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A Comparative Study of the Impact of Title I Literacy Instruction on Reading Achievement

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A Comparative Study of the Impact of Title I Literacy Instruction on Reading Achievement

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Approval Page

This dissertation was submitted by Jill S. Payne under the direction of the persons listed below. It was submitted to the Gardner-Webb University School of Education and approved in partial fulfillment of the requirements for the degree of Doctor of Education at Gardner-Webb University.

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Abstract

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Student Achievement and Growth launched a new intervention model to be implemented in a district in North Carolina. The purpose of this study was to investigate the impact of a specifically defined literacy instructional model, Leveled Literacy Intervention (LLI), on K-2 reading achievement as measured by the Text Reading and Comprehension (TRC) component of mClass: Reading 3D. A student's ability to read can be impacted by many things including school readiness, teacher expertise, student home environment, student school environment, and the instruction provided.

The problem in this study is that regardless of social status, race, or gender, an alarming number of students face difficulties in learning to read. Our educational system has a responsibility to decrease the gap in reading proficiency in order to maximize the number of students who graduate from high school and become productive members in our society.

The setting of this study included four elementary schools in a rural county in North Carolina. Participants were selected based on their beginning-of-year (BOY) TRC score and were grouped according to the Literacy Instructional Model used to provide their instruction: (1) pre-LLI group and (2) LLI group. Once served, this study analyzed the historical data comparing the classifications to determine the impact, if any, that LLI had on K-2 reading achievement and growth as measured by the TRC BOY to end of year (EOY). The study also compared student attendance and growth seeking to find any correlations that existed. The researcher collected TRC data to compare classifications for growth and achievement.

An analysis of the data suggests that LLI provides stable and consistent growth but no higher than when compared to instruction without LLI. Achievement levels are higher for students served through the LLI instruction model. These findings can be used by educational leaders in districts for planning and program selection to help guide their decisions in order to ensure that students and teachers are provided the most effective means for instruction.

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Chapter 1: Introduction

Introduction

"Literacy is not a luxury, it is a right and a responsibility. If our world is to meet the challenges of the twenty-first century we must harness the energy and creativity of all our citizens" (Clinton, 1994, para. 2).

In today's society, it is imperative that students learn to read. Students who do not become literate readers in early elementary are likely candidates for becoming high school dropouts (Hernandez, 2011). For decades, school reform has shown only slight growth in the area of reading. According to a comparison of reading results from the National Assessment of Education Progress (NAEP), the number of fourth-grade students who scored below proficient only decreased 7% between 1992 and 2013. Reading deficits are widespread problems that challenge school districts across the state and nation with only 35% of fourth-grade students in North Carolina and 34% of fourth-grade students as a nation in 2013 scoring at proficient or higher (The Nation's Report Card, 2013).

The National Reading Panel (NRP, 2000) stated that only 10-15% of the children who experience the most serious reading problems graduate from high school. Over 1.1 million members of the 2012 high school graduating class did not receive a diploma (Rumberger, 2013). Students must learn to read to have the necessary skills that allow them to be positive contributors in society. Reading not only impacts graduation and the individual's success, it can also impact the future of our nation. Authors of *Mission: Readiness* (2009), stated that over 75% of young people ranging in age from 17 to 24 cannot enlist in the U.S. military. Their inability to enroll is not because of a lack of interest but because they do not have a high school diploma and/or they have a criminal

record. Criminal involvement is more likely to occur for students who do not finish high school, and these same students who drop out cost our country on average $260,000 in lost earnings, taxes, and contributions (Riley & Peterson, 2008; Sum, Khawtiwada, McLaughlin, & Palma, 2009). With the significant impact reading has on a student's academic success as well as their adult status, elementary students beginning with kindergarten must master the necessary skills that promote reading proficiency (Cunningham & Stanovich, 1997; Entwisle & Alexander, 1999; Kraus, 1973).

"If we don't get more children on the track to becoming proficient readers, the U.S. will lose a growing and essential proportion of its human capital to poverty" (Fiester, 2010, p. 7). According to Ikomi (2010), K-2 reading deficits are a strong predictor for third-grade nonproficiency which is a significant indicator of high school dropout and juvenile criminal activity. A large population of students in K-2 are not developing the necessary strategies and skills that promote reading fluency and comprehension, negatively impacting their future success. Reading deficits are widespread problems that present a challenge to schools across the state and nation including the district in this study. Struggling readers can be found in every classroom. North Carolina's accountability system requires that students in Grades 3-8 take an end-of-grade (EOG) standardized test in reading each year. Table 1 presents data for reading proficiency in Grades 3-5 on the North Carolina EOG (NCEOG) for the schools, district, and state in this study.

Table 1

NC Report Card Data

	EOG% Proficiency Grades 3-5 Reading, 2010-2011	EOG% Proficiency Grades 3-5 Reading, 2011-2012
State of NC	70.7	71.2
District	69.5	69.1
School A	57.3	57.0
School B	67.5	60.8
School C	53.3	62.7
School D	46.7	53.7

According to the data from the 2011 North Carolina Report Card shown in Table 1, only 70.7% of the students at the state level demonstrated proficiency, with the district in this study scoring only 69.5% proficient (North Carolina Department of Public Instruction [NCDPI], 2011). These data for the 2011-2012 school year showed slight improvement at the state level where students scored 71.2% proficient, while the district in this study scored slightly lower at 69.1% proficient. Schools in this study did make slight changes between the 2 years of comparison; however, reading proficiency must still be an area of focus as the schools are still significantly lower than the state and the district being studied. This evidence shows the need for the study and that the challenge of growing literate readers is a problem that affects our nation, each state, and district as well as the individual schools.

Problem Statement

The problem in this study is that regardless of social status, race, or gender, an alarming number of students face difficulties in learning to read. A foundation must be laid for all readers in Grades K-2 to address the startling statistics of nonproficiency among third-grade students throughout our districts, states, and nation. Students struggling to meet proficiency in Grades K-2 are more likely to be below grade level in

Grades 3-5 (U.S. Department of Education, 1999). One detrimental factor to students struggling at the launch of their school experience is that students enter elementary school at many different levels of school readiness. Neuman (2006) stated that there is a large gap between readiness skills of incoming kindergartners and exposure to words, verbal and in print, which slows their reading progress. This information is imperative in that students entering kindergarten must be assessed to know how to provide appropriate strategies to establish a readiness for learning in all students. At the end of the 2011-2012 school year, the district being studied had only 47% of K-2 students meeting reading proficiency as measured by mCLASS: Reading 3D. Of the nonproficient students, 56% were classified as far below proficient or multiple reading levels below grade-level expectancy. The problem of students failing to learn how to read must be addressed as it not only impacts our states and nation in the areas of growth and economy but also schools and districts; and most importantly, it impacts the future success of the student as an individual.

