

DISSERTATION

SOCIOECONOMIC STATUS AND SUMMER LEARNING LOSS IN READING

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## ABSTRACT

### SOCIOECONOMIC STATUS AND SUMMER LEARNING LOSS IN READING

As the United States battles an economic recession, the numbers of students attending our schools who live in poverty continue to increase. The rigorous requirements of the No Child Let Behind Act of 2001 put accountability systems in place to make sure school systems implement reforms to close achievement gaps and guarantee success for all. One systemic reform conversation occurring increasingly to remove an existing barrier to this success is re-thinking the school calendar.

The foremost purpose of this study was to determine if there were differences in reading skill levels gained or lost over summer vacation based on socioeconomic status. Gender and grade level differences over the summer vacation were also analyzed. Factorial, repeated measures ANOVA was utilized to answer research questions. Statistical significance was determined at the  $p < .05$  level. Results revealed a lack of significant main effect of SES on DRA2 and DIBELS gain/loss scores over the summer and an increase of summer reading loss from the first grade to fourth grade.

A number of implications for action and recommendations for further research are provided at the conclusion of this study. These include the need to review summer

programming and calendar modification, implementation of a complete response to intervention system, and teacher professional development for bridging the poverty gap.

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## **CHAPTER 1: INTRODUCTION**

### **Background and Setting**

The achievement gap between students of differing socioeconomic status has drawn increased attention from 1983 until 2011 among scholars in student achievement. This section will document the continuing concern and increased emphasis on student achievement. In 1983, “A Nation at Risk,” an open letter and report to the American public, examined problems and posed solutions for the American educational system. The National Commission on Excellence in Education (National Commission on Excellence in Education, 1983) ignited urgency for systemic change, claiming “we must dedicate ourselves to the reform of our educational system for the benefit of all—old and young alike, affluent and poor, majority and minority. Learning is the indispensable investment required for success in the ‘information age’ we are entering.”

In response, school leaders and scholars committed to the disaggregation of data to identify specific gaps between gender, ethnicity, language acquisition, socioeconomic status, and special education designation. Investigations into necessary reform to close identified gaps grew. The No Child Left Behind Act of 2001 put accountability systems in place to make sure reforms to close achievement gaps remained integral to the work of school leaders and educators.

One systemic reform conversation occurring increasingly is re-thinking the school calendar. In America’s early formal education years, school calendars were determined to

fit the needs of each individual community (Harris Cooper, 2003). The predominant nine-month calendar was created in 1900, when mobility created the need for a standardized calendar. At that time, the agricultural cycle was a driving factor in the lives of most families, and climate control in buildings was extremely limited. Although the importance of the agricultural calendar on the livelihood of families has decreased dramatically, and the ability to regulate indoor climates to make the learning environment suitable throughout the year has increased, the nine-month calendar has remained. Research into the gap in student achievement over the summer months has identified a widening of the gap between students in higher socio-economic homes and students of poverty, especially when students are already struggling academically (H. Cooper, Nye, Charlton, Lindsay, & Greathouse, 1996; Helf, Konrad, & Algozzine, 2008). In 2010, 19% of students qualifying for free and reduced meals scored unsatisfactory on the Colorado Student Achievement Program (CSAP) reading test, compared to five percent of students not qualifying for free and reduced meals. Additionally, 27% of students qualifying for free and reduced meals scored partially proficient, 51% scored proficient, and only two percent scored advanced. At the same time, 12% of students not eligible for free and reduced meals scored partially proficient, 73% were proficient, and nine percent were advanced (Colorado Department of Education, 2010). The five year averages for the CSAP reading test are consistent with the 2010 scores, within .8 percent.

In order to identify gaps in student achievement, it is important to have assessment systems in place to target areas of need early and progress monitor students with skill deficiencies as they are receiving interventions to aid in acceleration. The Colorado Basic Literacy Act (Colorado General Assembly, 1997) was created with the

purpose of making sure all students had the literacy abilities to be successful in formal education and life after formal schooling by the end of third grade. To meet the requirements of the Colorado Basic Literacy Act (CBLA), schools have implemented beginning, mid and end-of-year benchmarking assessments. Results from these assessments are used to identify students who need targeted interventions to help them catch up to grade level proficiency targets. School districts can choose which assessments they will use from a list of state-approved CBLA assessments. The school district in this study used the Developmental Reading Assessment (DRA2) and Dynamic Indicators of Basic Early Literacy Skills (DIBELS).

CBLA requires school districts to provide interventions for students who demonstrate lack of performance on benchmarking assessments. While schools have reformed their instructional strategies to provide these interventions within the school day and the calendar year, there has been little reform in the school calendar or summer programming. Through the analysis of the data collected from these assessments, building and school district leaders can determine if the summer break is significantly contributing to the achievement gap problem and design reform strategies if a significant need is determined.

### **The Research Problem**

The numbers of students in poor families is increasing in our schools. This increase in students of poverty requires us to examine ways in which we can help these students be more academically successful. Research over the last three decades, from Heyns 1978 study to Cooper's 1996 meta-analysis, has shown that the three month

summer vacation leads to an increase in the achievement gap between students of poverty and students of more affluent homes. It is our responsibility to provide each student with the best education possible. Current mandates like No Child Left Behind (NCLB) hold schools responsible for the annual progress of all students, including students of poverty. Both growth and academic achievement are closely monitored to make sure all students are academically successful. This achievement gap between students of poverty and students from more affluent homes is a problem that warrants further research and data collection to drive action within our school systems.

### **Purpose of Study**

The purpose of this study is to determine if there are differences in reading skill levels gained or lost over summer vacation based on socioeconomic status. Gender and grade level differences over the summer vacation will also be analyzed. If needed, recommendations to summer programming and/or the academic schedule will be made.

### **Research Questions**

To study the differences in reading skill over summer vacation, the following main research questions were asked:

1. Is there a difference in DRA2 and/or DIBELS scores between students qualifying for free, reduced, free and reduced and non-free and reduced meals?
2. Is there a difference in DRA2 and/or DIBELS scores between grade levels?
3. Is there a difference in DRA2 and/or DIBELS scores between male and female?

4. Is there an interaction between grade level, gender, the four levels of free and reduced categories, and reading skills?

### **Definition of Terms**

#### **Socioeconomic Status (SES)**

Students receiving or not receiving free and reduced meals at school

#### **Students of Poverty**

Students receiving free or reduced meals at school

#### **Summer Learning Loss**

The difference between reading scores on a common assessment administered in both the spring and the fall.

#### **Phonics**

“Instructional practices that emphasize how spellings are related to speech sounds in systematic ways” (Snow, Burns, & Griffin, 1998, p. 52).

#### **Phonemic Awareness**

“The insight that every spoken word can be conceived as a sequence of phonemes. Because phonemes are the units of sound that are represented by the letters of an alphabet, an awareness of phonemes is key to understanding the logic of the alphabetic principle and this to the learnability of phonics and spelling” (Snow, et al., 1998, p. 52).



**Vocabulary**

“[S]tored information about the meanings and pronunciation of words” (Snow, et al., 1998, p. 46) .

**Fluency**

The ability to show “more rapid oscillations between form-focused and meaning focused reading: she can rely on automatic processing of form and focus on meaning until she encounters an unfamiliar term . . .whereupon the processing of meaning is disrupted while the form is decoded” (Snow, et al., 1998, p. 33).

**Comprehension**

The ability to understand, both literally and figuratively, what one is reading.

**Dynamic Indicators of Basic Early Literacy Skills (DIBELS)**

“[A] series of short tests given to children in kindergarten through third grade to screen and monitor their progress in learning the necessary skills to become successful readers” (Florida Center for Reading Research, 2000).

**Developmental Reading Assessment (DRA2)**

An assessment designed to be “a valid measurement of accuracy, fluency, and comprehension as evidenced by the following validity measurements: (1) Criterion-

Related Validity, (2) Construct Validity, and (3) Content Validity” (Pearson Education, 2010).

## **Title I**

“Title I of the Elementary and Secondary Education Act of 1965. . . The purpose of this title is to ensure that all children have a fair, equal, and significant opportunity to obtain a high-quality education and reach, at minimum, proficiency on challenging State academic achievement standards and state academic assessments” (U.S. Department of Education, 2004).

## **Delimitations**

This study is delimited to students in kindergarten through fifth grade at Thompson School District in northern Colorado. The primary reason for this is for convenience. This delimitation also keeps the data as consistent as possible. Although there are several neighboring school districts from which data may be available, there is not consistency between assessments used to determine reading skill. In addition, there is not consistency with neighboring districts on the timing of these assessments. Because the purpose of this study is to look at differences in the summer achievement gap, consistencies in timing of assessments are critical. Thus, the results of this study will be limited to public elementary schools and may not be generalized to private institutions.

### **Limitations**

This is a comparative study; therefore, participants are not randomized to groups. For this reason, there is no way to ensure the groups are equivalent. The independent variables, poverty level and gender, are attribute variables that are not controlled by the researcher. Instrumentation is an additional threat to internal validity. (Gliner, Morgan, & Leech, 2009). Both the DIBELS and DRA2 assessments are administered one-on-one to students. The DIBELS assessment has strict testing protocols, yielding high consistency in scoring. Adversely, while the DRA2 assessment has some specific testing protocols, grading is more subjective.

The theoretical population for this study is all kindergarten through fifth grade students. The accessible population is all kindergarten through fifth grade students in the Thompson School District who remained in the district from spring to fall. Since this is a convenience sample, it cannot be assumed that the accessible population represents the demographic characteristics of the theoretical population (Gliner, et al., 2009). In addition, due to the current economic downturn, free and reduce lunch percentages across the Thompson School District have risen quickly over the past three years. This has resulted in many families who are new to poverty, which can impact the validity of this study.

### **Researcher's Perspective**

I am an elementary school principal in a Title I school with demographics that are not consistent with the larger community of which my school is a part. Fifty-four percent of students at my school qualify for free lunch, with a total of 72% of our students

currently qualifying for free and reduced lunch. Our district elementary schools range from having 13% of students qualify for free and reduced meals to 72%. District-wide, our non-poverty students consistently out-perform our students from lower socioeconomic status (SES). My school missed our Adequate Yearly Progress target for free and reduced students, which places us at risk of being on NCLB school improvement. This means that public school choice would be offered and financially supported for any child whose parent wishes to transfer them from our school. Our state has a four year process for school improvement. Year four of school improvement results in restructuring.

In addition to not meeting some of the state's accountability measures due to a gap in academic performance, several programs have recently been cut. Due to budget cuts, our city tutoring center was cut in 2009 and our district dropped our summer school program in the summer of 2010. As I began pursuing my PhD at Colorado State University in the department of Education Leadership, Renewal and Change, my determination to explore the poverty student achievement gap drove my research interests. As I began my initial exploration into this topic, I found the concerns about academic achievement in students of poverty, and specifically on the correlations between summer break and the achievement to be reflected in professional literature.

In a world where people and relationships are at the heart of what we do, quantitative data analysis is a key aspect of my job as a principal. More and more of my time is spent disaggregating data to determine trends, identify specific gaps in learning and delivery, set measurable goals, and monitor progress. I guide my staff through postpositivist work, designing processes to identify causes that impact our outcomes

(Creswell, 2008). However, there is an additional worldview at play in the work I do. The advocacy and participatory worldview is the piece that drives me to take the causes identified and determine reform to close our achievement gaps (Creswell, 2008).

### **Summary and Conclusions**

Despite the limitations of this study, there is reason to conduct this study. Both the poverty achievement gap and the summer achievement gap are areas of national concern and importance. This study has the potential to determine differences in achievement that could lead to system-wide reform to better address the academic needs of our students in poverty.

While schools have been implementing interventions within the classroom and within the traditional school year to respond to individual student need, these interventions have not been enough to catch up many students after they have fallen behind, or to prevent students from falling behind initially. However, schools and school districts have been slow to identify external factors that may assist in eliminating identified academic shortfalls. This study will address one such external factor that could positively impact the educational system for students of poverty.

## **CHAPTER 2: LITERATURE REVIEW**

### **School-wide Needs for Effective Literacy Instruction**

Literacy skills are integral to overall academic success. Students cannot adequately access content in other academic areas without solid reading skills including: phonics, phonemic awareness, fluency, vocabulary, and comprehension. In order for schools to be effective overall, they need to have effective leadership, effective teaching, a focus on learning, positive school culture, high and appropriate expectations, an emphasis on student responsibilities and rights, progress monitoring, professional development for staff, and parent involvement (Teddle & Reynolds, 2001). In addition to demonstrating these qualities of effective schools, schools that demonstrate dramatic growth in reading are committed to a focused, balanced reading program, teachers are held accountable and supported by building and district leadership, time-on-task is intensively monitored, goals and standards are clear, a coordinated curriculum is in place, the staff works collaboratively as a strong team, students and staff are continuously progress monitored, individual teacher needs are supported, whole staff professional development is provided, and there is a consistent philosophy and investment in high performance, and fostering a love of reading (Carlson, Shagle-Shah, & Ramirez, 1999). The entire school staff must share a dedication to literacy development that permeates their culture.

Teachers are becoming experts at assessing for each of the five basic components of comprehensive balanced literacy to identify areas of necessary remediation, in addition to creating inclusive instructional programs to provide students with all of the skills necessary to become strong readers. A balanced literacy program must include a dedication to phonics in early literacy, regular practice in grammar, a focus on fluency, vocabulary and comprehension, and a solid literature-based approach addressing both fiction and non-fiction (Carlson, et al., 1999). The ultimate goal is to produce readers who can accurately comprehend text. However, mastery of each of the other four basic skills is necessary to achieve the highest level of comprehension. Students develop these skills progressively, and focus shifts as students move from grade level to grade level. Phonics and word attack skills have been found to be the strongest predictors of comprehension at the end of first grade, while vocabulary became the strongest predictor in second and third grade (Hemphill & Tivnan, 2008). Teachers are expected to guide students to mastery of these foundational skills early in their education.

### **Early Literacy Instructional Practices**

#### **Overview of Early Literacy**

Early literacy development sets the stage for students to excel or struggle academically later in their educational career. Prior literacy skills have been found to significantly impact future literacy skills, indicating an imperative need for early literacy intervention (Nguyen, 2010). Teachers and school leaders have to become intentional and focused in their quest to develop these skills. Early literacy skills that highly correlate with later literacy are sound naming; phonological awareness; the ability to rapidly name

letters, objects, and colors; students' writing of their own name; and phonological memory. Strategies that have been proven to be effective in building these early literacy skills include decoding work, shared reading, home programs, strong preschool and kindergarten programs, and language enhancement interventions (Lonigan & Shanahan, 2009). Classroom teachers, individual schools, school districts, and state educational systems all recognize the need to develop early literacy skills. While this goal is shared, there are multiple philosophies and belief systems about the most effective ways to build early literacy.

### **Comprehension in Early Literacy**

Routman (2003) argues that the current practices of emphasizing word calling and increasing rate or speed of reading compromise comprehension skills. Comprehension instruction is a vital component of literacy instruction from the beginning, as are shared reading, guided reading, and independent reading. Independent reading is a practice that begins prior to student's development of the ability to read and comprehend words and sentences. Kindergarten daily independent-reading routines take the form of students looking at books. Often, kindergarten students are looking at books that have been read by the teacher or read in a shared manner. This practice builds confidence and stamina (Reggie Routman, 2003). If early literacy is focused solely at the phonics and phonemic awareness stages, students will not gain the book sense skills they need to move fluidly into comprehension as the earlier stages of reading development become solidified.



