Using Universal Reading Achievement Data to Study the Effects of a Summer School Reading Program with Elementary Students in a Northern Wisconsin School District

A Research Project Report

Presented to

The Graduate Faculty

University of Wisconsin-Superior

In Partial Fulfillment

Of the Requirements for the Degree

Master of Science in Education-Reading

December 2014

By

Colleen M. Geisen

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Approved:

Research Advisor

12/12/2014
Date

Accepted:

Program Coordinator

12/12/2014
Date

Dedicated to my mom, Mary Grue Trumper and my dad Lewis John Trumper for always encouraging me to share my gift of teaching children to read. Thank you for your support.

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Chapter 1. Introduction

Summer reading loss, or summer slide as it's quite often called, is a concern as over time the achievement gap between children of low socioeconomic status and high socioeconomic status is widening, not narrowing. "The effects of remedial reading instruction were diminished when the summer vacation period was included in the estimates of achievement growth." (Allington, McGill-Franzen, p. 5). Students are showing growth during the school year, but the summer months are negating this, causing a gap. The predominant school structure in the United States of nine months instruction and three months of summer has proven to have a greater negative academic impact on students from low socioeconomic backgrounds (Schulte, 2009, p. 17). These negative academic consequences are often called the summer slide. Reading is one academic area negatively impacted by the summer slide and the negative impacts accumulate each year (McCombs, Augustine, Schwartz, Bodilly, MCinnis, Lichter, Brown-Cross, 2012, p. 47).

The "cumulative achievement gains over the first nine years of children's schooling mainly reflect school-year learning, whereas the high SES-low SES achievement gap at 9th grade mainly traces to differential summer learning over the elementary years," (Alexander, Entwisle & Olson, 2007, p. 1). It is already proven that summer slide, or summer reading loss, is a long lasting problem (McCombs et al., 2012, p. 47). One of the editors of *No More Summer Reading Loss,* Ellin Oliver Keen stated, "The loss many children experience over the summer is significant and preventable," (Cahill, Horvath, McGill-Franzen, & Allington, p. 67). This study intended to determine

whether offering a public summer school reading program to students of a northern Wisconsin, rural school district, with an enrollment K-12 of 540 students correlates with a reduced rate of summer slide. There have been summer slide studies on different ethnic groups, and of children of low SES backgrounds. It has yet to be determined what happens when a group of students enrolled in a 76% Caucasian school population with 40% low SES background in a northern Wisconsin, rural school district that exhibit summer slide in the previous summer are identified and offered a summer school reading program.

Problem Statement

It is unknown if enrollment in a public education summer school session will affect summer reading skills in elementary students who experienced summer slide during 2013 as measured by STAR Reading Enterprise, a reading achievement test, from spring to fall, in a small, rural, northern Wisconsin school. Students in the study who have departed grades second through fifth and are ready to enter grades three through six in the fall may enroll in a summer school program that includes reading instruction. Will this instruction impact student-reading skills over the summer and prevent summer slide? From spring to fall of 2014, will the students enrolled in summer school programs show a reduction in summer slide as shown on STAR Reading Enterprise? Will students of one-gender experience a different affect in summer reading slide or gain over the other gender? Will students exiting primary grades experience different results on their STAR reading tests in the fall than those exiting intermediate grades?

Rationale for the Study

The current research indicates that summer reading loss is significantly affecting students' long-term progress in reading. Students that experience summer slide over time fall further and further behind, resulting in a significant gap between students who read at or above grade level and students who are behind. According to Kim and White, "Many districts already give tests that measure reading ability, and this data can be used to improve summer reading programs" (2011, p. 67). The purpose of this study is to use this data to determine if a summer reading program in a rural, northern, homogeneous population will benefit children that have a history of a reading loss during the previous summer. This study will both add to the current research that summer reading loss is preventable with summer programs, and will also focus on a northern rural populace. It is important to determine if students from this population (composed of an enrollment of 540 students K-12) will benefit from a summer school reading program.

Independent Variable

Control group. Students that do not elect to participate in the summer school reading program, but are part of the student group that showed summer slide during the summer of 2013 are part of the control group.

Intervention group. Students enrolled in the summer school reading program at the public school that showed summer slide during the summer of 2013 are part of the intervention group.

Dependent Variables

Summer reading program. All of the students in the study were offered an opportunity

to participate in a summer school reading program for either two or four weeks held at the elementary school, free of cost.

Summer slide prevalence. All of the students in the study experienced summer slide in reading during the summer of 2013 as measured by STAR Reading Enterprise from spring to fall.

Hypotheses

Null hypothesis 1. Students enrolled in the summer school reading program will show summer slide from spring to fall of 2014 as measured by the STAR Enterprise reading pre and posttest when compared to the control group that is not enrolled in the public summer school reading program.

Research Hypothesis 1. Students enrolled in the experimental intervention group who are enrolled in the summer school reading program during the summer of 2014 will eliminate summer slide in reading as measured on the pre and post Star Reading Enterprise when compared to students in the control group who are not enrolled in the summer school reading program.

Null Hypothesis 2. Female students enrolled in the summer reading intervention will not outperform the male students enrolled in the intervention.

Research Hypothesis 2. Female students enrolled in the summer reading intervention group will outperform male students.

Null Hypothesis 3. Performance of students exiting the primary grades two and three that are enrolled in the summer reading intervention group will not exceed the performance of students exiting the intermediate grades four and five that are also enrolled in the summer school reading intervention.

Research Hypothesis 3. Performance of students exiting primary grades two and three that are enrolled in the intervention group will outperform the students exiting the intermediate grades who are enrolled in the summer school intervention program.

Limitations of Study

Self-selected participants. The intervention group participants were self-selected through opting for the choice of enrolling in the summer school reading program, thus the likelihood of having a large number of students represented in the intervention group is small.

Transportation. Students are not provided with transportation to summer school, so the children that live outside of the city limits may not have been able to choose summer school. This may have limited them from being able to attend even if they wanted to be a part of the program, thus preventing the sample size from being very large.

Attendance. The attendance of students at summer school is not mandatory. This may have limited the number of students who elected to participate in the program making the intervention group smaller than if it were a required summer class.

Mobility. There were students that moved out of the district during the study. These students were removed from the study as they were not enrolled in the district to participate in the fall of 2014 STAR testing.

Sample Size. The sample size was small; with only 43 students studied over four grade levels. It was hard to make a connection between correlations of the effect of the reading program with such a small sample size.

Delimitations of Study

Enrollment. The school district studied has an enrollment of 540 students in grades K-12. I chose to include only students exiting grades two through five in spring of 2013.

Ethnicity. The school district has a 76% Caucasian population. I chose not to include the ethnicity of the students that were included in the study as it would have been difficult to obtain this information.