In preparing to create a plan that works to solve the problem of reading deficiencies among primary students, the state of North Carolina adopted the North Carolina Excellent Public Schools Act (2013) which was approved by the State Board of Education in August 2012 with an implementation date of 2013-2014.

> The goal of the State is to ensure that every student read at or above grade level by the end of third grade and continue to progress in reading proficiency so that he or she can read, comprehend, integrate, and apply complex texts needed for secondary education and career success. (North Carolina Excellent Public Schools Act, 2013, p. 25)

As part of the North Carolina Excellent Public Schools Act (2013), the North Carolina

Read to Achieve and Reading 3D components were designed to focus on improving reading achievement, providing effective reading instruction, and using mCLASS: Reading 3D stated below.

> ***Facilitate early grade reading proficiency***. (a) Kindergarten, first, second, and third grade students shall be assessed with valid, reliable, formative, and diagnostic reading assessments made available to local school administrative units by the State Board of Education pursuant to G.S. 115C-174.11(a). Difficulty with reading development identified through administration of formative and diagnostic assessments shall be addressed with instructional supports and services. To the greatest extent possible, kindergarten through third grade reading assessments shall yield data that can be used with the Education Value-Added Assessment System (EVAAS), or a compatible and comparable system approved by the State Board of Education, to analyze student data to identify root causes for difficulty with reading development and to determine actions to address them. (b) Formative and diagnostic assessments and resultant instructional supports and services shall address oral language, phonological and phonemic awareness, phonics, vocabulary, fluency, and comprehension using developmentally appropriate practices. (North Carolina Excellent Public Schools Act, 2013)

mCLASS: Reading 3D is the assessment tool that has been selected to provide Grades K-3 teachers with diagnostic data from a formative assessment about individual students and the root cause of their reading deficiency. This is the first step in a state initiative designed to systematically identify and address the foundational level of deficiency for nonproficient readers.

Reading is developmental and occurs in stages. Early identification is imperative

in order for students to progress through the stages of reading. Large-scale studies have shown that young children, those entering kindergarten and first grade, vary greatly in their attainment of the early precursor skills that provide the launch pad for later literacy learning (West, Denton, & Germino-Hausken, 2000). Students who come with a gap in preparedness for learning, lacking the skills necessary to become a literate reader, must be identified accurately in order to implement appropriate interventions and decrease the likelihood of becoming a nonproficient reader or one who does not meet the expectations for their age-appropriate peers (Torgesen, 2004). Goodwin (2012) made a comparison:

> Student reading difficulties can be like many forms of cancer; relatively easy to treat if detected early, but more and more difficult to remedy if allowed to persist. By the late elementary grades, what started as minor reading deficiencies often metastasize to all areas of student learning. (p. 80)

Purpose of the Study

The district in this study lacked a method for determining the effectiveness of the literacy intervention used in Title I schools. Due to the inconsistency among programs implemented across Title I schools within the district to support students in their development toward becoming literate readers, the district being studied decided to implement a consistent approach. The purpose of this study was to investigate the impact of a specifically defined literacy instructional model, Leveled Literacy Intervention (LLI), on K-2 reading achievement as measured by the Text Reading and Comprehension (TRC) component of mClass: Reading 3D. A literate reader is defined in this study as a student who reads at the age-expected level as predetermined by the state and comprehends the text he/she is reading. The literacy teachers (LTs) providing the instruction in this study are focusing on teaching the students using the LLI model. The

format of this program, as described by Fountas and Pinnell (2009a), is to provide students daily, supplemental instruction in small groups. Assessments are a key component of LLI in order to gain knowledge of the progress students are making. In addition to LLI, the district being studied also uses the assessment system mCLASS: Reading 3D as a benchmark for student progress and to meet compliance with the Excellence Public Schools Act. mCLASS: Reading 3D allows teachers to identify specific areas of concern in order to create a progress monitoring plan for each individual student and measure his/her growth. Identification and intervention are essential to evading the downward spiral that results from a lack of foundational reading skills (Torgesen, 2004). This study looked at kindergarten, first-, and second-grade students in four primary schools located within a larger suburban school district in the piedmont area of North Carolina. It sought to determine the overall effectiveness of the supplemental reading program on mean reading growth and achievement of students served by Title 1 instruction prior to LLI compared to those after the implementation of LLI. The study was designed to establish the impact the LLI supplemental Title I literacy instruction provided. The research collected and analyzed in this study obtained data to support and guide the district office in instructional planning and revisions.

Setting

Four schools located in a large suburban school district in the piedmont area of North Carolina were the setting for this study which took place over a 5-year period of time, comparing data from 2010-2015. There are 55 schools in this district. Of the 55 schools, 31 are elementary with three serving prekindergarten through second grades, four serving third through fifth grades, and the remaining 24 serving prekindergarten through fifth grades. There are 11 middle schools serving sixth through eighth grades, 10

high schools serving ninth through twelfth grades, and one Early College High School. This district also has two alternative schools, one serving behaviorally at-risk students and the other serving severally handicapped students. In 2012-2013, the population for preschool was 586; Grades K-5 was 14,233; Grades 6-8 was 7,420; Grades 9-12 was 9,524; and the Early College 13th-year program served 12 students, totaling 31,775 students enrolled in prekindergarten through twelfth grade. In the elementary schools, 7,780 students attended Title I schools and 6,480 students attended a non-Title I school.

Four schools were selected because of their commonalities. All four schools qualified as Title I schools. Title I designation states that schools received federal funds to supplement their regular budget to support students who are identified at risk because of their socioeconomic level. The percentage of students that qualified for free and reduced lunch programs at each of the four schools is presented in Table 2.

Table 2

Free and Reduced Lunch Qualification by School, 2012-2013

School Lunch	Total Students *n*	Population on Free/Reduced *%*
A	329	(79.95%)
B	566	(90.44%)
C	455	(93.03%)
D	235	(94.83%)

Note. Data retrieved from GCS 2012-2013 Membership Report month 9 & GCS 2012-2013 At Risk Report.