## **Phonics in Early Literacy**

Adversely, there is a large amount of research pointing to the importance of teaching phonics first. Adams (1990, p. 237) states that “the reading process is driven by the visual recognition of individual letters in familiar ordered sequence and is critically supported by the translation of those strings of letters into their phonological correspondences.” Adams believes that students must first develop a strong recognition of letters, then work on letter-to-sound correspondence. From there, students can move to reading connected texts and develop the understanding that reading can be used for both information gathering and entertainment. While Adams advocates for a stronger phonics approach, there is agreement with Routman’s advocacy for the necessity of all students, especially struggling readers, to have increased time to read independently, noting that “low achievers are given less classroom opportunity than their on-schedule peers to read text or to read text independently” (Adams, 1990, p. 417). Although Adams work is two decades old, it remains a seminal work in early reading instructional methods and has been reprinted many times to meet the continued demand by teachers of early literacy.

## **Code-Breaking in Early Literacy**

Gentry (2007) focuses more on the decoding aspects of early reading instruction and identifies the relationships between sounds and letters as foundational elements of beginning reading. Gentry identifies five phases of code-breaking. In the first phase, *operations without letter knowledge*, students are just beginning to build confidence with reading. In this phase, students also begin to read their own name. In the second phase, *operations with letters but without sounds*, students can name letters and begin to match

some letters with sounds. They begin to become familiar with the format of reading, including turning pages and directionality. Instructional strategies in this phase include syllable work and rhyming, as well as initial sound recognition. In the third phase, *operations with partial phonemic awareness*, students begin to memorize early readers. The strategy of underwriting is an important instructional component at this stage. When teachers use the strategy of underwriting, students develop the ability to read the underwriting back to the teacher. In the fourth phase, *operations with full phonemic awareness*, students build up their sight word memory and increase letter-to-sound correspondence. During this phase, important instruction includes work with word families and patterned words. In the fifth phase, *operations with full code and chunking knowledge*, students begin to have independence in reading. Word sorting becomes an important aspect of instruction during this stage. The stages identified by Gentry provide a guide for primary instructors, especially at the pre-school and kindergarten level, to both identify developmental stages and to identify instructional strategies to support students at their level and move them into the next developmental level.

## **Instructional Approaches**

### **A Shift in Programming**

In 2004, the Individuals with Disabilities in Education Act (IDEA) was reauthorized. Within this act was the first mention of Response to Intervention (RTI). RTI is a tiered model of instruction intended to identify individual students needs early, implement research-based instruction and intervention, progress monitor regularly to determine the impact of instruction and intervention, and include all stakeholders in

conversations and decisions about student instruction and intervention (Bruce, 2009). As schools began to develop plans for using the RTI model, the awareness and focus on research-based programs for instruction was heightened. A shift from teacher-created curriculum to more prescriptive programs implemented with fidelity occurred. This shift created some disagreement among school professionals. Some professionals trust in the research behind prescriptive programs and implement the strategies and materials of these prescriptive programs with fidelity, while other professionals disagree with the prescriptive approach. One argument from the latter group is that scripted programs do not allow teachers to redesign instruction to meet student needs. When adopting a highly prescriptive literacy program, school professionals must look at what the research shows about a specific program's results. They must also find a program that supports balanced literacy, teaches teachers how to use best practices, and is engaging for students (Parsons & Harrington, 2009). After a program is chosen, it is the school leader who must monitor for fidelity and classroom teachers who must monitor for student results.

### **Emphasis on Authentic Reading**

Whether a teacher is using a highly-prescriptive program for instruction or a more open program, there are best practices in delivering literacy instruction that have been found to yield high results. Adolescents who had authentic reading and writing-based instruction rather than skill based instruction have shown higher achievement in studies conducted between 1994 and 2005. A necessary factor in this achievement was student discussion from their reading in multiple formats (Phelps & North Central Regional Educational Lab, 2005).

A targeted study researching instructional approaches found that reading books independently versus workbook practice or basal reading yielded the highest growth in comprehension. Abundant book choice was necessary to motivate and engage struggling readers. When teachers used instructional approaches allowing student choice in guided and independent reading, reading from more than seven pages of fiction and non-fiction with 15 to 20 minutes of teacher monitored silent reading, including two expository texts and follow-up discussion on themes, students were most successful ( $M = 2.53$ ,  $SD = .61$ ), while workbook practice ( $M = 1.99$ ,  $SD = .67$ ), and situated practice ( $M = 1.31$ ,  $SD = .45$ ) yielded significantly lower scores  $F(4, 1352) = 55.01$ ,  $p < .001$  (Block, Parris, Reed, Whiteley, & Cleveland, 2009). In addition to the other four components of balanced literacy, engagement in text becomes an essential factor in building reading comprehension, especially as student reach adolescence.

To increase reading comprehension, students must engage in reading by making inferences, drawing on prior knowledge, creating mental images, posing questions, making predictions, and setting purpose (Grimes, 2004). While early literacy teachers tend to place higher focus on developing the basic skills of phonics, phonemic awareness, vocabulary, and fluency as students move toward comprehension, the development of these engagement strategies becomes increasingly important.

## **Comprehension as End Goal**

All of the research and practice on effective literacy instruction moves toward the end goal of comprehension. Comprehension requires solid attainment of all of the other components. While the other aspects of comprehensive balanced literacy have been argued and debated in research for decades, reading comprehension research has a relatively short history. The majority of our learning in this area has happened over the past 35 years, which can partially be attributed to the lack of controversy in the instruction of comprehension (Farstrup & Samuels, 2002). Research on students who are strong at comprehension shows that they engage in the following behaviors: active reading, setting and evaluating goals, pre-reading text and analyzing structural components, making predictions throughout the text, monitoring reading to select areas of needed rereading or skimming, questioning, defining of new vocabulary through various strategies, use of schema or background knowledge, recognition of the author's perspective, checking their understanding, evaluation of the content, reading "different kinds of text differently," paying attention to elements of a narrative, summarizing during an expository text, and mentally processing during and after reading (Farstrup & Samuels, 2002, pp. 205-206).

## **Modifications for High-Risk Populations**

As with other academic disciplines, literacy instruction has to be adapted to meet the individual needs of students. High-risk students require modified instructional practices in order to accelerate growth. Literacy instruction in classrooms achieving high results with high-risk adolescents use a variety of strategies to teach skills. Teachers in

these successful classrooms integrate test-taking skills; intentionally connect skills and ideas to other content areas; teach students how to plan, organize, and reflect; regularly engage students in critical thinking; and collaborate to build understanding (Phelps & North Central Regional Educational Lab, 2005).

### **Increased Need for Independent Reading**

According to Routman (2003), struggling readers are given the least amount of time to read independently. They are engaged in targeted, focused instruction, while their more skilled peers are independently reading. However, struggling readers have a heightened need for independent reading. Routman identifies ten proven strategies for struggling readers designed to increase their time with text. These strategies include creating original texts, shared reading, repeated reading of familiar texts, schema building prior to reading, paired reading in which students are paired with more advanced peers for new texts and less advanced readers with repeated texts, independent reading with books at a student's independent reading level, writing aloud, journaling, shared writing, and tutoring with students of different ages.

### **Pull-out Intervention Programs**

Some interventions and modification take place within the classroom, while other interventions take place in alternative settings. Book Buddies, Early Reading Intervention, First Steps, and Reading Recovery are some well known early literacy intervention programs, and Success for All is a popular school-wide program (Farstrup &

Samuels, 2002). With most of these programs, there are conflicting arguments about the level of student achievement, but these are some that demonstrate documented success.

When a student is struggling to read, teachers need to work very closely with that student to identify skill gaps and focus instruction to meet that student's particular need. For this reason, pull-out programs have gained in popularity. A trained interventionist can work with a small group of students who are identified as having similar struggles. While this small group format is helpful in delivering targeted instruction, it is vital that all teachers working with a student that is pulled out have a coherent instructional plan (Calkins, 2001). If a student who is already struggling is presented with conflicting strategies and expectations, he will become more confused and his reading progress will be limited.

## **Literacy Assessment**

### **Historical Overview**

In 1983, "A Nation at Risk," an open letter and report to the American public, examined problems and posed solutions for the American educational system. The National Commission on Excellence in Education (National Commission on Excellence in Education, 1983) ignited urgency for systemic change, claiming "we must dedicate ourselves to the reform of our educational system for the benefit of all—old and young alike, affluent and poor, majority and minority. Learning is the indispensable investment required for success in the 'information age' we are entering." In response, school leaders and scholars committed to the disaggregation of data to identify specific gaps in literacy achievement. Investigations into necessary reform to close identified gaps grew.

The No Child Left Behind Act (NCLB) of 2001 put accountability systems in place to make sure reforms to close achievement gaps remained integral to the work of school leaders and educators.

In order to identify gaps in student achievement, it has become important to have assessment systems in place to target areas of need early and progress monitor students with identified skill deficiencies as they are receiving interventions to aid in acceleration. The Colorado Basic Literacy Act (Colorado General Assembly, 1997) was created with the purpose of making sure all students had the literacy abilities to be successful in formal education and life by the end of third grade. To meet the requirements of the Colorado Basic Literacy Act (CBLA), schools have implemented beginning, middle and end-of-year benchmarking assessments. Results from these assessments are used to identify students who need targeted interventions to help them catch up to grade-level-proficiency targets. School districts can choose which assessments they will use from a list of state-approved CBLA assessments.

CBLA requires school districts to provide interventions for students who demonstrate lack of performance on benchmarking assessment. Teachers use these benchmark assessments to determine which students need intervention, which students are on grade level, and which students need acceleration. When a whole school is struggling with reading, it does not benefit from a single intervention program. Just as is the case with individual struggling readers, a struggling school has to take an intense look at what is working and what isn't working (Calkins, 2001). The only way to find these essential answers is through assessment and analysis of assessment results to determine root causes.



## **Authentic Assessments**

The most effective assessment takes place when there is high trust between a skilled instructor and a confident student. In an effective classroom, formative and summative assessments are used regularly to monitor student progress and inform instructional choices. Four recommended overarching strategies for authentic assessment are surveys to determine who students are and how they learn; observational assessments including questioning during discussion, anecdotal records, and developmental checklists; portfolios showcasing students' best work; and one-on-one conferences between teacher and student (Morrow, Gambrell, & Pressley, 2003). Authentic assessments are particularly helpful for classroom teachers to accurately gauge student mastery of concepts and skills.

## **Formal Progress Monitoring**

When a student is involved in a pull-out program, RTI directs regular assessment to monitor progress. While in-class progress monitoring of differentiated literacy instruction often takes a more authentic form, pull-out programs tend to use more formal assessments specifically designed to assess a specific skill, such as DIBELS or AIMSWeb. Both DIBELS and AIMSWeb are direct, short probes. They typically last one minute, and are given frequently to students. Students in a pull-out intervention will typically be given this type of assessment every other week, and groupings will be rearranged as needed to ensure continuous progress toward goals. Even after a student reaches his goals and exits a pull-out program, it is recommended that he continue regular

progress monitoring so any regression of progress can be quickly identified and targeted for intervention.

### **Connections between Instruction and Assessment**

The increase of emphasis on regular assessment to monitor student achievement in literacy has resulted in new research on literacy instruction and changes in educator philosophies of best practices in teaching students to read. Just as assessments have positively impacted teaching practice, literacy assessments have changed as their use has increased. While past assessments were used strictly as an accountability measure, teachers and school officials are learning to rely on assessments to guide in modification of curriculum and instruction, and students are using assessments to set individual goals and increase their responsibility for their own learning.

Adversely, the “overuse and misuse of testing and evaluation is still a major problem, and the current national emphasis on accountability is likely to exacerbate the problem” (Morrow, et al., 2003, p. 233). Therefore, we must be intelligent and careful about our use of literacy assessments. A balance between assessment and instruction must be maintained. Time, effort and funds must go toward training teachers to effectively administer and interpret assessment; training school officials on use of data for accountability and to identify school improvement needs; and guiding students through using their data to set realistic, attainable literacy achievement goals.

## **History of Poverty**

As the United States began a steady economic recession in the late 1990's, schools began focusing on adapting to the changes in needs of students and families living in poverty. Parents increasingly worked odd hours; their focus shifted to basic survival needs, and children were impacted behaviorally and academically. Parents were increasingly unable to be at home during the hours their children were home, limiting homework support, academic discourse, and time available to be partners in their child's school.

In addition to parenting factors, students in poverty homes lack many of the experiences and support systems of more affluent students. They are typically exposed to far less print, engage in less discussion in the home, and have fewer cultural experiences. Families living in poverty rarely take family trips to museums, zoos, plays, or other culture-building establishments. Students of poverty also have limited ability to participate in out-of-school lessons, or sports, which build work ethic, respect, self worth, and the ability to work as a part of a team.

## **Poverty Student Achievement Gap**

A synthesis of multiple authors of school effectiveness research (Teddle & Reynolds, 2001) concluded that school influence, compared to differences within students' personal lives, such as poverty level, is relatively small. However, while socio-economic status (SES) has a great impact on student success, schools can impact student achievement by 12-15%, which can provide strong long-term effects in closing the

achievement gap between students in low SES households, traditionally defined as students receiving free or reduced meals, and students living in higher SES households.

### **Physical Factors**

The poverty gap is a problem that is not specific to the United States. A study of thirty countries found that socio-economic factors account for 21% of student performance differences in reading (Marks, 2006). Researchers and educators have identified multiple factors that play a role in contributing to these performance differences, not all of which are centered on formal academic development. Health, food, and parenting add to a student's physical environment and experiences outside of the school day to contribute to academic performance.

Poor people are more likely to have low birth weight children. Low birth weight children often have oxygen deficiencies and hemorrhaging, which lead to brain functioning difficulties. One important brain function difficulty often seen in low birth weight children is difficulty with memory. In addition, food insufficiencies impact children's ability to learn. The correlation between birth weight and IQ is about .70, with low birth weight children averaging IQ scores 11 points lower than children born at normal and higher birth weight (Berliner, 2009).

Nutrition deficiencies continue to impact children as they grow older. Households below the poverty line were found to have a rate of food insufficiency that was 3.4 times higher than households above the poverty line (Berliner, 2009). When students lack basic needs, such as food, their academic focus decreases from a physiological and emotional standpoint.

## **Parenting Factors**

Parenting is another factor outside of the school that contributes to the level of student success. However, early poverty has been significantly linked to a lowered level of parenting skills. This lower level of parenting skills adversely impacts student reading skills (Lee, 2009). Parents in poverty situations often work multiple jobs and work during the hours when their children are home, leaving little time for quality academic support and educational discourse. Many parents in poverty do not have strong educational backgrounds themselves and do not place the same emphasis on education as parents living in higher socio-economic ranges. Students from homes in the poverty level do not have the same background experiences, nor do they have models of being successful in school (Ediger, 2008).

Parents in high SES groups have more resources and stronger determination to get their children in schools with records of higher academic achievement. Students in higher ability groupings tend to show more significant gains (Marks, 2006). Marks' study was a study across 32 countries, so there was not a common assessment to determine gains. However, the breadth of the study across countries demonstrates that the impacts of ability groupings are not dependent on school, district, or region.

Family environment is believed to be the primary contributor to early literacy and language development. The strength of the family environment is strongly linked with socioeconomic status (Aikens & Barbarin, 2008). Students from higher SES homes are typically surrounded by print and regularly engage in discourse intentionally directed toward learning. Low-income students are less likely to attend academically based pre-schools, typically do not live in print-rich environments, and are less likely to have

parents that promote routines that build language and literacy skills (Hemphill & Tivnan, 2008). When students lack this environment at home, they enter school with an immediate disadvantage and performance gap.