Income level. The elementary portion of the district being studied has a 40% low socio-economic status. I chose to eliminate the income level of students enrolled in the study due to privacy issues with obtaining this information.

Definition of Terms

Achievement gap. According to Education Week, the achievement gap in education refers to the disparity in academic performance between groups of students, often attributed to socio-economic status, gender, race/ethnicity, and ability (2004).

Faucet Theory. A learning theory that states resources are turned *on* for all students during the school year when school is in session and all students have access to public education. On the contrary, during the summer months the faucet is turned *off* for children living in poverty (Alexander, Entwisle & Olson, 1997 & 2007, p. 168).

Fluency. The ability to read most words in context quickly and accurately and with appropriate expression (Cunningham, Allington, 2011, p. 49).

Instructional Reading Level. The highest level of text that a reader can read with at least 95 percent word accuracy and 75 percent comprehension. (Cunningham & Allington, 2011, p.207).

Phonemic awareness: The ability to hear and manipulate distinct sounds in words (U.S. Department of Education, 2008).

Phonics. The relationship between the letters of written language and the sounds (phonemes) of spoken language (U.S. Department of Education, 2008).

Summer Slide. The backsliding in reading development that can occur during the summer vacation periods, when children are not enrolled in school (Allington, McGill-Franzen, 2013).

Summary

Summer slide has been studied in highly populated areas with students of low socioeconomic status and ethnic minorities. This research project aimed to study a less populated, rural area that is 85% homogeneous, with 76% Caucasian students. The importance of adding to the research on summer slide will broaden the research base by learning more about rural, homogeneous demographics and the effects of an intervention to prevent summer slide in such areas. Through the review of the literature, the research of summer slide in reading will be examined. Learning to read is a foundation for every child to ensure long-range academic success.

Chapter 2. Review of Literature

Reading is a foundational skill for long-term academic success for children, but more than that, it is a foundation for life (Alexander, Entwisle and Olson, 2007). Reading is important for learning, enjoyment and safety. Whether a child is enjoying a mystery, a cereal box, a cartoon or reading the directions on how to put together a new toy, reading is a skill that requires practice to develop. The progression of reading skills is a process that cannot afford to be interrupted for three months each school year when school is not in session. Summer slide in reading affects the development of students as readers and can cause long term ramifications on a child's life if a child does not learn how to read adequately (Snow, Burns and Griffin, 1998).

Northern Wisconsin is a low population area in which research is not conducted very often on school children. The purpose of the literature review for this study on a summer reading program in a northern Wisconsin school is to learn about:

- the history of summer slide in reading
- how summer slide affects students over time
- importance of the 'big five'
- the benefits of early intervention
- the benefits of a summer school program
- gender differences in learning to read
- supplemental summer reading programs

History of Summer Slide in Reading

"Researchers have been reporting on the impact of summer reading loss for at least 30 years" (Allington & McGill-Franzen, 2013, p. 3). Barbara Heyn's 1978 study

found that children who read at least six books during the summer maintained or improved their reading skills, and students who didn't read showed summer slide of as much as one grade level. "Heyns concluded that the single activity most strongly and consistently tied to summer reading programs was reading – no surprises there" (Fiore, 2010, p. 27). Heyns also discovered that no matter which of the following three methods of tracking student's summer reading (the number of books read, the time spent reading, or even how often kids used the library), students increased vocabulary test scores. Socioeconomic status had little impact on reading achievement over the summer (Fiore, 2010), suggesting that students just have to read to become better readers and that how reading is tracked is not the issue.

Analysis and studies have been done by researchers to see how disadvantaged students experience academic loss over the summer months (Alexander et al., 2007; Cooper, 1996, 2000; and Heyns, 1978). Cooper showed through a meta-analysis of 13 studies that achievement scores from a fall semester tend to be lower than scores achieved in the previous spring semester (1996, p. 6). The study on northern Wisconsin children in a small rural school district will utilize the results from a previous summer to study children with a known history of reading loss. Summer slide research has been conducted on a much larger scale in larger, more urban school districts.

Summer slide is a serious issue, "…the scientific evidence on the accumulating impact of summer reading loss on the achievement gap is so compelling. What is, perhaps, surprising is just how long that evidence has been largely ignored by educators and policymakers" (Allington & McGill-Franzen 2013, p. 7). Research points to the lack of summer reading as the issue that causes summer slide. The widening achievement gap

is not attributed to inadequate schooling, but rather to a lack of exposure and limited resources to academic and stimulating experiences during the summer months for many children.

Summer Slide in Reading

Summer slide is a phenomenon that affects struggling readers across the United States as students show loss of reading skills during the summer months, a period equivalent to one third of the academic year (Allington & McGill-Franzen, 2013, p. 9). When children stop being students during the summer and are not reading books, they lose ground in reading skills. "The National Center for Summer Learning found that by the end of fifth grade, students who didn't read during the summer lagged two years behind their book-reading peers and that summer learning loss accounted for most of the achievement gap between students who lived in poverty and those whose families were better off" (Fiore, 2010, p. 27). McCombs et al. similarly stated, "low-income students lose substantial ground in reading during the summer, while their higher income peers often gain" (2012, p. 48).

Students gain at the same rate while school is in session during the academic year, but when summer comes along, the learning stops or even regresses for some students (Alexander, 1997). Socio-economic status, race, ethnicity, and students of lower ability groups show disparity in academic measures ("Achievement Gap," 2004). The faucet theory further explains this phenomenon: when the faucet is turned on, all students enjoy similar learning rates, but when school is not in session for the summer and the "faucet" is turned off, children have less access to resources, resulting in lower learning rates than their middle class counterparts (Alexander, 1997, p. 8). The effects of summer slide

accumulate (McCombs et al., 2012), Alexander stated in 2007, "We find that cumulative achievement gains over the first nine years of children's schooling mainly reflect school year learning, whereas the high SES [K1] -low SES achievement gap at 9th grade mainly traces to differential summer learning over the elementary years" (p. 167). Summer slide is a problem in the American education system that needs to be noticed. The research is clear that it is cumulative, and significant.

The Big Five

The National Reading Panel supports teaching the following 'big five' skills in grades kindergarten through third grade: phonemic awareness, phonics, oral reading fluency, vocabulary, and reading comprehension strategies (National Reading Panel, 2000, p. 34). These five skills are research-based components found necessary in reading programs (Armbruster, Lehr, Osborne, Adler, 2006, p. ii).

