations

A limitation is a factor that is considered to limit or weaken the outcome (Locke, Spirduso & Silverman, 2000). Utilizing data from one school district is a limitation of this study. Four of the six year-round schoolwide Title I schools were matched with schoolwide Title I traditional education schools from a school district in Southeastern Virginia. There were 849 student SOL scores included in the analyses, and the sample population was limited to students in grade three and five. Students that did not take both the Reading and the Math SOL assessment were not included in this study. Another limitation to consider was that there were no students receiving special education services included in this data analyses.

Research Questions

Research Question 1: Does the year-round school calendar have an impact on student achievement, as measured by the SOL Math and Reading test scores, in Title I schools in grades three and five?

Research Question 2: Does the gender of students who attend a year-round Title I school have an impact on academic achievement as measured by the SOL Math and Reading tests in grades three and five?

Research Question 3: Does the ethnicity of students who attend a year-round Title I school have an impact on academic achievement as measured by the SOL Math and Reading tests in grades three and five?

Using prior studies and research, an analysis and examination of the findings of the studies and the impact on student achievement, gender, and ethnicity in Math and

Reading in third grade and fifth grade students in a Title I year-round school will be discussed.

Definitions of Terms

The following terms will be used throughout this study:

Academic performance	Students' achievement as their ability to maintain and improve their academic success (Kneese, 1996)
Achievement gap	The difference in student performance that separates White students from disadvantaged minority students (ECS, 2003)
At-risk student	Schools enrolling a minimum of 40 percent of students from poor families are eligible to use Title I funds for schoolwide programs that serve all children in the school. These students are considered at-risk (Virginia Dept. of Education, 2005).
At-risk school	Schools with an enrollment of a minimum of 40 percent of students from poor families are eligible to utilize Title I funds for schoolwide programs to assist at-risk students (Virginia Dept. of Education, 2005).
Dual-track calendar	A calendar that contains both the traditional calendar and the year-round model (Glines, 1997).
Intersession	Days following the marking period that are added to provide additional instruction and remediation (Kneese, 1996).

Multi-track schedule	A year-round schedule that helps to ease overcrowding in buildings and address academic issues (Glines, 1997).
Title I school	Schools with a minimum of 40% of the students qualifying for free and reduced lunch (Virginia Dept. of Education, 2005).
Traditional education (TE)	Students who have a summer break for three months and attend classes for nine consecutive months (Glines, 1992).
Year-round Education (YRE)	A calendar that has been rearranged to eliminate the traditional three month summer vacation and allows for shorter intervals of academic instruction (Quinlan, George, & Emmet, 1987; Kneese, 1996).

Theoretical Framework

Figure 1 is a conceptual model contrasting traditional education and year-round education.

Organization

Chapter One of this study provides an introduction, history of year-round education, purpose of the study, research questions, definition of terms and the theoretical framework for this study. Chapter Two provides a literature review. Chapter Three containes the methodology selected for this study. Results are discussed in Chapter Four. A discussion of findings, summary, conclusion, and recommendations based on study findings are shared in Chapter Five along with future implications.

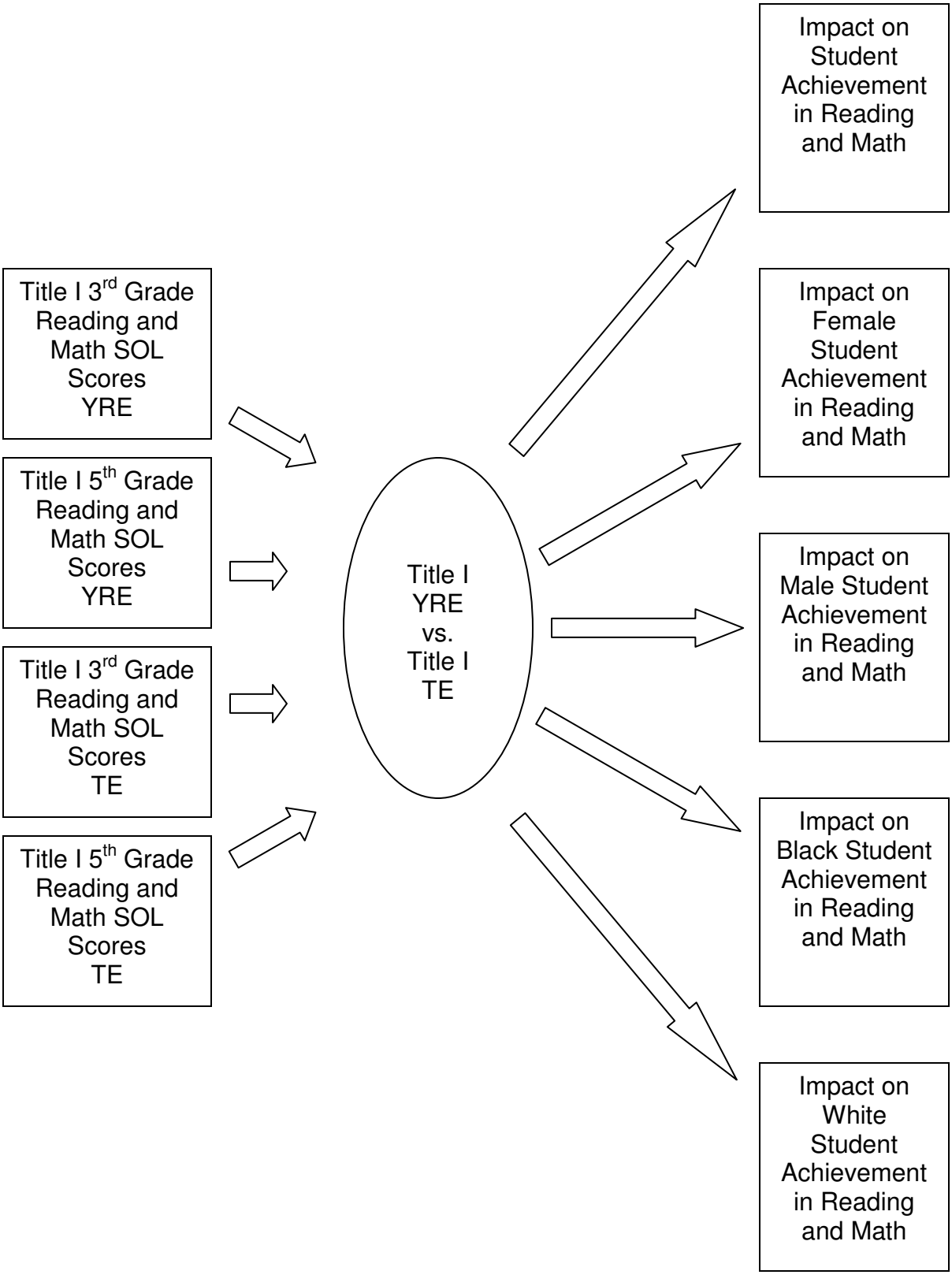

Figure 1. Conceptual Model

CHAPTER 2

REVIEW OF THE LITERATURE

Introduction

The purpose of this literature review was to examine the relationship between student achievement in Math and Reading in a Title I school and the correlation, if any, on gender and ethnicity. According to Kneese (1996), “Because the impact of year-round education on different student populations has not been adequately accounted for in the body of research, the need for more relevant research is indicated” (Kneese, p. 21, 2000). Few studies have examined the impact of year-round education on the at-risk student achievement (Kneese, 1996; Palmer, E. & Bemis, A., 1999). This study examined the impact and significance of year-round education regarding Title I student achievement, gender and ethnicity.

This literature review provided an overview of various significant studies that have been conducted on year-round education. After reviewing various studies from journals, books, and conference presentations, the data analyzed indicated that there are benefits and limitations of year-round education that should be considered. In order to accomplish this review of literature, computerized databases searches of ERIC, PYSCHINFO, Ovid, Worldcat, and Dissertation Abstracts International were conducted. In reviewing literature on year-round education, search terms included, but not limited to, year-round education, student achievement, intersessions, single-track schedule, dual track schedule, attendance, at-risk student achievement in a year- round setting, and traditional education were used. Studies were also included for this literature

review that examined (a) the history of year-round education; (b) current models; (c) advantages of year-round education; and (d) disadvantages of year-round education. There were no studies found that closely examined the impact of a year-round calendar in a Title I school.

As previously noted, the first year-round program was begun in Bluffton, Indiana in 1904 (Glines, 1997). The year-round calendar continues to be implemented in school districts across the nation today. Numerous studies have been conducted to analyze the impact of a year-round calendar on student achievement. The studies analyzed were conducted from 1980 to 2003. In most of the studies reviewed, it was noted that further research was needed to examine the impact of a year-round calendar on student achievement, attendance, at-risk student achievement, and behavior (Kneese, 2000).

Year-round education continues to be a controversial topic. Many studies indicate that year-round education does yield statistically significant results (Kneese, 2000: Kneese & Knight, 1996: Palmer & Bemis, 1999). While other research indicates that there is lack of evidence to indicate the effectiveness of year-round education (Cooper et al., 2003; Kneese, 1996; and Grotjohn & Banks, 1993). With the recent implementations of the No Child Left Behind legislation, school districts are scrambling to find alternate ways to address the needs of their students. Schools are altering the traditional calendars to offer continuous learning opportunities throughout the year (Kneese, 1996). Intersessions are scheduled to enrich the curriculum or to remediate and are offered immediately following the marking period. These intersessions are often optional to the students and parents allowing them the freedom of choice for the programs that they select (Ballinger, 2000; Kneese, 1996).

Theoretical Foundations of Year-round Education

The research reviewed indicated mixed results of the benefits of year-round education and the impact on student academic performance. The literature about year-round education reveals a large variety of information about the impact, policies, and effectiveness of implementing a year-round calendar. Studies have been conducted to determine which track, single or multi, performs better academically and which track has more of an impact on student achievement. Fifteen studies from the last decade have compared the effects of year-round education to the traditional nine-month calendar. The results indicated that a year-round calendar, though positive, produced a very small effect when examining student achievement (Kneese, 1996). There are still researchers that have yet to determine whether or not a year-round schedule is beneficial or significantly impacts student performance (Public Schools of North Carolina, State Board of Education Evaluation, 2000). According to the National Association for Year-round Education (NAYRE), in 2005 there were over 2 million students enrolled in a year-round program. The popularity of year-round education has appeared and disappeared according to trends in education throughout the years.

Current Models of Year-round Education

Year-round education is another way to rearrange the traditional nine-month calendar to provide a variety of learning opportunities. With a year-round model in place, learning is continuous when the calendar has been rearranged into instructional blocks and vacations are distributed throughout the year (Quinlan, George, and Emmett, 1987). The difference between the year-round calendar and the traditional calendar is the length of time that learning occurs and the scheduling of vacations

throughout the year. A traditional calendar offers 180-day schedule, a year-round calendar also provides 180 instructional days, but offers shorter instructional periods, eliminating the three-month break, typically followed by an intersession. These shorter instructional periods are interspersed throughout the school year.

Within the year-round schedule, there are a variety of different types of organizational models that school systems have adopted. There is the single-track, multi-track, and the extended school year. The single-track schedule is typically implemented for educational reform, since research indicates that a single-track calendar enhances academic achievement and minimizes learning loss through the use of intersessions and shorter summer breaks (Hazelton, Blakely, & Denton, 1992). Multi-track calendars have been implemented to address the growing concern of overcrowding in schools (Kneese, 1996). The most frequently utilized single-track and the multi-track models are 45/15, 60/20, 60/15, and 90/30 (Kneese, 1996). The arrangement of instructional days depends on the model that is implemented. For example, a 60/20 schedule indicates that there are 60 days of instruction and 20 days of intersession or vacation. The same holds true for a 45/15 calendar. There are 45 instructional days and 15 intersession or vacation days. The single-track school schedule generally has 180 instructional days, with short breaks known as intersessions. Intersessions are spread throughout the year to accommodate the calendar that has been selected (Kneese, 2000). Multi-track programs originated to increase building capacity, they were typically found in high growth, poor, and inner city areas (Quinlan, George, & Emmett, 1987). This type of year-round calendar is more difficult to implement than the single-track due to the fact that the school is similar to a

revolving door. As one group goes out, another group is entering. The building is in constant use to help ease overcrowding (Glines, 1992). With this model in place, the capacity of a school can be increased by one-third, and class sizes can be also be reduced (Kneese, 2000). There are a variety of calendar options that can be selected that best meet the needs of a school division. Each calendar will have advantages and disadvantages. School systems must determine which calendar best meets the needs of the students when implementing a year-round program.

Intersessions

Intersessions are mini vacations or short breaks that are woven into the calendar after each instructional period. These intersessions are considered to be part of the continuous learning process for students (Glines, 1997). During intersessions a variety of courses can be offered that include sports, theater, recreational activities, community-centered alternatives and other high interest activities that would not be typically offered throughout the regular instructional calendar. Students can participate in remediation classes, enrichment courses and traditional courses throughout the year (Glines, 1997). Teachers have the option to work intersessions and earn additional money or they can opt to take a mini-vacation instead and return once the intersession has been completed. According to Glines (1997), there are eight philosophical advantages of year-round education. Year-round education: 1) provides for continuous learning opportunities; 2) provides employment realities, not all parents can take vacation during the summer months of June, July and August; 3) allows for lifestyle diversities; 4) eases overcrowding by one-third making instruction more personal; 5) year-round calendars can be used as an improvement catalyst for student achievement; 6) enhances

community relations; 7) takes into consideration people and busy lifestyles; and 8) offers personal choices.

Advantages of Year-round Education

Advocates for year-round education cite that there are many advantages associated with year-round schedules. According to Peltier (1991) some of the advantages include: improved student achievement, improved teacher and student attendance, reduction in the number of discipline problems, reduction of teacher stress, greater motivation after intersessions, and more instructional opportunities during the intersessions which lead to improved student achievement. Summer learning loss will be kept at a minimum due to the shorter breaks in the calendar and prevent student boredom during the long summer months of the traditional calendar (Peltier, 1991). Teachers will be able to identify struggling students and be able to provide remedial instruction after the 9 or 12 weeks of instruction versus at the end of the traditional school year.

Eliminating the traditional three-month summer vacation improves learning retention. Cooper (1996) found that disadvantaged students tended to suffer a greater learning loss when compared to students that were not disadvantaged. According to Ballinger (1995), implementing a year-round schedule greatly reduces the learning loss that occurs during the traditional summer and is the most important reason for implementing a year-round calendar. In a meta-analysis conducted by Cooper, Valentine, Charlton, and Melson (2003), findings indicated that summer loss was more pronounced for Math overall than for Reading. Enrichment opportunities can be offered immediately to students throughout the year. Implementing a year-round schedule

allows for learning to be continuous and the reduction of summer learning loss. Cooper (1996) conducted a meta-analysis regarding summer learning loss, data indicated that achievement tests administered in the fall were 0.10 standard deviations lower than test scores from the preceding spring. Cooper (1996) concluded that a year-round calendar does lessen summer learning loss.

Year-round calendars may help reduce teacher and student boredom while addressing the different needs of each student. Students with special needs and whose primary language is not English may benefit more from a year-round calendar. Staff development for teachers and administrators can be offered throughout the year rather than primarily during the summer months (Ballinger, 1995).

The benefits in a multi-track calendar are similar but address other concerns as well, such as: ease overcrowding, reduction of class sizes, opportunities for teachers to work year-round, and better use of facilities with the potential for cost savings (Palmer & Bemis, 1999).

Disadvantages of Year-round Education

Others feel differently about year-round education and cite numerous disadvantages with the modified calendar. Studies have indicated a higher number of administrators that suffer from burn-out, scheduling family vacations or community activities becomes an issue, difficulty in arranging daycare during the intersessions can be frustrating, and an increase in the cost of operations when dealing with a year-round calendar (Palmer & Bemis, 1999).

The cost of operations is increased when a building is operated at full capacity for the duration of the entire year, not just for the typical 180 days. White (1992) states

that operating a school 12 months continuously creates additional work for administrators and the custodial staff without any down time for major building repairs or improvements. Time becomes a major factor when considering building improvements. With the building in constant use, scheduling for maintenance becomes a problem.

Peltier (1991) found that communication between parents, students and the community was difficult when dealing with a multi-track schedule. Teachers in a year-round setting were often excluded from staff development since traditional schools typically held training during the months of June, July, and August when year-round teachers were in school. Teaching in a year-round setting does not allow teachers to pursue their own education or recertification points during the summer months.

Daycare concerns and planning for vacations when families had more than one student on different tracks was another common problem. Peltier (1991) and Rasberry (1992) found that many teachers, parents, and students were opposed to the schedule change because it was different from what they were accustomed. Both students and teachers must be reintroduced every academic block instead of once in the fall (Rasberry, 1992).

Implementing a year-round calendar impacts on community businesses. Businesses lose workers and money when school districts are operating a year-round calendar. High school students attending year-round school are adversely affected by the shorter breaks in the schedule. They are not able to work during the traditional summer months earning money or gaining job experience (Rasberry, 1992).

Research Studies Included for Review

Research for this literature review focused on several key points. First, studies were to be conducted with schools that had implemented a year-round schedule. Second, studies were limited to those that had implemented a single-track schedule. Third, only studies that addressed student achievement in a year-round setting would be considered. Fourth, studies that address the growing concern of the impact of year-round education on at-risk students, gender and ethnicity will be included. Studies were found that recommended further investigation of the impact of alternative calendars on certain sub-populations. Lastly, several meta-analysis' were examined and analyzed that dealt with the above issues and year-round education.

Overview of Studies Included

Descriptions of the studies that were reviewed for the purposes of this study are located at the end of Chapter 2. The studies are arranged in alphabetical order. The table highlights the author's name, the topic, sample size, and brief results of the studies included.

Does Year-round Education Impact Student Achievement?

Several meta-analyses have been previously conducted examining the impact of a year-round calendar on student achievement. The overall consensus has been that year-round education has a positive impact on students when compared to the traditional calendar education. However, the number of quality studies is lacking (Kneese, 1996, Palmer & Bemis, 1999). According to Kneese and Knight (1995) the traditional calendar may no longer be adequate for meeting the present and future needs of children across the country. Year-round education is not a new program and is

one option for school systems to implement in education today. Due to higher standards and the demand for student achievement for all students, schools nationwide are looking inward to face the growing needs of students and to meet the expectations of the No Child Left Behind legislation. By the year 2013-2014 all students are expected to reach high standards in Mathematics and Reading/language arts (NCLB, 2001). Another provision of NCLB mandates that all students will graduate from high school. Schools not making adequate yearly progress (AYP) face strict sanctions from the federal government (NCLB, 2001).

Kneese and Knight (1995) investigated the effects of year-round education and the achievement of students considered at-risk. Their study focused upon the issue of year-round education improving academic performance for students considered at-risk. Samples were selected from ten suburban schools located in the Southwest that implemented both the traditional and year-round calendars. The school district involved had been offering a year-round calendar since 1980.The district had over 25,500 students from diverse backgrounds and socioeconomic status'. In 1990 six schools were selected to participate in the year-round program. There were 850 students and 40 teachers that were involved in the program offered to elementary students (Kneese & Knight, 1995). Eventually the year-round calendar grew to include a total of ten schools. By the end of the 1992 school year there were 1200 students involved in a year-round program. Schools that were involved in the study had to have implemented a year-round program for more than two years and had students that had taken the Norm-referenced Assessment Program for Texas (NAPT) in 1992 and 1993. Students were in fourth, fifth or sixth grade and had taken the Reading and Math subtests for the NAPT in

the spring of 1993, and had previously taken the test as third, fourth and fifth graders in 1993. Using a stratified sampling procedure, the comparison group consisted of 311 students in ten of the elementary schools participating in a traditional education program. These students were matched with 311 at-risk students in the same ten year-round schools (Kneese & Knight, 1995). According to the Texas Education Agency an at-risk student is one who engages in delinquent behavior, has been a victim of abuse, has Limited English Proficiency, failed at least one Reading, writing, or Math section of the recent Texas standardized tests, and did not perform satisfactorily on a beginning-of-school readiness or an achievement test (Kneese & Knight, p.76, 1995). Using this definition, Kneese and Knight (1995) identified and grouped at-risk students for the study.

Kneese and Knight (1995) used t-tests to compare the mean differences in the year-round results with those of the traditional program results. The students involved in the year-round program achieved higher than the comparison group of traditional education students in the subjects that were analyzed. The two subjects that were studied were Reading and Mathematics. Kneese and Knight (1995) concluded that there was practical significance in all instances in favor of year-round education even though the results were small. Students in sixth grade year-round programs scored the highest on the Reading test. Differences were then examined within the Reading and Math content areas for the at-risk students. For at-risk students, practical significances were indicated that ranged from small to large. Using the t-test statistics, at-risk students indicated that there was a significant difference in Reading scores between traditional students and year-round students (Kneese & Knight, 1995). However, in

Mathematics, the study revealed that there was not a significant difference in Math scores between at-risk students in year-round programs and traditional programs. Upon closer examination, lower socioeconomic students yielded statistically significant positive results (Kneese & Knight, 1995). The results from the comparison of all year-round education students and traditional education students indicated statistically significant results in five of the eight comparisons. When analyzing the results from the at-risk population, data revealed statistically significant results in two of six comparisons. Practical significance was obtained in all comparisons of at-risk-students (Kneese & Knight, 1995).