According to the U.S. Department of Education, Title I is a federal program that provides financial assistance to local educational agencies (LEAs) and schools with high numbers or high percentages of children from low-income families to help ensure that all children meet challenging state academic standards. Federal funds are currently allocated through four statutory formulas that are based

primarily on census poverty estimates and the cost of education in each state. (U.S. Department of Education, 2014, p. 1)

Schools may qualify for Title I if they meet the low socioeconomic status. The four schools in this study are all Title I designated schools which indicates that they receive additional funding to level the playing field for their students. The percentage of the population of students who receive free and reduced lunch is the data utilized to determine the socioeconomic status for qualification. Table 2 shows the percentage of students receiving free and reduced meals at each of the four schools used in this study for the 2012-2013 school year. Seventy-five percent of the schools in this study have higher than 90% of the students on free-reduced lunches. Students living in poverty, according to the National Early Literacy Panel (2008), are more likely to experience reading failure. All four schools in this study were ethnically diverse serving students of low-class families which is presented in Table 3.

Table 3

Student Demographics 2013-2014

Demographics	A *n (%)*	B *n (%)*	C *n (%)*	D *n (%)*
Total number of students	382 (100)	612 (100)	629 (100)	289 (100)
Male students	205 (53.66)	324 (52.94)	380 (60.41)	156 (53.97)
Female students	177 (46.33)	288 (47.05)	249 (39.58)	133 (46.02)
White students	280 (73.29)	270 (44.11)	231 (36.72)	47 (16.26)
Black students	53 (13.87)	196 (32.02)	266 (42.28)	134 (39.44)
Hispanic students	33 (8.63)	101 (16.50)	102 (16.21)	93 (32.17)
Other students	16 (4.18)	45 (7.35)	30 (4.76)	15 (5.19)

Note. Data retrieved from GCS 2013-2014 Membership Report.

Table 3 provides the demographic data for the schools within the study. The four schools all had a diverse clientele and were designated as Title 1 schools. School D is a much smaller school than A, B, or C, with only 289 students. Schools in this study do not have a common thread in their ethnicity. School A is primarily White, School B is

balanced with White and minority, and Schools C and D are primarily minority with fewer Whites. The male-to-female ratio was more comparable between schools with more males at each location.

Students being served by Title I LTs in the schools being studied during the 2012-2013 school year experienced a shift in the method used to provide early literacy intervention in the primary reading program. As noted in Table 4, the distribution of support among grade levels from the Title I LTs changed over the years. There became a greater focus on K-2 interventions. Prior to 2012-2013, schools in this district were allowed to make a determination on how to allocate funds at each specific school site to provide support for the grade levels under testing constraints by the state.

Table 4

Number of Students by School, by Grade Level

		A *N*	B *N*	C *n*	D *N*
2010-2011	K	24	0	28	0
	1st	23	51	0	25
	2nd	16	0	0	12
	School Total	63	51	28	37
2011-2012	K	0	0	0	0
	1st	0	0	28	0
	2nd	27	0	0	32
	School Total	27	0	28	32
2012-2013	K	7	23	0	16
	1st	16	19	24	22
	2nd	36	17	20	21
	School Total	59	59	44	59
2013-2014	K	7	18	0	19
	1st	22	21	39	23
	2nd	26	14	32	14
	School Total	55	53	71	56

Note. Collected from District Title I office – LT data 2010-2014.

Evidence of a shift toward a more structured K-2 approach for providing support

to at-risk students is presented in the distribution of students by grade level being served by Title I at each of the schools in Table 4. These four schools also used mCLASS as an assessment tool to assess and track student reading development and progress. During the 2012-2013 school year, the county being studied implemented a new approach to early intervention in the primary reading program LLI.

New efforts were being made to create a structured approach toward early intervention with all Title I schools in the district being studied using the same method of instructional planning and delivery. With the new implementation of LLI beginning in 2012-2013, the four schools in this study collected data prior to the implementation of the new format for Title I Literacy Instruction (2010-2012) and are still using it with the new LLI program implementation (2012-2015). Students are measured at the beginning of the year (BOY), middle of the year (MOY), and end of the year (EOY). One measure of mCLASS is the TRC. The TRC measures a student's ability to apply all foundational skills within reading at each level, increasing difficulty with mastery (mCLASS Reading 3D, n.d.) In 2012-2013, the district also began mandating a standards of practice in mCLASS TRC administration. No longer were teachers benchmarking their students in the TRC at the BOY, MOY, and EOY. Students had to be assessed by someone different than the teacher of record.

This study focused on four research questions seeking to determine the type of impact LLI has on K-2 reading proficiency.

Research Questions

1. What difference in mean growth scores on the mCLASS TRC exist between Title I students prior to the LLI program (2010-2012) and after the LLI program was implemented (2012-2015)?

2. What difference in mean growth scores on the mCLASS TRC exist between Title 1 schools prior to the LLI program (2010-2012) and after the LLI program was implemented (2012-2015)?
3. What impact did the LLI instruction have on the grade-level achievement of K-2 students being served in Title I as measured by the mClass TRC compared to the grade-level achievement of students being served in Title I prior to LLI also measured by mCLASS TRC?
4. What comparison, if any, can be made between reading growth and achievement and days served for students served in the LLI program and students served prior to LLI program as measured by mCLASS TRC and attendance logs?

Background of the Study

In recent years, proficiency levels in a suburban county in North Carolina, the district used in this study, show many of the students taking the standardized test for Grades 3-5 are not meeting the expectation for being identified as a proficient reader. K-2 reading proficiency is a strong indicator for Grades 3-5 reading proficiency (Ikomi, 2010). With high levels of accountability, schools are focusing on interventions and research-based strategies in order to increase student success (Trimble, 2003). Increases in expectations that are mandated by legislatures create a competition between teaching to learn and teaching the test, questioning the reliability of multiple choice tests that measure oral reading. According to Fredericksen (1986), test scores may be part of the problem if they do not measure what is being taught.

The North Carolina Report Card provides an overview of each school's proficiency in reading and math based on the third-, fourth-, and fifth-grade EOG

assessment. According to the report cards, the overall mean proficiency for the schools to be used in this study was 54.43% in reading for the 2011-2012 school year (NCDPI, 2013) as presented in Table 5.

Table 5

Mean Proficiency in Grades 3-5 on Reading EOG 2011-2012

School	A	A	B	B	C	C	D	D
	N	%	*N*	%	*N*	%	*n*	%
3rd Grade	102	(68.6)	98	(54.1)	56	(55.4)	33	(36.4)
4th Grade	115	(52.2)	76	(63.2)	83	(67.5)	40	(52.5)
5th Grade	125	(52.0)	104	(65.1)	62	(62.9)	35	(71.4)
School	342	(57.0)	283	(60.8)	201	(62.7)	108	(53.7)

Note. Data retrieved from NCDPI – North Carolina Report Card, 2012.