### **Mobility Factors**

The trajectory of learning for students coming from poverty typically needs to be higher than their more economically advantaged peers, and these gains need to be maintained from year to year. Consistency in curriculum, routine, and expectations is critical in maintaining this high trajectory. However, students living in poverty tend to have higher mobility rates, which is detrimental to consistency. David Berliner reports that “About 6.5% of all children in the United States have been in their current home for six months or less. But that rate climbs to more than 10% among poor children. In fact, 30% of the nation’s poorest children have attended at least three different schools by third grade,” and students “who move three or more times between the ages of 4-7 are 20% less likely than non-movers to graduate high school”(2009). When students move frequently, educational time is lost as the student must adapt to a new physical environment at home and school, new friends, new teaching styles, new expectations, new curriculum, and new routines.

### **Impact of Sustained Poverty**

Not only do high-poverty students enter school with a gap in early literacy skills, as they continue in poverty, the gap between them and students not in poverty tends to widen. Early poverty has a negative effect on student reading scores as children grow

older, especially in children living in persistent poverty, but also those in transitional poverty. While both persistent ( $\beta = -.08, p < .05$ ) and transitional ( $\beta = -.07, p < .05$ ) poverty students scored significantly lower in reading at age five than children not from poverty, the trajectory decreased ( $\beta = -.07, p < .10$ ) in persistent poverty students over time, thus widening the gap, while the trajectory stayed the same ( $\beta = -.02, ns$ ) in transitional poverty students (Lee, 2009). Students living in homes new to poverty and temporarily in poverty during their early literacy-forming years started with a gap that stayed consistent throughout their years of schools. These students kept up, but did not catch up. Students who entered school in poverty and continued in poverty entered with a gap that widened over the years. These students fell farther and farther behind national norms.

### **Literacy and Poverty**

The reading gap between children in poverty and children not in poverty appears immediately in their formal education. A study of the Kindergarten Cohort of 1998-1999 in the Early Childhood Longitudinal Study looked in depth at reading trajectories of students for different economic backgrounds. Reading achievement differences of 11.1 points were found between students of the highest and lowest SES groups. This gap grew to 16.1 points by the end of third grade. Higher negative impacts on reading growth, especially on the rate of reading growth between the spring of kindergarten and the spring of first grade, were found in schools with a high percentage of students in poverty. Within these schools, there was no evidence of impact due to teacher background,

including experience; professional development; or classroom instruction on rate of growth. As SES increased, so did both initial reading skill and rate of reading skill acquisition over time (Aikens & Barbarin, 2008).

### **Specific Skill and Grade Level Impacts of Poverty**

Not all early literacy skills seem to be impacted by poverty, but overall comprehension suffers due to the combination of solid and weak skills. High-poverty students in Boston were assessed and found to exhibit high levels of word recognition and word attack skills. However, their vocabulary and ability to segment phonemes of longer words were below grade level expectations (Hemphill & Tivnan, 2008). The five basic components of Comprehensive Balanced Literacy are phonics, phonemic awareness, fluency, vocabulary, and comprehension. These skills build upon each other, building up to comprehension. If any of the building skills are missing, comprehension suffers and the comprehension gap will continue to widen.

The greatest difference in literacy scores of students of varying SES was between the spring of kindergarten and the spring of first grade. This difference points to the extreme need of a strong early literacy program, focusing on all aspects of Comprehensive Balanced Literacy, for students of poverty. It also leads to the exploration of the impact of gaps in instruction during summer or long vacations and research on possible programming and systems to increase the learning trajectories of children in poverty.



## **Implications for Teachers**

It is important for teachers to know their demographics, become aware of trends and tendencies of teachers in similar demographics, and plan instruction to minimize negative tendencies. Teachers in four schools, two Title One schools, or schools identified as having a high percentage of low socio-economic students, and two non-Title schools, were studied to compare instructional practices. Teachers in the Title One schools were found to spend significantly more time in transitions and have more negative feedback than the teachers in the non-Title schools. In addition, the teachers in Title One schools spent more time engaged in non-instructional talk; there was more time when students were not learning and teachers were not teaching; and student left the room more frequently. Varying literacy time between whole group, small group, and independent work time has proven to increase learning and decrease behavior problems (Stichter, Stormont, & Lewis, 2009). Teachers working with high-risk populations that have a tendency to have increased behavior problems have to consider strategies that minimize behavioral-intervention time and maximize instructional time.

## **Programming Considerations in Closing Literacy Poverty Gap**

When school systems and staff recognize the gaps in literacy achievement between students of poverty and students in more economically advantaged homes, they can begin to search out resources and strategies to use with students of poverty to prevent or minimize reading difficulties. In the quest for resources that lead to developing an understanding of students living in poverty, the work of Ruby Payne has been both exalted and criticized. Critics of Payne's work have challenged the stereotypes presented

in her work and have criticized it as a work that advocates for people of poverty to learn to work within the middle-class educational system rather than presenting ways to change a system that is flawed (Gorski, 2005). On the other hand, Payne's work is often seen as a seminal work for schools in developing an understanding of poverty. Payne (2001) professes that students of poverty come to school lacking cognitive strategies. She presents specific interventions designed to explicitly teach the missing cognitive strategies through the stages of input, elaboration, and output.

Allington (2001) focuses increasing the volume of reading to improve the skills of struggling readers, citing analyses indicating that increasing the amount of time students spend reading silently during a school day by five minutes could result in gains of an additional month on reading achievement tests. Students need to spend time actually reading versus time doing other activities, such as worksheets and paperwork, that can detract from increasing reading skills. Classrooms need to be well equipped with large libraries of leveled books so students have access to a variety of materials at their independent reading level to access during silent reading time.

### **Literacy Instruction by Grade Level**

Closing the achievement gap begins in kindergarten. Kindergarten is where the foundation is established for developing strong literacy ability. There are two overarching goals of a kindergarten literacy program. The first is to provide kindergarten students with all of the basic structural elements of reading and solid organizational print concepts. The second goal is to foster attitudes in which students are motivated to read and feel success in reading (Snow, et al., 1998). Current guidelines indicate that all

students should be reading by the end of kindergarten. It is important for kindergarten teachers to read that goal in a way that builds student confidence and begins to establish a love of reading.

By first grade, different views on best practices begin to emerge. Whole language, embedded phonics, and direct code instruction are three different widely-used forms of first grade instruction. The Foorman study in Houston compared these three approaches. Findings concluded that direct code instruction yielded the highest word recognition and fastest reading rates. However, the whole language approach resulted in students with the most positive attitudes toward reading (Snow, et al., 1998). It is important to recognize the positive and negative correlations with both of these approaches so student skill levels can be accelerated while maintaining the positive reading attitude that kindergarten teachers are fostering.

Second and third grades are crucial in moving students from learning to read to becoming the fully capable independent readers they are expected to be from fourth grade on. Comprehension of varied forms and difficulties of text is critical as students make the transition from primary to intermediate. Students who are fluent readers enter second grade having read and practiced over the summer. Students who were struggling to read fluently at the end of first often regress over the summer. Second grade teachers have to provide a structured review to recover skills lost over the summer, in addition to making sure that the alphabetic principle is firmly grasped by students. Second grade is when students are developmentally ready to read expressively and with comprehension (Snow, et al., 1998). The end of the second grade and beginning of third grade year is often thought of as the “make it or break it” time. “Those who are not on track by third grade

have little chance of catching up” (Snow, et al., 1998, p. 212). Early literacy is vital to the overall literacy success of students. If students of poverty are entering kindergarten with gaps, special focus is essential to closing these gaps efficiently and effectively. If gaps are left open, the chances of these gaps increasing is far greater than the chance that these gaps will continue to diminish as students progress through their school career.

## **Gender and Early Literacy**

### **Skill Levels Entering Kindergarten**

Students enter kindergarten with varying literacy skills and abilities. The wide range of initial skill levels can be attributed to a variety of factors, including but not limited to age, race, socioeconomic status, familial background, preschool attendance, and gender. One study focusing on gender differences for students entering kindergarten found that female students, assessed through the Phonological Awareness Literacy Screening, entered kindergarten with higher skills in alphabetic knowledge, print knowledge, concept of work, name writing, beginning sounds, and verbal memory. The only area in which students females did not enter with an advantage was rhyming (Justice, Invernizzi, Geller, Sullivan, & Welsch, 2005). However, although the female skill advantages for these components of early literacy were statistically significant, the effect sizes for most areas were small. The effect size for beginning sounds was minimal ( $d = 0.11$ ), while the effect size for name writing approached medium ( $d = 0.42$ ). All other effect sizes fell in the range between ( $d = 0.21$ ) to ( $d = 0.27$ ). The differences in boys versus girls entering kindergarten are negligible. However, the fact that girls came

into kindergarten with higher scores in almost every area is a factor that should not be overlooked when constructing early literacy curriculum.

Adversely, a second study looking specifically at name writing in kindergarten students found name writing to have the smallest effect size between genders (Haney, Bissonnette, & Behnken, 2003). The other literacy skills analyzed in this study, each yielding larger effects between genders, were letter-word identification, non-word identification, phonological awareness, expressive vocabulary, and alphabet knowledge. In each of these areas, girls exhibited higher skill levels than boys. This study did find name writing skills to be significantly correlated to other basic writing skills. The researchers in this study developed their own name writing screener to assess this skill, while the other skills were assessed using highly-tested and widely-used tools. Further work with this screener to develop higher validity and reliability could strengthen this study and give educators stronger research to guide their practice.

### **Gender Differences throughout Elementary**

Research into a gender gap does not end at kindergarten, nor is it specific to the United States. A study of first grade students in the United States, India and Taiwan reported evidence of girls developing language and reading more fluently earlier than boys (Soderman, Chhikara, Hsiu-Ching, & Kuo, 1999). As in the kindergarten studies, first grade girls were ahead of boys in every cognitive and reading ability analyzed, including visual memory, verbal memory, directionality, visual motor integration, and eye tracking. The most significant gaps were in reading skills ( $p = .004$ ) and visual memory ( $p = .005$ ). Also notably significant ( $p < .05$ ) were the “child’s ability to identify

right/left orientation of figures in space” and the “ability to track non-symbolic figures across the printed page without losing his/her space” (Soderman, et al., 1999, p. 12). In this study, tracking ability was found to be the best predictor of first grade reading ability ( $F = 98.28, p < .0001$ ).

A second study using DIBELS to analyze gender differences in kindergarten through fifth grade confirmed prior studies indicating significantly higher scores for girls entering kindergarten (Below, Skinner, Fearing, & Sorrell, 2010). However, gender differences on letter naming, phoneme segmentation, and nonsense word fluency were not significant in first grade, nor were oral reading fluency scores in first through third grade. There was a small significant female oral reading fluency strength at fourth grade ( $ES = 0.176$ ), but no significance in fifth grade. In fact, fifth grade boys increased in oral reading fluency throughout the spring semester, yielding spring male and female scores that were nearly equal. This study was cross-sectional instead of longitudinal. A longitudinal study would present a more complete cohort picture.

MacFarlane’s (2001) findings show that differences in reading achievement between genders remains statistically insignificant in sixth through eighth grade, but literacy experiences are varied. Female students are more likely to have visited the library as a young child, currently view themselves as the primary reader in the home, and discuss reading with family. In addition, mothers are seen by both boys and girls to be the primary support in reading in the home for both girls and boys, which may have an impact on boys’ attitude toward reading.

The results of these studies indicate a necessity to analyze student skill immediately upon entering kindergarten and design learning experiences that will move

each child as quickly as possible toward high levels of reading skill and ability. If kindergarten students enter school with a gap, then progress at the same rate throughout elementary, the gap is never closed. However, if strategies and scaffolding are used effectively to catch males up to their female classmates early in kindergarten, the gap should remain closed throughout elementary.

### **Addressing the Performance of Boys**

With the release of *A Nation's Report Card* indicating that girls outperformed boys in both reading and writing every year since 1992, with the gap widening between 2005 and 2009, a flurry of educational articles appeared addressing the gap between males and females (National Assessment of Educational Progress, 2009). Researchers have examined additional contributing factors, including social contexts, leading to the disparity between the scores of males and females and given advice for moving forward.

Researchers and educational writers point to looking at the whole picture before jumping to the conclusion that boys are underachieving. Gender is not the only factor contributing to literacy achievement. When it intersects with racial or economic factors, we may see increased disparity. In addition, the perceived femininity of school can play a large role in the achievement of male students (Watson, Kehler, & Martino, 2010). Not only do the perceptions of success in school inhibiting masculinity need to be challenged, boy-friendly resources need to be added. In efforts to remove violence from school and from educational resources, action-oriented books have been removed, which traditionally appeal to male students (Sadowski, 2010). By removing action-oriented texts that may be violent in nature, we have furthered the feminization of our educational

system. A lack of interest and motivation will not aid in increasing the reading ability of our young male students. Other possible strategies to decrease the gender gap, although controversial in their impacts, are same-sex classrooms and recruitment and increased hiring of male educators.

A lack of reading ability can mask ability in other content areas due to the text-heavy nature of our standardized tests in mathematics, science and social studies. Sadowski (2010) urges readers to look beyond gender when dealing with educational gaps. By increasing access to reading support across all grade levels, basing decisions on data at the individual school and district level rather than jumping into action due to national trends, and looking at the big picture by analyzing all sub-populations, schools can target instruction to meet the needs of all struggling readers. Regardless of their defining characteristics, male or female, rich or poor, from any and all ethnic backgrounds, students who struggle with reading need additional strategies and support to succeed. In order to increase the achievement of all students, the gaps among all subgroups need to be addressed.

## **Comprehensive Literacy Plan**

### **Components of a Comprehensive Literacy Program**

Calkins (2001) identifies nine component structures of a complete, effective literacy program. These component structures are reading aloud, reading workshop, classroom lending library, assessment, work with struggling readers, phonics and word work, book talks, centers, and writing workshop. During a read aloud, a teacher reads various text aloud to the class for a specific purpose. This structure also includes shared



reading. Reading workshop includes time in which students are reading independently, mini-lessons on specific reading strategies, individual or partner conferences, and guided reading lessons. Classroom lending libraries are less about instruction and more about resource structures. Calkins (p. 44) recommends “*at least* twenty books per child in a lending library and exponentially more for K-2 children, who read smaller books.”

Assessment of students must be continuous in order to build upon student strengths and maintain progress toward reading goals. Work with struggling readers is based on moving both the students and the school toward specific goals. Rather than isolated phonics work, Calkins advocates for the incorporation of phonics and word work into other structures of reading instruction. Book-talks occur during some read-alouds, when students are engaged in discussion about text. Centers may be book clubs or literature circles designed to teach students to talk about text at a deeper level. Finally, writing workshop is a structure in which students work through the writing process both independently and collaboratively.

## **Organizational Considerations of a Comprehensive Plan**

### **Whole Class Instruction**

Finding a balance between whole class, small group, and individual instruction takes thoughtful planning and careful analysis of individual student data and purpose of instruction. Whole group instruction can be effectively used to present information meeting the general needs of students. Benefits of whole class instruction are that a teacher can easily share the same information with all students, it creates a community of learners, and it can reduce some of the negative impacts of placing labels on learners due

to specific skill levels (Morrow, et al., 2003). Adversely, it is difficult to meet the differentiated individual needs of students through an exclusively whole class format.

### **Ability Groups**

Smaller ability-based groups are often created in an attempt to efficiently meet the differentiated needs of students. When a classroom teacher groups students by ability level, there is typically a high, medium and low structure. While teachers may take care to not explicitly label these groups, it does not take long for students to figure out the level of their particular group. This hierarchy leads to some negative results, including changes in the level of instruction and use of best-practices, lowered teacher expectations, lowered student self-esteem, and negative social impacts (Morrow, et al., 2003). To reduce these negative impacts, groups have to be more fluid and possibly more skill-dependent instead of overall achievement-dependent.