Achievement differences in the year-round program and the traditional program cannot be attributed to intersessions. The school district where the study took place did not offer an enrichment or remediation during the break. The intersessions were for vacation time only. According to Kneese and Knight, their study revealed that there were slight increases in student achievement for students that attended a year-round program. While the differences were small, enough evidence indicates that a year-round program is beneficial for at-risk students in Reading. Future research should focus on the program design in the education of at-risk students (Kneese & Knight, 1995).

It should be noted that the lack of fifth grade at-risk students is a limitation of the study. The school district reported that there were no at-risk students in the fifth grade. Results could only be given for grades four and six, therefore, the mean scores for the at-risk students in the year-round school were higher (Kneese & Knight, 1995). Overall, this study did an excellent job comparing two groups of students to determine if year-round education has a positive impact on student achievement and on the performance

of at-risk students. There are very few studies that closely examine at-risk student achievement in a year-round setting.

Kneese and Knight's (1995) study highlights the need for further research when examining at-risk students and their achievement. It appears that students who are considered at-risk perform better in a year-round program when compared to their traditional education peers.

In 1996, Kneese conducted a meta-analysis of fifteen studies on year-round education that compared student achievement of year-round students to the achievement of traditional education students. A broad-based search was conducted to identify the criteria to be included in the meta-analysis. All studies had to involve either a multi-track or single-track calendar, include a control group or comparison, have implemented a year-round calendar for at least one year, and include student achievement as a dependent variable (Kneese, 1996). Kneese also selected studies that had taken in to account initial differences. Studies also chosen were both of cross-sectional and longitudinal analysis, and results of statistical analysis must have been reported in order to be included (Kneese, 1996). The fifteen studies selected varied in design and implementation. A coding system was created to include pertinent information such as, reference information, sample, time, design characteristics, research outcome, and statistical procedures (Kneese, 1996). Once the studies were selected a method was devised to compare the groups since there were differences in reporting the data. According to Kneese (1996), "the effect size describes the magnitude of the difference between the experimental and control group means, and is computed by dividing the mean difference of the control group's standard deviation unit"

(p. 78). The results from the fifteen studies were then transformed into effect sizes so that the results of the studies could be compared to determine the impact of year-round education on student achievement.

The meta-analysis indicated that students who participated in a single-track year-round program experience had a positive effect (+.08) on student achievement. The same holds true when comparing students from a high socioeconomic status (SES) and students from a low socioeconomic (SES) background that attend a year-round school. The first analysis indicated that that students from a high SES performed equally as well in both a year-round school and a traditional school. Results suggested that the effect size for high SES is 0.00 and for low SES is +0.15. However, another analysis was conducted which indicated completely different results. The second analysis found that the effect size for a high SES school was +0.25 while the effect size for the low SES school was -0.13 (Kneese, 1996). These results should also be considered with caution since only two studies met the criteria to be included in this analysis. Both analyses of the two studies yielded drastically different results.

Two studies selected for the analysis examined the impact of a year-round calendar on gender. Males marginally outperformed females that participated in a year-round school. Roby's (1995) study, found the effect size to be -.15, while Johnson's (1984) study indicated a positive effect size of +.09. Roby's negative effect size indicated that traditional school females outperform males involved in a year-round school. Both studies yielded small effect sizes.

Kneese's meta-analysis had many limitations. The first limitation was the small number of studies included in the analysis. Secondly, each school district reported data

differently. Kneese suggested that further research is needed determine the true impact of a year-round calendar. Also indicated in the meta-analysis was the fact that many test designs were included in the study making it difficult to analyze the data as a group and determine the benefits of a modified calendar. Lastly, Kneese (1996) noted that longitudinal studies should be conducted to study the achievement effect of a year-round schedule. Kneese (1996) concluded that future studies should focus on, "intent, nature of the student population, opportunity to learn, class size, and the nature of the curriculum" (p.70).

Kneese's (2000) meta-analysis of 36 studies indicated that that there was an overall improvement in student achievement for those students who participated in a year-round program. Studies included in the synthesis had to have originated in the 1990s, and had implemented a year-round program for a minimum of one year. Using the 36 studies selected for review, a total of 90 comparisons were made. The studies were grouped into three different reporting categories: 1) Studies that utilized descriptive statistics, 2) studies that utilized inferential statistics, and 3) studies that highlighted research results. Kneese compared student achievement in year-round schools with student achievement in traditional schools. The meta-analysis used inferential statistics to synthesize findings of the analysis. The inferential statistics analysis found that results were positive 40 out of 61 comparisons, negative for 9 out of 61 and 12 comparisons indicated mixed results when determining if year-round education had an impact on student achievement. Utilizing descriptive statistics, Kneese found 21 of 29 comparisons yielded positive results and 5 out of 29 indicated negative results. Only three analyses indicated a mixed finding. From this analysis Kneese

concluded that there was an overall improvement in achievement for students attending a year-round school. Kneese (2000) also indicated, “Additionally, in order to further enlarge the body of research in this field, educational evaluators should be encouraged to replicate studies and investigate the opportunities for learning differences offered in YRE, by subject, and by student type” (p. 17).

Palmer and Bemis (1999) designed a meta-analysis that spanned the past thirty years. Their study examined the impact of year-round education on student achievement. Data were gathered that highlighted the information about year-round education and the perceived advantages and disadvantages of implementing a restructured calendar. The meta-analysis considered student achievement and attendance, teacher absenteeism, student, teacher, and parent attitudes, teacher professional development, administrator burnout; and the impact of a year-round calendar on families were analyzed in their study. Studies included cited advantages and disadvantages of year-round calendars and whether or not a non-traditional calendar was effective.

Studies were organized using a vote-count summary of statistically significant directional findings of studies from 1980-1997 of a year-round calendar on student achievement (Palmer & Bemis, 1999). The studies were not weighted by sample size. Results should be viewed as suggestive of achievement trends. Of 74 analyses completed, 42 revealed no significant effect on academic performance. Twenty-seven analyses indicated a positive effect of a year-round calendar. The results of using the vote-count summary found that 27 of the 33 comparisons indicated significant positive effects of year-round education on student achievement. The study examined the

results in the core subject areas or Reading and Mathematics to determine the impact of a modified calendar whether it was positive or negative. Eleven of 13 comparisons in Reading indicated a .015 significant positive impact of a year-round calendar. In 9 of 11 comparisons in Math, the studies indicated a .035 significant positive result for students in a year-round setting (Palmer & Bemis, 1999).

Palmer and Bemis (1999) noted that their review of studies had numerous limitations. First, the quality of research designs included in the review varied significantly. Second, many of the studies did not conduct statistical tests. Because of this, it is difficult to examine and determine the effects of a year-round calendar. If the studies did, pertinent data was not reported accurately. Lastly, many of the studies did not clearly delineate the type of year-round calendar that was implemented.

Palmer and Bemis (1999) recommended that future research should focus on the growth of achievement in year-round education and the possible benefits for at-risk students.

Using ex-post facto data from over 345,000 public school students gathered by the state of North Carolina, McMillen examined achievement differences between year-round students and traditional students. The study analyzed archived data of 106 public schools in North Carolina that had implemented a year-round schedule during the 1997-1998 school year. Data were gathered using historical databases from the North Carolina Testing Program and was analyzed to examine the differences in student performance in year-round and traditional calendars (McMillen, 2001). North Carolina schools have implemented two models of a year-round program. The state uses the school-wide (SW) model where all of the students attend school using the same 12-

month calendar. The second model implemented is the school-within-a-school (SWS) model. This model has one group of students who attend a year-round schedule while another group of students attend a traditional school calendar. The study was designed to determine achievement growth from one year to the next using the End of Grade (EOG) tests that were given only to third through eighth graders. The EOG tests are scaled individually for each grade level and subject area, and the normative distribution of scores in each subject are shifts upward slightly from one grade level to the next. As students progress in school, the scaled score is expected to improve annually (McMillen, 2001). “Scaled scores cannot be directly combined or compared across multiple grade levels because the distribution of scores is not in the same scale location from one grade level to the next” (McMillen, 2001, p. 3). Since students were included in the analyses from grades 3-8, scores were converted to standard scores before the data could be analyzed. Scores were then standardized separately for each subject. The resulting scores had a mean of 50 and a standard deviation of 10 (McMillen, 2001).

Sample characteristics of the demographic data gathered were based on student characteristics as reported by the state of North Carolina Testing Program. Demographic information was gathered and separated into four groups of students. The four groups were: (a) students from schools that operated a SW traditional program, (b) students from schools that operated a SW year-round program, (c) students who attended by the traditional program in a school that operated a SWS model, and (d) students who attended by the year-round calendar in a school that was operating a SWS mode (McMillen, 2001). Students who were retained were not included in the analyses. Additional regression models were designed to analyze potential interactions

between year-round calendars and previous achievement, parent education level and ethnicity. McMillen (2001) used hierarchical linear modeling procedures to determine potential differences in student performance between the four groups of participants. Using this method, McMillen was able to incorporate the type of calendar implemented and student-level factors in the same analysis.

Students in a SW year-round calendar program revealed statistically significant interactions between year-round status and previous Reading achievement ($t= 5.19$, $p<0.05$) and Math achievement ($t= 2.34$, $p<0.05$) (McMillen, 2001). The analyses also indicated that lower achieving students in a year-round setting demonstrated slightly higher achievement than students participating in the traditional program. These students performed higher in Reading than in Mathematics, but the differences in the two were not large. In both subjects, Reading and Math, the result indicated a standard deviation of 0.05 (McMillen, 2001). Results were similar for students participating in a SWS model. There were no statistically significant interactions between students in the year-round program and prior Reading achievement (Reading, $t= .37$, $p>.71$: Math, $t=-.54$, $p>.58$) or between year-round standing and ethnicity (Reading, $t=-.39$, $p>.69$: Math, $t=1.11$, $p>.27$) (McMillen, 2001). The difference in achievement was small as well, with only 0.03 standard deviations (McMillen, 2001).

The analyses indicated no statistically significant interactions between Reading and Math achievement among students attending a year-round calendar or a traditional school. Results indicated that some students may benefit more from a year-round calendar, but results are potentially too small to be educationally significant by most standards (McMillen, 2001). McMillen's (2001) research found that lower achieving

students and White students may benefit slightly from a year-round calendar. It was also noted that the results of his study were similar and consistent with previous studies indicating that a year-round calendar may increase student achievement for students that are considered at-risk. The analyses concluded that both models, SW and SWS, produced results that indicated that no statistically significant differences in Reading or Mathematics achievement.

McMillen's study suggested that further research should be considered and conducted to determine and differentiate the effects of a year-round calendar and additional instructional time (intersessions) on student achievement. It was also noted that future research should examine the potential academic differences between year-round and traditional education. McMillen's study suggests that student achievement is not the only factor that should be considered when school divisions are deciding to implement a year-round program. Teacher and parent attitudes should be considered and factored into the decision to implement a year-round calendar. Additionally, potential cost savings should be examined when making the decision on which calendar to implement (McMillen).

This analysis did not examine the effects of intersession and the impact on student achievement. Did students that attended the year-round school in both the SW model and the SWS model participate in the intersessions? If so, how did that affect their performance on the EOG tests? According to McMillen, 57% of North Carolina schools have a mandatory intersession remediation for students who have fallen behind. Like Kneese's (1996) findings, more research is needed to determine the

benefits of a year-round calendar on the achievement of at-risk students and the impact of student attendance during intersession on student achievement.

McMillen (p.69) noted that most research that currently exists regarding year-round education suffers from methodological limitations. Limitations include: (a) failure to take student level factors into account when estimating achievement effects, (b) failure to report any tests of statistical significance or measures of effect size, (c) loss of precision in the dependent variable due to collapsing achievement outcomes into categories such as “at or below grade level” (Shields and Oberg, 1999), and (d) failure to differentiate between year-round schools and extended year schools.

The findings reported in McMillen’s study are consistent with previous reports (Gandara and Fish, 1991, Shields and Oberg, 1999) indicating that students in a year-round school may experience an increase in achievement, but the year-round calendar may prove to be more beneficial to students who are considered at-risk.

In 2003, Cooper, Valentine, Charlton, and Melson conducted a meta-analysis of previous studies that examined the effects of a year-round calendar on student achievement in grades K-12 and on school and community attitudes. Studies included in the analysis compared students in year-round programs with students in a traditional program. Studies for and against year-round calendars were included and analyzed. Multiple coders were used to include necessary data from each study; effect sizes were gathered and then combined using conservative hypotheses regarding the independence of effect estimates and estimate errors (Cooper, et al., 2003). Statistical procedures were conducted to test for the influence of moderating variables on the impact of modified calendars (Cooper, et al., 2003). Studies would have to meet certain

criteria to be included in the research synthesis. Included studies had to have a traditional calendar in place and a year-round calendar offered that provided for 180 instructional days. Extended calendars with more than 180 days were not included in the research. Studies that provided data on student achievement in grades k-12 were also included for review. Lastly, every study included in the analysis had to include a comparison of students in a year-round setting and students in a traditional setting (Cooper, et al., 2003). Once relevant data and studies were gathered, a database of the studies was created for which a coding scheme was developed for the 50 characteristics that were to be closely examined throughout the analysis. Sixty-six studies met the outlined criteria and were included in the analysis. Effect sizes were calculated from 39 school districts using the means and standard deviations of students' achievement indicators or from inferential statistics to calculate the d index. The studies were then examined in three different ways. A vote count was completed, calculation of effect size was completed, and average weighted effect size was identified. Like McMillen (2001), Cooper et al. (2003) found effect sizes in favor of year-round education slightly lower than d=.05.

Results from the analyses were inconclusive. Cooper et al. (2003) concluded that the impact of a year-round calendar on student achievement is small with a 0.05 standard deviation. Their study found that a year-round calendar may have a small effect on the academic performance of at-risk students, but existing research contains flaws that cause conclusions about academic achievement to be difficult to reach (Cooper et al., 2003). Like Kneese (2000), the authors also reiterated the need for quality longitudinal studies.

Sexton's (2003) case study examined the effect of a year-round calendar on attendance, academic performance, and behavior patterns. Her research compared year-round education students to traditional education students at the same urban middle school to determine the effectiveness of a modified calendar. Her study involved eighth graders who attended an urban middle school that housed grades 6-8 in Hampton, Virginia. The school had 66% of the students on free or reduced lunch and 73% of the students were minority. The middle school had both a traditional calendar and a year-round calendar implemented throughout the year. Participants in the study were registered on both schedules based on Advancement Via Individual Determination (AVID) qualifications, giftedness, advanced, and general ability levels (Sexton, 2003). At-risk and average students that have the potential and desire to attend college can participate in AVID.

Over the course of three years, the school's population was divided into two tracks on a modified 45/15 schedule. The dual track schedule had students participating in a year-round program or a traditional program. When Sexton's study began there were 761 year-round students and 360 traditional students. Of this population, only 87 students remained in the year-round program and 26 remained in the traditional education program for the entire three years. This was the sample in her study. Special education students were not included since there were not any special education students on the traditional education track.

Data were gathered using the Virginia Standards of Learning Test Scores, attendance from Hampton's MacSchool Data bank, and discipline data from the district's MacSchool Data bank. Using a quasi-experimental research method, the

relationship between several variables was explored (Sexton, 2003). Quasi-experimental research is a type of experiment in which participants are not randomly assigned to the experimental and control groups (Sexton, 2003).

A one-way analysis of covariance (ANCOVA) was conducted to determine if there was a statistically significant difference in attendance for students that attended the year-round program and students that attended the traditional schedule. Sexton's findings indicated there were no statistically significant differences in attendance between the two groups of students. One-way covariances were conducted to determine if there were statistically significant differences in student achievement between year-round students and traditional students on the grade 5 Degrees of Reading Power (DRP) test, the Standards of Learning Reading, Writing, Mathematics, History and Science tests. The Standards of Learning mean scores of the year-round education students in Reading, writing, Mathematics, and history were higher than the Reading, writing, Mathematics, and history Standards of Learning scores of the traditional education students (Sexton, 2003). The descriptive data indicated that the traditional education students outperformed the year-round students on the science Standards of Learning test.

Sexton's one-way ANCOVA indicated that there was no statistically significant difference in year-round education and traditional educations students' achievement in Reading, writing, Mathematics, history, and science. Her study also revealed that there were no statistically significant differences in the suspension rates between the two groups of students participating in the study (Sexton, 2003). The results of Sexton's

study are similar to Kneese's (1996) meta-analysis which found a range indicating that year-round education made a difference, made no difference, to being inconclusive.

Limitations of Sexton's (2003) study included size limitations of the group, lack of random student assignment, students in the year-round and traditional calendar interacting with each other and having the same teachers. Students that participated in this study were selected by their parents to attend the year-round school. Both Sexton's (2003) and Kneese's (2000) research indicated that more longitudinal research should be investigated and previous studies should be replicated to determine the true effectiveness of year-round education.

McMillen's (2001) study indicated no statistically significant differences in Reading or Mathematics achievement between year-round students or traditional calendar students. The results of the study were consistent with the findings of previous research indicating that achievement of traditional school students is similar to achievement of year-round students with the exception of at-risk students who benefited from the modified calendar. McMillen's results indicated that though the results from the studies were positive, the results were minimal. The meta-analysis also found that the multi-track schedule provided more opportunities for retention and continuous learning. It was also indicated that quality studies in the area of studying the impact of year-round education and at-risk students were limited. This finding is similar to results from Gandara and Fish (1994) and Shields and Oberg (1999).

Evaluating At-Risk Students in Year-round Education

In 2000, Kneese completed another meta-analysis with results that indicated that at-risk or lower socioeconomic students fared better in Reading and typically out

performed traditional education students and displayed greater academic gains. Another study completed by Mondfrans and Moody (1985) indicated that at-risk students showed significant increases in Reading scores in grades 1, 3, and 5. Using mean scaled scores, Van Mondfrans and Moody examined differences in student achievement and found that year-round had a positive, but very small effect on academic achievement. Test scores were compared in a school of high socioeconomic status to one of low socioeconomic status. Low socioeconomic students indicated a standardized gain of 5.66 in Reading, a standardized gain of 6.66 in language, and a standardized gain of 0.33 in Math (Kneese, p. 68, 1996). According to research results, low socioeconomic students made greater gains than higher socioeconomic students. McMillen's (2001) study also found that achievement for students in traditional schools as well as year-round schools was about equal, but that a year-round calendar may be beneficial for lower achieving students. These studies commented that further research is needed in the area of at-risk students to determine the benefits of year-round education on student achievement.