Balancing the 'big five' in reading programs is necessary for success. "When teachers spend too much time on one component—teaching decoding—the development of another important component—oral vocabulary—suffers" (Cunningham & Allington, 2011, p. 8). All five components should be used in a combination to provide a program for children that works together to provide a successful experience, "…if text is read in a laborious and inefficient manner, it will be difficult for the child to remember what has been read and to relate ideas expressed in the text to his or her background knowledge" (National Reading Panel, 2000, p. 49). Thus fluency is important. "In order to become avid and enthusiastic readers who get pleasure and information from reading, children must develop fluency. Children who have to labor over everything they read…will only read when forced to read and will never understand why anyone can actually enjoy

reading" (Cunningham & Allington, 2011, p. 49). Reading is thinking, and the goal of comprehension instruction is that children are able to think as they read on their own (Cunningham & Allington, 2011, p. 131). "Both reading and writing require that the most common words be read and spelled automatically---without thought or mediation—so that the brain's attention can focus on meaning" (Cunningham, 2011, p. 92). Fluency is necessary for reading to make meaning.

Common Core State Standards (CCSS) for reading and language arts "emphasize a deeper form of understanding than simply asking readers to recall what they read" (Allington & McGill-Franzen, 2013, p. 2). Explicit instruction of comprehension strategies will develop readers who understand the text they are decoding. "Through strategy instruction, students learn that reading is a complex process that involves careful, deliberate steps in making meaning. Students are then given lots of opportunities to practice these strategies in small groups and individually with the teacher's guidance. When this process is repeated time and time again during the school year students develop the behaviors of stronger and more independent readers, which they put to work in the summer" (Cahill, 2013, p. 45). When students are taught reading strategies during the summer, they can then practice them during the summer with support from a summer school program, a supportive home environment or a summer reading program through a library.

Vocabulary is crucial for reading comprehension; so wide reading is often recommended to expand vocabulary (Cunningham & Allington, 2011, p. 95). The skills intertwine. "Correlational studies suggest that the more children read, the better their fluency, vocabulary, and comprehension" (National Reading Panel, 2000, p. 12).

By making use of the big five in summer school students can make gains and divert the summer slide. “Children who are at risk for summer reading loss may need help to ensure that they read the books they’re given and that they do so in ways that are likely to build decoding skills, fluency, and comprehension” (Kim & White, 2011, p. 66). Allington says it best: “All kids, but the focus here is on a certain group of children, need books they can read—accurately, fluently, and with strong comprehension—in their hands all day long in order to exhibit maximum educational growth” (Allington, 2009, p. 32). The literature from research shows that the ‘big five’ should be taught to students and that if students are to continue learning over the summer, they should have instruction and practice in these areas. Practicing the ‘big five’ over the summer can help reduce or prevent summer slide.

Early Intervention in Reading

“First, attempting to close the gap after it has opened wide is a rear guard action. Most of the gap increase happens early in elementary school, which is where corrective interventions would be most effective -- or even before” (Alexander, 2001, p. 176). We know from the previous section on summer slide and the “faucet theory” that learners learn at similar rates when the faucet is turned on, but when it’s turned off in the summer, students are sliding back (Alexander, 1997, p. 9). To keep that faucet on during the summer for children preschool on up would help prevent the disparity that exists in students in skill levels in reading. Experts Cunningham and Allington (2011) state the importance of early literacy:

> Through early reading and writing experiences, children learn why we read and write. They develop background knowledge and vocabulary, print concepts, and

> phonemic awareness. They learn some concrete important-to-them words and some letter names and sounds. Most important, they develop the desire to learn to read and gain self-confidence in their own ability to become literate. Classrooms in which all children develop a firm foundation of emergent literacy provide a variety of reading, writing, and word activities to help all children get off to a successful start in literacy (p. 47).

A foundation for all learning that takes place happens while students are young. "With this accumulating reading achievement gap (at the beginning of schooling), students from lower-income families often find themselves 2 or 3 years behind their more –advantaged peers as they head to middle school—even when they receive effective instruction during the school year (Allington & McGill-Franzen, 2013, p. 5). We cannot afford to wait for students to get so far behind and offer too little, too late. There are long term ramifications for children's lives when the achievement gap widens. "These early out-of-school summer learning differences, in turn, substantially account for achievement-related differences by family SES in high school track placements (college preparatory or not), high school noncompletion, and four-year college attendance" (Alexander, 2011, p. 167).

Positive Effects of Summer School

Across all ethnic groups, a positive relationship exists between reading books over the summer and students' fall reading scores (J. Kim, 2009, p. 180). This relates to the study at hand because universally students' scores rise when they read books over the summer. "Students will all benefit from high quality summer schools for all, but they will not benefit in equal measure" (Alexander, 2001, p. 177). Mraz and Rasinski studied

116 children in first, second and third graders in middle class neighborhoods and found that the decoding skills of 45% of the participants and fluency skills of 25% of the students declined between May and September. This is not as severe of a decline as in lower socioeconomic schools (2007). "A review of 13 empirical studies representing approximately 40,000 students found that, on average, the reading proficiency levels of students from lower income families declined over the summer months, while the reading proficiency levels of students from middle-income families improved modestly," (Mraz and Rasinski, 2007).

Summer school is beneficial for students to make gains in learning during the months students are usually off. "Modified school calendars build in time to enrich learning and sustain gains," (Schulte, 2009, p. 17). This extra time allows for students to build on their reading skills. "Without regular successful reading practice, reading proficiency seems to suffer a setback" (Allington & McGill-Franzen, 2013, p. 14). The success of summer school programs cannot be overstated. "Rigorous studies have shown that strong summer programs can achieve several important goals: reverse summer learning loss, achieve learning gains, and give low-performing students the chance to master materials that they did not learn during the school year" (McCombs et al., 2012, p. 50). Not only will students make short term gains over a three month period, but longitudinal studies conclude that the effects of summer learning carry on for at least two years after a student has engaged in a summer program (McCombs et al., 2012, p. 49).

"Not all summer learning programs result in positive outcomes. Programming needs to be high quality and students need to attend regularly" (McCombs et al., 2012, p. 49). It's imperative to hire quality staff well in advance, assure materials are appropriate

and that they arrive and are available in time for teachers to review before the program. Another recommendation is to promote professional development for teachers in conjunction with summer school (Cooper, 2001, p. 7). Practices that can be used to assure improved student outcomes in a reading program are as follows: smaller class sizes, involve parents, provide individualized instruction, and maximize students' attendance (McCombs et al., 2012, p. 51).

Gender and Reading

There are gender differences with acquiring reading skills. "Significantly more boys can be found at the lower end (5^{th} quantile) whereas girls are more frequent at the higher end (95th quantile). The result has been obtained in large-scale international comparisons of reading literacy among 10-year-olds as well as among 15-year-olds and show that the gender differences emerge in a wide variety of school systems and cultural settings" (Lundborg, 2010 p. 307). Boys and girls learn to read at different rates and schools have changed so much in the last thirty years that those differences are not taken in to account when providing for boy's needs. "The combination of the slower developing male brain and an elementary school curriculum that is far more accelerated than it was 30 years ago is making learning more difficult for boys" (Senn, 2012, p. 215). Senn challenges teachers to look at literacy from a boy's perspective to begin teaching in ways to motivate boys to want to read and write (2012, p. 220).