The overall inconsistencies evident in Table 5 between schools and low reading EOY proficiencies, in addition to complying with Excellence Public Schools Act, require the district in this study to make changes to the instructional expectations and intervention process in order to address the ongoing low performance of Grades 3-5 students in the area of reading. This study used mClass to track student growth and determine the effectiveness of the LLI supplemental small-group instruction. In addition to implementing appropriate interventions, teachers must also look at the benefits of supplemental instruction in small-group settings. Hagans and Good (2013) stated that small-group instruction where there are high levels of intensity makes a positive impact in student growth and achievement data.

Schools and/or districts must create plans on how to use Title I funding, if available, to supplement their regular budget, providing a level playing field for all learners (Cohen, 2009). Administration must be proactive in providing the resources to effectively assess students and train teachers in early identification of students who are at risk. Individual learning plans must be created using these data to provide each student

the ability and opportunity to gain the skills necessary to become a literate reader. This would be the first step in paving a pathway that leads to graduation from high school and the potential to be a productive citizen with 21st century skills (Johnson & Johnson, 2006).

Definitions of Terms

For the purpose of this study, the following terminology has been defined.

Automaticity. Reading without conscious effort or attention to decoding.

Immediate intensive intervention. Instruction that may include more time, more opportunities for student practice, more teacher feedback, smaller group size, and different materials. It is implemented as soon as assessment indicates that students are not making adequate progress in reading.

Intensity. Focused instruction where students are academically engaged with the content and the teacher and receive more opportunities to practice with immediate teacher feedback.

Supplemental instruction. Instruction that goes beyond that provided by the comprehensive core program because the core program does not provide enough instruction or practice in a key area to meet the needs of the students in a particular classroom or school.

Achievement. Level of proficiency on the TRC which is set by the State Department of Instruction and is measured at the BOY, MOY, and EOY.

Growth. Individual growth from their BOY TRC to their EOY TRC.

Gains. Individual growth from the starting point on the TRC to their ending point or exit point TRC.

Significance of the Study

The researcher analyzed the historical data from North Carolina Report Cards for Grades 3-5, finding that the schools in this study or district were not creating literate readers based on third- through fifth-grade EOG proficiency scores.

This study is necessary because the data taken from the mClass tool, as presented in Table 6, for students in kindergarten through second grade showed that students were not proficient entering into the third grade, based on data that were collected during the 2010-2011 and the 2011-2012 school years prior to the implementation of the new early intervention reading focus of the Title 1 Literacy instructors. The data shown in Table 1 above show that the reading gap is not improving as students get older in that students in Grades 3-5 were not proficient in reading on the NCEOG between the years of 2010-2012.

Table 6

mCLASS: Reading 3D proficiency–2010-2012

	School A N (%)		School B N (%)		School C N (%)		School D N (%)	
2010-2011	21	(40%)	10	(24%)	15	(35%)	13	(45%)
2011-2012	19	(83%)	44	(94%)	28	(76%)	19	(63%)

Note. District Title I Cumulative mCLASS Reading 3D report – 2010-2012.

This study is significant because the results will help determine the effectiveness of Title I Literacy Intervention Model using LLI as their instructional program on the proficiency and growth of students in Grades K-2. The results of this study will also help inform the Title I department at the district level as they create short- and long-range instructional plans for their program. This study is of great significance because it analyzed data that could determine the type of impact the new approach to early intervention is having on student growth and achievement. This conclusion will drive the

district in instructional planning, therefore making a greater impact on students becoming proficient readers, high school graduates, and productive citizens within our communities, states, and nation.

Theoretical Framework

The district being studied recognized a need to make changes in the instructional practice that addressed meeting individual needs of students, especially those identified as at risk. They created a plan to address deficits in reading proficiency and began to implement the LLI program with all Title I elementary schools beginning in the 2012-2013 school year. There were multiple components of the plan that would be required by the district in this study. Each school was assigned a full-time Title I LT who had the primary responsibility of teaching selected children using the LLI system from Fountas and Pinnell. They were to provide students small group reading instruction, each group consisting of three to five students depending on reading level of the students, 4 days per week for 30-45 minutes per session. One day per week, LTs had to progress monitor students based on the data and documented needs. mCLASS: Reading 3D was the tool used for BOY, MOY, and EOY assessments in addition to the built-in assessments from LLI. The expectation as stated in the handbook for all LTs is that instructional planning is data-driven and their responsibility was to communicate assessment results and student progress with the regular education teacher about the students being served in their classroom and with the parents of the students they are serving.

Growing proficient readers in elementary school is key to graduating students from high school (Kirsch, Jungeblut, Jenkins, & Kolstad, 1993). Reading instruction has evolved over the past decades, and there are still debates about the best way to teach children to read (NRP, 2000). In addition, a teacher's success being measured by high

stakes standardized testing competes with the developmental approach to teaching reading. Teachers must be trained in how to assess, identify, and remedy reading difficulties from the first day of kindergarten in order to decrease the reading gap of those who come to school without school readiness and those who learn to read early (Allington, 2009; Stanovich, 1986). Title 1 schools must analyze data about research-based practices and allocate their dollars to maximize teacher knowledge, training, resources, and time so schools are not waiting for reading failure but instead are creating readers (Mathes & Torgesen, 1998). In Chapter 2, literature surrounding reading instruction, assessment, intervention, and success is reviewed.

LLI all incorporate the foundation components of the Big 5 reading ideas. LLI is different from Guided Reading in duration, materials, assessment, time, and intensity as well as the purpose and grouping.

Summary

The district in this study realized the current method of intervention for at-risk students was not producing literate readers. They used data to determine a program that aligned best reading intervention practices with a valid and reliable assessment tool to allow for early identification. The purpose of this study was to investigate the impact of a specifically defined literacy instructional model, LLI, on K-2 reading achievement as measured by the TRC component of mClass: Reading 3D.

A comparative analysis was used to determine the effect the LLI model had on reading growth and achievement of at-risk students who met the criteria for Title I literacy supplemental instruction. The researcher compared data of students who received instruction by the Title I LT from the four schools in the study and analyzed the growth recorded in mClass TRC scores as well as student achievement which was

determined by the levels set by the state and measured by the mClass: Reading 3D TRC scores. The researcher looked for trends that directly impacted the amount of time needed in the intervention group with a result of increased growth scores and achievement of proficient reader status to share with the district office in order to guide instructional planning for the future success of the system and the students it serves. The researcher also compared the growth results as measured by mCLASS TRC for the 2-year period of time prior to implementation of the LLI program and for the 3-year period of time after the implementation of the LLI program for schools in this study. Comparison results were shared by the researcher with the district office to validate the degree of impact LLI has on growing at-risk students as readers.