Table 1

Review of Studies of Student Achievement in Year-Round Education Settings

Author(s) / Date	Topic	Sample / Size	Results
American Association for School Administrators (1973)	Year-round Comm. Schools: Framework for administrative leadership	Administrators	Study noted that acceptance of YRE and amount of support is determined by beliefs.
Bechtel, R. (1991)	Academic Growth of third graders in YRE	Third grade students	Study found that the first two years of YRE showed sig. achievement, third year showed weaker performance

Author(s) / Date	Topic	Sample / Size	Results
			compared to TCS.
Bradford, J. (1992)	YRE: A national perspective	Students	Research found that an association with the amount of time spent learning and the amount of time learning occurred.
Carriedo & Goren (1989)	YRE through multi-track schools	Students in multi-track schools	Identified the effects of YRE in multi-track schools
Carnoy & Levin (1985)	Schooling and work in the democratic state	None	Addressed qualities of a democratic school
Cooper, H., Valentine, J., Charlton, K. & Melson, A., (2003)	The Effects of modified school calendars on student achievement and on school and community attitudes	Studies included had to have students that attended school for 180 days, students participated in an achievement test, and district have some type of data collection procedure.	YR calendar had small impact (.05 standard deviation) on student achievement. Research indicated the need for a well designed longitudinal study examining the impact of YRE on student achievement.
Doyle & Finn (1984)	Huck Finn is dead: Long-live YRE school	None	Addresses the idea that YRE could be used to study the issues of teacher pay, remediation, enrichment and child care problems encountered during the traditional summer months
Gandara & Fish (1991)	An experiment in restructuring k-6 education: the orchard plan	Students in grades k-6	Focuses on the idea of restructuring the educational program for students in k-6
Gandara & Fish (1994)	Year-round schooling as an avenue to major structural reform	Multi-track students and single-track students	M-T students sometimes outperformed S-T students. Few achievement diff. In student academic per. For all students.
Glass & Smith (1978)	Meta-analysis of research on the relationship of class-size and student achievement	Students	Class size and student achievement
Glass, G. (1992)	Policy considerations in conversion to YRE schools	None	Addresses various policies to consider before implementing YRE

Author(s) / Date	Topic	Sample / Size	Results
Glines, D. (1994)	YRE basics	None	Reviews the history, methods, concerns, and the future of YRE
Glines, D. (1997)	YRE: Understanding the basics	None	Reviews the basics of YRE
Goldman, J. (1990)	Life's a non-stop carousel for YRE principals	YRE Administrators	Studies the effects of the YRE calendar on administrators
Grotjohn & Banks (1993)	An evaluation synthesis: YRE and achievement	YR students	Student achievement at year-round schools vs. traditional schools
Hazelton, Blakely, & Denton (1992)	Cost effectiveness of alternative year schooling	YRE schools	Identifies the costs associated with YRE
Johnson, N. (1984)	The effects of a YRE school program in pupil achievement in selected schools in Los Angeles Unified Public School District	YRE students in L.A.	Students in year-round schools typically out performed TCS
Kaufman, R. (1992)	Beyond tinkering: Educational restructuring that will work.	None	Due to increasing populations, YRE is one way to address student needs and diverse pop.
Kneese & Knight (1995)	Evaluating the achievement of at-risk students in YRE	At-risk students in YRE	Addressed student achievement of at-risk students in YRE programs
Kneese, C. (1996)	Review of research on student learning in YRE	YRE students	Not enough longitudinal studies highlighting student achievement of YRE students (mixed results on student achievement)
Kneese, C. (2000)	Teaching in YRE schools	None	Provides the basics of the year-round program
Kneese, C. (2000)	The impact of YRE on student learning: A study of six elementary schools	Three YR schools matched with three traditional education schools	YR schools showed consistent academic achievement in Reading and Math after four years of implementing a YR calendar.
Kuner-Ruth, B. (1985)	A comparison of academic	YRE students	Analyzed student achievement using test scores

Author(s) / Date	Topic	Sample / Size	Results
	achievement of students in a year-round program		
Marr,C. (1989)	Year-round schools and student achievement	Students in YRE	Data indicated a small but positive effect of YRE on student achievement. Lower SES tended to learn at the same rate as higher SES school settings
McChesney, J. (1996)	Year-round schools	None	Lists the advantages and disadvantages of YRE
McGregor, P. (1996)	Summer of discontent	None	Research indicated that the number of year-round schools has dramatically risen. Majority are elem. Schools and cost is a factor.
McMillen, B. (2001)	Statewide Evaluation of academic achievement in year-round schools	Students in grades 4-8 that participated in the EOG tests	Results indicated that student achievement is equal in TE and YRE. Data concluded that lower achieving students benefit from a YR calendar.
McLain, J. (1973)	YRE, economic, educational, and sociological factors	None	Studies the complex issues facing the restructuring of calendars for YRE
Mutchler, S. (1993)	YRE	None	Identified effective policies and strategies of implementing year-round education
Palmer, E. & Bemis, A. (1999)	YRE	Meta-analysis of studies conducted over the past thirty years.	Mixed findings and cited that future research should focus on the benefits for at-risk students.
Rasberry, Q. (1992)	Year-round schools may not be the answer	None	Lists the disadvantages and concerns of YRE
Shields & Oberg (2000)	Year-Round Schooling: Promises and Pitfalls	YRE schools	Highlights the advantages and disadvantages
Sexton, M. (2003)	Impact of YRE on attendance, achievement and behavior	Middle school TE and YRE students	No statistical significance differences in YRE and TE
Slavin, R. (1990)	Class size and student	YRE students	Studies indicate that class size alone does not sig. Impact

Author(s) / Date	Topic	Sample / Size	Results
	achievement		student achievement
Weaver, T. (1992)	Year-round education	None	Presents an overview of YRE

CHAPTER 3

METHODOLOGY

Introduction

The methodology section addresses the framework for how this study was conducted. This section addresses the design of the study, variables, sample size, instrumentation, data collection and analysis. Research questions for this study were:

Research Question 1: Does the year-round school calendar have an impact on student achievement, as measured by the SOL Math and Reading test scores, in Title I schools in grades three and five?

Research Question 2: Does the gender of students who attend a year-round Title I school have an impact on academic achievement as measured by the SOL Math and Reading tests in grades three and five?

Research Question 3: Does the ethnicity of students who attend a year-round Title I school have an impact on academic achievement as measured by the SOL Math and Reading tests in grades three and five?

Research Design

This study is quantitative in nature and uses statistical methods to analyze data gathered for research. The causal-comparative design method is utilized in this study. Gall and Borg (1999) define causal-comparative research as a method of research that "identifies possible causes and effects of a personal characteristic or behavior pattern by comparing individuals in whom it is present with individuals in whom it is absent or present to a lesser degree" (p.525). Causal-comparative research allows the researcher

to study relationships between multiple groups of subjects and variables that are typically difficult to manipulate (Gall & Borg, 1999). Causal-comparative research is relevant to studies in which the purpose is to examine the relationship between a set of independent variables and some dependent variables. The researcher does not have the ability to control for the values of the independent variables and must select groups using careful sampling to select comparable groups (Gall & Borg, 1999).

Possible effects of a year-round calendar implemented in a Title I school on student achievement, gender and ethnicity were examined. Because this study analyzed the impact of a year-round calendar on student achievement, gender, and ethnicity in Title I schools, utilizing a casual-comparative research design best addressed the study.

This study used the ex-post facto, posttest only method. The ex-post facto method utilizes data that have already been collected. For the purpose of this study, SOL test scores from the 2004-2005 school year were analyzed. The impact of a year-round calendar on gender, ethnicity, and student achievement in Reading and Math of third and fifth grade students in a Title I year-round education program were compared to third and fifth grade student achievement, gender and ethnicity in a Title I traditional school program. A multivariate analysis of variance (MANOVA) allowed data to be analyzed to determine the impact of year-round education on student achievement in grades three and five and the impact on ethnicity and gender in a year-round setting. A MANOVA is a statistical analysis for determining whether the difference between the mean scores of two or more groups on multiple dependent variables is statistically significant. A MANOVA is used to assess whether a particular difference exists between

groups. An MANOVA with an Alpha value of 0.025 was used to analyze data collected to determine if there was statistical significance between student achievement in both Title I programs. The reason for the use of an Alpha value of 0.025 versus an Alpha value of 0.05 is as follows: One of the assumptions behind the ANOVA analysis is that the population variances of the various data sets must be approximately equal. During the initial analysis, an Alpha of 0.05 was run. SPSS then performed a statistical test to verify the assumption of equal population variances. The output file is included in the appendices. Based on the test, the assumption of equal variances is not met. Under these conditions, Levine's Guide to SPSS, strongly recommends decreasing Alpha from 0.05 to 0.025 to make allowances for the violation of the equal variance assumption. Comparison of the two output files gives the same results, but for the purposes of this study data will be analyzed with the alpha of 0.025. Since certain ANOVA assumptions are violated, using alpha of .025 is more appropriate.

Permission from the Institutional Review Board (IRB) to conduct this study was not necessary since all data that was used in this study was ex-post facto data. This study required no direct interaction with any students. Ex-post facto data was collected from the Virginia Department of Education and not involve any interventions or interactions with the sample population.

Variables

The independent variables for this study were student membership in a traditional or year-round Title I program, gender, calendar type; and ethnicity. The dependent variable was student achievement on the SOL Reading and Math third and fifth grade assessments.

Sample Size

Data for this study have been collected annually by the Virginia Department of Education from schools across the Commonwealth. There are currently 282 Title I schools in the Commonwealth, of those 26 are year-round schools. Seventeen of those 26 year-round schools are designated as schoolwide Title I schools. Title I schools have been identified as schools that have a minimum of 40 percent of their population qualifying for free or reduced lunch. The data gathered consisted of students who participated in a schoolwide elementary Title I year-round setting and a schoolwide elementary Title I traditional school for the 2004-2005 school year. Schools selected were matched according to demographics and the Free and Reduced Lunch percentages to ensure that both populations were similar. Schools included in this study targeted year-round and traditional schools with similar demographic and Free and Reduced Lunch populations. Schools with comparable Free and Reduced Lunch percentages and ethnic populations were matched to ensure that the sample size was closely matched. According to Borg and Gall (1989), the matching method is most useful in studies where large differences are not likely to occur between the control group and the experimental group. The sample population included Title I students in grades 3 and 5 from both a year-round school setting and a traditional school setting from eight elementary schools from a district in Southeastern Virginia. Table 2 is a listing of year-round elementary schools within the state of Virginia.

Instrumentation

The Standards of Learning Math and Reading scores from students in grades 3 and 5 was the instrument used to analyze the impact of year-round education in Title I schools. Demographic information and Free and Reduced Lunch percentages were obtained from the Virginia Department of Education.

A request for approval to obtain SOL data from a school district in Southeastern Virginia was submitted and approved. Ex-post facto SOL test data was received in an Excel spreadsheet to be imported into SPSS to complete the MANOVA.

Table 2

Virginia Year-Round Elementary Schools

School Name	Low Grade	High Grade
BRIARFIELD ELEM.	PK	5
POINT O' VIEW ELEM.	PK	5
WILLIAMS ELEM.	**PK**	**5**
SEATACK ELEM.	**PK**	**5**
WILLIAM M. BASS ELEM.	**PK**	**5**
CAPTAIN JOHN SMITH ELEM.	PK	5
MERRIMACK ELEM.	**PK**	**5**
GLENWOOD ELEM.	**PK**	**5**
WYTHE ELEM.	**PK**	**5**
IRVIN W. TAYLOR ELEM	**PK**	**5**
MOUNT VERNON ELEM.	PK	5
PARKLAWN ELEM.	**PK**	**5**
CORPORATE LANDING ELEM.	PK	5
BARCROFT ELEM.	**PK**	**5**
WOODROW WILSON ELEM.	**PK**	**5**
ACHIEVABLE DREAM ACADEMY	PK	5

School Name	Low Grade	High Grade
WILLIAM MASON COOPER ELEM	**PK**	**5**
CENTRAL ELEM.	KG	5
GLEN FOREST ELEM.	**PK**	**5**
SAMUEL W. TUCKER ELEM	PK	5
PLAZA ELEM.	PK	5
ABERDEEN ELEM.	**PK**	**5**
ROBERT E. LEE ELEM.	**PK**	**5**
A.W.E. BASSETTE ELEM.	**PK**	**5**
SCHOOLFIELD ELEM	**PK**	**5**
ANNANDALE TERRACE ELEM.	**PK**	**5**

Note. Schools in bold indicate a schoolwide Title I program.

Table 3

Schools Selected for Study

Year-Round Schools				Traditional Year Schools			
School Name	Ethnicity		% Free & Reduced Lunch	School Name	Ethnicity		% Free & Reduced Lunch
	White	Black			White	Black	
YRE 1	4%	95%	72%	TE 1	6%	93%	85%
YRE 2	16%	79%	62%	TE 2	20%	75%	62%
YRE 3	8%	89%	72%	TE 3	30%	60%	70%
YRE 4	10%	86%	78%	TE 4	30%	67%	80%

Standards of Learning

The Standards of Learning (SOLs) assessments are the Commonwealth's high-stakes achievement test. The SOLs are criterion-referenced assessments that are administered annually to students and assess skills taught in Reading, Math, social

studies and science. Criterion referenced tests are those that assess the minimum level of skill mastery in a subject area. Students that reach the minimum benchmark score are considered to have mastered the information (Gellman, 1995). Students can obtain scores of passing, proficient, and advanced in English/Reading, writing, Mathematics, social studies, and science. (The Virginia Department of Education Division of Assessment and Reporting, 1995).

Assessment validity was determined based on similar measures of the Stanford 9 Achievement Test and the Literacy Passport Test. Differential item functioning, Rasch item statistics, and traditional item statistics were completed on each test question before they were approved as an acceptable question (The Virginia Department of Education Division of Assessment and Reporting, 1995).

The Virginia Department of Education utilized a team of outside researchers to analyze the SOL assessments and determine the validity of the test. The SOLs were created to track students across the Commonwealth's progress and keep parents and teachers informed about student academic achievement.

Data Collection and Analysis

The intent of this study was to determine the impact of a year-round calendar on Math and Reading achievement of students in a Title I year-round school setting, and on gender and ethnicity. Data were gathered using the ex-post facto, posttest only method. Ex-post facto method data are gathered after the SOL tests have been administered and scored.

The mean score was calculated for the dependent variable. Causal-comparative research uses inferential statistics to identify whether there are any differences between

the means are statistically significant (Gall & Borg, 1999). According to Gall and Borg (1999), “Inferential statistics enable researchers to make inferences about a population based on the descriptive statistics that are calculated on data from a sample that represents this population” (p. 156). The sample selected for this study compared and analyzed student Math and Reading achievement of students in traditional Title I schools versus students attending a Title I year-round program in grades three and five to determine the impact, if any, of year-round education.

The selection of the schools in this study was limited to those that offered a year-round, single-track program with any type of calendar configuration and completed the Standards of Learning Assessments. Math and Reading achievement was analyzed to determine if there was a significant difference in Reading and Math achievement of third and fifth grade Title I year-round and traditional education students. The next area of investigation was to determine if there was a significant difference in Reading and Math achievement on ethnicity in third and fifth grade students in a Title I school. Research question two examined the impact of a year-round calendar on gender in a Title I school. Data was entered into Statistical Package for the Social Sciences (SPSS) 11.0 to determine the statistical significance.

Summary

This chapter has provided the framework for the methodology section. Sample selection was presented and the procedure for analyzing and collecting data was shared. Information was given justifying the value and importance of continuing Dr. Kneese’s 1994 study examining the impact of year-round education on student achievement and further recommendations to continue the research in this field.

CHAPTER 4

RESULTS

This study examined the impact of a year-round calendar on a schoolwide Title I program. Using student enrollment in the Free and Reduced Lunch program, gender, and ethnicity, data were analyzed using an MANOVA. Scores from the 2004-2005 school year were gathered and provided from a school district in Southeastern Virginia.

Chapter 4 contains the findings of the three research questions examining the impact of a year-round calendar in a schoolwide Title I program.

Research Question 1: Does the year-round school calendar have an impact on student achievement, as measured by the SOL Math and Reading test scores, in Title I schools in grades three and five?

Research Question 2: Does the gender of students who attend a year-round Title I school have an impact on academic achievement as measured by the SOL Math and Reading tests in grades three and five?

Research Question 3: Does the ethnicity of students who attend a year-round Title I school have an impact on academic achievement as measured by the SOL Math and Reading tests in grades three and five?

Data Findings

In Table 4, descriptive data of Title I year-round and Title I traditional education students are illustrated by gender, grade, ethnicity, and Free and Reduced Lunch program. Data from 849 students in a year-round program and traditional program were included in this study. There were 472 females and 377 males that were represented in the analyses.

Table 4

Demographics of Year-round Education (n=466) and Traditional Education (n=383) Students (n=849) by Gender, Grade and Ethnicity

		TE	YRE	Overall
Gender				
Female	N	219	253	472
	%	57.2%	54.3%	55.6%
Male	N	164	213	377
	%	42.8%	45.7%	44.4%
Ethnicity				
Black	N	282	428	710
	%	73.6%	91.8%	83.6%
White	N	101	38	139
	%	26.4%	8.2%	16.4%
Grade				
Third	N	166	229	395
	%	43.3%	49.1%	46.5%
Fifth	N	217	237	454
	%	56.7%	50.9%	53.5%

Table 5 presents mean scores on the Reading and Math SOL tests for each school considered in the study. It is segmented by Gender, Ethnicity and Grade. Table 6 presents detailed mean SOL test scores for Reading and Math. It is segmented by Ethnicity, Grade, Gender and Calendar Type.

Table 5

Mean Reading and Math SOL Scores by School

School		Mean SOL Scores	
		Reading	Math
TE 1		432.731	437.343
	Female	438.718	438.718
	Male	424.393	435.429
	Black	432.172	437.250
	White	444.667	439.333
	Third Grade	419.182	461.591
	Fifth Grade	439.356	425.489
TE 2		439.392	447.324
	Female	449.574	453.537
	Male	427.938	440.333
	Black	433.533	437.571
	White	457.440	477.360
	Third Grade	431.222	465.555
	Fifth Grade	448.583	426.813

School		Mean SOL Scores	
		Reading	Math
TE 3		435.230	471.473
	Female	445.159	471.318
	Male	420.667	471.700
	Black	420.940	455.000
	White	465.000	505.792
	Third Grade	414.180	482.872
	Fifth Grade	458.686	458.771
TE 4		430.186	455.186
	Female	429.268	456.195
	Male	431.483	453.759
	Black	418.868	441.418
	White	451.204	480.755
	Third Grade	422.569	483.647
	Fifth Grade	434.551	438.876
YRE 1		417.791	429.730

School		Mean SOL Scores	
		Reading	Math
	Female	417.790	425.597
	Male	417.793	433.793
	Black	416.847	428.342
	White	444.000	468.250
	Third Grade	408.613	449.774
	Fifth Grade	428.528	406.283
YRE 2		440.384	458.949
	Female	444.532	451.213
	Male	436.480	466.220
	Black	435.512	455.191
	White	471.846	483.231
	Third Grade	431.038	484.038
	Fifth Grade	451.636	428.727
YRE 3		435.193	456.331
	Female	437.333	464.914
	Male	432.484	445.469

School		Mean SOL Scores	
		Reading	Math
	Black	429.758	452.197
	White	490.385	498.308
	Third Grade	420.015	464.969
	Fifth Grade	447.525	449.313
YRE 4		417.339	433.927
	Female	424.074	436.706
	Male	406.171	429.317
	Black	408.762	425.673
	White	525.625	538.125
	Third Grade	429.633	474.367
	Fifth Grade	407.300	400.900

Table 6

Detailed Reading and Math SOL Test Score Means

Test	Ethnicity	Grade	Gender	Calendar Type	Mean	Std. Error	97.5% Confidence Interval	
							Lower Bound	Upper Bound
READING	Black	Third	Male	Traditional	402.192	7.353	385.683	418.702
				Year-Round	408.069	5.684	395.305	420.833

Test	Ethnicity	Grade	Gender	Calendar Type	Mean	Std. Error	97.5% Confidence Interval	
							Lower Bound	Upper Bound
			Female	Traditional	418.908	6.576	404.141	433.674
				Year-Round	422.365	4.723	411.759	432.971
		Fifth	Male	Traditional	433.313	6.477	418.769	447.858
				Year-Round	427.106	5.199	415.432	438.780
			Female	Traditional	439.082	5.356	427.055	451.108
				Year-Round	429.973	5.032	418.673	441.273
	White	Third	Male	Traditional	438.056	12.497	409.994	466.117
				Year-Round	475.667	17.673	435.982	515.351
			Female	Traditional	457.548	9.523	436.166	478.931
				Year-Round	504.429	20.040	459.431	549.427
		Fifth	Male	Traditional	453.296	10.204	430.384	476.208
				Year-Round	475.846	14.705	442.827	508.866
			Female	Traditional	469.240	10.604	445.429	493.051
				Year-Round	499.111	17.673	459.427	538.796
MATH	Black	Third	Male	Traditional	452.404	8.458	433.411	471.397
				Year-Round	462.011	6.539	447.328	476.695
			Female	Traditional	464.277	7.565	447.289	481.265

Test	Ethnicity	Grade	Gender	Calendar Type	Mean	Std. Error	97.5% Confidence Interval	
							Lower Bound	Upper Bound
				Year-Round	463.159	5.434	450.957	475.360
		Fifth	Male	Traditional	430.612	7.452	413.879	447.344
				Year-Round	417.942	5.981	404.512	431.372
			Female	Traditional	429.000	6.161	415.165	442.835
				Year-Round	418.432	5.789	405.433	431.432
	White	Third	Male	Traditional	509.278	14.377	476.996	541.560
				Year-Round	530.111	20.332	484.457	575.765
			Female	Traditional	513.645	10.955	489.046	538.244
				Year-Round	526.143	23.054	474.376	577.909
		Fifth	Male	Traditional	453.852	11.738	427.494	480.210
				Year-Round	473.154	16.917	435.168	511.140
			Female	Traditional	464.160	12.199	436.768	491.552
				Year-Round	481.444	20.332	435.791	527.098

Table 7 presents selected output from a multivariate analysis of variance (MANOVA) for Reading and Math SOL scores from students in grades 3 and 5. Main effects were found for Grade (.000), Gender (.005), Calendar Type (.008) and Ethnicity (.000). However, a significant interaction effect was also found for Calendar Type and Ethnicity (.005), indicating that the effect of school calendar type on SOL performance

differed significantly across the two ethnic groups included in the study. Because of this significant interaction effect between Ethnicity and Calendar Type, it is not appropriate to consider the main effects of Ethnicity and Calendar Type by themselves, though they also appear to be significant (Levine's Guide to SPSS p. 45). No other significant interaction effects were revealed.

Table 8 presents the results of an analysis of the between subjects effects of Gender, Calendar Type, Ethnicity and Grade on Reading and Math SOL scores. The results indicate that the main effect of Grade has a significant effect on both Reading (.025) and Math (.000) SOL scores. Gender has a significant effect on Reading scores (.004), but not Math scores (.546). Ethnicity is shown to have a significant effect on both Reading (.000) and Math (.000) scores. Calendar Type has a significant effect on Reading scores (.003) but not Math Scores (.282). Finally, based on the significant interaction between Ethnicity and Calendar Type, within Ethnicity, the Calendar Type has a significant effect on Reading scores (.001), but not Math scores (.099).