From the beginning boys and girls have varying needs. The differences in the primary grades are that in "first through third grade—girls often begin reading sooner and with greater skill than boys, who usually take longer to achieve reading mastery"(Senn, 2012, p. 214). Whereas in the intermediate grades, "…boys generally focus on all things

related to action and exploration, whereas girls attend much more to relationships and communication…boys are more often referred for remedial reading than girls" (Senn, 2012, p. 214). With more boys being referred for remedial reading, the conclusion may be that more boys may be recommended for summer school reading programs, but the research does not support this. In Fiore's 2010 study, "We also found that more girls participated in the summer reading program than boys (53 percent compared to 45 percent), most of the participants were Caucasian (49 percent), and 61 percent of the participants qualified for free or reduced school lunch" (p. 29).

Smith and Wilhelm highlighted the reasons boys need extra attention and care when it comes to literacy: boys take longer to read than girls, boys generally provide lower estimations of their reading abilities than girls do, boys read less than girls, boys express less enthusiasm for reading than girls do, and boys increasingly consider themselves to be "nonreaders" as they get older. Very few designate themselves as nonreaders early in schooling, but nearly 50% make that designation by high school (Smith & Wilhelm, 2002, p. 11).

"One reason why many boys can be so difficult to motivate to read is because the material provided to them by schools, teachers, and parents does not appeal to their interests" (Senn, 2012, p. 216). The interests of boys are different. Boys are more inclined to fuel their interests by reading informational texts, magazine articles, and newspaper articles (Smith and Wilhelm, 2012, p. 11).

Supplementary Summer Reading Programs

Summer school, voluntary public library reading programs and voluntary supplemental book programs sponsored by schools are all options for increasing or

maintaining students' reading skills in the summer time. All three of these programming choices provide growth during the summer months when students are out of school.

Allington and McFranzen (2013) did a study over three summers in which students were given free books at the reading level appropriate for the students to read independently. Students were able to choose their own books. The cost of running a program in this manner can be as little as fifty dollars per student (Allington & McFranzen, 2013, p. 48). "There is accumulating research demonstrating that student choice is an important factor when it comes to reading development" (Allington, 2012, p. 73). The overall effect size on reading achievement was d= .14 at the end of the study; the study used student peformances on the state reading achievement test given the year the project ended (Allington & McFranzen, 2013). This is a significant effect size.

By providing books of choice to children over the summer, summer slide can be curbed and gains can be made. Allington and McGill-Franzen research in the *Summer Books!* program discovered:

> Children need an enormous supply of successful reading experiences, both in school and out, to become proficient, independent readers. The potential role of summer voluntary reading in the development of reading proficiency (and in closing the reading achievement gap) has been too long neglected by educators and policymakers. Schools that serve many poor children must play a substantive role in ensuring that each and every child has year-round access to a generous supply of books to read in school and out, books the children cannot wait to read. (2013, p. 14).

Allington and McGill-Franzen have also concluded from their summer research project stretching over three summers that the simple act of providing books matched to students reading and interest levels improves reading achievement and eliminates summer slide in reading, "thereby narrowing the rich/poor reading achievement gap" (2013, p. 110).

In a similar study, Kim had students in four different groups receive books in the mail over the summer. For students in the treatment group, "one matched book was mailed each week for eight successive weeks from early July until the end of August" (Kim, 2008, p. 121). The four groups were:

1. Matched books only
2. Matched books and oral reading
3. Matched books, oral reading, and comprehension strategy instruction
4. Control group receiving books in the fall after post testing and no teacher or parent scaffolding (Kim, 2008, p. 121).

As measured on the Iowa Test of Basic Skills (ITBS), "Students in the full treatment group, Books with Oral Reading and Comprehension Scaffolding (M=207.0) significantly outperformed student in the Control group on the ITBS with a learning advantage of 2.5 months" (Kim, 2008, p. 123). Kim and White concluded that "…merely giving students books is not effective and that some form of scaffolding is necessary for voluntary summer reading to have achievement benefits" (Kim, 2008, p. 124).

Allington and McGill Franzen's conclusion from their study: *Summer Books*! project, in which students independently read books of choice is contrasting:

> "…our assumption was that after three consecutive summers, the amount of potential growth we might expect to observe should be large enough to capture on

> a commercial reading achievement test. We were correct in that assumption and will suggest that at least some of the shorter-term studies (c.f., single year studies) of summer voluntary reading might have reported not obtaining statistically significant effects on reading achievement as much because of measurement problems of this sort" (2013, p. 108).

The study being conducted will utilize an instructional approach combining some of what the research has lent to summer slide in reading: student placement with literature at their instructional reading level and teaching of the big five. The students will read stories at their instructional and independent reading levels in their summer school classes. The teachers will base the story selections on the students test results from the spring STAR Renaissance reading tests. Repeated readings to build fluency, higher level questions to build comprehension, and preteaching of vocabulary words will be included in the summer school instruction. The students that are in need of phonics instruction will be placed in stories that work on one or two phonics skills to help students practice skills with one or two sounds while reading a story or passage.

Summary

In conclusion, all the research agrees that doing nothing about summer slide is not an option. "Rigorous studies of voluntary programs, mandatory programs, and programs that encourage students to read at home in the summer have found positive effects on student achievement" (McCombs et al., 2012, p. 49). In order for a person to become a better reader, they must practice. "One of the proven strategies for narrowing the achievement gap is to focus on summer reading activity" (Allington, McGill-Franzen, 2013, p. 109).

Chapter 3: Methodology

During the summer of 2013 a group of students exiting grades 2-5 in a small, northern Wisconsin school district (enrollment of 540) experienced summer slide in reading. These same students were selected to enter into an experimental study during the summer of 2014. The students were self-selected either into an intervention group that attended a summer school program for either two or four weeks, or into a control group, those whose families chose not to have their children attend the district's summer school reading program. It was determined whether the data showed that the intervention (summer school) group scores suggest that the intervention had an impact on preventing summer slide versus the control group over the summer of 2014. Two different teachers taught the students in separate classes with a student teacher ratio of 8:1, allowing for more focused help.

Research Design.

An experimental study allowed for two groups to be compared in the summer slide research project: a control group and an intervention group. Allington and McGill-Franzen used a pretest-posttest control group design (2013, p. 76) to conduct research on summer slide in reading during their research in *The Summer Books! Project.* This same design was used for this research project as two groups of students were studied: a control and an intervention group.