Chapter 2: Review of Related Literature

Creating unmotivated readers who have a poor image of themselves is not the goal of education; however, it is the reality for those students who do not become skilled readers (Goodwin, 2012). Reading is developmental; and students must be provided every support, intervention, and opportunity to become a literate reader. This study was designed to investigate the impact of a specifically defined literacy instructional model, LLI, on K-2 reading achievement as measured by the TRC component of mCLASS: Reading 3D.

Evolution of Reading Instruction

There are competing views on the instructional approach toward reading and writing that involve educational beliefs as well as political stances. Bromley (2010) reported the earliest examples of written text began with drawings by cavemen and have evolved into today's digital media. Writing language is an important part of building the necessary skills for reading comprehension (Berninger, Abbott, Vermeulen, & Fulton, 2006). According to Graves, Juel, and Graves (1998), reading instruction began during the colonial period with a purpose of religion. The purpose of reading instruction transformed throughout the years while the instructional focus was the same; teachers used a step by step alphabetic approach. This process was then challenged in the 1840s by Horace Mann who believed in a holistic approach, teaching everything integrated together and looking at the whole word instead of the parts (Graves et al., 1998). Reading programs then began to shift to a basal-driven approach where teachers had teacher manuals, worksheets, and a large collection of stories housed in one spot. One major change that came with the beginning of basal text was the offering of supplemental resources. This was the beginning of documented interventions being provided by a

company for educational purposes. Basal readers were then challenged by whole-language advocates. These advocates voiced concerns about reading and phonics skills being taught in isolation and that students were not able to apply any knowledge that they were learning in the reading context (Graves et al., 1998).

There is extensive research provided by the NRP (2000) about the best way to teach young children to read. Effective instruction in reading incorporates phonemic awareness, phonics, and guided reading with a focus on reading comprehension integration. Reading instruction today must target Common Core Standards which promote integration of content with high levels of focused skill lessons integrated into and across the reading, writing, and content curriculums. Using an integrated approach to literacy and content instruction, reading achievement gaps are minimized between children from different socioeconomic levels (Halvorsen et al., 2012). Teachers must utilize texts that are written with high levels of vocabulary integration to build student background knowledge for later content curriculum (Mathes & Torgesen, 1998).

Bromley (2010) questioned what the next form of reading instructional materials will be and how they will impact students learning to read: "Will we need to teach reading and writing differently in the future" (p. 104)? Digital textbooks, if utilized, will add another deficit for some students learning to read; not only will they have to interpret letters and words, they will have to analyze still and moving images and determine the meaning that is being presented and how that information can be manipulated. The difficulty being experienced today, however, is teaching all children to read because of the rise in the literacy expectations without any increase in the amount of time spent on instruction (Duke & Block, 2012; Mathes & Torgesen, 1998).

Elements of Core Reading Instruction

It has been said that reading instruction in the lower grades is the "single best weapon against reading failure" (Snow, Burns, & Griffin, 1998, p. 343). Studies show that teachers have focused more on skill specific instruction in reading and math since the passing of the No Child Left Behind Act (NCLB) (Good & Kaminski, 2002). Torgesen (2009) said that students must receive instruction that focuses on high quality balanced literacy. The NRP (2000) identified effective reading instruction in kindergarten through third grade inclusive of phonemic awareness, alphabetic principle or phonics, fluency with text, vocabulary, and comprehension. It is critical that students develop these skills in early elementary to get started on the right path to becoming a skilled reader. Teachers must train students from the first day of kindergarten to read through a disciplinary lens, thinking of themselves as writers, scientist, and historians. This will not replace vocabulary knowledge; however, it will provide students with skills to use when they hit a roadblock (Juel, 2010). Teaching students using nonfiction text will build vocabulary knowledge and will not interfere with the development of word call and basic writing (Duke & Block, 2012).

Phonemic awareness is often confused as phonics. Phonemic awareness is very different. Phonemic awareness is essential for students to understand phonics. It is the ability of a student to put sounds together and break them apart and is the foundation for learning to speak and read using letters that make sounds. Phonemic awareness is one of the greatest predictors for later reading difficulties and/or successes. With over 250 sounds which must be taught, the NRP found that students from underprivileged families benefited as much from intense phonics instruction as those from more privileged backgrounds (Ehri et al., 2001).

A common approach in a regular education to supporting all students in their reading development is guided reading. Guided reading, according to Fountas and Pinnell (2012), must be used to grow readers as much as they can grow within a given school year. Teachers must create a structure in their instructional environment where they can meet with small groups while other students are engaged in meaningful learning activities. Teachers must plan effectively for guided reading by selecting a just-right text that meets the instructional focus and is on the student's instructional level (Fontas & Pinnell, 2012). Within guided reading, the teacher will introduce the text providing some background information while leaving room for students to problem solve. After students read the text independently, the teacher will facilitate a discussion around the purposeful teaching point. This is an effort to expand the student toolkit of strategies they use when working on reading. Another area of guided reading that Fountas and Pinnell (2012) stated must be integrated is word work. Students must be equipped to decode words in an effort to become an accurate and fluent reader. The skilled teacher uses guided reading to engage the reader individually as a problem solver who is learning different strategies to expand his/her reading success (Fountas & Pinnell, 2012). Another area of guided reading and good reading instruction is ongoing assessments that allow teachers to group and regroup students as they progress as evident in the data. Fontas and Pinnell (2012) stated that the basic structure of guided reading is only the beginning. Professional development must be provided to equip teachers to strategically instruct students based on their individual needs. Differentiated instruction within guided reading will allow teachers to see the shift in student reading abilities and the growth in the development of the reader (Fountas & Pinnell, 2012; Kamps et al., 2008).

Stages of Reading Development

Students move through different stages working toward becoming fluent readers. Schulman and daCruz Payne (2000) described the four stages students progress through when moving through the foundation of reading. Students begin learning to put letters and sounds together in the emergent stage. Children need to be read to a lot during this phase being introduced to story elements as they are making connections with sounding out words and the meaning trying to be conveyed by the text. Children who are read to pick up reading more frequently than those without the support of home reading because of the comfort and familiarity of the text. The second stage, the early stage of reading, occurs when students are becoming automatic with text. Fluency is a key focus as students need to read independently during this stage. As the fluency becomes stronger, comprehension strategies can be a focus for instruction. The third stage, transitional reader, has a goal of

> developing the levels of fluency and comprehension required to support identification and absorption. Students accomplishing this stage have developed a level of automaticity which is the culmination of all of the early stages and sub-stages of reading development. It is also the foundation of all subsequent reading development. (Schulman & daCruz Payne, 2000, p. 45)

The fluent stage is when students can read and comprehend fluently. A fluent reader can read, understand, and apply information from all genres of reading. Readers at this stage are able to delight in the marks on the page and gain pleasure from their experiences. This is also when reading involves thinking and processing of information and students are reading for intrinsic purposes and enjoy reading, according to Guthrie and Humenick (2004).