Table 7

Multivariate Tests of Gender, Ethnicity, Grade and School Calendar Type on SOL Test Scores

Effect	Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power
Intercept Wilks' Lambda	0.028	14531.539	2.000	832.000	0.000	0.972	29063.078	1.000
Ethnicity Wilks' Lambda	0.904	43.940	2.000	832.000	0.000	0.096	87.879	1.000
Grade Wilks' Lambda	0.873	60.383	2.000	832.000	0.000	0.127	120.767	1.000
Gender Wilks' Lambda	0.987	5.307	2.000	832.000	0.005	0.013	10.613	0.760
Calendar Type Wilks' Lambda	0.988	4.849	2.000	832.000	0.008	0.012	9.699	0.715
Ethinicity and Grade Wilks' Lambda	0.998	0.918	2.000	832.000	0.400	0.002	1.836	0.137
Ethnicity and Gender Wilks' Lambda	0.998	0.825	2.000	832.000	0.439	0.002	1.650	0.123
Grade and Gender Wilks' Lambda	0.999	0.483	2.000	832.000	0.617	0.001	0.966	0.078
Ethnicity, Grade, Gender Wilks' Lambda	1.000	0.208	2.000	832.000	0.812	0.000	0.416	0.046
Ethinicity, Calendar Type Wilks' Lambda	0.987	5.274	2.000	832.000	0.005	0.013	10.548	0.757
Grade, Calendar Type Wilks' Lambda	0.998	0.865	2.000	832.000	0.421	0.002	1.731	0.129
Ethnicity, Grade, Calendar Type Wilks' Lambda	0.999	0.536	2.000	832.000	0.585	0.001	1.072	0.084
Gender, Calendar Type Wilks' Lambda	0.999	0.269	2.000	832.000	0.764	0.001	0.538	0.052
Ethnicity, Gender, Calendar Type Wilks' Lambda	0.999	0.222	2.000	832.000	0.801	0.001	0.444	0.047
Grade, Gender, Calendar Type Wilks' Lambda	1.000	0.142	2.000	832.000	0.868	0.000	0.283	0.039
Ethnicity, Grade, Gender, Calendar Type Wilks' Lambda	1.000	0.010	2.000	832.000	0.990	0.000	0.020	0.026

Table 8

Tests of Between-Subjects Effects for Multifactor Analysis of Variance

Source	Dependent Variable	df	F	Sig.
Corrected Model	READING	15.000	7.410	0.000
	MATH	15.000	11.483	0.000
Intercept	READING	1.000	25838.809	0.000
	MATH	1.000	21397.303	0.000
Ethnicity	READING	1.000	77.648	0.000*
	MATH	1.000	65.363	0.000*
Grade	READING	1.000	5.022	0.025*
	MATH	1.000	47.379	0.000*
Gender	READING	1.000	8.157	0.004*
	MATH	1.000	0.364	0.546
Calendar Type	READING	1.000	8.654	0.003*
	MATH	1.000	1.161	0.282
Ethnicity and Grade	READING	1.000	1.591	0.207
	MATH	1.000	1.406	0.236
Ethnicity and Gender	READING	1.000	1.154	0.283
	MATH	1.000	0.019	0.890
Grade and Gender	READING	1.000	0.498	0.480
	MATH	1.000	0.006	0.937
Ethnicity, Grade, Gender	READING	1.000	0.090	0.765
	MATH	1.000	0.399	0.528
Ethnicity and Calendar Type	READING	1.000	10.308	0.001*
	MATH	1.000	2.734	0.099
Grade and Calendar Type	READING	1.000	1.624	0.203
	MATH	1.000	0.309	0.578
Ethnicity, Grade, Calendar Type	READING	1.000	0.028	0.868
	MATH	1.000	0.467	0.495
Gender and Calendar Type	READING	1.000	0.064	0.800
	MATH	1.000	0.137	0.711
Ethnicity, Gender, Calendar Type	READING	1.000	0.242	0.623
	MATH	1.000	0.001	0.973
Grade, Gender, Calendar Type	READING	1.000	0.003	0.956
	MATH	1.000	0.140	0.709
Ethnicity, Grade, Gender, Calendar Type	READING	1.000	0.001	0.974
	MATH	1.000	0.016	0.899

Main Effect: Ethnicity

On average, White students scored higher than Black students in both the Math and Reading portions of the SOL tests. Table 9 presents the average scores and confidence intervals for the Reading and Math SOL tests, segmented by Ethnicity. In each case, the difference in mean scores was found to be statistically significant (Reading - .000, Math - .000).

Table 9

Mean SOL Test Scores by Ethnicity

				97.5% Confidence Interval	
Test	Ethnicity	Mean	Std. Error	Lower Bound	Upper Bound
READING	Black	422.626	2.073	417.972	427.280
	White	471.649	5.163	460.056	483.242
MATH	Black	442.230	2.384	436.876	447.584
	White	493.973	5.939	480.637	507.310

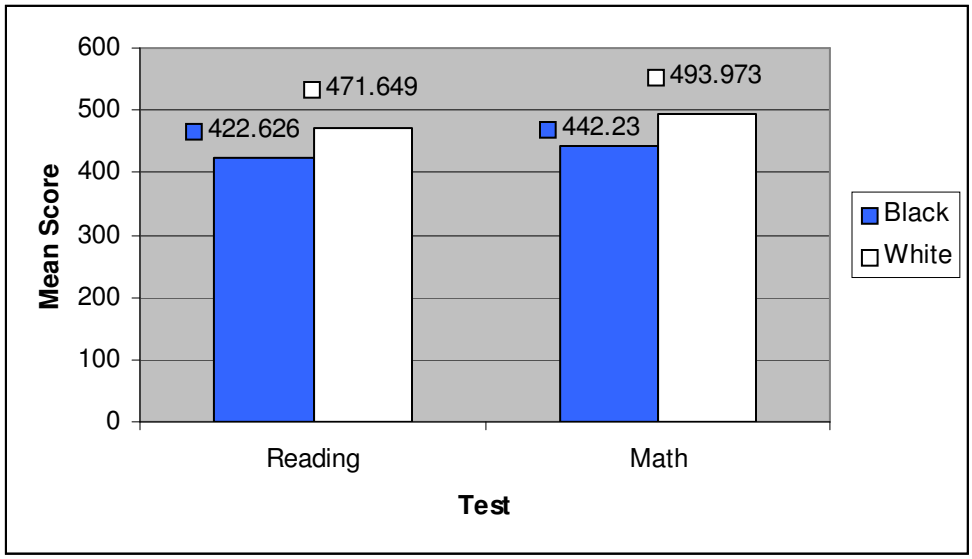

Figure 2. Mean SOL Scores by Ethnicity

Main Effect: Grade

On average, fifth grade students scored higher than third grade students on the SOL Reading test, but third graders scored higher on the SOL Math test. In each case, the difference in mean scores was found to be statistically significant (Reading - .025, Math - .000). Table 10 lists the mean scores and confidence intervals by grade for each test. Figure 3 presents this data graphically.

Table 10

Mean SOL Test Scores by Grade

				97.5% Confidence Interval	
Test	Grade	Mean	Std. Error	Lower Bound	Upper Bound
READING	Third	440.904	4.170	431.541	450.267
	Fifth	453.371	3.683	445.101	461.641
MATH	Third	490.128	4.797	479.357	500.900
	Fifth	446.075	4.237	436.561	455.589

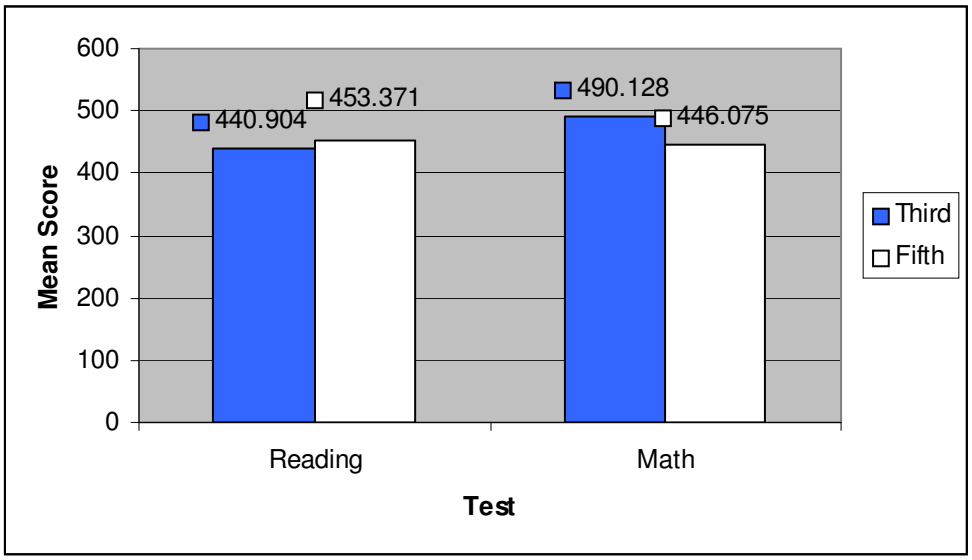

Figure 3. Mean SOL Scores by Grade

Main Effect: Gender

Female students scored higher than male students on the SOL Reading and Math tests. However, only the difference in Reading scores was found to be statistically significant (.004). While females scored higher than males on the Math test, the difference in mean scores cannot be attributed to any real differences in the populations, based on the sample under consideration. Table 11 lists the mean scores and confidence intervals by gender for each test. Figure 4 presents this data graphically.

Table 11

Mean SOL Test Scores by Gender

		Mean	Std. Error	97.5% Confidence Interval	
Test	Gender			Lower Bound	Upper Bound
READING	Male	439.193	3.841	430.568	447.818
	Female	455.082	4.025	446.045	464.119
MATH	Male	466.171	4.419	456.248	476.093
	Female	470.033	4.630	459.636	480.429

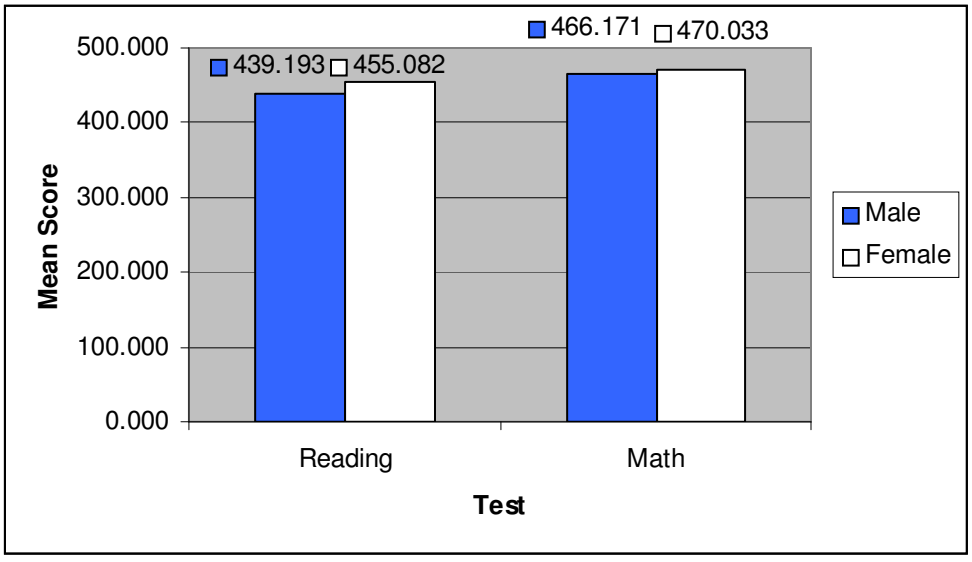

Figure 4. Mean SOL Scores by Gender

Main Effect: Calendar Type

On average, year-round students scored higher than traditional calendar students on both the SOL Reading and Math tests. However, only the differences in Reading scores were found to be statistically significant (.003). Differences in Math scores were not found to be statistically significant (.282), and were no greater than might be expected based on random chance alone. Table 12 lists the mean scores and confidence intervals by gender for each test. Figure 5 presents this data graphically.

Table 12

Mean SOL Test Scores by Calendar Type

		Mean	Std. Error	97.5% Confidence Interval	
Test	Calendar Type			Lower Bound	Upper Bound
READING	Traditional	438.954	3.141	431.902	446.007
	Year-Round	455.321	4.592	445.010	465.632
MATH	Traditional	464.653	3.613	456.540	472.767
	Year-Round	471.550	5.283	459.688	483.412

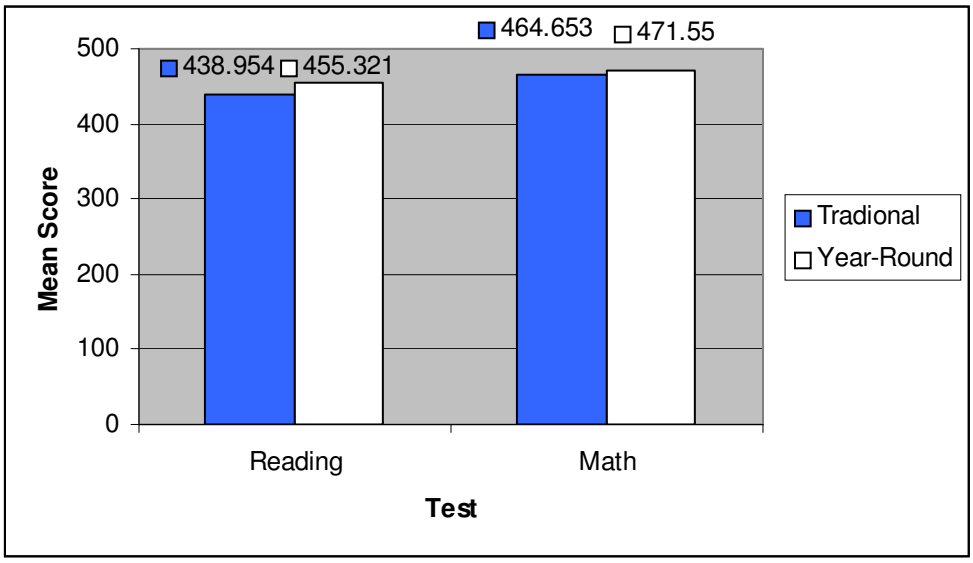

Figure 5. Mean SOL Scores by Calendar Type

Interaction Effect: Ethnicity and Calendar Type

The MANOVA analysis reveals a significant interaction between ethnicity and calendar type. Specifically, the effect of the school calendar type on SOL test scores varies based on ethnicity. As shown previously, Math scores, with a significance level of .099, do not display a significant interaction between ethnicity and calendar type. However, Reading scores do display significance in the interaction effect (.001). An examination of Table 13 reveals that mean Reading scores for White students in year-round schools were substantially higher than mean Reading scores for White students in traditional year schools. Conversely, Black students in traditional year schools exhibit higher Reading scores than Black students in year-round schools. However, the differences in mean Reading scores for Black students in each school type are very small. The differences in mean average scores among the groups can be seen graphically in Figure 6.

Table 13

Mean SOL Test Scores by Ethnicity and Calendar Type

			Mean	Std. Error	97.5% Confidence Interval	
Test	Ethnicity	Calendar Type			Lower Bound	Upper Bound
READING	Black	Traditional	423.374	3.240	416.099	430.649
		Year-Round	421.878	2.586	416.072	427.684
	White	Traditional	454.535	5.382	442.451	466.620
		Year-Round	488.763	8.812	468.975	508.551
MATH	Black	Traditional	444.073	3.727	435.704	452.442
		Year-Round	440.386	2.975	433.707	447.066
	White	Traditional	485.234	6.191	471.331	499.136
		Year-Round	502.713	10.138	479.949	525.477

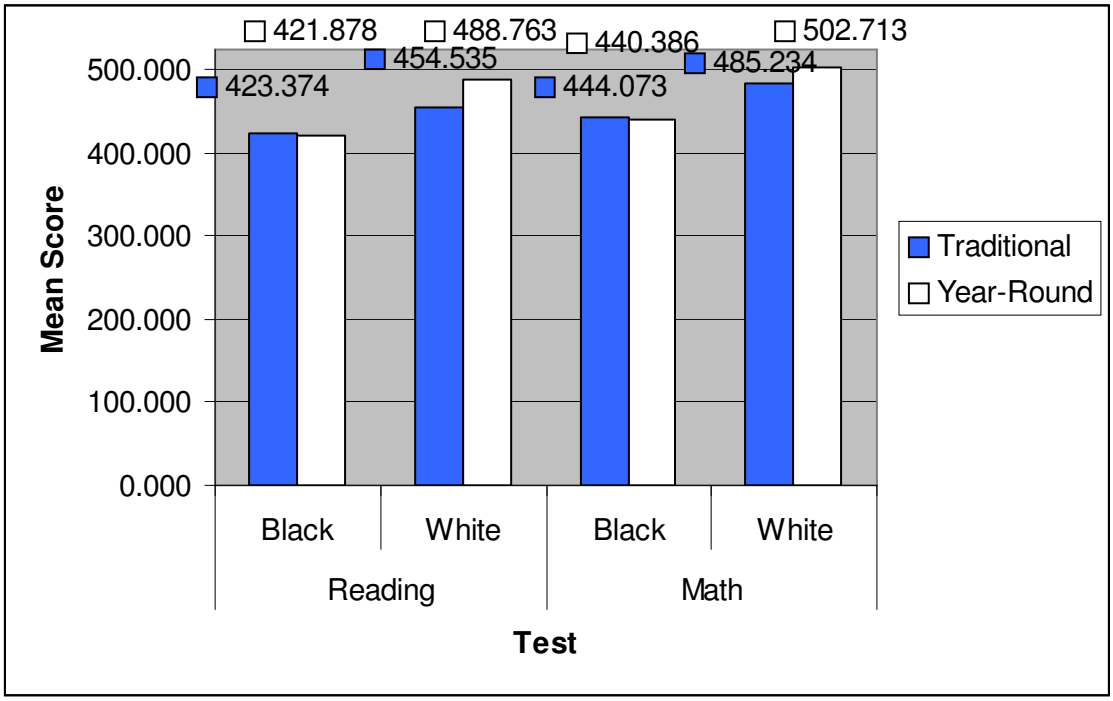

Figure 6. Mean SOL Scores by Ethnicity and Calendar Type

Summary

In Chapter IV, a MANOVA analysis of data from a school district in southeastern Virginia was presented using Grade (3rd, 5th), Gender, Ethnicity (Black, White) and school calendar type (traditional, year-round) as factors, and Reading and Math SOL scores as dependent variables. Because the classic ANOVA assumption of equal variances was not met, the analysis was conducted with Alpha = .025, rather than the more frequently used alpha value of .05. Schools were selected based on the percentages of students enrolled in free/reduced meal programs and ethnic composition of the student population at each school. Efforts were made to ensure that these measures were closely matched across all schools to control for demographic differences. In total, 849 students' test scores were analyzed. There were 466 students

enrolled in year-round schools, and 383 students enrolled in schools with a traditional calendar.

The MANOVA analysis revealed significant main effects due to Grade (.000), Gender (.005), Calendar Type (.008) and Ethnicity (.005). The analysis also revealed a significant interaction effect for Calendar Type within Ethnicity. Females were found to outperform males on the SOL Reading test regardless of grade, ethnicity or calendar type. White students, regardless of gender or grade, were found to exhibit higher SOL Reading scores when enrolled in a year-round program. The school calendar type did not appear to have a significant effect on Math scores of any students. There was no statistically significant difference in Black students' SOL Reading and Math scores for year-round vs. traditional calendar education programs.

CHAPTER 5

Summary

Since the early 1900's many school systems across the country have implemented a year-round calendar. There are currently over two million students in the United States who attend a year-round program (NAYRE, 2005). Studies on the impact of a year-round calendar on student achievement have been inconclusive. Prior to this study, no studies have been conducted pertaining to the impact of a year-round calendar on student achievement in a schoolwide Title I year-round program. This study addressed the following research questions: (1) Does the year-round school calendar have an impact on student achievement, as measured by the SOL Reading and Math test scores in Title I schools in grades three and five? ; (2) Does the gender of students who attend a year-round Title I school have an impact on academic achievement as measured by the SOL Math and Reading tests in grades three and five?; and (3) Does the ethnicity of students who attend a year-round Title I school have an impact on academic achievement as measured by the SOL Math and Reading tests in grades three and five?

Discussion of Findings

This study was conducted to determine the overall impact, if any, of a year-round calendar in a schoolwide Title I program on student achievement. The study also examined whether the impact of a year-round calendar differed based on gender or ethnicity. Data from 849 students in both year-round (n= 466) and traditional (n= 383) Title I schools were selected as the sample population for this study. The sample population included third and fifth grade students from eight schoolwide Title I

elementary schools from a school district in Southeastern Virginia. Traditional and year-round schools were closely matched according to the ethnicity and the percentage of students enrolled in the Free and Reduced Lunch program.