Quantitative research methods were used in the research design. The numerical data gathered from universal reading tests on the STAR Enterprise reading test was used to determine whether a sample population that attended summer school avoided summer slide in reading over the control group. A unique feature of this study was that the

populations enrolled in the study were all students that experienced summer slide the previous summer.

Participants

Students in the study included all elementary students that experienced summer slide at the northern Wisconsin school district over the summer of 2013 that were exiting grades two through five in June of 2013. These students entered grades four through seven in the fall of 2014. A summer slide of 15 scaled score points or greater was used as a guideline for purposes of defining summer slide.

The study was made up of the following students exiting the grade listed in June of 2013:

- 11 Students (2nd) 3 female, 8 male. 1 attended summer school for a 2-week session, 3 attended summer school for a 4-week session (all 4 that attended summer school were male).
- 17 students (3rd): 5 female, 12 male. 2 students attended summer school for 2 weeks (both were male). 0 attended summer school for 4 weeks.
- 9 students (4th):4 female and 5 male. 1 student attended for a 2 week session (male). 0 attended summer school for 4 weeks.
- 6 students (5th): 1 female and 5 male. 0 students attended for a 2 week session. 0 students attended for a 4 week session.

Instrumentation

A Renaissance Learning product STAR Reading Enterprise was used to measure the scores of students in May of 2014 and again in September of 2014, after the intervention took place. To add to the strength of the study, *only* students with summer

slide (as present in the data stored on the district's Renaissance Learning historical reports) from the summer of 2013 were included in the 2014 research project.

The STAR Reading Enterprise is a computer adaptive test of reading proficiency. STAR Reading Enterprise includes carefully calibrated items based on the Common Core State Standards. The test measures include an item bank in which the 34 questions are generated based on the student's ability level. Administration usually takes 20 minutes or less. The Center on Response to Intervention at American Institutes for Research rates the STAR Reading test with high marks for reliability and validity with convincing evidence ("Academic progress monitoring GOM," 2014). The reliability of STAR Reading Enterprise is very high, ranging from 0.93 to 0.95 within each grade and "retest reliability estimates were 0.90 for all grades combined" (see Appendix A). More than 400 concurrent and predictive validity studies were done for STAR Reading and the validity correlations "observed in these studies range from 0.60 to 0.87; correlations in that range are considered strong" (see Appendix B).

STAR Reading Enterprise tests can be given as often as weekly for progress monitoring, or as little as three times per school year for universal screening of all students. The results of STAR Reading Enterprise can be used to see how students are progressing and if they are meeting the standards expected of them for their grade level. The results can be used to decide which students need interventions, and in which particular areas of reading ("Assessments built for insight," 2014).

Analysis

A matched pair's statistical analysis was done with the data. A matched pair test allowed the comparison of the control and intervention groups on the STAR Reading Enterprise; the spring of 2014 STAR Reading Enterprise test scores were compared to the fall of 2014 test scores. The mean of the difference was identified. The STAR Reading Enterprise is one of the most reliable and valid products in the field for universal testing as of 2014 as shown on the website for The Center on Response to Intervention at American Institutes for Research (2014).

Procedure

Students enrolled in a summer school reading program in a small, northern Wisconsin school district were studied to see whether attending summer school had an impact on their reading achievement test scores versus students that did not attend summer school during the summer months as shown on a pretest and posttest from spring to fall. Using STAR Reading Enterprise scores from Spring of 2013 and Fall of 2013, (which were stored in the historical records on the district's Renaissance Learning account) it was determined which students exhibited summer slide in during the summer of 2013. The students showing summer slide from the summer of 2013 were studied during the summer of 2014.

An experimental intervention was conducted during the summer of 2014 with the identified students either participating in the experimental group receiving summer school reading classes at the school district, or the control group that did not attend the district's summer school program. Families were given the choice to enroll their children in summer school, thus the control group and the intervention groups were self-selected

based on whether parents enrolled their children in the summer school program. The students were tested using the STAR Reading Enterprise in May of 2014 and again in September 2014.

STAR Renaissance provided a student identification number for each student the district purchased a testing license for. Identification numbers were used as coding numbers. The district added in the gender on an Excel sheet so that the researcher did not see the identity of students. Only the students that were identified as having a summer loss of 15 Scaled Score points or more during the summer of 2013 were selected to participate in the study. The codes were looked up again by student number to identify students who participated in the summer school program during the summer of 2014. The district provided this information to the researcher on an Excel spreadsheet. The results of the study are presented in whole group scores: intervention vs. control.

The students were taught in small groups with a ratio of 8 students to 1 teacher. The students attended reading class for 1 hour each day, Monday through Friday for either 2 weeks or 4 weeks. The two teachers teaching were certified professional educators with over 20 years of successful teaching experience.

The researcher was not involved in providing the intervention; the researcher collected the data on the students after it had been coded. The names of the students were anonymous with only the gender, grade level and scores available to the researcher. The data was analyzed using a matched pair procedure between the control and intervention groups.

Assumptions and Limitations

There were three assumptions made in this study:

1. The teachers used a balanced reading intervention that provided systematic instruction in phonics, fluency, comprehension, and vocabulary development as recommended by the National Reading Panel.
2. Teachers were trained to utilize STAR Renaissance Star test results to choose reading material for students and did this properly.
3. The scores obtained from the STAR Enterprise Reading accurately reflect students' reading achievement and progress. If students were having a bad day, or were feeling ill the day of testing, their results may not be valid.

The limitations of this study are:

1. The sample size was small as the district is small with a population of only 540 students. If a larger sample size were available it would have increased the reliability of the study as there would have been more students to find a correlation between interventions done and summer slide in reading.

2. The students may not have had the same teacher during their intervention, or during the school year for each grade level. This may have posed a threat to the validity of the study, as the lowest grade in the study had a different teacher for summer school than the older three grades did, so teaching styles were different.

Summary

The research plan was carefully laid out and the historical data was collected to determine which students qualified for the study. A matched pairs design was planned.

A valid and reliable reading achievement test, STAR Enterprise Reading test, was conducted in the spring before, and the fall, after the intervention took place to gather the scaled scores of the participants. The mean of the difference was identified and the results of the data analysis have been displayed. The data was analyzed numerically to determine whether growth in reading was obtained by the students in the intervention group compared to the control group through the matched pairs test.

Chapter 4: Results

There were three research hypotheses I posed regarding summer slide in reading. For research hypothesis 1, I applied a one way analysis of variance (ANOVA) to the three mean differences (Control group, Intervention Group-2 Weeks and Intervention Group-4 Weeks) and the data does not support a correlation between enrollment in the summer school reading program and the elimination of summer slide in reading compared to the students in the control group that self-selected to not attend summer school. Summer school was offered to all students free of charge.