Indicators of Reading Success

Students enter kindergarten at different levels which creates a diverse classroom of learners. Goodwin (2012) stated that students who enter kindergarten with an understanding of alphabetic and phonemic awareness will advance at a quicker pace than those who enter with no letter knowledge or understanding of phonemes. Students with prior knowledge are likely to advance through the stages of reading at a much quicker pace which allows them to begin to read for enjoyment earlier than their peers without prior knowledge; however, poor readers usually do not practice reading and therefore become even poorer readers.

According to Wells (2012) and Neuman (2006), gaps found when students enter kindergarten and do not have the readiness skills needed or have a lack of exposure to words, verbal and/or print, increase the deficit that most minority, low socioeconomic children are up against. Reading is a skill that students need for every area of education but also to be successful in life. Students who come to school without the necessary skills must receive additional support in order to make adequate growth toward becoming a skilled reader (Goodwin, 2012; Torgesen, 2009). Pre-reading skills are one of many necessary components to reading success.

The quality of the teacher can have an impact on the success of the student (Kamps et al., 2008). Allington (2009) reported that a kindergarten teacher trained in identification and reading instruction can solve the reading problems of most at-risk readers at the same rate as tutors in later years. A study conducted to determine the improvements in reading instruction since the publication of Preventing Reading Difficulties revealed that teachers are focusing instruction on the easier-to-master skills instead of building conceptual and content knowledge (Duke & Block, 2012). Denton,

Vaughn, and Fletcher (2003) found key factors associated with effective reading instruction. Teachers must have the skills as well as a high level of interest to work with at-risk students in addition to the time allotted to work in small groups. Students who are nonproficient, struggling readers deserve the best and most intensive instruction from the most qualified instructors, those who consistently refine their practice through continued professional development (Lipson & Wiscom, 2012).

Teachers must also make time for students to be engaged in direct reading activities. Studies indicate that reading instruction provides little time with reading opportunities that foster growth and development; instead, students are engaged in nonreading or indirect activities (Mathes & Torgesen, 1998; Snow et al., 1998). Not only is it important for students to read in the classroom, Guthrie and Humenick (2004) stated that reading outside of the classroom is bidirectional. Students who are better readers tend to be more interested in reading outside of school, but more reading outside of school also makes students better readers. Students who read on average 20 minutes per day will read approximately 1.8 million words per year; where students who read less than 1 minute per day will only read approximately 8,000 words in a year (Goodwin, 2012).

Teachers must engage students in reading for intrinsic purposes in order to impact achievement in a positive manner. Many teachers use external programs and rewards for increasing sustainability in reading, which just promotes reading, according to Guthrie and Humenick (2004), instead of reading, thinking, and processing the text being read for intrinsic purposes.

Reading instruction must also have a final goal of students being able to comprehend and connect with the text. In order to accomplish this task, educators must

with fidelity motivate through modeling and excitement the purpose for reading in order to increase student engagement in reading and thinking.

For those students who are not progressing through the developmental stages of reading toward becoming a fluent reader, we must identify them early, not waiting until the gap is too large to bridge and the students' self-confidence is damaged (Fontas & Pinnell, 2009b).

Identification of Struggling Readers

Torgesen (1998) stated that all students should be assessed to determine their knowledge of letters and phonemes upon entrance of kindergarten. Once identified, he suggested that you must provide students with intense, small-group instruction or one-on-one tutoring. There are two key factors that can be used to predict the students in kindergarten who will have later reading difficulties (Allington, 2011; Goodwin, 2012). Students must have the ability to identify letters and must understand the connection between the letter and its appropriate sound (Scarborough, 1989; Whitehurst & Lonigan, 2001). Scanlon and Vellutino (1997) agreed that assessing student ability to show knowledge of letter identification is a great predictor for future reading struggles. According to the National Institute of Child Health and Human Development (2000), just as you can predict a student's future success in reading utilizing phonemic awareness, you can also predict a student's ability to comprehend what they read based on their vocabulary at the age of four, which is generally weak in students of low socioeconomic levels (Lesaux, 2012).

Hart and Risley (1995) found that the amount of language a child is exposed to in the home is directly related to the language development in the academic setting. Background knowledge and vocabulary increases a student's ability to understand the

context of the reading and allows them to make connections. Students from low-income households have been identified in multiple studies according to Lesaux (2012) as having a deficit in reading largely in part to their low vocabulary knowledge.

Another hurdle students face is that evidence indicates teachers are not trained to teach at-risk students. Only 25% of U.S. teachers are believed to be trained and feel qualified to teach at-risk students (Allington, 2011; Menzies, Mahdavi, & Lewis 2008). It is important for teachers to understand and implement the program being designed to meet the needs of identified students in order for them to be successful and program effectiveness be measured.

Schools must intervene by preparing teachers to effectively create learning plans for at-risk students that build the foundation other students enter school with, allowing for reading strategies to be understood and all students to make progress through the stages of reading. Juel (1990) sampled 54 students and found a probability that 88% of students who were poor readers in first grade would still be poor readers in fourth grade. With proper assessments, students can be identified and teachers can match instruction to each of the individual student's deficits (Lesaux, 2012).

Reading Assessments

The National Early Literacy Panel (2008) reported that there were strong correlations between comprehension skills developed in later elementary and the early literacy skills of print knowledge, alphabet knowledge, rapid letter naming, IQ, decoding non-words, phonological awareness, and decoding words. The measurement tool that was used in this study is mClass: Reading 3D. mClass: Reading 3D provides formative data for teachers with a progress monitoring plan for students identified at risk. mCLASS: Reading 3D uses seven Dibels measures to assess students three times a year

and can be progress monitored more often. The seven measures are correlated with the Big Ideas in Beginning Reading which are essential for reading success.

Phonemic awareness is when you can hear, name, and use individual sounds in words and is measured by the 60-second indicators, First Sound Fluency (FSF) and Phoneme Segmentation Fluency (PSF). FSF determines a student's knowledge of the beginning sound. Once a student has shown they can identify the beginning sound, the PSF measures if the student can differentiate between the sounds that make up the remainder of the word. Phonemic awareness is the foundational skill needed by all students to progress through the developmental stages of reading (NRP, 2000). In a review of phonemic awareness by the NRP, instruction with attention to phonemic awareness significantly improved their reading performance (NRP, 2000).