Impact of Year-Round Calendar on Academic Performance

This study found a significant positive main effect on Reading scores based on calendar type (.003). Traditional school students scored an average of 438.954 on the SOL Reading test, while year-round students scored an average of 455.321. It also revealed a significant interaction between calendar type and ethnicity (.001) on SOL Reading scores. White students participating in the studied year-round program scored an average of 488.763 on the SOL Reading test, whereas White students in a traditional calendar program scored an average of 454.535. On average, a year-round calendar appears to have resulted in an increase of 34.228 points on the SOL Reading test for White students. Conversely, SOL Reading scores for Black students actually decreased by 1.496 points. Black students in a traditional calendar program scored an average of 423.374 on the SOL Reading test, whereas Black students in a year-round program averaged 421.878.

While there are statistically significant differences in scores between third and fifth graders, there is no significant interaction effect between grade and calendar type (.421). The lack of a significant interaction between grade level and calendar type indicates that while there are differences in the test scores for third and fifth students they are not due to a year-round calendar type.

Gender

Data from this study indicated a statistically significant difference (.004) between female (455.082) and male (439.193) students in SOL Reading scores. However, the data also indicates that these gender based differences are not related to the choice of calendar type selected. The data revealed that female students scored higher than male students on the Reading test. While female students (470.33) also scored higher than male students (466.171) on the SOL Math test, the difference in Math SOL test scores was not found to be statistically significant (.546). Therefore, meaningful conclusions can only be drawn from the gender-based differences in SOL Reading scores, but not from the gender-based differences in SOL Math scores.

While the study revealed a significant main effect based on gender it did not indicate a statistically significant interaction between gender and calendar type (.764). Based on the lack of a significant interaction between gender and calendar type (.764), it can be concluded that the choice of school calendar type did not impact the academic performance on students based on gender. Female students (455.082) scored higher than male students (439.193) on the SOL Reading test in both year-round schools and traditional schools. The differences in scores between male and female students was independent of calendar type, leading to the conclusion that school calendar type does not play a significant role in gender-based achievement differences.

Ethnicity

The data indicated that there was a positive significant main effect on academic performance based on ethnicity (.000). In both the Reading (.000) and the Math (.000) tests, White students achieved higher average scores than Black students. The study

also revealed a significant interaction between ethnicity and calendar type (.005). Specifically, the analysis revealed a statistically significant impact (.001) on the Reading scores of White students based on calendar type. On average White students in a traditional calendar program achieved a score of 454.535 on the SOL Reading test versus an average score of 488.763 for White students in a year-round program. While the impact on Reading scores for White students was significant, the impact on Math scores was not (.099). The difference in Reading scores for Black students was minimal, with traditional calendar students slightly outscoring year-round students by an average of 423.374 versus 421.878. It is important to note that no significant interaction effect between the combination of gender, ethnicity, and calendar type was found for either SOL Reading (.868) or SOL Math (.495) scores. While the data show that the impact of year-round education varies based on ethnicity, it does not indicate that gender plays any significant role in these differences. It can be concluded that for the sample population considered in this study that the effectiveness of year-round education as measured by the SOL test scores is limited primarily to improvements in Reading scores for White students and does not help reduce the achievement gap between White and Black students.

In Chapter 1, limitations of the study were discussed. It is important to remember that this study focused on one Southeastern school district for one school year and the data revealed a small picture of the impact of a year-round calendar on student achievement, ethnicity, and gender. Another limitation to consider was the length of time that each year-round school had been implementing a year-round calendar.

Implications of Findings

Current research has identified numerous factors that can be attributed to the achievement gap between Black and White students. While there does not appear to be a simple solution to closing the gap, year-round education is one option that schools are implementing. Based on the findings from the data, there are several implications to consider:

1. Data from this study indicated that rather than narrowing the achievement gap between Black and White students, year-round education, may in fact contribute to a widening of the achievement gap as measured by SOL Reading scores in this sample population.
2. Kneese and Knight (1995) found practical significance in Reading for at-risk students who attended a year-round program but not in Math. Results were similar to the findings in this study.
3. Kneese's (2000) meta-analysis, year-round students achieved higher Reading scores than traditional students. Findings in this study were consistent with Kneese's concluding that student achievement in year-round education was equal to, but did not exceed, traditional education, with the exception of statistically significant findings for White year-round students in Reading (.001).
4. Unlike McMillen's (2001) study that found no statistically significant differences in Reading or Math between year-round and traditional education students, this study indicated a statistically significant positive effect of year-round education on the SOL Reading scores of White students.

Recommendations for Practice

The No Child Left Behind Act demands greater expectations for all students. By 2014 all students in the nation must be proficient in Reading and Math. Closing the achievement gap between Black and White students is just one challenge that educational leaders face today. Educators may take into account these suggestions based on the findings from this study:

1. Provide staff development regarding effective utilization of calendar arrangement. Data from this study revealed that year-round students scored higher on both the Reading and Math SOL tests, but only the Reading scores were significant (.003). Using data from previously conducted research, examine which calendar arrangement is most beneficial to students, particularly Black students.
2. Provide similar enrichment and remediation activities in year-round school and traditional schools. In doing so, this will allow for additional studies to be conducted to determine the true impact of a year-round calendar.
3. Provide additional Math support in both year-round and traditional schools. Students in a year-round school scored higher than students in a traditional school in Reading and Math, however, only the Reading scores were significant (.003), Additional Math support is needed to improve Math SOL test scores in both year-round and traditional schools.
4. Reconsider the effectiveness of a year-round calendar as a tool for closing the achievement gap for predominately Black students. Black students in traditional

schools performed higher than Black students in year-round schools in both Reading and Math.

Suggestions for Future Studies

Closing the achievement gap between Black and White students continues to be a focus of school systems across the nation. Current research indicated the gap is narrowing, but progress has been slow. Year-round education is just one potential solution to continue to reduce the achievement gap. Suggestions to consider for further studies include:

1. Conduct longitudinal study of the sample population. This is important because this study reflects only one year of SOL testing for the sample population.
2. Replicate the study to include special education students to determine if year-round education has an impact on their level of achievement.
3. Conduct a study involving all year-round schools in the Commonwealth of Virginia.
4. Conduct a study reaching across state boundaries to study the impact of a year-round calendar on a regional or national scale.
5. Investigate the effect of a year-round calendar on specific sub populations as defined by NCLB. Additional studies on certain sub populations would help educators focus on student achievement and effective utilization of calendar arrangement.
6. Conduct a study examining the different organizational formats of year-round education to determine if there is one structure that has a greater impact on student achievement.

When considering potential future studies, thought should be given to the structure and use of instructional time during traditional education summer school and year-round intersessions. The year-round sample population in this study was required to attend the October intersession if the student failed the Math and/or Reading portion of the SOL test. Traditional education students were required to attend summer school if the Math and/or Reading SOL test was not passed.

Reflections

My interest in year-round education began nine years ago I was a teacher involved in the process of implementing a new year-round program for the school division. I was able to work with various people in the school division to create the first year-round program. Unfortunately, the year-round calendar was implemented for only two years before the program was eliminated. My passion and interest in year-round education did not subside and throughout the doctoral program my research has focused on year-round education and the impact on student achievement.

Though there were limited statistically significant findings in my study, I believe that year-round education should continue to be an option for school divisions in the nation. Thomas Alva Edison once said, “I have not failed. I've just found 10,000 ways that won't work.” I feel that this quote holds true to this study and I often referred to it when teaching a difficult concept to my students. Just because we don’t achieve the desired results, do not give up. While the data reveal that the achievement gap may in fact be widening for this sample population, I do not believe that year-round education has failed. We as educators must look for alternate ways to achieve success for all

students regardless of gender, ethnicity, or socio-economic status. The data revealed the answers to my research questions, and generated new questions to consider.

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Appendix A: Title I Schoolwide Elementary Schools in Virginia

Virginia Department of Education
2004-2005 Title I Schoolwide Schools as of January 2005

DIV. NO.	DIVISION	SCHOOL NO.	SCHOOL	TITLE I FOCUS
001	ACCOMACK CO PBLC SCHS	590	PUNGOTEAGUE ELEMENTARY	Title I -SchWide
001	ACCOMACK CO PBLC SCHS	600	KEGOTANK ELEMENTARY.	Title I -SchWide
001	ACCOMACK CO PBLC SCHS	701	ACCAWMACKE ELEM	Title I -SchWide
001	ACCOMACK CO PBLC SCHS	702	METOMPKIN ELEM	Title I -SchWide
007	ARLINGTON CO PBLC SCHS	90	CARLIN SPRINGS	Title I -SchWide
007	ARLINGTON CO PBLC SCHS	150	BARCROFT ELEM.	Title I -SchWide
007	ARLINGTON CO PBLC SCHS	250	BARRETT ELEM.	Title I -SchWide
007	ARLINGTON CO PBLC SCHS	510	RANDOLPH ELEM.	Title I -SchWide
007	ARLINGTON CO PBLC SCHS	615	CAMPBELL ELEM.	Title I -SchWide
014	BUCHANAN CO PBLC SCHS	10	RUSSELL PRATER ELEM.	Title I -SchWide
015	BUCKINGHAM CO PBLC SCHS	10	BUCKINGHAM PRIMARY	Title I -SchWide
015	BUCKINGHAM CO PBLC SCHS	510	DILLWYN PRIMARY	Title I -SchWide
015	BUCKINGHAM CO PBLC SCHS	730	GOLD HILL ELEM.	Title I -SchWide
017	CAROLINE CO PBLC SCHS	610	BOWLING GREEN PRIMARY	Title I -SchWide
018	CARROLL CO PBLC SCHS	1130	OAKLAND ELEM.	Title I -SchWide
021	CHESTERFIELD CO PBLC SCHS	60	HOPKINS ROAD ELEM.	Title I -SchWide
021	CHESTERFIELD CO PBLC SCHS	350	ETTRICK ELEM.	Title I -SchWide
021	CHESTERFIELD CO PBLC SCHS	430	BENSLEY ELEM.	Title I -SchWide
021	CHESTERFIELD CO PBLC SCHS	460	HARROWGATE ELEM.	Title I -SchWide
021	CHESTERFIELD CO PBLC SCHS	550	J. A. CHALKLEY ELEM.	Title I -SchWide
021	CHESTERFIELD CO PBLC SCHS	590	FALLING CREEK ELEM.	Title I -SchWide
021	CHESTERFIELD CO PBLC SCHS	660	BELLWOOD ELEM.	Title I -SchWide
026	DICKENSON CO PBLC SCHS	20	CLINTWOOD ELEM.	Title I -SchWide
026	DICKENSON CO PBLC SCHS	40	CLINCHCO ELEM.	Title I -SchWide
026	DICKENSON CO PBLC SCHS	530	ERVINTON ELEM.	Title I -SchWide
026	DICKENSON CO PBLC SCHS	860	SANDLICK ELEM.	Title I -SchWide
029	FAIRFAX CO PBLC SCHS	220	DOGWOOD ELEM.	Title I -SchWide
029	FAIRFAX CO PBLC SCHS	330	GROVETON ELEM.	Title I -SchWide
029	FAIRFAX CO PBLC SCHS	380	WOODLAWN ELEM.	Title I -SchWide
029	FAIRFAX CO PBLC SCHS	510	MOUNT EAGLE ELEM.	Title I -SchWide
029	FAIRFAX CO PBLC SCHS	520	WEYANOKE ELEM.	Title I -SchWide
029	FAIRFAX CO PBLC SCHS	530	GRAHAM ROAD ELEM.	Title I -SchWide
029	FAIRFAX CO PBLC SCHS	550	BAILEYS ELEM.	Title I -SchWide
029	FAIRFAX CO PBLC SCHS	580	WESTLAWN ELEM.	Title I -SchWide
029	FAIRFAX CO PBLC SCHS	590	WOODLEY HILLS ELEM.	Title I -SchWide
029	FAIRFAX CO PBLC SCHS	620	CAMERON ELEM.	Title I -SchWide
029	FAIRFAX CO PBLC SCHS	630	GARFIELD ELEM.	Title I -SchWide
029	FAIRFAX CO PBLC SCHS	700	BUCKNELL ELEM.	Title I -SchWide
029	FAIRFAX CO PBLC SCHS	720	BELVEDERE ELEM.	Title I -SchWide
029	FAIRFAX CO PBLC SCHS	820	PINE SPRING ELEM.	Title I -SchWide
029	FAIRFAX CO PBLC SCHS	830	TIMBER LANE ELEM.	Title I -SchWide
029	FAIRFAX CO PBLC SCHS	870	CRESTWOOD ELEM.	Title I -SchWide

029	FAIRFAX CO PBLC SCHS	890	LYNBROOK ELEM.	Title I -SchWide
029	FAIRFAX CO PBLC SCHS	940	BREN MAR PARK ELEM.	Title I -SchWide
029	FAIRFAX CO PBLC SCHS	970	GLEN FOREST ELEM.	Title I -SchWide
029	FAIRFAX CO PBLC SCHS	1030	PARKLAWN ELEM.	Title I -SchWide
029	FAIRFAX CO PBLC SCHS	1090	BRADDOCK ELEM.	Title I -SchWide
029	FAIRFAX CO PBLC SCHS	1330	HOLLIN MEADOWS ELEM.	Title I -SchWide
029	FAIRFAX CO PBLC SCHS	1360	ANNANDALE TERRACE ELEM.	Title I -SchWide
029	FAIRFAX CO PBLC SCHS	1390	MOSBY WOODS ELEM.	Title I -SchWide
029	FAIRFAX CO PBLC SCHS	1420	HYBLA VALLEY ELEM.	Title I -SchWide
029	FAIRFAX CO PBLC SCHS	1640	MOUNT VERNON WOODS ELEM.	Title I -SchWide
029	FAIRFAX CO PBLC SCHS	1820	RIVERSIDE ELEM.	Title I -SchWide
033	FRANKLIN CO PBLC SCHS	10	HENRY ELEM.	Title I -SchWide
033	FRANKLIN CO PBLC SCHS	350	CALLAWAY ELEM.	Title I -SchWide
033	FRANKLIN CO PBLC SCHS	660	LEE M. WAID ELEM.	Title I -SchWide
033	FRANKLIN CO PBLC SCHS	690	GLADE HILL ELEM.	Title I -SchWide
033	FRANKLIN CO PBLC SCHS	960	SONTAG ELEM.	Title I -SchWide
033	FRANKLIN CO PBLC SCHS	1170	SNOW CREEK ELEM.	Title I -SchWide
033	FRANKLIN CO PBLC SCHS	1360	FERRUM ELEM.	Title I -SchWide
033	FRANKLIN CO PBLC SCHS	1380	ROCKY MOUNT ELEM.	Title I -SchWide
038	GRAYSON CO PBLC SCHS	30	PROVIDENCE ELEM.	Title I -SchWide
038	GRAYSON CO PBLC SCHS	440	BAYWOOD ELEM.	Title I -SchWide
038	GRAYSON CO PBLC SCHS	480	FAIRVIEW ELEM.	Title I -SchWide
040	GREENSVILLE CO PBLC SCHS	50	GREENSVILLE ELEM	Title I -SchWide
043	HENRICO CO PBLC SCHS	380	GLEN LEA ELEM.	Title I -SchWide
043	HENRICO CO PBLC SCHS	420	RATCLIFFE ELEM.	Title I -SchWide
043	HENRICO CO PBLC SCHS	430	LABURNUM ELEM.	Title I -SchWide
043	HENRICO CO PBLC SCHS	640	HIGHLAND SPRINGS ELEM.	Title I -SchWide
043	HENRICO CO PBLC SCHS	660	ADAMS ELEM.	Title I -SchWide
044	HENRY CO PBLC SCHS	220	SANVILLE ELEM.	Title I -SchWide
044	HENRY CO PBLC SCHS	480	CARVER ELEMENTARY SCHOOL	Title I -SchWide
044	HENRY CO PBLC SCHS	590	CAMPBELL COURT ELEM.	Title I -SchWide
044	HENRY CO PBLC SCHS	630	IRISBURG ELEM.	Title I -SchWide
044	HENRY CO PBLC SCHS	661	JOHN REDD SMITH ELEM.	Title I -SchWide
044	HENRY CO PBLC SCHS	662	COLLINSVILLE PRIMARY	Title I -SchWide
044	HENRY CO PBLC SCHS	740	RICH ACRES ELEM.	Title I -SchWide
044	HENRY CO PBLC SCHS	750	AXTON ELEMENTARY SCHOOL	Title I -SchWide
044	HENRY CO PBLC SCHS	760	STANLEYTOWN ELEM.	Title I -SchWide
044	HENRY CO PBLC SCHS	872	MT. OLIVET PRIMARY	Title I -SchWide
051	LANCASTER CO PBLC SCHS	210	LANCASTER PRIMARY	Title I -SchWide
052	LEE CO PBLC SCHS	20	KEOKEE ELEM.	Title I -SchWide
052	LEE CO PBLC SCHS	200	ST. CHARLES ELEM.	Title I -SchWide
052	LEE CO PBLC SCHS	330	ELK KNOB ELEM.	Title I -SchWide
052	LEE CO PBLC SCHS	340	STICKLEYVILLE ELEM.	Title I -SchWide
052	LEE CO PBLC SCHS	630	FLATWOODS PRIMARY	Title I -SchWide
052	LEE CO PBLC SCHS	670	ROSE HILL ELEM.	Title I -SchWide
052	LEE CO PBLC SCHS	760	EWING ELEM.	Title I -SchWide
052	LEE CO PBLC SCHS	820	ELYDALE ELEM.	Title I -SchWide
054	LOUISA CO PBLC SCHS	610	THOMAS JEFFERSON ELEM.	Title I -SchWide
058	MECKLENBURG CO PBLC SCHS	190	SOUTH HILL ELEM.	Title I -SchWide

058	MECKLENBURG CO PBLC SCHS	910	CHASE CITY ELEM.	Title I -SchWide
058	MECKLENBURG CO PBLC SCHS	920	SOUTH HILL PRIMARY	Title I -SchWide
058	MECKLENBURG CO PBLC SCHS	930	BOYDTON ELEM.	Title I -SchWide
058	MECKLENBURG CO PBLC SCHS	1000	CLARKSVILLE ELEM.	Title I -SchWide
058	MECKLENBURG CO PBLC SCHS	1010	BUCKHORN ELEM.	Title I -SchWide
058	MECKLENBURG CO PBLC SCHS	1020	LACROSSE ELEM.	Title I -SchWide
060	MONTGOMERY CO PBLC SCHS	700	BELVIEW ELEM.	Title I -SchWide
060	MONTGOMERY CO PBLC SCHS	720	ELLISTON LAFAYETTE ELEM.	Title I -SchWide
060	MONTGOMERY CO PBLC SCHS	780	CHRISTIANSBURG PRIMARY	Title I -SchWide
060	MONTGOMERY CO PBLC SCHS	800	SHAWSVILLE ELEM.	Title I -SchWide
065	NORTHAMPTON CO PBLC SCHS	451	OCCOHANNOCK ELEM.	Title I -SchWide
065	NORTHAMPTON CO PBLC SCHS	452	KIPTOPEKE ELEM.	Title I -SchWide
066	NORTHUMBERLAND CO PBLC SCHS	331	NORTHUMBERLAND ELEM.	Title I -SchWide
067	NOTTOWAY CO PBLC SCHS	300	NOTTOWAY INTERMEDIATE	Title I -SchWide
067	NOTTOWAY CO PBLC SCHS	310	BURKEVILLE ELEM	Title I -SchWide
067	NOTTOWAY CO PBLC SCHS	330	CREWE PRIMARY	Title I -SchWide
067	NOTTOWAY CO PBLC SCHS	340	BLACKSTONE PRIMARY	Title I -SchWide
068	ORANGE CO PBLC SCHS	70	LIGHTFOOT ELEM.	Title I -SchWide
068	ORANGE CO PBLC SCHS	350	UNIONVILLE ELEM.	Title I -SchWide
068	ORANGE CO PBLC SCHS	360	GORDON BARBOUR ELEM.	Title I -SchWide
071	PITTSYLVANIA CO PBLC SCHS	30	JOHN L. HURT ELEM.	Title I -SchWide
071	PITTSYLVANIA CO PBLC SCHS	280	GRETNA ELEM.	Title I -SchWide
071	PITTSYLVANIA CO PBLC SCHS	640	CHATHAM ELEM.	Title I -SchWide
071	PITTSYLVANIA CO PBLC SCHS	1460	SOUTHSIDE ELEM.	Title I -SchWide
071	PITTSYLVANIA CO PBLC SCHS	1690	KENTUCK ELEM.	Title I -SchWide
071	PITTSYLVANIA CO PBLC SCHS	1740	UNION HALL ELEM.	Title I -SchWide
071	PITTSYLVANIA CO PBLC SCHS	1750	MT. AIRY ELEM.	Title I -SchWide
073	PRINCE EDWARD CO PBLC SCHS	10	PRINCE EDWARD ELEM.	Title I -SchWide
075	PRINCE WM CO PBLC SCHS	430	TRIANGLE ELEM.	Title I -SchWide
077	PULASKI CO PBLC SCHS	20	CRITZER ELEM.	Title I -SchWide
077	PULASKI CO PBLC SCHS	230	PULASKI ELEM.	Title I -SchWide
083	RUSSELL CO PBLC SCHS	390	LEBANON ELEM.	Title I -SchWide
083	RUSSELL CO PBLC SCHS	710	SWORDS CREEK ELEM.	Title I -SchWide
083	RUSSELL CO PBLC SCHS	792	CASTLEWOOD ELEM.	Title I -SchWide
083	RUSSELL CO PBLC SCHS	800	GIVENS ELEM.	Title I -SchWide
083	RUSSELL CO PBLC SCHS	880	CLEVELAND ELEM.	Title I -SchWide
083	RUSSELL CO PBLC SCHS	890	HONAKER ELEM.	Title I -SchWide
084	SCOTT CO PBLC SCHS	42	DUNGANNON INTERMEDIATE	Title I -SchWide
084	SCOTT CO PBLC SCHS	102	FORT BLACKMORE ELEM.	Title I -SchWide
084	SCOTT CO PBLC SCHS	641	SHOEMAKER ELEM.	Title I -SchWide
084	SCOTT CO PBLC SCHS	750	DUFFIELD-PATTONSVILLE PRY	Title I -SchWide
091	SUSSEX CO PBLC SCHS	20	ANNIE B. JACKSON ELEM.	Title I -SchWide
091	SUSSEX CO PBLC SCHS	50	ELLEN W. CHAMBLISS ELEM.	Title I -SchWide
091	SUSSEX CO PBLC SCHS	380	JEFFERSON ELEM.	Title I -SchWide
092	TAZEWELL CO PBLC SCHS	822	RICHLANDS ELEM.	Title I -SchWide
095	WESTMORELAND CO PBLC SCHS	210	COPLE ELEM.	Title I -SchWide
095	WESTMORELAND CO PBLC	310	WASHINGTON DISTRICT ELEM.	Title I -SchWide