### **Flexible Groups**

While flexible groups are based on student ability, they are not permanent. Students can move between groups as their skills and ability levels change. This practice reduces the negative outcomes of ability grouping. Adversely, since groups are ever-changing, the risk of classroom chaos increases (Morrow, et al., 2003). The classroom teacher must dedicate time to establishing clear classroom routines and expectations for center activities during small group instruction so the routines can be maintained during group fluctuations. Flexible groups can be homogenous or heterogeneous, or a combination of the two. A teacher may be meeting with a homogenous group conducting

a guided reading lesson, while centers for independent reading, shared reading, listening centers, word work and writing centers could be heterogeneous.

### **One-on-One Work**

Teachers can work time in for one-on-one work with students within either whole class instruction or small group instruction. During whole class independent reading workshop, a teacher may have individual students conferences focusing on specific assessment, strategies, and student goals (Calkins, 2001). A one-on-one writing conference could take place during writing workshop to provide affirmations, reinforce skills, assess areas of needed development and achievement, instruct on next steps for each individual writer, and set and monitor goals (Regie Routman, 2005). During a small group guided reading lesson, a teacher will listen to an individual student read a piece of text, utilizing running records or anecdotal notes to monitor areas of needed growth. In some cases, students may receive one-on-one instruction in a pull-out situation for a specific, targeted need.

## **Interrupted Schedules of Implementation**

### **Historical Overview**

The No Child Left Behind Act of 2001 created a new standard for school accountability. This act required states to assess students annually with standards-based assessments in order to receive federal funding. States had to determine guidelines for proficiency. In 2010, the stakes for school accountability were ratcheted up again. States began to compete for Race to the Top Grants. Turning around the nation's lowest

performing schools was one of the key focus areas of these grants. State and school leaders began to take a harder, more focused look at factors contributing to achievement success and failure. Every aspect of our traditional system of schooling began to be scrutinized.

One aspect of the traditional school system that has begun to spark serious discussion is the school calendar. When the nine-month calendar became standard, 85% of families in the United States were involved in agriculture. In present day, only 3% of families make their living in agriculture (Cooper, 2003). Those 3% of families tend to live in rural areas, where there may still be some need for students to be home to help on a family farm during the busy summer farming months. However, this is no longer a need for the vast majority of families. This antiquated school calendar that is no longer essential to the livelihood of most families creates an unnecessary three month gap in formal education.

### **Impact of Learning Time**

Overall instructional time is both a frustration for classroom teachers and a hot-point for instructional reformists. The bar has been rising on instructional goals since the introduction of No Child left Behind. These increased goals cannot be met within the present assigned instructional time. Learning time must be increased, as was recommended by “A Nation At Risk” over 25 years ago (Gewertz, 2009). The increase in time spent on literacy has to be drastic in order to achieve the results necessary to meet state and federal regulations. One study found that just increasing the literacy instructional block to ninety minutes and continuing traditional basal instruction was not

enough to significantly increase comprehension. A drastic increase of instructional time, coupled with best practices is necessary to see the kind of gains in reading comprehension we need (Block, et al., 2009).

### **Summer Programming**

Summer programming is varied widely and the results are as varied as the programs themselves. Summer programs that focus on building skills through a highly prescriptive curriculum have been found to produce short-term gains. Many schools are moving toward prize-based, independent reading programs for longer-lasting gains. Students who have high access to books read significantly more books, so prize-based systems are being used to increase volume of reading. In fact, heavy readers, students reading over three books during the summer, averaged 4.49 points higher on a common literacy assessment than light readers, students reading zero or one book over the summer, and 2.57 points higher than moderate readers (Kim, 2004).

The Knowledge is Power Program (KIPP) has shown strong gains in low-income student achievement. In KIPP schools, students attend this rigorous program 8.5 hours per day, five days a week. Additionally, they attend school every other Saturday and for three weeks in the summer. Two thirds of charter schools adopt longer days or longer years. (Gewertz, 2009). School leaders must investigate how to use scarce resources to extend the learning day or learning time (Carlson, et al., 1999). While literacy instruction in the classroom is dependent on teacher delivery, it is the job of the school leader to keep up to date on current research and lead and support their staff in providing the best instruction through the most effective methods possible for their students.

Another summer school program producing strong results is the Building Educated Leaders for Life (BELL) program. This is an accelerated summer learning program that was found to have positive impacts on reading scores of low-income students. BELL students attend the program five days a week, starting just after the Independence Day holiday and running through mid-August. Students are in this program designed to bridge the summer gap for 25 days. The program runs five days a week. Mondays through Thursdays, students receive two hours of reading instruction, one hour of math instruction, lunch, and then three hours of extension activities. The extension activities include opportunities such as art, dance, and sports. On Friday mornings, community members speak to the students about the impact of education on their success. Friday afternoons are dedicated to field trips around town. These field trips give students the opportunity to visit museums, libraries, and community centers in their own town (Capizzano, Bischoff, Woodroffe, Chaplin, & Mathematica Policy Research, 2007). The BELL program is designed to give underprivileged students extracurricular opportunities afforded to more privileged students, in addition to intensive academic intervention. It is designed to mimic the summer experience a student in a wealthier household may have on a day-to-day basis.

A third plan to stop the summer achievement slide has taken place in Fairfax County, Virginia. At Timber Lane Elementary School, students attend school on a modified calendar that includes extensions to the school year. Students start school in late July. In October, students can participate in the first intersession. Students who need intervention are specifically invited to attend, but there are various extension opportunities provided for students opting to attend who do not need remediation or

intervention. A second intersession takes place just after winter break, and a third backs up to spring break. Summer break is reduced to five to six weeks. After six years at Timber Lane, students attended 30 more weeks of school than their peers, the equivalent to an additional year of formal education (Schulte, 2009). Although this plan is more costly due to increased staffing needs, the benefits were significant. Student achievement rates rose. Students maintained reading levels over the shorter summer break. Discipline referrals dropped. Attendance rates rose.

A fourth innovative school option is taking place in a high school in Brooklyn, New York. Furman Brown has spent over a decade working with schedules to make the Brooklyn Generation School a reality. In this cost-neutral model, teachers instruct smaller class sizes and have two hours a day for collaborative planning. This works through a system in which teachers have different roles teaching both foundations courses and studio courses. They also stagger their schedules. Twice a year, the teachers teaching foundations and studio courses have month-long breaks while their peers step in to teach intensive courses focused on college and career preparation. The result is a 20 day extended year for students without extending the 180 day teacher contract (Sawchuk, 2010). These forms of creative scheduling and creative allocation of funds are necessary if we are truly committed to leaving no child behind.

### **Summer Programming versus Calendar Modifications**

Although focused summer learning programs do yield increases in summer achievement, the question remains, are summer gap programs enough? A study using the Early Childhood Longitudinal Study Kindergarten Class of 1998-99 found that children

who took part in out-of-school summer activities between their kindergarten and first grade year did demonstrate slightly higher summer learning than their peers who did not take part in summer activities. However, this additional learning was not enough to compensate for the summer learning gap between high and low socioeconomic students (Burkam, Ready, Lee, & LoGerfo, 2004). A study designed to look at the impacts of summer school for students identified as having Limited English Proficiency (LEP) found that summer school helped LEP students keep up with their peers. LEP students not participating in summer school lost significantly more in math achievement over the summer than non-LEP students who were not in summer school. In the LEP and non-LEP groups of students who did attend summer school, there was not a significant gap in summer loss (MacLean, 2007). Another study of students, in kindergarten through second grade, showed that students who had received intense reading intervention during the school year showed higher gains over the summer than those who did not (Helf, et al., 2008), indicating that changes may need to be more continuous than a summer intervention or extension program.

### **Calendar Modification Options**

Three options for revision of the traditional school calendar are often discussed. The school year can be extended, summer school can be implemented, or the calendar can be modified. Cooper (2003) studied these three options. Students in the United States spend far less time in school than many nations with whom we compete. For example, students in Japan are in school 240 days per year, while students in the United States are in school 175 to 180 days a year. Increasing the school year by one week would only add



3% to our students' formal education time. Cooper states that an increase of 35 days is needed for a noticeable change. The second option, summer school, must be a focused remediation or enrichment program. Traditionally, the highest gains in focused summer school are made by middle class students, continuing to increase the achievement gap. However, all students show gains when in a focus summer school, so this option is one to consider regardless of the gap. The third option is modified calendars. Results of modified calendars are ambiguous. Results do show an increase in achievement for low socio-economic and poor achieving students, which could result in a narrowing of the achievement gap. Additionally, school staff, parents and students in schools with modified calendars are positive about results.

Positive support for year-round calendars is growing. Research is showing that summer school serves too few students and typically lacks the specific focus needed to increase summer learning (Ballinger, 1995). Proponents of year-round calendars point to many reasons to consider year-round calendars. Year-round calendars are conducive to meeting the differentiated learning needs of students. These calendars have built-in intersession weeks, which provide the opportunity to provide remediation and enrichment in a timely manner. Year-round calendars have been proven to help students who do not speak English at home in both academics and language acquisition, and students maintain their interest in learning. Extracurricular activities can happen throughout the year instead of being compacted into short, intense seasons. Finally, a year-long calendar provides opportunities for year-long staff professional development (Ballinger, 1995). Year-round calendars are also being investigated in schools with space and/or critical economic issues.

There are several common formats for schools operating on a partial or school-wide, year-round calendar. In a single-track system, the entire school follows the same year-round schedule. A dual-track system is a school-within-a-school model. A single school will have one track of students and teachers operating on a traditional calendar, while the students and teachers on another track attend on a year-round calendar. A third system is a multi-track system. This is a system in which students and staff start and break at different times of the year with schedules overlapping, much like a musical round (Winter, 2005). Each of these systems has benefits and drawbacks. In a single-track system, there is consistency and a structure that allows for ease in collaborative practices. However, the building is still out of use for weeks at a time. A dual-track system allows for family choice and flexibility. However, there is a lack of consistency and there could be a tendency for demographics to lose their heterogeneous nature due to like-families choosing the same track. The multi-track system is often used to help with overcrowding and building efficiency issues. However, there is a lack of consistency within the school with this system, and collaboration between teachers and classrooms is difficult due to the variance in timing.

### **Connections Between Literacy Plan and School Calendar**

#### **Outcomes of Modified Calendars**

Research is mixed on the academic impact of year-round school. An analysis of multiple researchers and their studies indicated that low socioeconomic and struggling students were helped by a year-round system, and the student population, in general, in a year-round system is not declining in any academic area, and is showing improvement in

the majority of academic areas (Kerry & Davies, 1998). McMillen (2001) argued that earlier research on year-round calendars did not take into account number of days in school, as well as having other methodological errors. McMillen's research analyzed data for North Carolina schools on year-round tracks. Some of these schools were single schools and some were school-within-a-school systems in which one track operated on a traditional track while another operated on a year-round track. McMillen found that, similar to earlier studies, there was no significant overall difference in achievement between students on a year-round track and a traditional track. This lack of difference in student achievement was true in both school-wide, year-round schools and school-within-a-school studies. However, this study did find statistically significant differences between year-round schools and traditional calendar schools ( $t = 5.19, p < .05$ ) for reading when interactions between school calendar and prior achievement were analyzed. The school-within-a-school analysis did not yield the same significant interaction. However, the school-within-a-school study found a statistically significant interaction in reading achievement between the year-round track and level of parent education ( $t = -2.18, p < .05$ ). These results are consistent with earlier studies finding stronger positive impacts of year-round schools for specific sub-categories of students.

The majority of studies on the impacts of year-round schools take place at the primary, intermediate and secondary levels. Few studies address the impacts of year-round school on early learning. One study in Ontario looked specifically at students at the junior and senior kindergarten levels (ages four and five). Two schools with a traditional track and a modified, eleven-month track were used to collect data. Positive themes in the modified track included better retention of routines and academic and social skills, better

attendance and less teacher burnout. An additional positive theme was the lack of need for extended-time child care. Negative themes included differences in schedules for families with multiple students, inconsistency with child-care schedules and a potential split in the educational community. In addition, some support staff members were not present during the entire modified year (Winter, 2005). This study was purely qualitative, so no numerical data on student achievement were available.

Analysis of single studies and meta-analyses of multiple school calendar studies point to the conclusion that a year-round school calendar helps students struggling in literacy and students in poverty situations, and does not hurt stable students. Students in a year-round calendar do not suffer from the loss of reading ability, so the need to dedicate time at the beginning of the year to “catch students back up” is diminished. Since struggling students do not suffer from this loss, and non-struggling students do not make increased gains, the achievement gap is narrowed. Additional positive outcomes include staff, student and parent satisfaction; higher attendance rates; and the potential for better building efficiency.

However, as with summer school and extended year options, there are negative issues. School schedules have to be carefully planned and coordinated so families with children at multiple levels attending multiple schools can have coinciding breaks. Daycare providers have to make adaptations to their regular schedules. Summer coursework for teacher recertification can be a challenge. Many schools are not equipped with air conditioning systems necessary to create conducive learning environments during the hot summer months. This country also has a long tradition of a nine-month calendar, a tradition to which many people value and hold tightly.

The highest results in student achievement are seen when learning time is not just altered but extended. However this is a change that requires both a philosophical shift and additional funds due to increased staff time. Building and district officials need to think creatively and critically about leveraging time and funds to best meet the needs of all students.

### **Instructional Time, Poverty, and Literacy Achievement**

When students have combined disadvantages, such as students who do not speak English as their first language and live in poverty, we often see further increased educational gaps. These combined disadvantages have shown to be increased over the summer break. In a study of students who had limited English proficiency, students who were also living in poverty situations showed greater summer loss in both English and math than their limited English proficient peers not living in poverty (Nguyen, 2010). While these increases were not significant, they did demonstrate an important trend.

Students from poverty do not begin their education on a level playing field. They begin school with lower verbal and math skills, and these gaps increase from year to year (Burkam, et al., 2004). In one study, students who had to repeat kindergarten due to below-proficient standards showed significant and large summer losses (Nguyen, 2010). Formal school is only one part of a student's learning. Students are engaged in active discovery in other aspects of their environment when they are not in school (Wintre, 1986).

A study in Toronto, testing the assumption that summer loss is not a valid issue for middle class students, showed some academic skill area improvement over the

summer for English speaking, middle class students with mixed mathematics computation results (Wintre, 1986). For children in poverty, their opportunities for active discovery are limited. The negative impact of summer vacation is not limited to the early years of schooling. Summer learning loss grows as students progress from third to eighth grade (H. Cooper, et al., 1996; Kerry & Davies, 1998). School and public leaders have begun to take a serious look at traditional school calendars and summer programming to attempt to limit this achievement gap.

The gap between students of poverty and students in more economically privileged homes appears to be strongly impacted by the summer break. Karl Alexander, a Johns Hopkins sociologist, has found summer learning losses to account for two thirds of the achievement gap between high and low socioeconomic students (Gewertz, 2009). This research goes back decades. In 1978, Barbara Heyns found that not only did students in higher socioeconomic groups learn faster throughout the school year, the differences in learning rates between high and low socioeconomic students was even more significant over the summer break. Schools with high populations of students on free and reduced lunch showed losses over the summer in reading, while schools serving a more economically advantaged student population showed gains (Burkam, et al., 2004).

One study conducted with kindergarten through second grade students in a south eastern United States urban school system did not find significant evidence of reading regression during the summer break (Helf, et al., 2008). This study used an assessment that measured phonics and fluency, but did not measure reading comprehension. However, a meta-analysis of 39 studies indicated that students fall back one month, as measured by standardized tests, over the summer break (H. Cooper, et al., 1996). Overall,

loss over the summer break was greater in math and spelling than in reading. However, gains and losses were found to differ according to the socioeconomic status of students and their families. This meta-analysis indicates that students show a similar loss in math, regardless of their socioeconomic status. Significant differences were found in reading gains and losses over the summer depending on socioeconomic status. Reading achievement for high socioeconomic students grew over the summer, while it decreased for low socioeconomic students, resulting in a three month gap between high and low socioeconomic students over the summer break (H. Cooper, et al., 1996; Helf, et al., 2008). When students lose ability at an equal rate, such as was seen in math performance on standardized tests, whole-class review and remediation can take place. However, in the case of reading, the gap between poorer and more affluent students widened, creating an intense need for intervention for students of poverty.