Nonsense Word Fluency (NWF) is the indicator to measure the Big Idea of Alphabetic Principle which is letter-sound correspondence. NWF determines a student's understanding of sounds alone and is given in a format that prohibits sounds to be identified by sight alone. NWF measures a student's ability to blend sounds together to form Consonant-Vowel-Consonant (CVC) pattern words or Vowel-Consonant (VC) words. Measurements are taken in 1-minute increments and two scores are reported for NWF: CLS or Correct Letter Sounds which is the number of letter sounds produced correctly in 1 minute and Whole Words Read (WWR) or the number of make-believe words read correctly as a whole word without first sounding out. For example, students would be asked to read /c/ /i/ /f/; if the students says ci f or cif, he/she would receive the point for WWR and three points for CLS because there was demonstration of each sound being understood and also blended together to make the word. If the students would have said, /c/ /i/ /f/, he/she would have gotten three points for correct letter sound but no points

for WWR since there was no evidence of blending sounds together to produce a word (Kaminski & Good, 1996).

Oral Reading Fluency (DORF) is the indicator used to measure the Big Idea of Accuracy and Fluency. Students are assessed to determine if they have the ability to read a text with accuracy, fluency, and with automaticity. Accuracy is determined as the student reads a text for 60 seconds, the assessor marks errors, and the handheld device calculates the fluency based on the words read correctly per minute. DORF and Retell Fluency (RTF) measure a student's ability to understand what he/she has read or their comprehension. Assessors take specific notes as this will guide instructional preparation for individual students in teaching comprehension strategies. This component of the indicator is much more in depth than just right or wrong. This piece is an oral retell which shows the degree of understanding a student has with the application of specific comprehension strategies.

Vocabulary is also a Big Idea of Beginning Reading that must be measured. Vocabulary at age 3 is a strong predictor of the language skills a student will have at ages 9-10 (Hart & Risley, 2003). A student's vocabulary determines their ability to effectively communicate. Without background knowledge, students have limited vocabulary and struggle more in communication, whether listening, reading, or speaking (Duke & Block, 2012). Vocabulary is assessed by the Daze indicator. This indicator measures a student's ability to use a word in context correctly.

The TRC component of the mCLASS: Reading 3D assessment system is given when assessing for accuracy, fluency, comprehension, and vocabulary. Students are assessed using benchmark books and must have an accuracy score of 90-94%, a retell score of two or higher, and an oral comprehension score of four or higher. The TRC

measures the ability a student has to apply the reading skills with a benchmark text.

A study surveying teachers found one teacher who stated that with mClass: Reading 3D, she felt like for the first time data were being collected to truly help her know what areas she needed to help her students (Olson, 2007). In this same study, other teachers stated that their perception was students were less likely to fall behind with progress monitoring because you are in contact with them on a regular basis, addressing interventions that are specific to their needs. During the fall of 2004 when the above study was conducted, 29% of the students in kindergarten were on an intensive plan in reading and 28% were at the Dibels Benchmark level. After 2 years of interventions and implementation, only 2% of kindergartners were at the intensive level and 93% were reading at the Dibels Benchmark level. Olson (2007) warned that DIBELS is a tool that screens; teachers still must make an impact with highly intensive progress monitoring or interventions.

Clay (1987) first used the term intervention when arguing that children should not be considered for a learning disability until the child failed to respond to the acceleration provided with high-quality instruction. The role of the teacher is the facilitator where he/she uses data to know where the students are preforming and what they are ready to learn next and then modifies each intervention expectation to meet the individual needs of the learner (Scanlon, Anderson, & Sweeney, 2010).

A longitudinal study conducted on students in Grades K-9 focusing on the development of reading skills over a long period of time provides clear support of the need for students to develop a strong foundation in reading during early grades. Students in the study who lacked foundational reading skills such as phonemic awareness in the third grade did not catch up to their peers by the ninth grade (Fletcher et al., 1994;

Francis, Shaywitz, Stuebing, Shaywitz, & Fletcher, 1996). A shocking number of students, 74% of those identified as poor readers as third graders, were also identified as poor readers in ninth grade (Francis et al., 1996).

Over the past 20 years, multiple studies have focused on a core reading deficit, phonological awareness (Allington, 2011; Ball & Blachman, 1991; Goodwin, 2012; Scarborough, 1989; Torgesen, 1998; Vellutino et al., 1996; Whitehurst & Lonigan, 2001). Results from these studies indicate that reading skill deficits can improve if provided appropriate interventions with a primary focus on Grades K-2 in the area of phonemic awareness instruction which fosters the student's ability to make connections between sounds and alphabet letters (Ball & Blachman, 1991).

Interventions

Students who are faced with reading deficits must have strong core instruction in their classroom; assessments for identification; and then extra instruction or interventions that are appropriate and aligned to the needs of the individual student and are explicit, intensive, and supportive (Torgesen, 2004).

Mathes and Torgesen (1998) stated that we should not wait for reading failure; we should identify and begin interventions as early as the start of kindergarten. Torgesen (2002) conducted several studies that found structured intervention with high levels of intensity can decrease the rate of severe reading failure by 4-6%.

Nonproficient readers deserve focused, highly effective and intensive instruction from the most qualified instructors. These instructors are the ones who consistently refine their practice through continued professional development (Lipson & Wiscom, 2012). Torgesen (2000) defined instructional intensity as a skill-focused lesson that integrates and explores content as well as ensuring smaller class size. According to

NCLB regulations, students who are nonproficient should receive supplemental instruction, not supplant instruction (McIntyre et al., 2005). Supplemental instruction is in addition to the core reading instruction and may be provided by the general education teacher or a teacher who specializes in the area of the intervention.

The National Institute of Child Health and Human Development (2000) stated that intervention instruction must be focused on phonemic awareness in order to improve later reading abilities. Berninger et al. (2006) reviewed scientific evidence that prioritized the instruction for students at risk of reading failure to have a focus on phonological awareness, alphabetical principle and phonological decoding, fluency training, and reading comprehension. Once students begin basic reading, writing instruction can be utilized as a support to the continued development of reading comprehension.

Title I students who have phonological deficits were involved in a study that examined the impact made on three groups of students who received three different intervention structures. The summary of the study reflected that students who received explicit instruction above the core curriculum had a 94-98% success rate. Explicit instruction may be addressed in 1:1 tutoring or small group intervention instruction where teachers have the ability to analyze data, identify needs, and create plans using appropriate resources that address reading problems (Torgesen, 2002).