	SCHS			
096	WISE CO PBLC SCHS	653	COEBURN PRIMARY	Title I -SchWide
104	CHARLOTTESVILLE CTY PBLC SCHS	10	JOHNSON ELEM.	Title I -SchWide
104	CHARLOTTESVILLE CTY PBLC SCHS	50	CLARK ELEM.	Title I -SchWide
104	CHARLOTTESVILLE CTY PBLC SCHS	70	BURNLEY-MORAN ELEMENTARY	Title I -SchWide
104	CHARLOTTESVILLE CTY PBLC SCHS	90	GREENBRIER ELEM.	Title I -SchWide
104	CHARLOTTESVILLE CTY PBLC SCHS	120	JACKSON - VIA ELEM.	Title I -SchWide
108	DANVILLE CITY PBLC SCHS	40	SCHOOLFIELD ELEM	Title I -SchWide
108	DANVILLE CITY PBLC SCHS	170	W. TOWNES LEA ELEM.	Title I -SchWide
108	DANVILLE CITY PBLC SCHS	180	IRVIN W. TAYLOR ELEM	Title I -SchWide
108	DANVILLE CITY PBLC SCHS	190	G. L. H. JOHNSON ELEM.	Title I -SchWide
108	DANVILLE CITY PBLC SCHS	200	GROVE PARK ELEM.	Title I -SchWide
108	DANVILLE CITY PBLC SCHS	220	WOODBERRY HILLS ELEM.	Title I -SchWide
108	DANVILLE CITY PBLC SCHS	250	PARK AVENUE ELEMENTARY	Title I -SchWide
108	DANVILLE CITY PBLC SCHS	1270	GLENWOOD ELEM.	Title I -SchWide
108	DANVILLE CITY PBLC SCHS	1373	WOODROW WILSON ELEM.	Title I -SchWide
110	FREDERICKSBRG CITY PBLC SCHS	50	HUGH MERCER ELEM.	Title I -SchWide
111	GALAX CITY PBLC SCHS	10	GALAX ELEM.	Title I -SchWide
112	HAMPTON CITY PBLC SCHS	80	WILLIAM MASON COOPER ELEM	Title I -SchWide
112	HAMPTON CITY PBLC SCHS	110	WYTHE ELEM.	Title I -SchWide
112	HAMPTON CITY PBLC SCHS	160	ABERDEEN ELEM.	Title I -SchWide
112	HAMPTON CITY PBLC SCHS	210	ROBERT R. MOTON ELEM.	Title I -SchWide
112	HAMPTON CITY PBLC SCHS	250	JANE H. BRYAN ELEM.	Title I -SchWide
112	HAMPTON CITY PBLC SCHS	270	JOHN B. CARY ELEM.	Title I -SchWide
112	HAMPTON CITY PBLC SCHS	390	MERRIMACK ELEM.	Title I -SchWide
112	HAMPTON CITY PBLC SCHS	400	ROBERT E. LEE ELEM.	Title I -SchWide
112	HAMPTON CITY PBLC SCHS	440	JOHN TYLER ELEM.	Title I -SchWide
112	HAMPTON CITY PBLC SCHS	500	A.W.E. BASSETTE ELEM.	Title I -SchWide
114	HOPEWELL CITY PBLC SCHS	40	DUPONT ELEM.	Title I -SchWide
114	HOPEWELL CITY PBLC SCHS	70	PATRICK COPELAND ELEM.	Title I -SchWide
114	HOPEWELL CITY PBLC SCHS	140	HARRY E. JAMES ELEM.	Title I -SchWide
115	LYNCHBURG CITY PBLC SCHS	70	DEARINGTON ELEM FOR INNOVATION	Title I -SchWide
115	LYNCHBURG CITY PBLC SCHS	90	T.C. MILLER ELEM. FOR INNOVAT.	Title I -SchWide
115	LYNCHBURG CITY PBLC SCHS	190	ROBERT S. PAYNE ELEM.	Title I -SchWide
115	LYNCHBURG CITY PBLC SCHS	250	WILLIAM M. BASS ELEM.	Title I -SchWide
115	LYNCHBURG CITY PBLC SCHS	270	PERRYMONT ELEM.	Title I -SchWide
115	LYNCHBURG CITY PBLC SCHS	300	SHEFFIELD ELEM.	Title I -SchWide
115	LYNCHBURG CITY PBLC SCHS	360	LINKHORNE ELEM.	Title I -SchWide
115	LYNCHBURG CITY PBLC SCHS	370	SANDUSKY ELEM.	Title I -SchWide
115	LYNCHBURG CITY PBLC SCHS	1102	HERITAGE ELEM.	Title I -SchWide
116	MARTINSVILLE CITY PBLC SCHS	52	ALBERT HARRIS INTERMEDIATE	Title I -SchWide
116	MARTINSVILLE CITY PBLC SCHS	80	CLEARVIEW ELEM.	Title I -SchWide
116	MARTINSVILLE CITY PBLC SCHS	90	DRUID HILLS ELEM.	Title I -SchWide
118	NORFOLK CITY PBLC SCHS	131	JAMES MONROE ELEM.	Title I -SchWide
118	NORFOLK CITY PBLC SCHS	220	CHESTERFIELD ACADEMY ELEM.	Title I -SchWide

118	NORFOLK CITY PBLC SCHS	430	JACOX ELEM.	Title I -SchWide
118	NORFOLK CITY PBLC SCHS	480	BOWLING PARK ELEM.	Title I -SchWide
118	NORFOLK CITY PBLC SCHS	520	LINDENWOOD ELEM.	Title I -SchWide
118	NORFOLK CITY PBLC SCHS	530	YOUNG PARK ELEM.	Title I -SchWide
118	NORFOLK CITY PBLC SCHS	540	OAKWOOD ELEM.	Title I -SchWide
118	NORFOLK CITY PBLC SCHS	550	COLEMAN PLACE ELEM.	Title I -SchWide
118	NORFOLK CITY PBLC SCHS	560	CROSSROADS ELEM.	Title I -SchWide
118	NORFOLK CITY PBLC SCHS	610	INGLESIDE ELEM.	Title I -SchWide
118	NORFOLK CITY PBLC SCHS	620	NORVIEW ELEM.	Title I -SchWide
118	NORFOLK CITY PBLC SCHS	630	OCEANAIR ELEM.	Title I -SchWide
118	NORFOLK CITY PBLC SCHS	682	LITTLE CREEK ELEM.	Title I -SchWide
118	NORFOLK CITY PBLC SCHS	770	CAMPOSTELLA ELEM.	Title I -SchWide
118	NORFOLK CITY PBLC SCHS	780	TIDEWATER PARK ELEM.	Title I -SchWide
118	NORFOLK CITY PBLC SCHS	810	DREAMKEEPERS ACADEMY AT J.J. ROBERTS ELEM	Title I -SchWide
118	NORFOLK CITY PBLC SCHS	820	ST. HELENA ELEM.	Title I -SchWide
118	NORFOLK CITY PBLC SCHS	860	WILLOUGHBY ELEM.	Title I -SchWide
120	PETERSBURG CITY PBLC SCHS	100	BLANDFORD ELEMENTARY SCHOOL	Title I -SchWide
120	PETERSBURG CITY PBLC SCHS	110	VIRGINIA AVENUE ELEM.	Title I -SchWide
120	PETERSBURG CITY PBLC SCHS	130	WALNUT HILL ELEM.	Title I -SchWide
120	PETERSBURG CITY PBLC SCHS	160	WESTVIEW ELEM.	Title I -SchWide
120	PETERSBURG CITY PBLC SCHS	170	ROBERT E. LEE ELEM.	Title I -SchWide
120	PETERSBURG CITY PBLC SCHS	180	J. E. B. STUART ELEM.	Title I -SchWide
120	PETERSBURG CITY PBLC SCHS	190	A. P. HILL ELEM.	Title I -SchWide
121	PORTSMOUTH CITY PBLC SCHS	60	PARK VIEW ELEM.	Title I -SchWide
121	PORTSMOUTH CITY PBLC SCHS	160	CHURCHLAND PRIMARY & INTERMED	Title I -SchWide
121	PORTSMOUTH CITY PBLC SCHS	190	DOUGLASS PARK ELEM.	Title I -SchWide
121	PORTSMOUTH CITY PBLC SCHS	210	WESTHAVEN ELEM.	Title I -SchWide
121	PORTSMOUTH CITY PBLC SCHS	230	JOHN TYLER ELEM.	Title I -SchWide
121	PORTSMOUTH CITY PBLC SCHS	321	CHURCHLAND ACADEMY ELEM.	Title I -SchWide
121	PORTSMOUTH CITY PBLC SCHS	1400	JAMES HURST ELEM.	Title I -SchWide
121	PORTSMOUTH CITY PBLC SCHS	1480	SIMONSDALE ELEM.	Title I -SchWide
121	PORTSMOUTH CITY PBLC SCHS	1630	HODGES MANOR ELEM.	Title I -SchWide
121	PORTSMOUTH CITY PBLC SCHS	1650	LAKEVIEW ELEM.	Title I -SchWide
121	PORTSMOUTH CITY PBLC SCHS	1763	STEPHEN H. CLARKE ACADEMY	Title I -SchWide
121	PORTSMOUTH CITY PBLC SCHS	1766	BRIGHTON ELEM.	Title I -SchWide
123	RICHMOND CITY PBLC SCHS	100	BELLEVUE MODEL ELEM.	Title I -SchWide
123	RICHMOND CITY PBLC SCHS	130	OVERBY-SHEPPARD ELEM.	Title I -SchWide
123	RICHMOND CITY PBLC SCHS	170	BLACKWELL ELEM.	Title I -SchWide
123	RICHMOND CITY PBLC SCHS	210	SWANSBORO ELEM.	Title I -SchWide
123	RICHMOND CITY PBLC SCHS	230	GINTER PARK ELEM.	Title I -SchWide
123	RICHMOND CITY PBLC SCHS	290	GEORGE MASON ELEM.	Title I -SchWide
123	RICHMOND CITY PBLC SCHS	311	GEORGE W. CARVER ELEM.	Title I -SchWide
123	RICHMOND CITY PBLC SCHS	330	OAK GROVE/BELLEMEADE ELEM	Title I -SchWide
123	RICHMOND CITY PBLC SCHS	340	PATRICK HENRY ELEM.	Title I -SchWide
123	RICHMOND CITY PBLC SCHS	390	J. E. B. STUART ELEM.	Title I -SchWide
123	RICHMOND CITY PBLC SCHS	510	SUMMER HILL/RUFFIN ROAD	Title I -SchWide
123	RICHMOND CITY PBLC SCHS	600	JOHN B. CARY ELEM.	Title I -SchWide

123	RICHMOND CITY PBLC SCHS	621	FRANKLIN MILITARY ACADEMY	Title I -SchWide
123	RICHMOND CITY PBLC SCHS	650	WOODVILLE ELEM.	Title I -SchWide
123	RICHMOND CITY PBLC SCHS	660	WESTOVER HILLS ELEM.	Title I -SchWide
123	RICHMOND CITY PBLC SCHS	690	MAYMONT ELEM.	Title I -SchWide
123	RICHMOND CITY PBLC SCHS	710	FAIRFIELD COURT ELEM.	Title I -SchWide
123	RICHMOND CITY PBLC SCHS	720	WHITCOMB COURT ELEM.	Title I -SchWide
123	RICHMOND CITY PBLC SCHS	780	A. V. NORRELL ELEM.	Title I -SchWide
123	RICHMOND CITY PBLC SCHS	810	CLARK SPRINGS ELEM.	Title I -SchWide
123	RICHMOND CITY PBLC SCHS	830	CHIMBORAZO ELEM.	Title I -SchWide
123	RICHMOND CITY PBLC SCHS	1100	BROAD ROCK ELEM.	Title I -SchWide
123	RICHMOND CITY PBLC SCHS	1400	ELIZABETH D. REDD ELEM.	Title I -SchWide
123	RICHMOND CITY PBLC SCHS	1440	E. S. H. GREENE ELEM.	Title I -SchWide
123	RICHMOND CITY PBLC SCHS	1470	G. H. REID ELEM.	Title I -SchWide
123	RICHMOND CITY PBLC SCHS	1480	SOUTHAMPTON ELEM.	Title I -SchWide
123	RICHMOND CITY PBLC SCHS	1710	J. L. FRANCIS ELEM.	Title I -SchWide
123	RICHMOND CITY PBLC SCHS	3106	LINWOOD HOLTON ELEM	Title I -SchWide
123	RICHMOND CITY PBLC SCHS	3107	MILES JONES ELEM	Title I -SchWide
124	ROANOKE CITY PBLC SCHS	30	FOREST PARK MAGNET	Title I -SchWide
124	ROANOKE CITY PBLC SCHS	50	FALLON PARK ELEM.	Title I -SchWide
124	ROANOKE CITY PBLC SCHS	60	MORNINGSIDE ELEM.	Title I -SchWide
124	ROANOKE CITY PBLC SCHS	70	VIRGINIA HEIGHTS ELEM.	Title I -SchWide
124	ROANOKE CITY PBLC SCHS	110	HIGHLAND PARK MAGNET ELEM	Title I -SchWide
124	ROANOKE CITY PBLC SCHS	220	ROANOKE ACDMY/MATH & SC	Title I -SchWide
124	ROANOKE CITY PBLC SCHS	240	OAKLAND INTERMEDIATE	Title I -SchWide
124	ROANOKE CITY PBLC SCHS	300	GARDEN CITY ELEM.	Title I -SchWide
124	ROANOKE CITY PBLC SCHS	320	HUFF LANE MICROVILLAGE	Title I -SchWide
124	ROANOKE CITY PBLC SCHS	330	PRESTON PARK PRIMARY	Title I -SchWide
124	ROANOKE CITY PBLC SCHS	340	LINCOLN TERRACE SATURN NETWORK	Title I -SchWide
124	ROANOKE CITY PBLC SCHS	350	WESTSIDE ELEM.	Title I -SchWide
124	ROANOKE CITY PBLC SCHS	410	FAIRVIEW MAGNET ELEM.	Title I -SchWide
124	ROANOKE CITY PBLC SCHS	420	HURT PARK ELEM.	Title I -SchWide
124	ROANOKE CITY PBLC SCHS	430	ROUND HILL MONTESSORI	Title I -SchWide
128	VA BEACH CITY PBLC SCHS	20	WHITE OAKS ELEM.	Title I -SchWide
128	VA BEACH CITY PBLC SCHS	60	BIRDNECK ELEM.	Title I -SchWide
128	VA BEACH CITY PBLC SCHS	290	SEATACK ELEM.	Title I -SchWide
128	VA BEACH CITY PBLC SCHS	470	WILLIAMS ELEM.	Title I -SchWide
128	VA BEACH CITY PBLC SCHS	520	LYNNHAVEN ELEM.	Title I -SchWide
128	VA BEACH CITY PBLC SCHS	600	HOLLAND ELEM.	Title I -SchWide
128	VA BEACH CITY PBLC SCHS	710	NEWTOWN ROAD ELEM.	Title I -SchWide
128	VA BEACH CITY PBLC SCHS	820	PARKWAY ELEM.	Title I -SchWide
130	WAYNESBORO CITY PBLC SCHS	580	WENONAH ELEM.	Title I -SchWide
130	WAYNESBORO CITY PBLC SCHS	751	WILLIAM PERRY ELEM.	Title I -SchWide
135	FRANKLIN CITY PBLC SCHS	10	S. P. MORTON ELEM	Title I -SchWide
136	CHESAPEAKE CITY PBLC SCHS	40	THURGOOD MARSHALL ELEM	Title I -SchWide
136	CHESAPEAKE CITY PBLC SCHS	50	GEORGE W. CARVER INT.	Title I -SchWide
136	CHESAPEAKE CITY PBLC SCHS	90	CAMELOT ELEM.	Title I -SchWide
136	CHESAPEAKE CITY PBLC SCHS	200	RENA B. WRIGHT PRIMARY	Title I -SchWide
136	CHESAPEAKE CITY PBLC SCHS	600	SOUTHWESTERN ELEM.	Title I -SchWide
136	CHESAPEAKE CITY PBLC SCHS	730	PORTLOCK PRIMARY	Title I -SchWide

136	CHESAPEAKE CITY PBLC SCHS	971	TRUITT INTERMEDIATE	Title I -SchWide

Appendix B: Data Request

January 24, 2006

[redacted]:

I am requesting SOL data from the 2004-2005 school year. I am specifically interested in grades 3 & 5 Reading and Mathematics SOL test scores. My study will examine the impact of a year-round calendar in a schoolwide Title I program, and the differences between gender and ethnicity in a Title I year-round program. I will need the following items of data for individual students (minus identifying information – there is no need for me to be able to identify individual students by name or ID number):

- Gender
- Ethnicity
- Grade level (3 and 5)
- School name
- Reading Score
- Math Score
- Year-Round or Traditional Year (if available)

I only need the data for Title I elementary schools, but if Title 1 / Non-Title 1 is not easy to filter in your data you can provide data for all elementary schools and I can identify the Title I schools myself.

An Excel spreadsheet or a delimited text file containing the data would be ideal, as this will facilitate the process of loading the data into the statistical analysis software.

I am submitting the request for obtaining the data, research questions, and my abstract along with this letter. If further information or clarification is needed, please contact me at [redacted]. I appreciate all of your help.

Sincerely,

[redacted]

Jennifer M. Cary

Request For Approval
Research Projects – [redacted]

School (If applicable): _____ School Year: 2005-2006

Individual/Dept. Making Request: Jennifer Cary

- **Provide title and a brief description of proposed research project (specific purpose(s)):**

Closing the Achievement Gap in Title 1 Year-Round Schools:

*See attached abstract.

- **What types of information do you anticipate utilizing in your research? (Copies of instruments/letters requesting Release of test scores must be provided.)**

_____ Student Records	_____ Admin. Teacher Interviews	_____ Focus Groups
_____ Teacher Records	_____ Student Interviews	✓ Test Results
_____ School Records		

- **What goals do you have for your project findings/conclusions? (Please submit research questions.)** (Attached)

Current research indicates that student achievement in year-round schools is inconclusive. I hope to find that there is a positive impact of a year-round calendar on student achievement in Title 1 year-round schools.

- **If the proposed project is in conjunction with college coursework, prior approval by the academic institution and professor must be provided below:**

Course: EDAE: Research and Dissertation Academic Institution: Virginia Polytechnic Institute and State Univ.

Professor Signature: [redacted] Date: Jan. 19, 2006

Submit to: Dept. of Inst. Accountability, Research & Evaluation
Attn: Chairperson of Research Committee
[redacted]

Appendix D: Data Approval

YAHOO! MAIL

Print - Close Window

Date: Thu, 26 Jan 2006 16:10:28 -0500
From: [redacted]
Subject: dissertation data
To: "'jparker'" [redacted]

Hi Jennifer,

Your research study has been approved by the committee. Please find attached the data you requested. Please send a copy of your final research findings when you complete your study.

Good Luck!