Research hypothesis 2 could not be tested, as there were no female students that chose to enroll in the summer school program from the study. Out of the 7 students that attended summer school, all 7 were male.

Research hypothesis 3 could not be tested, as there were no students that enrolled in summer school from the fifth grade class.

Data Presentation.

There were 43 students that experienced summer slide of 15 Scaled Score points or more during the summer of 2013. Out of those 43 students, 36 were in the control group that did not attend summer school. 4 attended summer school reading classes for 2 weeks (Intervention Group 2 Weeks), 3 attended summer school classes for 4 weeks (Intervention Group 4 Weeks). Out of the 7 students that attended summer school, all 7 were male. From fifth grade, none of the students exhibiting summer slide attended summer school reading classes. (See table 1).

Group	N	Mean Difference	Standard Deviation
Control	36	35.19	134.38
Intervention Group 2 Weeks	4	125.5	180.92
Intervention Group 4 Weeks	3	31.3	231.93

Table 1

The mean difference of the students in the control group, that included 36 students are 81.19 scaled score points. The standard deviation is 77.54 scaled score points.

The mean difference of the students in intervention group (2 weeks), which included 4 students is 125.5 scaled score points. The standard deviation is 180.92 scaled score points.

The mean difference of the students in intervention group (4 weeks), which included 3 students is 117 scaled score points. The standard deviation is 231.93 scaled score points.

I applied a one way analysis of variance (ANOVA) to the three mean differences (Control group, Intervention Group-2 Weeks and Intervention Group-4 Weeks) and the data does not support the idea that summer school helped the students in the intervention groups (F test statistic = .721, critical value = 4.0510). A longitudinal study with larger sample sizes (at least 30 in the intervention groups as well as the control group) would be needed in order to determine whether a statistically significant difference exists in the data between the control and intervention groups.

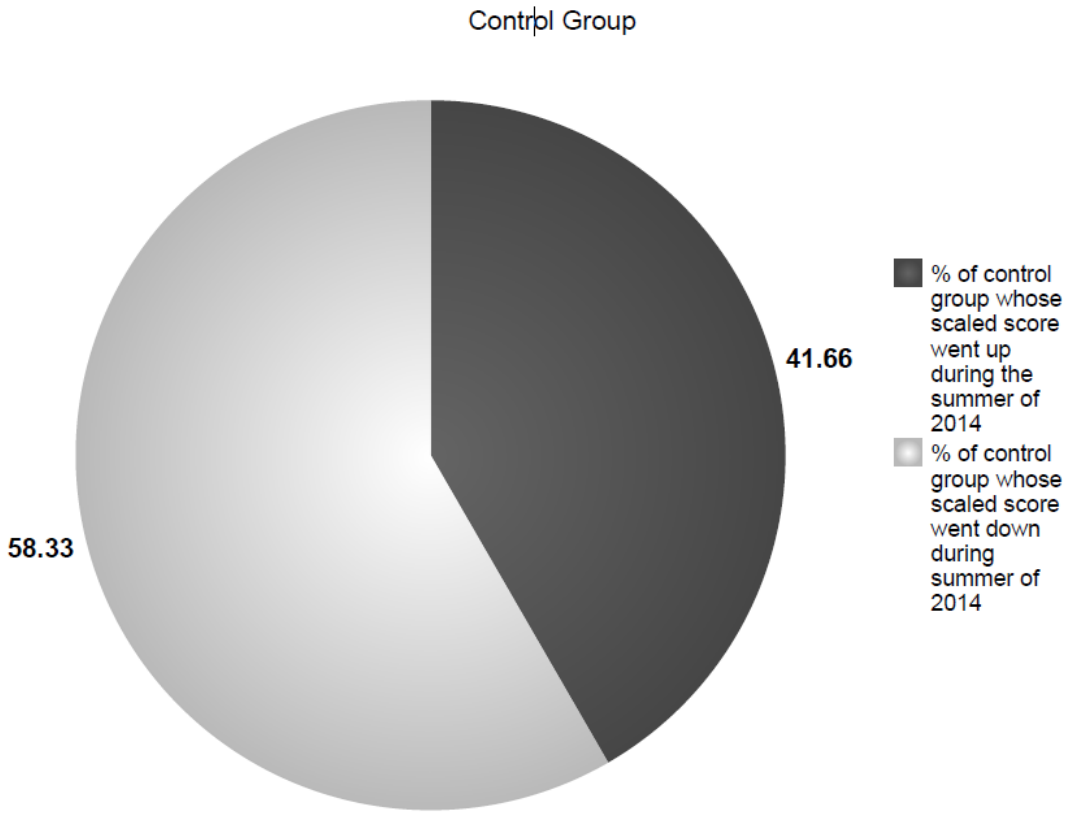

Figure 1

15 out of 36 students in the control group experienced a gain in reading over the summer of 2014 (See figure 1).