### **Conclusion**

In order for a school to achieve consistently high literacy results, the school leader has to be intentional in building a culture and climate committed to literacy. School leaders have to develop a culture in which it is the norm for staff to plan together, creatively problem solve, and push each other to reach high standards. Both students and staff must have clear, measurable, high expectations and goals. Principals must use student results in teacher evaluations and hold firm to a no-excuses stance for low-performing students (Carlson, et al., 1999). A commitment to literacy has to extend beyond the classroom walls and reach the parents and the community. The following five

strategies can be used as a guide for school leaders to support policies to increase literacy achievement:

1. Engage key stakeholders in making literacy a priority.
2. Set high, rigorous goals, and standards.
3. Align resources, including the adoption of interventions for struggling readers.
4. Build capacity, especially through instructional coaches.
5. Progress monitor to drive instruction.

(Bates, Breslow, Hupert, Regional Educational Laboratory, & Islands, 2009).

Through the use of these five strategies and an unwavering dedication to creating a supportive, innovative culture, school leaders can empower systemic dedication to students' success in literacy.

Therefore, it is clear that a study of the summer achievement gap in students of different socioeconomic categories would be useful for the K-12 education system. A study of this nature is especially important in determining possible factors contributing to the achievement gap in literacy between students of poverty and students not living in poverty situations.



## **CHAPTER 3: RESEARCH METHODOLOGY**

### **Research Design and Rationale**

The purpose of this study is to determine if there are differences in reading skill levels gained or lost over summer vacation based on socioeconomic status. Grade level and gender differences over the summer vacation are also analyzed. This is a 4X5X2X2 non-experimental, comparative design with repeated measures on the last factor. Achievement scores from past assessments are analyzed, making this an ex post facto study. This study is a mixed design. Since all students have taken both the spring and fall assessments, it is a within-subjects design (Gliner, Morgan, &Leech, 2009). It is also a between-subjects design since it analyzes the differences between the independent variables, socio-economic status (SES), grade level, and gender and the dependent variable summer learning loss. The researcher is interested in understanding the problem of the achievement gap between students of poverty and students not of poverty. To gain a better understanding of the factors that may influence this problem, a quantitative method is used (Creswell, 2009). The data gathered were numerical pre-test and post-test data from standardized benchmarking assessments given to students in the spring and fall.

In this study, low SES students are defined as students receiving free or reduced meals. Summer learning loss is defined as the difference between reading scores

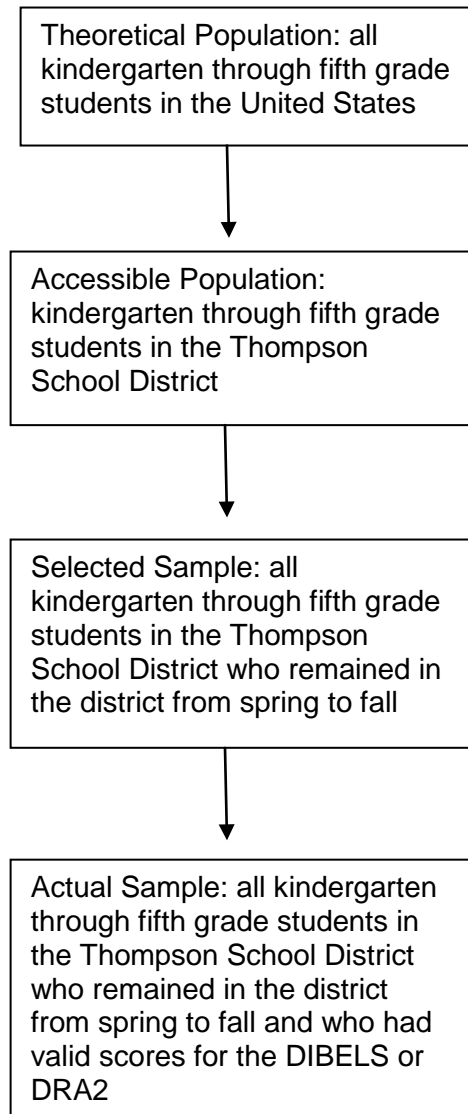
on common assessment administered in both the spring and the fall in the area of reading. Grade level is defined as the span of time from the spring of one grade level to the fall of the next grade level. First grade indicates the time from the end of kindergarten to the beginning of first grade. Second grade is the end of first to the beginning of second grade. Third grade is the end of second to the beginning of third grade. Fourth grade is the end of third to the beginning of fourth grade. Fifth grade is the end of fourth to the beginning of fifth grade. In the district analyzed for this study, students begin middle school in sixth grade, so there is no data beyond the summer between fourth and fifth grade.

The survey nature of this study allows data to be collected rapidly and with little monetary cost (Creswell, 2009). Data were collected on kindergarten to fifth grade students in years in which the same reading assessment, either DRA2 or DIBLELS, was administered in both the spring and the fall.

### **Sampling Design**

Due to time and cost constraints, a convenience sample is used. The use of a convenience sample poses a threat to external validity. As in the majority of social sciences quantitative studies, population external validity is compromised by not using a random sample (Gliner, et al., 2009). Figure 3.1 outlines the sampling framework used in this study. While population external validity is low, ecological external validity is medium to high. Students are tested in the classroom setting by their classroom teacher. Both DIBELS and DRA2 are one-on-one assessments. Therefore, if the classroom is not one in which teachers regularly confer and assess one-on-one with students, ecological

external validity would be lower than in classroom where one-on-one conferences and assessments were the norm.



**Figure 3.1** Sampling framework for summer learning loss study

### **Data Sources and Collection**

Data include scores from a nonrandom sampling, including all elementary students in the Thompson School District in Colorado, a district of approximately 15,000 students in kindergarten through twelfth grade. These data are readily available. There are 20 elementary schools in this district, which serves the cities of Loveland and Berthoud, as well as portions of Fort Collins and Johnstown. The district as a whole consistently outperforms the state in standardized achievement tests, but individual schools range from consistently underperforming to consistently exceeding Colorado benchmarks. Schools also range in socio-economic status from approximately 13% of students qualifying for free and reduced meals to approximately 72% of students qualifying for free and reduced meals. Both female and male students are included in this study.

### **Instrumentation**

Students were tested in the spring and fall using DRA2 or DIBELS. These assessments are on Colorado's approved list of assessments to be used for the benchmarking requirements of CBLA. Consistent assessments were administered throughout all elementary schools in the district. However, the assessment used changed from year-to-year, so the only data used in this study were from years in which the same assessment was used in both the spring and fall. The summer gain/loss scores from one set of DRA2 and one set of DIBELS scores are analyzed. The DRA2 provides a reading level for students, which is determined by a combination of accuracy, fluency and comprehension. DIBELS assesses early literacy skills, including phonological awareness, phonics, fluency, and comprehension. Phonological awareness is assessed through initial

sound fluency (ISF) and phonemic segmentation fluency (PSF). Phonics is assessed through nonsense word fluency (NWF) and oral reading fluency (ORF). Fluency is assessed through ORF. Comprehension is assessed through ORF. Each of the DIBELS assessments consists of one-minute probes.

### **Measurement Validity and Reliability**

Reports on the validity of DIBELS are mixed. Burke, Hagen-Burke, Kwok, and Parker (Burke, Hagan-Burke, Kwok, & Parker, 2009) cite three studies in 2005 by researchers who question the validity of DIBELS. Meanwhile, many other prominent authors are cited as affirming the construction and development of DIBELS, as well as the relevance of the skills assessed by DIBELS. Burke, et al. (2009) found DIBELS to provide “a fairly good picture of reading acquisition and has good predictive validity from a developmental reading perspective” (Burke, et al., 2009). Particularly strong was the correlation between oral reading fluency in second grade and letter naming fluency at kindergarten, with a significant correlation of .62. In a DIBELS reliability study of 75 kindergarten students, measurements for inter-rater reliability, test-retest reliability, and alternate forms reliability ranged from .80 to .90, except in Initial Phoneme Ability, which resulted in lower test-retest (.74) and equivalent forms (.64) scores (Elliott, Lee, & Tollefson, 2001).

Reviews of the validity and reliability of the DRA2 also yielded some conflicting results. Paris and Hoffman (Paris & Hoffman, 2004) found that informal reading inventories such as the DRA2 could “provide multiple indicators of children's oral reading, including rate, accuracy, prosody, retelling, and comprehension” (p.207). Burgin

and Hughes (Burgin & Hughes, 2009) found the content-related validity of the DRA2 to be high. They reported one concern to be with matching the topic to student background and interest. They also recommended administering the writing component during normal writing workshop time to lessen test-taking anxiety. Adversely, some concern has been reported due to the reliability of scoring DRA2 assessments and the negative impact this lack of reliability has on validity. Burgin and Hughes (2009) concluded that inter-rater reliability could be improved by having teachers assess the students of a peer.

### **Framework**

This quantitative study explores relationships between students from homes qualifying for free lunch, reduced lunch, combined free and reduced lunch, and not qualifying for free or reduced lunch. Gender differences are also explored. In this study, spring and fall Dynamic Indicators of Basic Early Literacy Skills (DIBELS) and Developmental Reading Assessment (DRA2) scores are used to find relationships between students of varying socioeconomic statuses and genders. Figure 3.2 is a diagram of the comparative approach that is used in this study.

			Independent Variable	Dependent Variable
<u>Sample</u>	<u>Assignment</u>	<u>Group</u>	<u>Attribute IV</u>	<u>Avg. Loss Score for Group</u>
Males F, R, F&R, N K-1, 1-2, 2-3, 3-4, 4-5	→ NR	Males (F, R, F&R, N) (K-1, 1-2, 2-3, 3-4, 4-5)	Level 1: M	O
Females F, R, F&R, N K-1, 1-2, 2-3, 3-4, 4-5	→ NR	Females (F, R, F&R, N) (K-1, 1-2, 2-3, 3-4, 4-5)	Level 2: F	O
Key: NR = Non Random Assignment O = Observation/score on the dependent variable F = Free Lunch, R = Reduced Lunch, F&R = Free and Reduced Lunch, N = Non- Free and Reduced Lunch K-1 = entering 1 <sup>st</sup> grade, 1-2 = entering 2 <sup>nd</sup> grade, 2-3 = entering 3 <sup>rd</sup> grade, 3-4 = entering 4 <sup>th</sup> grade, 4-5 = entering 5 <sup>th</sup> grade Note: Letters and numbers in parentheses indicate the participants in that group				

**Figure 3.2 Schematic diagram of research approach**

### Research Questions and Data Analysis Procedures

All overarching research questions in this study are composed of one dependent variable (summer learning loss). Each research question is restated followed by the statistics used for analysis.

1. Is there a difference in DRA2 and/or DIBELS scores between students qualifying for free, reduced, free and reduced and non-free and reduced meals?
2. Is there a difference in DRA2 and/or DIBELS scores between grade levels?
3. Is there a difference in DRA2 and/or DIBELS scores between male and female?

4. Is there an interaction between grade level, gender, the four levels of free and reduced categories, and reading skills?

In this 4x5x2x2 factorial design with repeated measures on the last factor study, achievement scores from past assessments will be analyzed, making this an ex post facto study. The study design is a within-subjects design, since all subjects take the spring and the fall assessments, as well as a between-subjects design. This comparative research study will analyze the differences between the independent variables, socio-economic status (SES), grade level, and gender and the dependent variable summer learning loss. A Factorial ANOVA with repeated measures on the last factor will be run for the summers between grades from kindergarten through fifth grade.

Figure 3.3 outlines the variables and statistics used for analysis for each overarching research question.



Research Question	Independent Variable(s)	Levels of IV	Dependent Variable	Statistics
Research Question 1:  Is there a difference in DRA2 and/or DIBELS scores between students qualifying for free, reduced, free and reduced and non-free and reduced meals?	Socio-economic Status	Students on Free Meals (F) Students on Reduced Meals (R) Students on Free and Reduced Meals (FR) Students on Non-Free and Reduced Meals (N)	Summer Learning Loss (spring to fall)	Factorial ANOVA with Repeated Measures on Last Factor
Research Question 2:  Is there a difference in DRA2 and/or DIBELS scores between grade levels?	Grade Level	Kindergarten to First (K-1) First to Second (K-2) Second to Third (2-3) Third to Fourth (3-4) Fourth to Fifth (4-5)	Summer Learning Loss (spring to fall)	Factorial ANOVA with Repeated Measures on Last Factor
Research Question 3:  Is there a difference in DRA2 and/or DIBELS scores between male and female?	Gender	Male (M) Female (F)	Summer Learning Loss (spring to fall)	Factorial ANOVA with Repeated Measures on Last Factor
Research Question 4:  Is there an interaction between gender, the four levels of free and reduced categories, and reading skills?	Socio-economic Status  Grade Level  Gender*	(M F K-1) (M F 1-2) (M F 2-3) (M F 3-4) (M F 4-5)	Summer Learning Loss (spring to fall)	Factorial ANOVA with Repeated Measures on Last Factor

*Note.* In Research Question 4, all possible combinations of male and female, free, reduced, and non free and reduced, and grades K-1, 1-2, 2-3, 3-4, and 4-5 will be analyzed

**Figure 3.3** Overarching research questions, variables and statistics

### **Data Collection Procedures**

The researcher met with the Director of Assessment at Thompson School District to outline the scope of the study and the approvals of the Colorado State University's Institutional Review Board (IRB), following IRB approval. Upon IRB approval, Thompson School District granted approval to the researcher to conduct research. The Director of Assessment provided raw scores for the assessments matching the criteria of this study in electronic form.

The researcher received raw data with student names and identification numbers removed to protect student confidentiality. Paper copies of original tests and scores were not used. The researcher imported raw data into SPSS for analysis.

### **Coded and Computed Variables and Missing Scores**

The following codes were used for analysis. One indicates the time from the end of kindergarten to the beginning of first grade. Two is the end of first to the beginning of second grade. Three is the end of second to the beginning of third grade. Four is the end of third to the beginning of fourth grade. Five is the end of fourth to the beginning of fifth grade. Free lunch was coded one. Reduced lunch was coded two. Free and reduced was coded three. Non-free and reduced lunch was coded zero. Gender was coded as Male = zero, Female = one. Missing scores for either spring or fall were eliminated from the data set. This lowered the sample size.

## **Summary**

The current state of the United States economy is one in which there exists a definite separation between people of poverty and people living above the line of poverty. This “have” and “have not” economical system is mirrored in the United State education system. This is a system in which achievement gaps are evident between students of poverty and their more economically privileged peers. Standards for closing the achievement gaps in education call for school officials to examine and minimize contributors to the poverty achievement gap (Dee, Jacob, & Urban, 2009). Without careful analysis of factors contributing to the poverty achievement gap, followed by targeted actions to actively close this gap, the “have” and “have not” system that is evident in our school systems will continue to widen, taking us further away from the goal of the nation to leave no child behind.

Colorado requires beginning of the year benchmarking and end of the year summative assessments in literacy in kindergarten through third grade (Colorado General Assembly, 1997). Thompson School District has extended this requirement through fifth grade. Careful analysis of this data makes it possible to determine if the summer vacation contributes to the poverty achievement gap.

Many reports have indicated little impact of summer vacation on overall student achievement, but more targeted studies have found higher negative impacts of summer vacation on students of poverty or students who are already struggling academically (H. Cooper, et al., 1996). Nonetheless, few school districts are taking steps to revise their calendars or summer programs based on these findings. For this reason, the research in this dissertation is important for future planning for the Thompson School District, and is

an important replication of earlier studies to expand the basis of results of the impact of summer vacation on summer learning loss in students of poverty. By examining all elementary students in one district, recommendations can be made to summer programming or the overall school calendar that could positively influence the poverty achievement gap.