[redacted]

Appendix E: SPSS Model and Output

General Linear Model

Notes		
Output Created		03-FEB-2006 15:44:27
Comments		
Input	**Data**	C:\Documents and Settings\jen\My Documents\DISSERTATION\DATA_ANALYSIS\YRE_ANOVA.sav
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	849
Missing Value Handling	**Definition of Missing**	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data for all variables in the model.
Syntax		GLM Reading Math BY ethnic grade gender caltype /METHOD = SSTYPE(3) /INTERCEPT = INCLUDE /EMMEANS = TABLES(OVERALL) /EMMEANS = TABLES(ethnic) COMPARE ADJ(LSD) /EMMEANS = TABLES(grade) COMPARE ADJ(LSD) /EMMEANS = TABLES(gender) COMPARE ADJ(LSD) /EMMEANS = TABLES(caltype) COMPARE ADJ(LSD) /EMMEANS = TABLES(ethnic*grade) /EMMEANS = TABLES(ethnic*gender) /EMMEANS = TABLES(grade*gender) /EMMEANS = TABLES(ethnic*grade*gender) /EMMEANS = TABLES(ethnic*caltype) /EMMEANS = TABLES(grade*caltype) /EMMEANS = TABLES(ethnic*grade*caltype) /EMMEANS = TABLES(gender*caltype) /EMMEANS = TABLES(ethnic*gender*caltype) /EMMEANS = TABLES(grade*gender*caltype) /EMMEANS = TABLES(ethnic*grade*gender*caltype) /PRINT = DESCRIPTIVE ETASQ OPOWER PARAMETER HOMOGENEITY /CRITERIA = ALPHA(.025) /DESIGN = ethnic grade gender caltype ethnic*grade ethnic*gender grade*gender ethnic*grade*gender ethnic*caltype grade*caltype ethnic*grade*caltype gender*caltype ethnic*gender*caltype grade*gender*caltype ethnic*grade*gender*caltype .
Resources	**Elapsed Time**	0:00:01.39

Between-Subjects Factors			
		Value Label	N
ETHNIC	0	Black	710
	1	White	139
GRADE	0	Third	395
	1	Fifth	454
GENDER	0	Male	377
	1	Female	472
CALTYPE	0	Traditional	383
	1	Year-Round	466

Descriptive Statistics							
	ETHNIC	GRADE	GENDER	CALTYPE	Mean	Std. Deviation	N
READING	Black	Third	Male	Traditional	402.1923	47.25817	52
				Year-Round	408.0690	56.08337	87
				Total	405.8705	52.85499	139
			Female	Traditional	418.9077	65.59552	65
				Year-Round	422.3651	48.96245	126
				Total	421.1885	55.03851	191
			Total	Traditional	411.4786	58.52712	117
				Year-Round	416.5258	52.33614	213
				Total	414.7364	54.57646	330
		Fifth	Male	Traditional	433.3134	44.52483	67
				Year-Round	427.1058	52.71667	104
				Total	429.5380	49.62533	171
			Female	Traditional	439.0816	48.21123	98
				Year-Round	429.9730	48.85981	111
				Total	434.2440	48.65393	209
			Total	Traditional	436.7394	46.69738	165
				Year-Round	428.5860	50.66309	215
				Total	432.1263	49.08439	380
		Total	Male	Traditional	419.7143	48.10813	119
				Year-Round	418.4346	54.95974	191
				Total	418.9258	52.35945	310
			Female	Traditional	431.0368	56.47800	163
				Year-Round	425.9283	48.95872	237
				Total	428.0100	52.14554	400

			Total	**Traditional**	426.2589	53.31228	282
				Year-Round	422.5841	51.79517	428
				Total	424.0437	52.39650	710
		Third	**Male**	**Traditional**	438.0556	63.57254	18
				Year-Round	475.6667	70.13202	9
				Total	450.5926	66.95019	27
			Female	**Traditional**	457.5484	63.95354	31
				Year-Round	504.4286	93.44848	7
				Total	466.1842	71.21488	38
			Total	**Traditional**	450.3878	63.85753	49
				Year-Round	488.2500	79.58266	16
				Total	459.7077	69.37505	65
		Fifth	**Male**	**Traditional**	453.2963	50.36010	27
				Year-Round	475.8462	57.51934	13
				Total	460.6250	53.13345	40
	White		**Female**	**Traditional**	469.2400	58.23035	25
				Year-Round	499.1111	29.32339	9
				Total	477.1471	53.41724	34
			Total	**Traditional**	460.9615	54.34420	52
				Year-Round	485.3636	48.53035	22
				Total	468.2162	53.54329	74
		Total	**Male**	**Traditional**	447.2000	55.83116	45
				Year-Round	475.7727	61.35372	22
				Total	456.5821	58.80970	67
			Female	**Traditional**	462.7679	61.19596	56
				Year-Round	501.4375	62.92108	16
				Total	471.3611	63.24184	72
			Total	**Traditional**	455.8317	59.09079	101
				Year-Round	486.5789	62.50130	38
				Total	464.2374	61.37395	139
	Total	**Third**	**Male**	**Traditional**	411.4143	53.81167	70
				Year-Round	414.4063	60.44721	96
				Total	413.1446	57.59222	166
			Female	**Traditional**	431.3854	67.23241	96
				Year-Round	426.6842	54.82208	133
				Total	428.6550	60.23972	229
			Total	**Traditional**	422.9639	62.54055	166
				Year-Round	421.5371	57.43963	229

				Total	422.1367	59.56285	395
		Fifth	**Male**	**Traditional**	439.0532	46.88888	94
				Year-Round	432.5214	55.19520	117
				Total	435.4313	51.64373	211
			Female	**Traditional**	445.2114	51.60970	123
				Year-Round	435.1583	50.97981	120
				Total	440.2469	51.44070	243
			Total	**Traditional**	442.5438	49.60221	217
				Year-Round	433.8565	53.00628	237
				Total	438.0088	51.53434	454
		Total	**Male**	**Traditional**	427.2561	51.65478	164
				Year-Round	424.3568	58.18873	213
				Total	425.6180	55.38826	377
			Female	**Traditional**	439.1507	59.22589	219
				Year-Round	430.7036	53.09937	253
				Total	434.6229	56.12355	472
			Total	**Traditional**	434.0574	56.34753	383
				Year-Round	427.8026	55.51324	466
				Total	430.6243	55.94483	849
MATH	**Black**	**Third**	**Male**	**Traditional**	452.4038	70.95269	52
				Year-Round	462.0115	73.05406	87
				Total	458.4173	72.16757	139
			Female	**Traditional**	464.2769	72.84155	65
				Year-Round	463.1587	73.85320	126
				Total	463.5393	73.32040	191
			Total	**Traditional**	459.0000	71.94334	117
				Year-Round	462.6901	73.35709	213
				Total	461.3818	72.77090	330
		Fifth	**Male**	**Traditional**	430.6119	49.02719	67
				Year-Round	417.9423	46.20529	104
				Total	422.9064	47.59390	171
			Female	**Traditional**	429.0000	46.23673	98
				Year-Round	418.4324	47.32069	111
				Total	423.3876	47.00141	209
			Total	**Traditional**	429.6545	47.24839	165
				Year-Round	418.1953	46.67585	215
				Total	423.1711	47.20700	380
		Total	**Male**	**Traditional**	440.1345	60.31653	119

				Year-Round	438.0157	63.69628	191
				Total	438.8290	62.33052	310
			Female	**Traditional**	443.0675	60.63350	163
				Year-Round	442.2110	66.57974	237
				Total	442.5600	64.14673	400
			Total	**Traditional**	441.8298	60.40981	282
				Year-Round	440.3388	65.26631	428
				Total	440.9310	63.34284	710
		Third	**Male**	**Traditional**	509.2778	74.95081	18
				Year-Round	530.1111	51.47194	9
				Total	516.2222	67.73781	27
			Female	**Traditional**	513.6452	65.88199	31
				Year-Round	526.1429	89.32418	7
				Total	515.9474	69.55027	38
			Total	**Traditional**	512.0408	68.60666	49
				Year-Round	528.3750	67.88704	16
				Total	516.0615	68.26851	65
	White	**Fifth**	**Male**	**Traditional**	453.8519	47.08479	27
				Year-Round	473.1538	56.98223	13
				Total	460.1250	50.60515	40
			Female	**Traditional**	464.1600	70.70872	25
				Year-Round	481.4444	47.92471	9
				Total	468.7353	65.21401	34
			Total	**Traditional**	458.8077	59.24593	52
				Year-Round	476.5455	52.41931	22
				Total	464.0811	57.52683	74
		Total	**Male**	**Traditional**	476.0222	65.07321	45
				Year-Round	496.4545	60.71458	22
				Total	482.7313	63.94827	67
			Female	**Traditional**	491.5536	71.87057	56
				Year-Round	501.0000	70.29177	16
				Total	493.6528	71.13965	72
			Total	**Traditional**	484.6337	69.02416	101
				Year-Round	498.3684	64.03480	38
				Total	488.3885	67.74628	139
	Total	**Third**	**Male**	**Traditional**	467.0286	75.70920	70
				Year-Round	468.3958	73.84143	96
				Total	467.8193	74.40954	166

			Female	Traditional	480.2188	74.05165	96
				Year-Round	466.4737	75.67710	133
				Total	472.2358	75.14452	229
			Total	Traditional	474.6566	74.81247	166
				Year-Round	467.2795	74.75592	229
				Total	470.3797	74.77365	395
		Fifth	Male	Traditional	437.2872	49.36993	94
				Year-Round	424.0769	50.35104	117
				Total	429.9621	50.23088	211
			Female	Traditional	436.1463	53.71352	123
				Year-Round	423.1583	50.02067	120
				Total	429.7325	52.22249	243
			Total	Traditional	436.6406	51.76219	217
				Year-Round	423.6118	50.07969	237
				Total	429.8392	51.25027	454
		Total	Male	Traditional	449.9817	63.51981	164
				Year-Round	444.0516	65.72005	213
				Total	446.6313	64.75362	377
			Female	Traditional	455.4658	66.96783	219
				Year-Round	445.9289	68.19879	253
				Total	450.3538	67.72634	472
			Total	Traditional	453.1175	65.48549	383
				Year-Round	445.0708	67.01200	466
				Total	448.7008	66.40973	849

Box's Test of Equality of Covariance Matrices(a)	
Box's M	123.589
F	2.639
df1	45
df2	23949.407
Sig.	.000

Tests the null hypothesis that the observed covariance matrices of the dependent variables are equal across groups.

a Design: Intercept+ETHNIC+GRADE+GENDER+CALTYPE+ETHNIC * GRADE+ETHNIC * GENDER+GRADE * GENDER+ETHNIC * GRADE * GENDER+ETHNIC * CALTYPE+GRADE * CALTYPE+ETHNIC * GRADE * CALTYPE+GENDER * CALTYPE+ETHNIC * GENDER * CALTYPE+GRADE * GENDER * CALTYPE+ETHNIC * GRADE * GENDER * CALTYPE

Multivariate Tests(c)

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power(a)
Intercept	Pillai's Trace	.972	14531.539(b)	2.000	832.000	.000	.972	29063.078	1.000
	Wilks' Lambda	.028	14531.539(b)	2.000	832.000	.000	.972	29063.078	1.000
	Hotelling's Trace	34.932	14531.539(b)	2.000	832.000	.000	.972	29063.078	1.000
	Roy's Largest Root	34.932	14531.539(b)	2.000	832.000	.000	.972	29063.078	1.000
ETHNIC	Pillai's Trace	.096	43.940(b)	2.000	832.000	.000	.096	87.879	1.000
	Wilks' Lambda	.904	43.940(b)	2.000	832.000	.000	.096	87.879	1.000
	Hotelling's Trace	.106	43.940(b)	2.000	832.000	.000	.096	87.879	1.000
	Roy's Largest Root	.106	43.940(b)	2.000	832.000	.000	.096	87.879	1.000
GRADE	Pillai's Trace	.127	60.383(b)	2.000	832.000	.000	.127	120.767	1.000
	Wilks' Lambda	.873	60.383(b)	2.000	832.000	.000	.127	120.767	1.000
	Hotelling's Trace	.145	60.383(b)	2.000	832.000	.000	.127	120.767	1.000
	Roy's Largest Root	.145	60.383(b)	2.000	832.000	.000	.127	120.767	1.000
GENDER	Pillai's Trace	.013	5.307(b)	2.000	832.000	.005	.013	10.613	.760
	Wilks' Lambda	.987	5.307(b)	2.000	832.000	.005	.013	10.613	.760
	Hotelling's Trace	.013	5.307(b)	2.000	832.000	.005	.013	10.613	.760
	Roy's Largest Root	.013	5.307(b)	2.000	832.000	.005	.013	10.613	.760
CALTYPE	Pillai's Trace	.012	4.849(b)	2.000	832.000	.008	.012	9.699	.715
	Wilks' Lambda	.988	4.849(b)	2.000	832.000	.008	.012	9.699	.715
	Hotelling's Trace	.012	4.849(b)	2.000	832.000	.008	.012	9.699	.715

	Roy's Largest Root	.012	4.849(b)	2.000	832.000	.008	.012	9.699	.715
ETHNIC * GRADE	**Pillai's Trace**	.002	.918(b)	2.000	832.000	.400	.002	1.836	.137
	Wilks' Lambda	.998	.918(b)	2.000	832.000	.400	.002	1.836	.137
	Hotelling's Trace	.002	.918(b)	2.000	832.000	.400	.002	1.836	.137
	Roy's Largest Root	.002	.918(b)	2.000	832.000	.400	.002	1.836	.137
ETHNIC * GENDER	**Pillai's Trace**	.002	.825(b)	2.000	832.000	.439	.002	1.650	.123
	Wilks' Lambda	.998	.825(b)	2.000	832.000	.439	.002	1.650	.123
	Hotelling's Trace	.002	.825(b)	2.000	832.000	.439	.002	1.650	.123
	Roy's Largest Root	.002	.825(b)	2.000	832.000	.439	.002	1.650	.123
GRADE * GENDER	**Pillai's Trace**	.001	.483(b)	2.000	832.000	.617	.001	.966	.078
	Wilks' Lambda	.999	.483(b)	2.000	832.000	.617	.001	.966	.078
	Hotelling's Trace	.001	.483(b)	2.000	832.000	.617	.001	.966	.078
	Roy's Largest Root	.001	.483(b)	2.000	832.000	.617	.001	.966	.078
ETHNIC * GRADE * GENDER	**Pillai's Trace**	.000	.208(b)	2.000	832.000	.812	.000	.416	.046
	Wilks' Lambda	1.000	.208(b)	2.000	832.000	.812	.000	.416	.046
	Hotelling's Trace	.001	.208(b)	2.000	832.000	.812	.000	.416	.046
	Roy's Largest Root	.001	.208(b)	2.000	832.000	.812	.000	.416	.046
ETHNIC * CALTYPE	**Pillai's Trace**	.013	5.274(b)	2.000	832.000	.005	.013	10.548	.757
	Wilks' Lambda	.987	5.274(b)	2.000	832.000	.005	.013	10.548	.757
	Hotelling's Trace	.013	5.274(b)	2.000	832.000	.005	.013	10.548	.757

	Roy's Largest Root	.013	5.274(b)	2.000	832.000	.005	.013	10.548	.757
GRADE * CALTYPE	**Pillai's Trace**	.002	.865(b)	2.000	832.000	.421	.002	1.731	.129
	Wilks' Lambda	.998	.865(b)	2.000	832.000	.421	.002	1.731	.129
	Hotelling's Trace	.002	.865(b)	2.000	832.000	.421	.002	1.731	.129
	Roy's Largest Root	.002	.865(b)	2.000	832.000	.421	.002	1.731	.129
ETHNIC * GRADE * CALTYPE	**Pillai's Trace**	.001	.536(b)	2.000	832.000	.585	.001	1.072	.084
	Wilks' Lambda	.999	.536(b)	2.000	832.000	.585	.001	1.072	.084
	Hotelling's Trace	.001	.536(b)	2.000	832.000	.585	.001	1.072	.084
	Roy's Largest Root	.001	.536(b)	2.000	832.000	.585	.001	1.072	.084
GENDER * CALTYPE	**Pillai's Trace**	.001	.269(b)	2.000	832.000	.764	.001	.538	.052
	Wilks' Lambda	.999	.269(b)	2.000	832.000	.764	.001	.538	.052
	Hotelling's Trace	.001	.269(b)	2.000	832.000	.764	.001	.538	.052
	Roy's Largest Root	.001	.269(b)	2.000	832.000	.764	.001	.538	.052
ETHNIC * GENDER * CALTYPE	**Pillai's Trace**	.001	.222(b)	2.000	832.000	.801	.001	.444	.047
	Wilks' Lambda	.999	.222(b)	2.000	832.000	.801	.001	.444	.047
	Hotelling's Trace	.001	.222(b)	2.000	832.000	.801	.001	.444	.047
	Roy's Largest Root	.001	.222(b)	2.000	832.000	.801	.001	.444	.047
GRADE * GENDER * CALTYPE	**Pillai's Trace**	.000	.142(b)	2.000	832.000	.868	.000	.283	.039
	Wilks' Lambda	1.000	.142(b)	2.000	832.000	.868	.000	.283	.039
	Hotelling's Trace	.000	.142(b)	2.000	832.000	.868	.000	.283	.039

	Roy's Largest Root	.000	.142(b)	2.000	832.000	.868	.000	.283	.039
ETHNIC * GRADE * GENDER * CALTYPE	**Pillai's Trace**	.000	.010(b)	2.000	832.000	.990	.000	.020	.026
	Wilks' Lambda	1.000	.010(b)	2.000	832.000	.990	.000	.020	.026
	Hotelling's Trace	.000	.010(b)	2.000	832.000	.990	.000	.020	.026
	Roy's Largest Root	.000	.010(b)	2.000	832.000	.990	.000	.020	.026

a Computed using alpha = .025

b Exact statistic

c Design: Intercept+ETHNIC+GRADE+GENDER+CALTYPE+ETHNIC * GRADE+ETHNIC * GENDER+GRADE * GENDER+ETHNIC * GRADE * GENDER+ETHNIC * CALTYPE+GRADE * CALTYPE+ETHNIC * GRADE * CALTYPE+GENDER * CALTYPE+ETHNIC * GENDER * CALTYPE+GRADE * GENDER * CALTYPE+ETHNIC * GRADE * GENDER * CALTYPE

Levene's Test of Equality of Error Variances(a)

	F	**df1**	**df2**	**Sig.**
READING	1.772	15	833	.034
MATH	5.211	15	833	.000

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a Design: Intercept+ETHNIC+GRADE+GENDER+CALTYPE+ETHNIC * GRADE+ETHNIC * GENDER+GRADE * GENDER+ETHNIC * GRADE * GENDER+ETHNIC * CALTYPE+GRADE * CALTYPE+ETHNIC * GRADE * CALTYPE+GENDER * CALTYPE+ETHNIC * GENDER * CALTYPE+GRADE * GENDER * CALTYPE+ETHNIC * GRADE * GENDER * CALTYPE

Tests of Between-Subjects Effects

Source	**Dependent Variable**	**Type III Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**	**Partial Eta Squared**	**Noncent. Parameter**	**Observed Power(a)**
Corrected Model	**READING**	312455.197(b)	15	20830.346	7.410	.000	.118	111.151	1.000
	MATH	640828.718(c)	15	42721.915	11.483	.000	.171	172.249	1.000
Intercept	**READING**	72635154.321	1	72635154.321	25838.809	.000	.969	25838.809	1.000
	MATH	79605807.548	1	79605807.548	21397.303	.000	.963	21397.303	1.000
ETHNIC	**READING**	218276.183	1	218276.183	77.648	.000	.085	77.648	1.000
	MATH	243175.099	1	243175.099	65.363	.000	.073	65.363	1.000
GRADE	**READING**	14116.023	1	14116.023	5.022	.025	.006	5.022	.498
	MATH	176267.820	1	176267.820	47.379	.000	.054	47.379	1.000
GENDER	**READING**	22929.053	1	22929.053	8.157	.004	.010	8.157	.729
	MATH	1354.689	1	1354.689	.364	.546	.000	.364	.053

CALTYPE	**READING**	24327.802	1	24327.802	8.654	.003	.010	8.654	.757
	MATH	4319.428	1	4319.428	1.161	.282	.001	1.161	.122
ETHNIC * GRADE	**READING**	4473.554	1	4473.554	1.591	.207	.002	1.591	.163
	MATH	5229.222	1	5229.222	1.406	.236	.002	1.406	.145
ETHNIC * GENDER	**READING**	3244.742	1	3244.742	1.154	.283	.001	1.154	.122
	MATH	71.526	1	71.526	.019	.890	.000	.019	.026
GRADE * GENDER	**READING**	1401.190	1	1401.190	.498	.480	.001	.498	.064
	MATH	23.364	1	23.364	.006	.937	.000	.006	.025
ETHNIC * GRADE * GENDER	**READING**	252.166	1	252.166	.090	.765	.000	.090	.032
	MATH	1484.402	1	1484.402	.399	.528	.000	.399	.056
ETHNIC * CALTYPE	**READING**	28977.167	1	28977.167	10.308	.001	.012	10.308	.833
	MATH	10172.663	1	10172.663	2.734	.099	.003	2.734	.278
GRADE * CALTYPE	**READING**	4565.704	1	4565.704	1.624	.203	.002	1.624	.167
	MATH	1150.370	1	1150.370	.309	.578	.000	.309	.048
ETHNIC * GRADE * CALTYPE	**READING**	78.132	1	78.132	.028	.868	.000	.028	.027
	MATH	1736.663	1	1736.663	.467	.495	.001	.467	.061
GENDER * CALTYPE	**READING**	180.251	1	180.251	.064	.800	.000	.064	.030
	MATH	511.067	1	511.067	.137	.711	.000	.137	.035
ETHNIC * GENDER * CALTYPE	**READING**	681.291	1	681.291	.242	.623	.000	.242	.043
	MATH	4.244	1	4.244	.001	.973	.000	.001	.025
GRADE * GENDER * CALTYPE	**READING**	8.377	1	8.377	.003	.956	.000	.003	.025
	MATH	520.212	1	520.212	.140	.709	.000	.140	.035
ETHNIC * GRADE * GENDER * CALTYPE	**READING**	3.050	1	3.050	.001	.974	.000	.001	.025
	MATH	60.140	1	60.140	.016	.899	.000	.016	.026
Error	**READING**	2341635.943	833	2811.088					
	MATH	3099065.292	833	3720.366					
Total	**READING**	160090322.000	849						
	MATH	174671127.000	849						
Corrected Total	**READING**	2654091.140	848						
	MATH	3739894.009	848						

a Computed using alpha = .025

b R Squared = .118 (Adjusted R Squared = .102)

c R Squared = .171 (Adjusted R Squared = .156)

Estimated Marginal Means

1. Grand Mean				
			97.5% Confidence Interval	
Dependent Variable	Mean	Std. Error	Lower Bound	Upper Bound
READING	447.138	2.782	440.891	453.384
MATH	468.102	3.200	460.916	475.287

2. ETHNIC

Estimates					
				97.5% Confidence Interval	
Dependent Variable	ETHNIC	Mean	Std. Error	Lower Bound	Upper Bound
READING	Black	422.626	2.073	417.972	427.280
	White	471.649	5.163	460.056	483.242
MATH	Black	442.230	2.384	436.876	447.584
	White	493.973	5.939	480.637	507.310

Pairwise Comparisons							
						97.5% Confidence Interval for Difference(a)	
Dependent Variable	(I) ETHNIC	(J) ETHNIC	Mean Difference (I-J)	Std. Error	Sig.(a)	Lower Bound	Upper Bound
READING	Black	White	-49.023(*)	5.563	.000	-61.515	-36.531
	White	Black	49.023(*)	5.563	.000	36.531	61.515
MATH	Black	White	-51.744(*)	6.400	.000	-66.115	-37.372
	White	Black	51.744(*)	6.400	.000	37.372	66.115
Based on estimated marginal means							
* The mean difference is significant at the .025 level.							
a Adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustments).							