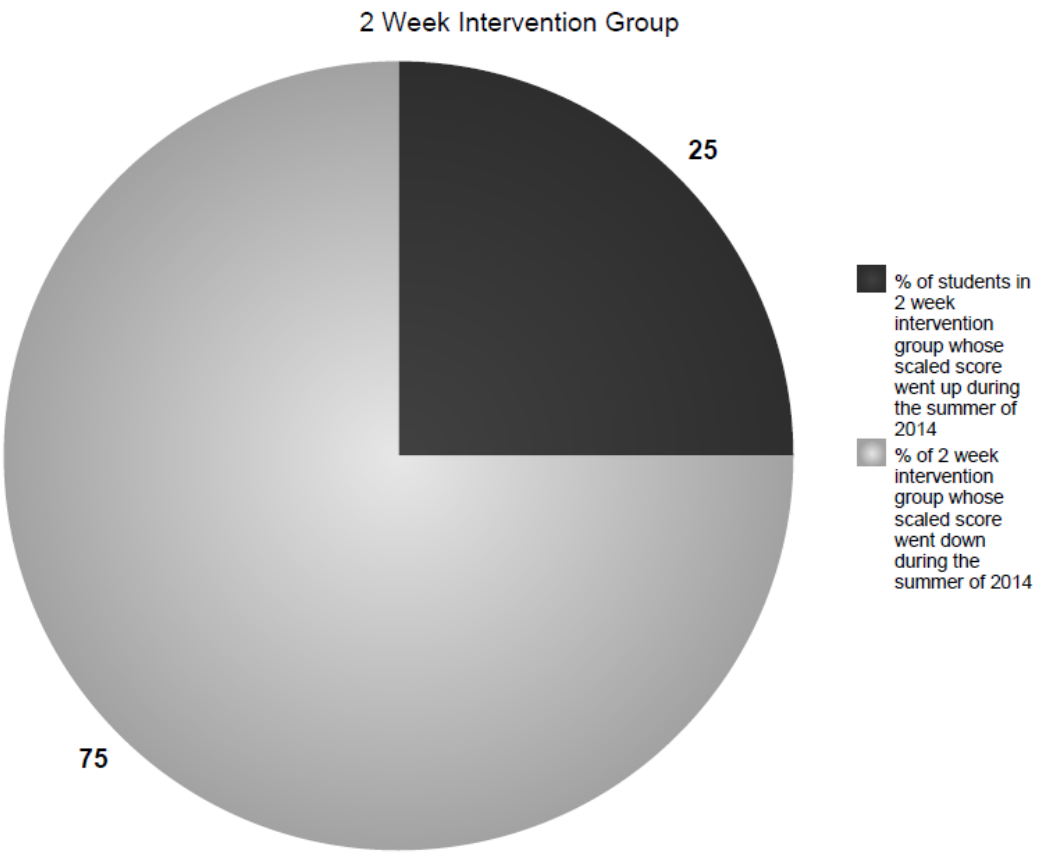

Figure 2

1 of 4 of the students in the 2 week summer school group experienced gain (see figure 2).

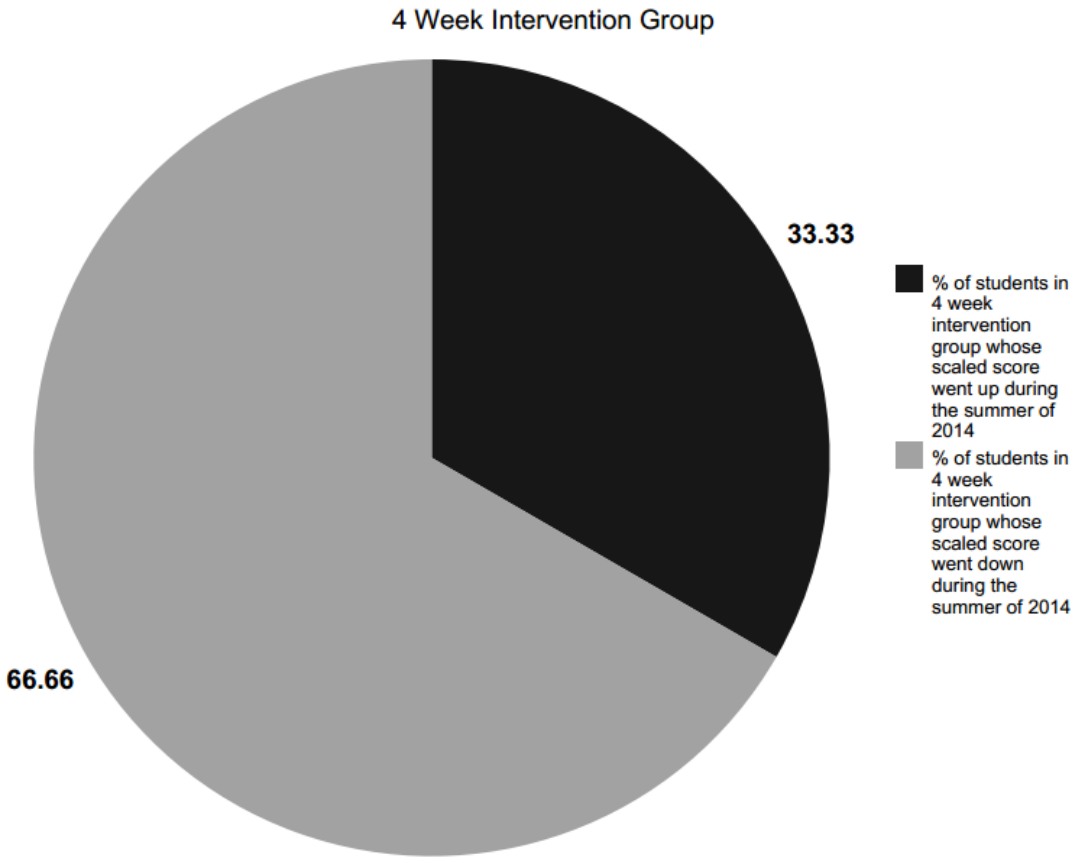

Figure 3

1 of 3 students in the 4-week summer school group experienced gain in reading over the summer of 2014 (see figure 3).

Summary

The data for research hypothesis 1 does not support a correlation between enrollment in the summer school reading program and the elimination of summer slide in reading compared to the students in the control group. The students participating in the two intervention groups (two weeks of summer school and four weeks of summer school) did not outperform the students in the control group. Research hypothesis 2 (comparing male vs. female summer slide in reading) was not able to be tested as there were no female

students that enrolled in the summer school program from the study. Research hypothesis 2 (comparing primary vs. intermediate grades) was not able to be tested as no fifth graders enrolled in the summer school program. A larger sample size and a study conducted over a period of three summers would have allowed for the collection of data that was statistically significant.

Chapter 5: Summary

Introduction

During the summer of 2013, there were 43 students exiting grades 2-5 from a small northern Wisconsin school district that experienced summer slide in reading of 15 or more scaled scores points as measured on the STAR Renaissance reading test from Spring of 2013 to Fall of 2013. These same students were studied during the summer of 2014. 36 were in the control group (that self-selected not to attend summer school), 4 students were in Intervention Group-2 that self-selected to attend summer school for 2 weeks, and 3 students were in Intervention Group-4 that self-selected to attend summer school for 4 weeks. The summer school reading program consisted of a one hour, daily class focusing on a balanced literacy approach containing instruction and practice in reading with fluency, comprehension, and vocabulary acquisition. Phonics and phonemic awareness were included as needed for individuals. This research study's purpose was to determine if a summer reading program in a northern, rural school district could have a benefit of preventing summer slide for children that have a history of summer slide during the previous summer.

Discussion of Data

From the data analysis conducted it was determined that summer school instruction in the rural, northern school district did not show significant impact on students' reading skills over the summer. The students in the summer school program compared to the students in the control group were not statistically different on their fall STAR testing scores. A comparison between male and female students was not a

possibility because of the small sample size; there were no females that participated in the summer school program. The comparison between primary and intermediate grades was not possible either, because no students exiting grade five in 2013 attended summer school during 2014. The possibilities within the findings of this study suggest that the sample size was too small. It is known from other studies that summer school reading programs do prevent summer slide in reading (McCombs, 2012).

Further research could be done on small, northern rural schools, by studying a group of students from several small schools in order to obtain a sample size that is large enough to obtain statistically significant data to lend to a correlation between a summer school intervention and the prevention of summer slide in reading. I would recommend that participants in a future study prequalify through identification on a universal reading achievement test from spring to fall of the previous summer. Students being studied would then have a summer slide background as a commonality. I believe this would bring something new to the research. I chose this unique feature for my research project, hoping to learn if it was effective for students that have already shown summer slide in the previous year.