## **CHAPTER 4: DATA PRESENTATION AND ANALYSIS**

### **Introduction**

As stated in Chapter One, this study examined the problem of the achievement gap between students of poverty and students from more affluent homes in detail. This chapter presents analyses of differences in reading skills gained or lost over summer vacation based on socioeconomic status and gender. These analyses include comparisons of male and female students qualifying for free meals, reduced meals, not qualifying for free or reduced meals, and the combination of students qualifying for both free and reduced meals. Scores on both DIBLES and DRA2 assessments from spring and the following fall were analyzed. This chapter is organized in terms of four specific research questions identified in Chapter One. Factorial analysis of variance (ANOVA) addressed the four research questions.

Participants in this study were students in first grade through fifth grade in one mid-sized school district in northern Colorado. Students from all elementary schools in the district were a part of the study. Data were used from all students who completed both the spring and fall assessments. Data were analyzed from the kindergarten to first grade summer, the first to second grade summer, the second to third grade summer, the third to fourth grade summer, and the fourth to fifth grade summer. Students ranged in age from five years old to eleven years old.

### **Study Predictions**

Research Question One: Is there a difference in DRA2 and/or DIBELS scores between students qualifying for free, reduced, free and reduced, and non-free and reduced meals? This study predicted that students qualifying for free meals would have the greatest loss of reading skill over the summer vacation on both the DIBELS and DRA2 assessments. Students qualifying for reduced meals were also predicted to have a loss in reading skill over the summer, but not as great as students qualifying for free meals. Students not qualifying for free or reduced meals were predicted to demonstrate a gain in reading skill over the summer vacation.

Research Question Two: Is there a difference in DRA2 and/or DIBELS scores between grade levels? This study predicted that students entering into first grade would show the greatest difference in scores on both the DIBELS and DRA2 assessments. The differences in scores were predicted to narrow as students were assessed in higher grade levels. Students in the primary grades, those who were entering first grade to third grade, were predicted to demonstrate the widest range in gain and loss scores. Students in intermediate grades, those entering fourth and fifth grades, were predicted to show narrower variance in gain and loss scores.

Research Question Three: Is there a difference in DRA2 and/or DIBELS scores between male and female? This study predicted that males would demonstrate a slightly greater loss of reading skill over the summer vacation on both the DIBELS and DRA2 assessments. Female students were predicted to show slightly greater gains than males in reading skill over the summer months.

Research Question Four: Is there an interaction between grade level, gender, the four levels of free and reduced categories, and reading skills? This study predicted that there would be an interaction between grade level and socioeconomic status on both the DIBELS and DRA2 assessments.

### **Presentation of Results: Research Question One**

The effects of the summer break on reading skill for students of varying levels of SES were studied. Measures investigated were a spring and fall DRA2 and DIBELS test. The study examined the results of students qualifying for free lunch, reduced lunch, not qualifying for free or reduced lunch, and combined free and reduced lunch. The first research question was, "is there a difference in DRA2 and/or DIBELS scores between students qualifying for free, reduced, free and reduced and non-free and reduced meals?"

### **Test for Assumptions**

The data were tested for univariate normality for all observations. Statistical procedures, such as ANOVA, operate under the assumption that the data are normally distributed. Normality can be tested through visual scans of graphical representations of the data, and through a more objective analysis of numerical statistics. In these data sets, visual scans of histograms were approximately normal. Skewness slightly exceeded +/- 1.0 values and kurtosis statistics exceeded +/- 1.0 values. Assumptions of normality were violated, hence univariate normality was not assumed. A visual scan of the box and whiskers plot indicated outliers in each test.

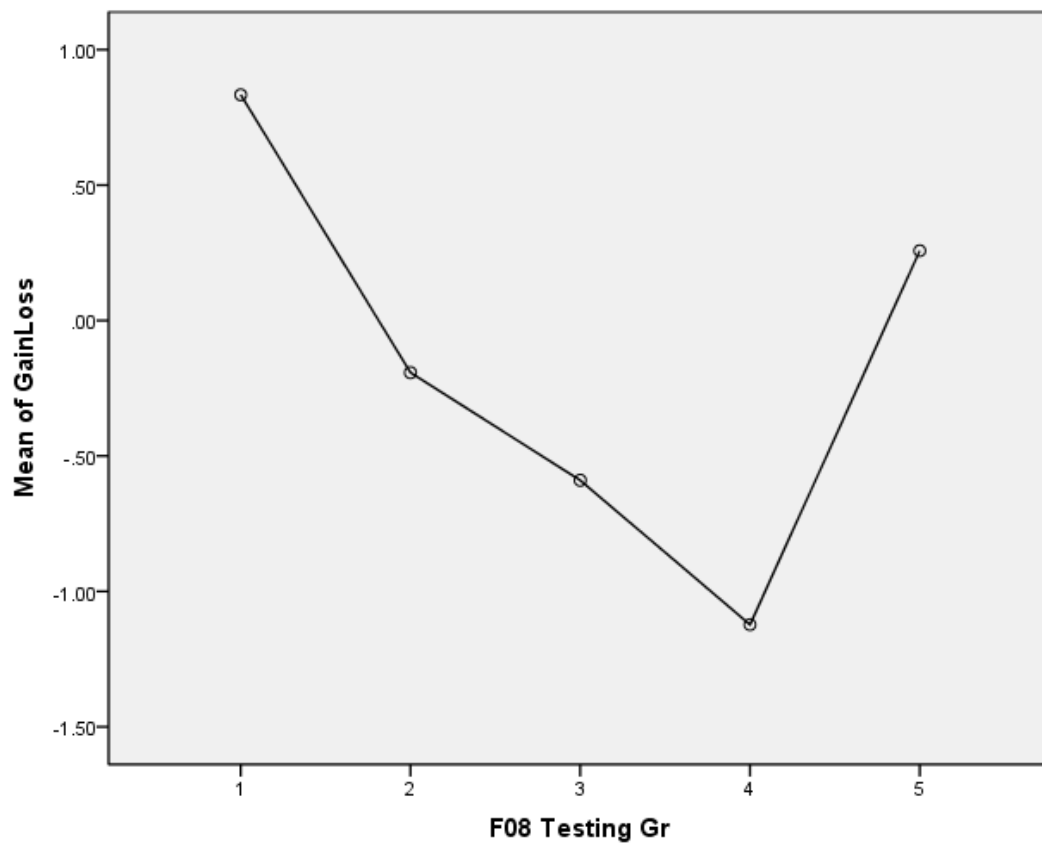
## **Main Effects Analysis**

A 4 x 2 mixed factorial ANOVA with repeated measures on the last factor was conducted to investigate the effect of SES over summer vacation on DRA2 and DIBELS reading scores. ANOVA is used to compare means when there are two or more independent variables. The ANOVA is mixed because there is a mixture of between-groups and repeated measures variables. The four between-groups variables for this research question are the four levels of SES: free, reduced, free and reduced, and non-free and reduced. The repeated measures are the spring and fall DRA2 and DIBELS assessments. Table 4.1 presents the descriptive statistics of each factorial group for the DRA2 assessment. Figure 4.1 presents a graphical depiction of means for each grade level for the DRA2 assessment. Table 4.2 presents the descriptive statistics for each factorial group for the DIBELS reading scores. Figure 4.2 presents a graphical depiction of means for each grade level for the DIBELS assessment. Means represent gain/loss scores. Table 4.3 presents the ANOVA source table for both the DRA2 and DIBELS assessments, demonstrating a lack of significant main effect of SES on DRA2 and DIBELS gain/loss scores over the summer, however, significance numbers were at or very close to the .05 level.



**Table 4.1:** Sample sizes, means, and standard deviations of all socioeconomic levels for DRA2

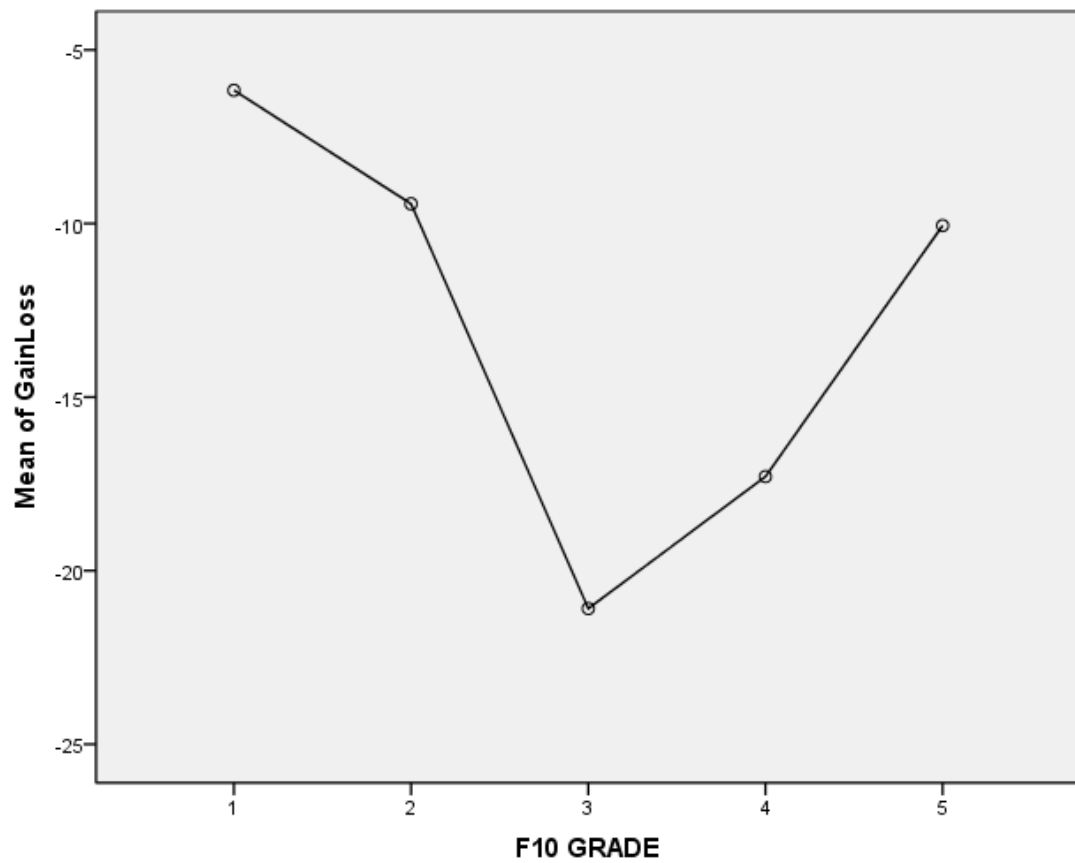
Groups	N	Mean	Std. Deviation
Non Free and Reduced	2630	.13	4.31
Free	912	-.72	4.34
Reduced	210	-.43	5.51
Free and Reduced	1122	-.67	4.58



**Figure 4.1** Means plot for grade level using DRA2

**Table 4.2:** Sample sizes, means, and standard deviations of all socioeconomic levels for DIBELS

Groups	N	Mean	Std. Deviation
Non Free and Reduced	2086	-13.60	31.02
Free	1278	-11.47	14.78
Reduced	328	-11.63	16.28
Free and Reduced	1606	-11.50	15.09



**Figure 4.2** Means plot for grade level using DIBELS

**Table 4.3:** ANOVA source table of socioeconomic group and DRA2 and DIBELS gain/loss

Source	Sum of Squares	df	Mean Square	F	p
DRA2 SES	112.97	2	56.48	2.98	.05
Error	65338.56	3452	18.93		
DIBELS SES	2166.98	1	2166.98	3.57	.06
Error	2226955.76	3662	608.13		

### Post-Hoc Tests for all Simple Main Effects

A Levene's test for equality of variances was conducted to determine if the variances of the populations from which the data were gathered were equal. Levene's tests the null hypothesis that the variances of the populations are equal. If the p-value obtained through the Levene's test is less than .05, the results are determined to be significant, meaning the null is rejected and there is a difference in variances of the populations. When Levene's is significant, adjustments must be made when calculating statistics to account for the assumption that variances are not equal. Levene's was significant for the DRA2 assessment,  $F(29, 3452) = 7.34, p < .001$ . A Levene's test for equality of variances was not statistically significant for the DIBELS assessment,  $F(19, 3672) = 1.43, p = .10$ . Type I familywise error rates were controlled through the use of the Holm Sequential Bonferroni Adjustment. Table 4.4 and Table 4.5 show the results of the post hoc analyses for DRA2 and DIBELS, presenting only the pairwise comparisons that achieved statistical significance at  $\alpha = 0.05$ .

The only socioeconomic status comparisons that resulted in statistical significance were the comparisons between students qualifying for free meals and those qualifying for neither free nor reduced meals. Students qualifying for free meals showed significantly greater losses over the summer months using both the DRA2 and DIBELS assessments. However, using Cohen's  $d$ , the effect size of the socioeconomic comparison using DIBELS was negligible ( $d = -.09$ ), and the effect size of the socioeconomic comparison using DRA2 was small ( $d = .20$ ), showing a minimal relationship.

**Table 4.4:** *Post hoc tests for DRA2 main effects and interaction effects (SES)*

95% C.I.					
	<u>M</u> diff	<i>SE</i>	<u>d</u>	Lower Bound	Upper Bound
Non Free and Reduced					
Free	.85*	.17	.20	.44	1.26

\*The mean difference is significant at the 0.05 level.

**Table 4.5:** *Bonferroni post hoc tests for DIBELS main effects and interaction effects (SES)*

95% C.I.					
	<u>M</u> diff	<i>SE</i>	<u>d</u>	Lower Bound	Upper Bound
Non Free and Reduced					
Free	-2.12*	.88	-.09	-4.22	-.03

\*The mean difference is significant at the 0.05 level.

### **Presentation of Results: Research Question Two**

The effects of the summer break on reading skill for students at different grade levels were under study. Measures investigated were a spring and fall DRA2 and DIBELS test. The study examined the results of students entering first grade, second grade, third grade, fourth grade, and fifth grade. The second research question was, "is there a difference in DRA2 and/or DIBELS scores between grade levels?"

### **Test for Assumptions**

The data were tested for univariate normality for all observations. Skewness slightly exceeded +/-1.0 values and kurtosis statistics exceeded +/-1.0 values. Assumptions of normality were violated, hence univariate normality was not assumed. A visual scan of the box and whiskers plot indicated outliers in each test.

### **Main Effects Analysis**

A 5 x 2 between groups factorial ANOVA with repeated measures on the last factor was conducted to investigate the effect of grade level over summer vacation on

DRA2 and DIBELS reading scores. The five between-groups variables for this research question are the five grade levels: entering first, second, third, fourth and fifth gradez. The repeated measures are the spring and fall DRA2 and DIBELS assessments. Table 4.6 presents the descriptive statistics of each factorial group for the DRA2 assessment. Means represent gain/loss scores. Students entering first grade showed a gain in reading scores over the summer. Losses began in second grade, increasing through fourth, and then resulting in gains again as students entered fifth grade. Table 4.7 presents the descriptive statistics for each factorial group for the DIBELS reading scores. Means represent gain/loss scores. Losses over the summer in reading scores were noted at all grade levels, increasing through fourth grade, and then decreasing in fifth grade. Table 4.8 presents the ANOVA source table for both the DRA2 and DIBELS assessments, demonstrating a significant main effect of grade level on DRA2 and DIBELS gain/loss scores over the summer.