Multivariate Tests								
	Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power(a)

Pillai's trace	.096	43.940(b)	2.000	832.000	.000	.096	87.879	1.000
Wilks' lambda	.904	43.940(b)	2.000	832.000	.000	.096	87.879	1.000
Hotelling's trace	.106	43.940(b)	2.000	832.000	.000	.096	87.879	1.000
Roy's largest root	.106	43.940(b)	2.000	832.000	.000	.096	87.879	1.000

Each F tests the multivariate effect of ETHNIC. These tests are based on the linearly independent pairwise comparisons among the estimated marginal means.

a Computed using alpha = .025

b Exact statistic

Univariate Tests

Dependent Variable		Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power(a)
READING	**Contrast**	218276.183	1	218276.183	77.648	.000	.085	77.648	1.000
	Error	2341635.943	833	2811.088					
MATH	**Contrast**	243175.099	1	243175.099	65.363	.000	.073	65.363	1.000
	Error	3099065.292	833	3720.366					

The F tests the effect of ETHNIC. This test is based on the linearly independent pairwise comparisons among the estimated marginal means.

a Computed using alpha = .025

3. GRADE

Estimates

Dependent Variable	GRADE	Mean	Std. Error	97.5% Confidence Interval	
				Lower Bound	Upper Bound
READING	**Third**	440.904	4.170	431.541	450.267
	Fifth	453.371	3.683	445.101	461.641
MATH	**Third**	490.128	4.797	479.357	500.900
	Fifth	446.075	4.237	436.561	455.589

Pairwise Comparisons

Dependent Variable	(I) GRADE	(J) GRADE	Mean Difference (I-J)	Std. Error	Sig.(a)	97.5% Confidence Interval for Difference(a)	
						Lower Bound	Upper Bound

READING	**Third**	**Fifth**	-12.467	5.563	.025	-24.959	2.548E-02
	Fifth	**Third**	12.467	5.563	.025	-2.548E-02	24.959
MATH	**Third**	**Fifth**	44.054(*)	6.400	.000	29.683	58.425
	Fifth	**Third**	-44.054(*)	6.400	.000	-58.425	-29.683

Based on estimated marginal means

* The mean difference is significant at the .025 level.

a Adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustments).

Multivariate Tests

	Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power(a)
Pillai's trace	.127	60.383(b)	2.000	832.000	.000	.127	120.767	1.000
Wilks' lambda	.873	60.383(b)	2.000	832.000	.000	.127	120.767	1.000
Hotelling's trace	.145	60.383(b)	2.000	832.000	.000	.127	120.767	1.000
Roy's largest root	.145	60.383(b)	2.000	832.000	.000	.127	120.767	1.000

Each F tests the multivariate effect of GRADE. These tests are based on the linearly independent pairwise comparisons among the estimated marginal means.

a Computed using alpha = .025

b Exact statistic

Univariate Tests

Dependent Variable		Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power(a)
READING	**Contrast**	14116.023	1	14116.023	5.022	.025	.006	5.022	.498
	Error	2341635.943	833	2811.088					
MATH	**Contrast**	176267.820	1	176267.820	47.379	.000	.054	47.379	1.000
	Error	3099065.292	833	3720.366					

The F tests the effect of GRADE. This test is based on the linearly independent pairwise comparisons among the estimated marginal means.

a Computed using alpha = .025

4. GENDER

Estimates

		Mean	Std. Error	97.5% Confidence Interval	
Dependent Variable	**GENDER**			**Lower Bound**	**Upper Bound**

READING	**Male**	439.193	3.841	430.568	447.818
	Female	455.082	4.025	446.045	464.119
MATH	**Male**	466.171	4.419	456.248	476.093
	Female	470.033	4.630	459.636	480.429

Pairwise Comparisons

Dependent Variable	(I) GENDER	(J) GENDER	Mean Difference (I-J)	Std. Error	Sig.(a)	97.5% Confidence Interval for Difference(a)	
						Lower Bound	Upper Bound
READING	**Male**	**Female**	-15.889(*)	5.563	.004	-28.381	-3.397
	Female	**Male**	15.889(*)	5.563	.004	3.397	28.381
MATH	**Male**	**Female**	-3.862	6.400	.546	-18.233	10.509
	Female	**Male**	3.862	6.400	.546	-10.509	18.233

Based on estimated marginal means

* The mean difference is significant at the .025 level.

a Adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustments).

Multivariate Tests

	Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power(a)
Pillai's trace	.013	5.307(b)	2.000	832.000	.005	.013	10.613	.760
Wilks' lambda	.987	5.307(b)	2.000	832.000	.005	.013	10.613	.760
Hotelling's trace	.013	5.307(b)	2.000	832.000	.005	.013	10.613	.760
Roy's largest root	.013	5.307(b)	2.000	832.000	.005	.013	10.613	.760

Each F tests the multivariate effect of GENDER. These tests are based on the linearly independent pairwise comparisons among the estimated marginal means.

a Computed using alpha = .025

b Exact statistic

Univariate Tests

Dependent Variable		Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power(a)
READING	**Contrast**	22929.053	1	22929.053	8.157	.004	.010	8.157	.729
	Error	2341635.943	833	2811.088					
MATH	**Contrast**	1354.689	1	1354.689	.364	.546	.000	.364	.053

	Error	3099065.292	833	3720.366					

The F tests the effect of GENDER. This test is based on the linearly independent pairwise comparisons among the estimated marginal means.

a Computed using alpha = .025

5. CALTYPE

Estimates

Dependent Variable	CALTYPE	Mean	Std. Error	97.5% Confidence Interval	
				Lower Bound	Upper Bound
READING	**Traditional**	438.954	3.141	431.902	446.007
	Year-Round	455.321	4.592	445.010	465.632
MATH	**Traditional**	464.653	3.613	456.540	472.767
	Year-Round	471.550	5.283	459.688	483.412

Pairwise Comparisons

Dependent Variable	(I) CALTYPE	(J) CALTYPE	Mean Difference (I-J)	Std. Error	Sig.(a)	97.5% Confidence Interval for Difference(a)	
						Lower Bound	Upper Bound
READING	**Traditional**	**Year-Round**	-16.366(*)	5.563	.003	-28.858	-3.874
	Year-Round	**Traditional**	16.366(*)	5.563	.003	3.874	28.858
MATH	**Traditional**	**Year-Round**	-6.896	6.400	.282	-21.268	7.475
	Year-Round	**Traditional**	6.896	6.400	.282	-7.475	21.268

Based on estimated marginal means

* The mean difference is significant at the .025 level.

a Adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustments).

Multivariate Tests

	Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power(a)
Pillai's trace	.012	4.849(b)	2.000	832.000	.008	.012	9.699	.715
Wilks' lambda	.988	4.849(b)	2.000	832.000	.008	.012	9.699	.715

Hotelling's trace	.012	4.849(b)	2.000	832.000	.008	.012	9.699	.715
Roy's largest root	.012	4.849(b)	2.000	832.000	.008	.012	9.699	.715

Each F tests the multivariate effect of CALTYPE. These tests are based on the linearly independent pairwise comparisons among the estimated marginal means.

a Computed using alpha = .025

b Exact statistic

Univariate Tests

Dependent Variable		Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power(a)
READING	**Contrast**	24327.802	1	24327.802	8.654	.003	.010	8.654	.757
	Error	2341635.943	833	2811.088					
MATH	**Contrast**	4319.428	1	4319.428	1.161	.282	.001	1.161	.122
	Error	3099065.292	833	3720.366					

The F tests the effect of CALTYPE. This test is based on the linearly independent pairwise comparisons among the estimated marginal means.

a Computed using alpha = .025

6. ETHNIC * GRADE

			Mean	Std. Error	97.5% Confidence Interval	
Dependent Variable	**ETHNIC**	**GRADE**			**Lower Bound**	**Upper Bound**
READING	**Black**	**Third**	412.884	3.081	405.964	419.803
		Fifth	432.368	2.773	426.143	438.594
	White	**Third**	468.925	7.749	451.524	486.325
		Fifth	474.373	6.824	459.050	489.697
MATH	**Black**	**Third**	460.463	3.545	452.503	468.423
		Fifth	423.997	3.190	416.834	431.159
	White	**Third**	519.794	8.915	499.777	539.812
		Fifth	468.153	7.851	450.524	485.781

7. ETHNIC * GENDER

			Mean	Std. Error	97.5% Confidence Interval	
Dependent Variable	**ETHNIC**	**GENDER**			**Lower Bound**	**Upper Bound**
READING	**Black**	**Male**	417.670	3.116	410.673	424.667

		Female	427.582	2.734	421.443	433.720
	White	Male	460.716	7.022	444.949	476.483
		Female	482.582	7.571	465.582	499.582
MATH	Black	Male	440.742	3.585	432.693	448.792
		Female	443.717	3.145	436.655	450.779
	White	Male	491.599	8.078	473.460	509.737
		Female	496.348	8.709	476.791	515.905

8. GRADE * GENDER

			Mean	Std. Error	97.5% Confidence Interval	
Dependent Variable	GRADE	GENDER			Lower Bound	Upper Bound
READING	Third	Male	430.996	5.889	417.772	444.219
		Female	450.812	5.905	437.554	464.071
	Fifth	Male	447.390	4.933	436.314	458.467
		Female	459.351	5.470	447.068	471.635
MATH	Third	Male	488.451	6.775	473.238	503.664
		Female	491.806	6.793	476.553	507.059
	Fifth	Male	443.890	5.675	431.147	456.633
		Female	448.259	6.293	434.128	462.390

9. ETHNIC * GRADE * GENDER

				Mean	Std. Error	97.5% Confidence Interval	
Dependent Variable	ETHNIC	GRADE	GENDER			Lower Bound	Upper Bound
READING	Black	Third	Male	405.131	4.647	394.696	415.565
			Female	420.636	4.048	411.546	429.727
		Fifth	Male	430.210	4.153	420.884	439.535
			Female	434.527	3.675	426.276	442.778
	White	Third	Male	456.861	10.823	432.559	481.163
			Female	480.988	11.094	456.078	505.899
		Fifth	Male	464.571	8.949	444.476	484.666
			Female	484.176	10.305	461.036	507.315
MATH	Black	Third	Male	457.208	5.346	445.204	469.211
			Female	463.718	4.657	453.260	474.176
		Fifth	Male	424.277	4.778	413.549	435.005

			Female	423.716	4.227	414.224	433.208
	White	**Third**	**Male**	519.694	12.451	491.737	547.652
			Female	519.894	12.762	491.237	548.551
		Fifth	**Male**	463.503	10.295	440.385	486.621
			Female	472.802	11.855	446.182	499.423

10. ETHNIC * CALTYPE

			Mean	Std. Error	97.5% Confidence Interval	
Dependent Variable	**ETHNIC**	**CALTYPE**			**Lower Bound**	**Upper Bound**
READING	**Black**	**Traditional**	423.374	3.240	416.099	430.649
		Year-Round	421.878	2.586	416.072	427.684
	White	**Traditional**	454.535	5.382	442.451	466.620
		Year-Round	488.763	8.812	468.975	508.551
MATH	**Black**	**Traditional**	444.073	3.727	435.704	452.442
		Year-Round	440.386	2.975	433.707	447.066
	White	**Traditional**	485.234	6.191	471.331	499.136
		Year-Round	502.713	10.138	479.949	525.477

11. GRADE * CALTYPE

			Mean	Std. Error	97.5% Confidence Interval	
Dependent Variable	**GRADE**	**CALTYPE**			**Lower Bound**	**Upper Bound**
READING	**Third**	**Traditional**	429.176	4.638	418.762	439.590
		Year-Round	452.632	6.931	437.070	468.195
	Fifth	**Traditional**	448.733	4.237	439.219	458.246
		Year-Round	458.009	6.026	444.479	471.539
MATH	**Third**	**Traditional**	484.901	5.335	472.920	496.882
		Year-Round	495.356	7.973	477.453	513.260
	Fifth	**Traditional**	444.406	4.874	433.462	455.350
		Year-Round	447.743	6.932	432.178	463.309

12. ETHNIC * GRADE * CALTYPE

	Mean	Std. Error	97.5% Confidence Interval

Dependent Variable	ETHNIC	GRADE	CALTYPE			Lower Bound	Upper Bound
READING	Black	Third	Traditional	410.550	4.932	399.475	421.625
			Year-Round	415.217	3.695	406.919	423.515
		Fifth	Traditional	436.198	4.202	426.761	445.634
			Year-Round	428.539	3.618	420.416	436.663
	White	Third	Traditional	447.802	7.856	430.162	465.442
			Year-Round	490.048	13.360	460.049	520.046
		Fifth	Traditional	461.268	7.358	444.746	477.790
			Year-Round	487.479	11.495	461.666	513.291
MATH	Black	Third	Traditional	458.340	5.674	445.599	471.081
			Year-Round	462.585	4.251	453.039	472.131
		Fifth	Traditional	429.806	4.835	418.950	440.662
			Year-Round	418.187	4.162	408.842	427.533
	White	Third	Traditional	511.461	9.037	491.168	531.755
			Year-Round	528.127	15.369	493.616	562.638
		Fifth	Traditional	459.006	8.465	439.999	478.013
			Year-Round	477.299	13.225	447.604	506.994

13. GENDER * CALTYPE

			Mean	Std. Error	97.5% Confidence Interval	
Dependent Variable	GENDER	CALTYPE			Lower Bound	Upper Bound
READING	Male	Traditional	431.714	4.719	421.118	442.311
		Year-Round	446.672	6.062	433.060	460.283
	Female	Traditional	446.194	4.146	436.884	455.505
		Year-Round	463.969	6.899	448.478	479.461
MATH	Male	Traditional	461.536	5.429	449.346	473.727
		Year-Round	470.805	6.974	455.146	486.464
	Female	Traditional	467.771	4.770	457.060	478.481
		Year-Round	472.295	7.937	454.473	490.117

14. ETHNIC * GENDER * CALTYPE

				Mean	Std. Error	97.5% Confidence Interval	
Dependent Variable	ETHNIC	GENDER	CALTYPE			Lower Bound	Upper Bound

READING	Black	Male	Traditional	417.753	4.899	406.751	428.754
			Year-Round	417.587	3.852	408.939	426.236
		Female	Traditional	428.995	4.241	419.472	438.517
			Year-Round	426.169	3.451	418.420	433.918
	White	Male	Traditional	445.676	8.067	427.562	463.789
			Year-Round	475.756	11.495	449.944	501.569
		Female	Traditional	463.394	7.126	447.393	479.396
			Year-Round	501.770	13.360	471.771	531.769
MATH	Black	Male	Traditional	441.508	5.636	428.852	454.164
			Year-Round	439.977	4.431	430.027	449.927
		Female	Traditional	446.638	4.879	435.684	457.593
			Year-Round	440.796	3.970	431.881	449.710
	White	Male	Traditional	481.565	9.280	460.727	502.403
			Year-Round	501.632	13.225	471.937	531.328
		Female	Traditional	488.903	8.198	470.494	507.311
			Year-Round	503.794	15.369	469.283	538.305

15. GRADE * GENDER * CALTYPE

				Mean	Std. Error	97.5% Confidence Interval	
Dependent Variable	GRADE	GENDER	CALTYPE			Lower Bound	Upper Bound
READING	Third	Male	Traditional	420.124	7.250	403.845	436.403
			Year-Round	441.868	9.282	421.024	462.711
		Female	Traditional	438.228	5.786	425.235	451.221
			Year-Round	463.397	10.294	440.281	486.512
	Fifth	Male	Traditional	443.305	6.043	429.736	456.874
			Year-Round	451.476	7.799	433.965	468.987
		Female	Traditional	454.161	5.940	440.823	467.499
			Year-Round	464.542	9.188	443.911	485.173
MATH	Third	Male	Traditional	480.841	8.340	462.113	499.568
			Year-Round	496.061	10.679	472.083	520.040
		Female	Traditional	488.961	6.657	474.014	503.908
			Year-Round	494.651	11.843	468.058	521.243
	Fifth	Male	Traditional	442.232	6.952	426.622	457.842
			Year-Round	445.548	8.972	425.403	465.693
		Female	Traditional	446.580	6.833	431.236	461.924
			Year-Round	449.938	10.570	426.204	473.673

16. ETHNIC * GRADE * GENDER * CALTYPE								
					Mean	Std. Error	97.5% Confidence Interval	
Dependent Variable	ETHNIC	GRADE	GENDER	CALTYPE			Lower Bound	Upper Bound
READING	Black	Third	Male	Traditional	402.192	7.353	385.683	418.702
				Year-Round	408.069	5.684	395.305	420.833
			Female	Traditional	418.908	6.576	404.141	433.674
				Year-Round	422.365	4.723	411.759	432.971
		Fifth	Male	Traditional	433.313	6.477	418.769	447.858
				Year-Round	427.106	5.199	415.432	438.780
			Female	Traditional	439.082	5.356	427.055	451.108
				Year-Round	429.973	5.032	418.673	441.273
	White	Third	Male	Traditional	438.056	12.497	409.994	466.117
				Year-Round	475.667	17.673	435.982	515.351
			Female	Traditional	457.548	9.523	436.166	478.931
				Year-Round	504.429	20.040	459.431	549.427
		Fifth	Male	Traditional	453.296	10.204	430.384	476.208
				Year-Round	475.846	14.705	442.827	508.866
			Female	Traditional	469.240	10.604	445.429	493.051
				Year-Round	499.111	17.673	459.427	538.796
MATH	Black	Third	Male	Traditional	452.404	8.458	433.411	471.397
				Year-Round	462.011	6.539	447.328	476.695
			Female	Traditional	464.277	7.565	447.289	481.265
				Year-Round	463.159	5.434	450.957	475.360
		Fifth	Male	Traditional	430.612	7.452	413.879	447.344
				Year-Round	417.942	5.981	404.512	431.372
			Female	Traditional	429.000	6.161	415.165	442.835
				Year-Round	418.432	5.789	405.433	431.432

	White	**Third**	**Male**	**Traditional**	509.278	14.377	476.996	541.560
				Year-Round	530.111	20.332	484.457	575.765
			Female	**Traditional**	513.645	10.955	489.046	538.244
				Year-Round	526.143	23.054	474.376	577.909
		Fifth	**Male**	**Traditional**	453.852	11.738	427.494	480.210
				Year-Round	473.154	16.917	435.168	511.140
			Female	**Traditional**	464.160	12.199	436.768	491.552
				Year-Round	481.444	20.332	435.791	527.098