Reflection

Though the hypotheses were rejected, much was learned through this study. The golden nugget found by looking at the data for reading growth during the school year shows that 100% of the students in the study went up in their scaled score from fall of 2013 to spring of 2014, and 75% of the students enrolled in the study experienced growth of 100 scaled score points or more from fall to spring during the 2013-14 school year.

My focus as a researcher was on summer slide, but in looking at the data, I did not want to dismiss this unexpected key finding of the success this school experienced over the course of the 2013-14 school year. The programming in this northern, rural school is helping these students experience significant growth during the year.

Questions that arise are: did some students not enroll in summer school because they had shown significant growth during the school year? Do some of these students that were enrolled in summer school that did not show growth during the summer have learning disabilities that hindered their reading growth? What did the 15 students in the control group do differently during the summer that caused them to exhibit growth in the fall? Would a survey have helped identify the reading and writing activities they pursued that were different than the other 21 students in the control group that did not show growth over the summer**?** Several possible explanations exist for the results shown in this study.

Larger studies in more urban areas did show a correlation between summer school and other summer reading programs and preventing summer slide in reading. (Allington, 2013 and Cooper, 2000). The confounding variables in this study that may have caused the control group to have a higher success rate in reading may be family support in reading. Was the summer school program motivating to the students? Were there income level disparities between the students in the control group that showed growth during the summer? Could a questionnaire have helped discover what students in the control group did to achieve gains (for the 15 out of 36 that showed summer gains in reading).

A future study could feature several rural schools in a region in order to obtain a large enough sample group to provide a statistical analysis to see if there is a correlation

between summer school attendance with prequalified students that exhibited summer slide the summer before. This allows the use of reading achievement data to answer questions of what works to help students with summer slide in reading longitudinally. We know from the research that summer slide in reading is cumulative and significant (Alexander, 2007; McCombs, 2012). The National Center for Summer Learning concluded that by the end of fifth grade there is a two year gap between students of high and low income, mostly accounted for through summer reading loss. This problem is pressing and with more research and application of what we already know, students can be helped early on with summer reading programs to address their needs.

Summary

There is more to be learned through studying students with previous summer slide in reading during the summer months. As a teacher/researcher I learned more in depth about what methodologies work to prevent summer slide in reading. The previous research has taught us that The Big Five has an impact when designing a literacy program, this includes summer school. Boys and girls have different needs when learning how to read and these can be accommodated through designing instruction with a variety of topics in books and stories that students can choose. The research that has been done on summer slide in reading has been done with large numbers of students in urban areas (Allington, 2013), and to replicate it in a rural area is difficult. There is more to be learned about students that experienced significant (15 Scaled Score points or more) summer slide in reading in a previous summer. We know that summer slide in reading is a problem that accumulates throughout the years and creates a gap of several years between students of low socioeconomic status and middle class students (Alexander,

1997). By studying prequalified students identified with previous summer slide, more can be learned about how to help this target group.

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Appendix A

Reliability and validity of STAR Reading Enterprise™

Reliability

The reliability of STAR Reading Enterprise assessments was estimated using two methods, internal consistency (generic reliability coefficients) and test-retest correlation coefficients, in a random national sample of more than 1.2 million STAR Reading Enterprise tests administered between September 2012 and June 2013. The retest correlation coefficients were based on samples of 5,000 students per grade, from the same dataset. Results are displayed in Table 7. The internal consistency reliability estimates were very high, equaling or exceeding those of most major published assessments. Over all grades combined, the reliability was 0.97; it ranged from 0.93 to 0.95 within grades. Retest reliability estimates were 0.90 for all grades combined, and ranged from 0.54 to 0.85 within grades.

Table 7: Internal Consistency and Retest Reliability of STAR Reading Enterprise™

Assessments Taken Between June 2012 and June 2013

	Internal Consistency		Retest Reliability	
	Students	Reliability Coefficient	Students	Reliability Coefficient
All	1,227,915	0.97	60,000	0.90
1	100,000	0.95	5,000	0.54
2	100,000	0.94	5,000	0.66
3	100,000	0.94	5,000	0.75
4	100,000	0.93	5,000	0.77
5	100,000	0.93	5,000	0.78
6	100,000	0.93	5,000	0.83
7	100,000	0.94	5,000	0.82
8	100,000	0.94	5,000	0.83
9	95,171	0.94	5,000	0.85
10	94,624	0.95	5,000	0.85
11	93,118	0.95	5,000	0.85
12	89,031	0.95	5,000	0.85

Appendix B

Validity

As noted in the discussion of STAR Early Literacy validity, content is a crucial facet of test validity; content-related evidence of validity lies in the degree of correspondence, or alignment, between the knowledge and skills measured by an assessment's test items and the knowledge and skills intended to be taught and learned in a given curriculum at a given grade level or levels. STAR Reading Enterprise content is aligned to curriculum standards at the state and national levels—including the Common Core State Standards (see Core Progress Learning Progressions—The Bridge Between Assessment and Instruction, p. 10).

Psychometric reliability, combined with a high degree of alignment of test content to curriculum standards may be evidence enough of an assessment's validity. However, other measures complement or corroborate those two facets and serve to further strengthen an assessment's claims of validity.

To support STAR Reading Enterprise as a measure of both reading comprehension and a broad range of other reading skills, Renaissance Learning has collected a wide range of correlations between scores on STAR Reading and scores on other recognized, established measures of different aspects of reading achievement, such as survey achievement tests, diagnostic reading measures, and state accountability tests, among others. Table 8 summarizes the results of more than 400 concurrent and predictive validity studies conducted for STAR Reading, involving a total of more than 1 million students. The average correlations observed in these studies range from 0.60 to 0.87; correlations in that range are considered strong. Below the table is a list of state assessments that have been found to correlate well with scores on STAR Reading.

Table 8: Summary of STAR Reading™ Validity Studies

	Predictive			Concurrent and Other External Validity		
Grade	Studies	Students	Average Correlation	Studies	Students	Average Correlation
1	6	74,77	.68	15	1,135	.77
2	10	184,434	.78	32	4,142	.72
3	30	200,929	.80	44	4,051	.75
4	25	185,528	.82	41	5,409	.75
5	29	126,029	.82	40	3,588	.75
6	23	82,189	.82	37	2,728	.71
7	23	64,978	.81	33	3,294	.70
8	25	34,764	.81	29	2,148	.72
9	8	9,567	.83	15	949	.72
10	9	7,021	.85	11	566	.61
11	6	6,653	.86	6	324	.70
12	2	3,107	.86	4	165	.74