**Table 4.6:** *Sample sizes, means, and standard deviations of all grade levels for DRA2*

Groups	N	Mean	Std. Deviation
First Grade	829	.83	3.02
Second Grade	957	-.19	4.05
Third Grade	1002	-.59	4.23
Fourth Grade	399	-1.12	5.39
Fifth Grade	295	.26	6.81

**Table 4.7:** *Sample sizes, means, and standard deviations of all grade levels for DIBELS*

Groups	N	Mean	Std. Deviation
First Grade	989	-6.16	14.43
Second Grade	997	-9.43	15.54
Third Grade	965	-21.09	41.47
Fourth Grade	488	-17.29	13.95
Fifth Grade	253	-10.06	13.25

**Table 4.8:** ANOVA source table of grade level group and DRA2 and DIBELS gain/loss scores

Source	Sum of Squares	df	Mean Square	F	p
DRA2 Grade	499.65	4	124.91	6.60	<.001
Error	65338.56	3452	18.93		
DIBELS Grade	123328.53	4	30832.13	50.78	<.001
Error	2226955.76	3662	608.13		

### Post-Hoc Tests for All Simple Main Effects

A Levene's test for equality of variances was significant for the DRA2 assessment,  $F(29, 3452) = 7.34, p < .001$ . A Levene's test for equality of variances was not statistically significant for the DIBELS assessment,  $F(19, 3672) = 1.43, p = .10$ . Type I familywise error rates were controlled through the use of the Holm Sequential Bonferroni Adjustment. Table 4.9 and Table 4.10 show the results of the post hoc analyses for DRA2 and DIBELS, presenting only the pairwise comparisons that achieved statistical significance at  $\alpha = 0.05$ .

The DRA2 grade level comparisons showed a significant loss in reading scores over the summers when students are entering first grade and second grade, first and third grade, first and fourth grade, and second and fourth grade. The effect size of the relationship between the summer ending in first grade and the summer ending in second grade was small ( $d = .29$ ), as was the effect size of the relationship between the summer ending in second grade and the summer ending in fourth grade ( $d = .20$ ). However, the effect size increased between the summer entering first grade and the summer entering



third grade where the effect size ( $d = .39$ ) was small to typical and the summer entering first grade and the summer entering fourth grade where the effect size ( $d = .45$ ) was typical. These comparisons showed significant gains over the summers between third and fifth grade ( $d = -.15$ ) and fourth and fifth grade ( $d = -.22$ ). Both of these gains, while significant, had small effects showing minimal relationships.

The DIBELS grade level comparisons showed a significant loss in reading scores over the summers when students are entering first grade and second grade, first and third grade, first and fourth grade, second and third grade, and second and fourth grade. As was consistent with the DRA2 results, the effect size grew between the summers ending in first and second and the summers ending in first and fourth. The effect size of the relationship between the summer ending in first grade and the summer ending in second grade ( $d = .22$ ) and the relationship between the summer ending in second grade and the summer ending in third grade ( $d = .37$ ) were small, indicating minimal relationships. However, the effect size of the relationships between the summer ending in first grade and the summer ending in third grade ( $d = .48$ ) and between the summers ending in second grade and fourth grade ( $d = .53$ ) were medium, and the relationship between the summer ending in first grade and the summer ending in fourth grade was large ( $d = .78$ ), indicating a substantial relationship. The DIBELS comparisons also showed significant gains over the summers between third and fifth grade ( $d = -.36$ ), a small effect size, and fourth and fifth grade ( $d = -.53$ ), a medium effect size.

**Table 4.9:** *Post hoc tests for DRA2 main effects and interaction effects (grade level)*

		95% C.I.			
		<u>M</u> diff	<i>SE</i>	<u>d</u>	Lower Bound    Upper Bound
First					
	Second	1.03 *	.21	.29	.45            1.61
	Third	1.42*	.20	.39	.85            2.00
	Fourth	1.96*	.27	.45	1.21           2.70
Second					
	Fourth	.93*	.26	.20	.20            1.66
Third					
	Fifth	-.85*	.29	-.15	-1.66           -.04
Fourth					
	Fifth	-1.38*	.33	-.22	-2.32           -.44

\*The mean difference is significant at the 0.05 level.

**Table 4.10:** Bonferroni post hoc tests for DIBELS main effects and interaction effects (grade level)

		95% C.I.			
		<u>M</u> diff	SE	<u>d</u>	
				Lower Bound	Upper Bound
First					
	Second	3.27 *	1.11	.22	.16 6.83
	Third	14.93*	1.12	.48	11.79 18.06
	Fourth	11.13*	1.36	.78	7.30 14.96
Second					
	Third	11.66*	1.11	.37	8.53 14.78
	Fourth	7.86*	1.36	.53	4.03 11.68
Third					
	Fifth	-11.03*	1.74	-.36	-15.92 -6.14
Fourth					
	Fifth	-7.23*	1.91	-.53	-12.60 -1.87

\*The mean difference is significant at the 0.05 level.

### Presentation of Results: Research Question Three

The effects of the summer break on reading skill for male and female students were under study. Measures investigated were a spring and fall DRA2 and DIBELS test. The third research question was, "is there a difference in DRA2 and/or DIBELS scores between grade male and female?"

### Test for Assumptions

The data were tested for univariate normality for all observations. Skewness slightly exceeded +/-1.0 values and kurtosis statistics exceeded +/-1.0 values. Assumptions of normality were violated, hence univariate normality was not assumed. A visual scan of the box and whiskers plot indicated outliers in each test.

### Main Effects Analysis

A 2 x 2 between groups factorial ANOVA with repeated measures on the last factor was conducted to investigate the effect of gender over summer vacation on DRA2 and DIBELS reading scores. The two between-groups variables for this research question are male and female. The repeated measures are the spring and fall DRA2 and DIBELS assessments. Table 4.11 presents the descriptive statistics of each factorial group for the DRA2 assessment. Table 4.12 presents the descriptive statistics for each factorial group for the DIBELS reading scores. Means represent gain/loss scores. Table 4.13 presents the ANOVA source table for both the DRA2 and DIBELS assessments, demonstrating no significant main effect of gender on either DRA2 or DIBELS gain/loss scores over the summer.

**Table 4.11:** *Sample sizes, means, and standard deviations of both genders for DRA2*

Groups	N	Mean	Std. Deviation
Male	1868	-.27	4.43
Female	1614	.03	4.39

**Table 4.12:** *Sample sizes, means, and standard deviations of both genders for DIBELS*

Groups	N	Mean	Std. Deviation
Male	1888	-11.86	16.07
Female	1804	-13.55	32.34

**Table 4.13:** *ANOVA source table of gender group and DRA2 and DIBELS gain/loss scores*

Source	Sum of Squares	df	Mean Square	F	p
DRA2 Gender	26.24	1	26.24	1.39	.24
Error	65338.56	3452	18.93		
DIBELS Gender	934.58	1	934.58	1.54	.22
Error	2226955.76	3662	608.13		

### Post-Hoc Tests for All Simple Main Effects

A Levene's test for equality of variances was significant for the DRA2 assessment,  $F(29, 3452) = 7.34, p < .001$ . A Levene's test for equality of variances was not statistically significant for the DIBELS assessment,  $F(19, 3672) = 1.43, p = .10$ . Type I familywise error rates were controlled through the use of the Holm Sequential Bonferroni Adjustment. No pairwise comparisons on either the DRA2 or the DIBELS assessment achieved statistical significance at  $\alpha = 0.05$ . Males showed a slight mean loss in reading scores over the summer and females showed a slight mean gain on the DRA2 assessment. Both males and females showed mean losses over the summer using the

DIBELS assessment. With DIBELS, females showed a slightly greater mean loss in reading scores. Mean gain/loss scores between males and females were close using both the DRA2 and DIBELS assessments. Additionally, the post hoc tests indicated a lack of directionality. These results indicated that the null hypothesis that gender has no effect of summer learning loss must be accepted.

#### **Presentation of Results: Research Question Four**

The interactions between socioeconomic status, grade level and gender over the summer break on reading skill were under study. Measures investigated were a spring and fall DRA2 and DIBELS test. The study examined the results of male and female students, not qualifying for free and reduced meals, qualifying for free meals, qualifying for reduced meals, and qualifying for free and reduced meals, entering first grade, second grade, third grade, fourth grade, and fifth grade. The fourth research question was, "is there an interaction between grade level, gender, the four levels of free and reduced categories, and reading skills?"

#### **Test for Assumptions**

The data were tested for univariate normality for all observations. Skewness slightly exceeded  $\pm 1.0$  values and kurtosis statistics exceeded  $\pm 1.0$  values. Assumptions of normality were violated, hence univariate normality was not assumed. A visual scan of the box and whiskers plot indicated outliers in each test.

## **Main Effects Analysis**

A 4 x 5 x 2 x 2 factorial ANOVA with repeated measures on the last factor was conducted to investigate the effect of SES, grade level, and gender over summer vacation on DRA2 and DIBELS reading scores. The first four between-groups variables for this research question are the four levels of SES: free, reduced, free and reduced, and non-free and reduced. The second five between-groups variables are the five grade levels: entering first, entering second, entering third, entering fourth, and entering fifth. The third two between-groups variables are male and female. The repeated measures are the spring and fall DRA2 and DIBELS assessments. Table 4.14 presents the main effect ANOVA for SES, grade level, and gender from the DRA2 assessment, demonstrating a significant main effect of SES \* grade level interaction ( $F[8,43.92]=2.32; p=.02$ ). Table 4.15 presents the main effect ANOVA for SES, grade level and gender from the DIBELS assessment, demonstrating no significant main effect interactions. Table 4.16 presents the estimated marginal means for the grade level \* SES interaction for DRA2. Figure 4.3 presents a graphical representation of the interaction between SES and first through fifth grade levels.

**Table 4.14:** ANOVA source table of SES, grade level and gender and DRA2 gain/loss scores

Source	Sum of Squares	df	Mean Square	F	p
Grade Level*	116.43	4	29.11	1.54	.19
Gender					
Grade Level*	351.36	8	43.92	2.32	.02
SES					
Gender* SES	16.31	2	8.16	.43	.65
Grade Level*	217.10	8	27.14	1.43	.18
Gender*SES					
Error	65338.56	3452	18.93		

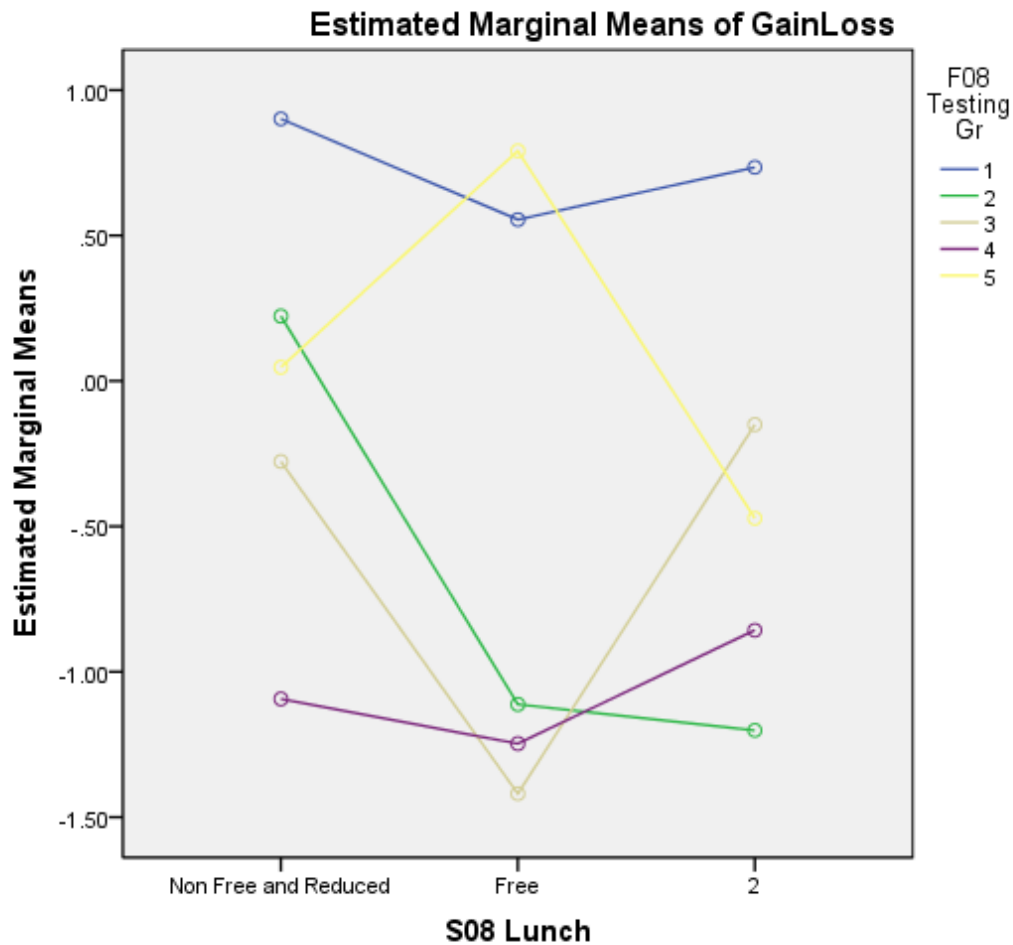


**Table 4.15:** ANOVA source table of SES, grade level and gender and DIBELS gain/loss scores

Source	Sum of Squares	<i>df</i>	Mean Square	<i>F</i>	<i>p</i>
Grade Level*	742.79	4	185.70	.31	.88
Gender					
Grade Level*	6083.42	8	760.43	1.25	.27
SES					
Gender*	316.67	2	158.33	.26	.77
SES					
Grade Level*	1344.37	8	168.05	.28	.97
Gender*SES					
Error	2226955.76	3662	608.13		

**Table 4.16:** *Estimated marginal means for DRA2 main grade level\*SES interactions*

Grade	SES	<u>M</u>	95% C.I.	
			Lower Bound	Upper Bound
First	Non Free and Reduced	.90	.56	1.24
	Free	.56	-.12	1.23
	Reduced	.73	-.71	2.18
	Free and Reduced	.59	-.02	1.19
Second	Non Free and Reduced	.22	-.11	.55
	Free	-1.11	-1.67	-.55
	Reduced	-1.20	-2.42	.02
	Free and Reduced	-1.12	-1.62	-.61
Third	Non Free and Reduced	-.28	-.61	.06
	Free	-1.42	-1.94	-.90
	Reduced	-.15	-1.22	.92
	Free and Reduced	-1.19	-1.66	-.72
Fourth	Non Free and Reduced	-1.10	-1.68	-.51
	Free	-1.25	-1.97	-.52
	Reduced	-.86	-2.32	.60
	Free and Reduced	-1.16	-1.81	-.51
Fifth	Non Free and Reduced	.05	-.62	.71
	Free	.79	-.06	1.65
	Reduced	-.47	-2.35	1.41
	Free and Reduced	.57	-.21	1.35



**Figure 4.3** Estimated marginal means plot for DRA2 showing grade level\*SES interactions

Although there was a significant main effect of SES \* grade level interaction on the DRA2, there was a lack of directionality in means. A lack of directionality means that there is a lack of consistency in the groups showing the lowest and highest means. Students qualifying for free meals had the lowest mean gain scores using the DRA2 assessments when they were entering first, third and fourth grade. However, the lowest mean scores for students entering second and fifth grades were those students qualifying for reduced meals. Students qualifying for free meals who were entering fifth grade had

the highest mean gain scores. Students not qualifying for free and reduced meals had the highest gain scores in first and second grades, while the highest gain scores in third and fourth grades were attained by students qualifying for reduced meals.

### **Summary**

This study predicted that students qualifying for free meals would have the greatest loss of reading skill over the summer vacation on both the DIBELS and DRA2 assessments. While there was a statistical significance between students qualifying for free meals and those students not qualifying for either free or reduced meals, the effect size was small for the DRA2 assessment and negligible for the DIBELS assessment. There was no significance between students qualifying for reduced meals and free or non-free and reduced meals, as well as no significance between students qualifying for free and reduced meals combined and students not qualifying for free or reduced meals. The hypothesis that students qualifying for free meals would have the greatest loss of reading skill over the summer can only be accepted with extreme caution at specific grade levels, using only the DRA2 results.

This study predicted that students entering into first grade would show the greatest difference in scores on both the DIBELS and DRA2 assessments. The differences in scores were predicted to narrow as students were assessed in higher grade levels. Primary grades were expected to show greater losses than intermediate grades. Results indicated that students showed greater gains or smaller losses in using both DRA2 and DIBELS assessments when they were entering first grade. Losses in reading

scores increased as students progress through grade levels until they reached the summer entering fifth grade when the scores showed greater gains.

This study predicted that males would demonstrate a slightly greater loss of reading skill over the summer vacation on both the DIBELS and DRA2 assessments. Results of data showed a slightly greater loss of reading skill over the summer vacation in males using the DRA2 assessment, but a slightly greater loss of reading skill over the summer in females using the DIBELS assessment. Neither assessment resulted in significant results.

This study predicted that there would be an interaction between grade level and socioeconomic status on both the DIBELS and DRA2 assessments. A significant interaction was determined between students qualifying for free meals and students not qualifying for either free or reduced meals using DRA 2 results. However, there was a lack of directionality in these results. Students qualifying for free meals had the lowest mean gain scores using the DRA2 assessments when they were entering first, third and fourth grade. However, the lowest mean scores for students entering second and fifth grades were those students qualifying for reduced meals. Students qualifying for free meals who were entering fifth grade had the highest mean gain scores. Students not qualifying for free and reduced meals had the highest gain scores in first and second grades, while the highest gain scores in third and fourth grades were attained by students qualifying for reduced meals.

Although SES was not found to account for statistically significant variability in summer learning loss in reading at all SES levels, a significant effect was found between students qualifying for free lunch and students not qualifying for free or reduced lunch.

Reduced lunch did not produce significant variability. The DRA2 assessment analysis showed a significance of variability in the interaction of SES and grade level. As students progressed through grade levels, the means of their scores on both DRA2 and DIBELS assessments showed a significant increase in primary years after the kindergarten to first grade summer. There was a significant increase in scores in the fifth grade when compared to third and fourth grade.

## **CHAPTER 5: DISCUSSION**

This chapter provides a summary of the study and presents conclusions determined from the data presented in Chapter four. A discussion of the implications for action and recommendations for further research are included.

### **Summary of the Study**

#### **Statement of Purpose**

The intention of this research was to further examine previous studies on the summer learning loss students experience on the traditional agrarian calendar. The purpose of this study was to determine if there were differences in reading skill levels gained or lost over summer vacation based on socioeconomic status, gender, and grade level.

#### **Methodology**

A 4x5x2x2 factorial ANOVA with repeated measures on the last factor non-experimental, comparative design was used to determine the extent to which socioeconomic status, grade level, and gender accounted for summer learning loss in reading using spring and fall DRA2 and DIBELS assessments results. Numerical pre-test

and post-test data from these standardized benchmarking assessments were gathered. Achievement scores from past assessments were analyzed, making this an ex post facto study. This comparative research study analyzed the differences between the independent variables, socio-economic status (SES), grade level, and gender, and the dependent variable summer learning loss.

### **Research Questions and Summary of Major Findings**

Research Question One: Is there a difference in DRA2 and/or DIBELS scores between students qualifying for free, reduced, free and reduced and non-free and reduced meals?

Finding: While there was a statistical significance between students qualifying for free meals and those students not qualifying for either free or reduced meals, the effect size was small for the DRA2 assessment and negligible for the DIBELS assessment. Effect size is used to determine to what extent the variables analyzed in the study made a difference. So, a statistical significance shows that there is a difference in the summer achievement gap based on SES, but the effect size indicates that the difference is not a great difference. There was no significance between students qualifying for reduced meals and free or non-free and reduced meals, as well as no significance between students qualifying for free and reduced meals combined and students not qualifying for free or reduced meals.

Research Question Two: Is there a difference in DRA2 and/or DIBELS scores between grade levels?



Finding: Losses in reading scores increased as students progressed through grade levels until they reached the summer entering fifth grade when the scores showed greater gains.

Research Question Three: Is there a difference in DRA2 and/or DIBELS scores between male and female?

Finding: Results of data showed a slightly greater loss of reading skill over the summer vacation in males using the DRA2 assessment, but a slightly greater loss of reading skill over the summer in females using the DIBELS assessment. Neither assessment resulted in significant results.

Research Question Four: Is there an interaction between grade level, gender, the four levels of free and reduced categories, and reading skills?

Finding: A significant interaction was determined between students qualifying for free meals and students not qualifying for either free or reduced meals using DRA 2 results. However, there was a lack of directionality in these results, meaning there is no consistency in the groups with the lowest or highest means. Students qualifying for free meals had the lowest mean gain scores using the DRA2 assessments when they were entering first, third and fourth grade. However, the lowest mean scores for students entering second and fifth grades were those students qualifying for reduced meals. Students qualifying for free meals who were entering fifth grade had the highest mean gain scores. Students not qualifying for free and reduced meals had the highest gain scores in first and second grades, while the highest gain scores in third and fourth grades were attained by students qualifying for reduced meals.

## **Discussion of Findings Related to the Literature**

The first finding in this study analyzing socioeconomic status and summer learning loss found a statistical significance between students qualifying for free meals and those not qualifying for either free or reduced meals. However, the effect size was small for the DRA2 assessment and negligible for the DIBELS assessment. There was no significance between students qualifying for reduced meals and free or non-free and reduced meals, as well as no significance between students qualifying for free and reduced meals combined and students not qualifying for free or reduced meals. Earlier studies show more drastic differences when comparing students living in poverty and students not living in poverty. A study by Lee (2009) showed that students living in persistent poverty, which can be correlated with students qualifying for free meals in this study, had lower and lower reading scores as they moved through grade levels, while students in transitional poverty entered at a lower level but maintained adequate yearly growth as they moved through grade levels. In addition, a study of students who had limited English proficiency, students who were also living in poverty situations showed greater summer loss in both English and math than their limited English proficient peers not living in poverty (Nguyen, 2010).

This study only analyzed gain/loss scores, resulting in an analysis of the widening or narrowing of the achievement gap over the summer months. It did not take into account the differences in entry levels of students at varying socioeconomic status levels, as earlier studies did. The analysis of initial gaps in reading ability may have resulted in a more complete look at socioeconomic status and summer gap data.

The finding that losses in reading scores were small in the summer between kindergarten and first grade, increasing as students progress through grade levels until they reached the summer entering fifth grade when the scores showed greater gains supports previously cited research. Phonics and word attack skills are the earliest skills used to predict later comprehension. As students move into second and third grades, vocabulary becomes the highest predictor (Hemphill & Tivnan, 2008). If kindergarten instruction is focused heavily on the development of phonics and word attack, these skills can carry over to the beginning of the first grade year. Then, the complexity of early literacy skills increases, adding vocabulary, phonemic awareness, fluency and finally comprehension. Authentic, independent reading practice becomes an integral component to the development of these more complex tasks, and is especially important in achieving the end goal of proficiency in comprehension (Routman, 2003). As the importance of independent, authentic reading increases, the decline in scores over the summer months when students may not be engaged in independent reading practices also increases.

Gentry (2007) identifies five phases of code-breaking as a guide for preschool and kindergarten instructors. These phases include operations without letter knowledge, operations with letters but without sounds, operations with partial phonemic awareness, operations with full phonemic awareness, and operations with full code and chunking knowledge. This instruction is highly skill-based and systematic. Students learn to identify letters and sounds, and then move to combining letters and sounds to read words. These concrete skills appear to be more easily retained over a gap in instruction. However, as students begin to combine these basic skills with phonemic awareness, fluency, vocabulary building and comprehension, learning becomes less concrete.

Regular practice in reading is necessary to continue vocabulary development and the ability to comprehend by making inferences, drawing on prior knowledge, creating mental images, posing questions, making predictions, and setting purpose (Grimes, 2004). Without regular practice over the summer months, these skills appear to diminish.

The finding of a slightly greater loss of reading skill over the summer vacation in males using the DRA2 assessment, but a slightly greater loss of reading skill over the summer in females using the DIBELS assessment also supports prior studies. Studies show significant differences in specific reading and writing abilities between boys and girls, with girls tending to excel in some skill areas and boys in others. While a study of first grade girls yielded results indicating that girls were ahead of boys in every cognitive and reading ability analyzed, including visual memory, verbal memory, directionality, visual motor integration, and eye tracking (Soderman, Chhikara, Hsiu-Ching, & Kuo, 1999), a study using DIBELS to analyze gender differences in kindergarten through fifth grade (Below, Skinner, Fearington, & Sorrell, 2010) found no significant differences on letter naming, phoneme segmentation, and nonsense word fluency in first grade, nor in oral reading fluency scores in first through third grade. There was a small significant female oral reading fluency strength at fourth grade, but no significance in fifth grade. In fact, fifth grade boys increased in oral reading fluency throughout the spring semester, yielding spring male and female scores that were nearly equal.

Findings concerning interactions between grade level, gender and socioeconomic status showed a significant interaction between students qualifying for free meals and students not qualifying for either free or reduced meals using DRA 2 results. However, there was a lack of directionality in these results. This is somewhat inconsistent with

literature reviewed. Earlier studies determine consistent losses in academic skills in students of lower socioeconomic levels, especially when analyzing summer achievement gaps.

Karl Alexander, a Johns Hopkins sociologist, found summer learning losses to account for two thirds of the achievement gap between high and low socioeconomic students (Gewertz, 2009), and schools with high populations of students on free and reduced lunch showed losses over the summer in reading, while schools serving a more economically advantaged student population showed gains (Burkam, et al., 2004).

A meta-analysis of 39 studies indicated that students fall back one month, as measured by standardized tests, over the summer break (H. Cooper, et al., 1996). Overall, loss over the summer break was greater in math and spelling than in reading. However, in Cooper's meta-analysis, gains and losses were found to differ according to the socioeconomic status of students and their families. The meta-analysis indicated that while students show a similar loss in math, regardless of their socioeconomic status, significant differences were found in reading gains and losses over the summer depending on socioeconomic status. Reading achievement for high socioeconomic students grew over the summer, while it decreased for low socioeconomic students, resulting in a three month gap between high and low socioeconomic students over the summer break (H. Cooper, et al., 1996; Helf, et al., 2008). This study did find a significant interaction between socioeconomic status, specifically students qualifying for free meals and those not qualifying for reduced meals and gain/loss scores over the summer vacation. However, due to a lack of directionality in this study, the significance does not support data from the meta-analysis conducted by Cooper et al.

## **Conclusions**

### **Implications for Action**

As I analyzed the results of this study, I did see indications of the impact of socioeconomic status on summer achievement. However, the minimal effect size of this impact was disheartening. I believe that this study needs to be expanded to get a more complete picture of the socioeconomic impact on summer regression. The findings of this study suggest the following implications for action for school and school district leaders. These recommendations will assist in meeting the accountability requirements outlined in the No Child Left Behind Act of 2001:

1. Existing intervention programs should be evaluated and modified to ensure a tiered model of instruction. This process should clearly identify procedures for early identification of individual students needs, research-based instruction with opportunities for authentic reading, and regular progress monitoring to determine the impact of intervention.
2. The scope of the school should be expanded to include regular family learning and engagement opportunities and partnership building practices such as home visits, targeted family learning nights, and summer academic programming options.
3. Professional development should be provided to classroom teachers and interventionists focused on academic and behavior-management best practices.
4. Existing summer school and before and after school programs should be reviewed and modified to extend the regular school day/year and provide services that address both academic and cultural/extracurricular needs.

5. Calendar modifications should be analyzed and implemented to decrease large amounts of time spent away from focused learning opportunities and to increase the amount of time students, especially students who are below grade-level expectations, are in school by at least 35 days or seven weeks.
6. A pilot study should be conducted. A Title I school with high numbers of students qualifying for free or reduced meals should move to a year round calendar. A comparative study between this pilot school and a school of similar demographics on the traditional agrarian calendar should be conducted. This should be a multi-year study to account for the regression dip that often occurs when a significant change is implemented.

### **Recommendations for Further Research**

The findings of this study suggest the following recommendations for further research:

1. In order to generalize findings to all elementary grade levels and students of varying socioeconomic statuses, this study should be replicated with a larger sample that spans geographic areas. The study should include rural, urban and suburban school districts across the United States.
2. In order to generalize findings to all elementary grade levels and students of varying socioeconomic statuses, this study should be replicated with analysis of mathematics scores.
3. A longitudinal study tracking cohorts of students over time would give a more accurate picture of overall gains and losses than a one-time analysis of student data. One

class of students should be tracked using the same standardized assessment given on the same dates in the spring and fall from kindergarten through fifth grade.

4. This study should be expanded from summer gain/loss analysis to include initial gaps in reading skill.

5. This study found an increase in scores as students entered fifth grade. Future research could explore reasons why this occurred.

### **Concluding Remarks**

The Thompson School District recognized a need to make changes to its summer school programming in order to justify continued spending on this type of extended learning opportunity in lean budgetary times. School and district-level representatives formed a task group to revise the summer school plan. During the 2011 summer, a new program will be implemented. Four schools will host a Jump Start program, in which trained teachers use research-based intervention programs with small groups of students to target specific skill area gaps. Two schools will host programs in which students come for one-hour a day to receive intervention. Two schools will host half-day programs that incorporate one-hour interventions with other academic and social growth opportunities. The seven Title I schools in Thompson School District received funding to develop their own summer programming plans.

As the principal of a Title I school, I used my learning from the literature I reviewed and the data I analyzed to come up with a plan to address both academic and social development needs of my students. I teamed up with another Title I school and the local Boys and Girls Club to create a different approach to meeting the needs of our less



advantaged and struggling students. We have hired four teachers to run two, four-week summer sessions at the Boys and Girls Club. These teachers will conduct four small group interventions a day. These interventions will serve small groups of students who are flexibly grouped to meet their needs. Interventions will run from eight until noon each day. Students can come to the club first thing in the morning, receive breakfast, and begin participating in club activities until it is time for their group to meet. Following their group intervention, they may remain at the club for the remainder of the day to participate in arts and crafts, organized sporting activities, trips to the local pool, character and leadership development programs, camps and field trips, work in technology and music labs, and all other activities provided by the club. They will receive lunch, and can remain at the club until six in the evening. This will allow students the opportunities to take part in academic and social growth experiences that they would not typically get at their homes during the summer. Each session will cost families \$25, but if the student attends 90% of their intervention sessions, \$20 will be refunded back to the families at the end of that session. The remaining \$5 will pay for their membership to the Boys and Girls Club for the year, and will help offset the club's additional expenses. Data will be gathered from each summer program in the Thompson School District in the fall of 2011, analyzed to identify which programs are making a positive difference, and programs will continue to be adapted and modified. In addition, several schools are in the process of investigating a year round calendar option, including academic intersession, for possible implementation in the 2012-2013 school year.

The achievement of all students is at the core of the moral and ethical purpose of each teacher in every school across the United States. It is our mission to provide the best

education possible for each and every child who walks through our doors and becomes a part of our school community. In order to provide the best education possible, we have reached a point in which we must examine and challenge the status quo. In the face of growing academic achievement gaps in our country, it is no longer acceptable to keep trying to do more under the same constraints. We have fallen in our position of educational leadership in the world, and we cannot continue to expect acceptable global performance without challenging our current paradigms. Research must continue to identify causes and possible solutions to our achievement gap problem, and school and district leaders must bravely initiate systemic reform practices to address these gaps.

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