Allington (2009) focused on instructional time when creating interventions. Multiple studies provide evidence that students in kindergarten through second grade with reading deficiencies should receive 30 minutes per day above the core instruction, 5 days per week in groups of one, three, or five in order to increase the number of students identified as proficient readers (Allington, 2011; Mathes & Torgesen, 1998; Torgesen,

2004).

According to a study by McIntyre et al. (2005), one-on-one tutoring was the best method of supplemental instruction; however, students benefited from small-group instruction more than instruction within their classroom (Abbott et al., 2010).

As many as one of five children are struggling in reading (Foorman, Francis, Fletcher, Schatschneider, & Mehta, 1998). No single approach for reading instruction and intervention will close the achievement gap; however, it is imperative that identification of students and appropriate interventions be implemented to ensure that students have the opportunity to catch up and access the grade-level standards. The earlier the process begins, the more effective results will be achieved (Menzies et al., 2008).

LLI

LLI was designed to supplement not substitute instruction for students who struggle in reading or writing in kindergarten, first, and second grades. According to Ransford-Kaldon, Flynt, and Ross (2011) and Fountas and Pinnell (2009b), LLI small-group instruction should occur daily over a 4-month time period with each lesson being approximately 30 minutes in duration and consist of a recommended group of three students. LLI, as with any intervention model, is most effective in a 1:1 tutor ratio but still shows significant gains within the small group instructional model (Fountas & Pinnell, 2009a). The framework of LLI establishes a tight structure allowing a little wiggle room so teachers can use their professional judgment to modify/plan to meet specific student needs. A systematic assessment provides teachers with data to help them formulate groups of preferably three students but no more than five. The design of the program is for students to be provided instruction 30 minutes a day, 5 days per week.

Fountas and Pinnell (2009a) guided educators through the development and design of LLI which comes from empirical research on reading acquisition and difficulties while keeping language learning and vocabulary acquisition as a strong factor stemming from the works of Clay (1991) and Fountas and Pinnell (2009b, 2012). Instruction in the LLI model is fast-paced, provides intensive support, and focuses on explicit comprehension instruction while incorporating early writing strategies, fluency, systematic phonics with word work practice, specific strategies for teaching vocabulary as well as assessments and progress monitoring into each lesson. Texts are a combination of fiction and nonfiction. There are four systems within LLI categorized based on the Fontas and Pinnell gradient of text difficulty. Lessons are broken down into three levels: getting started, odd, and even. Each level within LLI gets gradually harder as students move through. All levels of LLI incorporate the foundational components of the Big 5 reading ideas. Systematic instruction allows each student to progress through the levels until they are capable to work independently and be successful with their age-appropriate peers. Their success is measured by the mCLASS: TRC assessment.

LLI is different from Guided Reading in duration, materials, assessment, time, and intensity as well as the purpose and grouping. According to Heinemann (2009), LLI differs from guided reading because their instructional contexts are designed for different purposes. LLI is designed to be supplemental and for students who are having difficulty and reading below grade-level expectancy. Guided reading groups can be made up of four to eight students of all students with like abilities and continues throughout the school year. LLI should have no more than three or four students and should be short term. The time spent in Guided Reading also differs from LLI in that Guided Reading occurs up to three times per week for 15-20 minutes while LLI happens daily for 30-45

minutes. The instructional elements, need for professional development, and need for teacher expertise are essential for both LLI and Guided Reading. LLI is designed instructionally to meet struggling learners with an intense approach to close the achievement gap (Heinneman, 2009).

LLI is designed to meet a student's needs within approximately 18 weeks of instruction but can be extended if needed. LLI was designed to address the needs of the lowest achievers in literacy in their grades with a focus on Grades K-2. Students participating in LLI are designed to move from level A through to N. Children who are acquiring English as a second language also benefit from LLI. One of the key benefits of LLI is the text levels are matched to students reading ability so children are immersed in books on their level, building their fluency and understanding. Opportunities for students to be engaged in high frequency words help to provide a foundation that they can build later vocabulary which enhances their vocabulary and oral language development.

Implementation of LLI requires planning and organization. LLI teachers must collaborate in order to effectively document and track student academics and behavior. After the initial mCLASS data check point, teachers must be equipped to create small groups of readers and begin lessons at his/her levels. LLI is a fluid program as students can be moved if they are experiencing success at a rate higher than their peers and also if they are moving at a pace slower than their peers.

The getting started lessons engage children in rereading, phonics, reading a new book with several levels of support, writing about their reading, and letter and word work. Rereading books allows students to show evidence of voice-print match as they practice reading a familiar text. This can be performed as a group with you pointing to the text or independently in a soft quiet voice. Students will be engaged in the phonics as

a means to learn letter names and sounds and then make connections between letter sounds and their corresponding symbol. After practicing word work, teachers will introduce a new book to students.

Multiple studies provide evidence that LLI programs, implemented effectively, make a positive impact on students, especially those at risk, English Language Learners, or those identified with a learning disability.

In a study of K-2 students, Ransford-Kaldon et al. (2011) sought to determine the efficacy of the LLI program on K-2 students. Researchers analyzed data from 4,881 students in Grades K-5 at 34 sites across the United States and Canada. Intervention groups of one to three students met 5 days per week in addition to their classroom small-group instruction. Participation in the program was on average 21 weeks, attending 79.8 lessons (Ransford-Kaldon et al., 2011). Results show that students made an average of 9.7 months of growth in their average of 21.1 weeks or 5.3 months. Of the LLI students, 64.8% were at or within one text level of their expected instructional reading level when they completed their LLI program.

The results supported the positive impact of LLI as students in kindergarten who received LLI instruction measured one level higher than the control group, first-grade students receiving LLI measured two levels higher, and those in second grade demonstrated one level higher in proficiency than their peers who did not receive LLI. Match pair randomization was used in this study, comparing like students. The findings indicated that LLI in addition to regular classroom instruction impacts student literacy achievement at a higher rate than classroom instruction alone (Ransford-Kaldon et al., 2011). Students in this study who are EC or ELL also benefited from this treatment. LLI also proved to work well with students who have low socioeconomic status, as that was

the population in this study. Ransford-Kaldon et al. (2011) found through their study that LLI is an effective short-term intervention for those readers who are below grade-level proficiency. Another strong finding was that

> LLI program has important implications for schools and districts with limited resources and time available for early reading interventions. LLI's short-term, small group format allows a greater number of struggling readers to achieve grade-level competency within a shorter period of time. LLI's success with early learners also demonstrates its potential for reducing the development of chronic, long-term reading deficiencies and academic problems. (Ransford-Kaldon et al., 2011, p. A4)

Another efficacy study of LLI for K-2 urban students was conducted by Ransford-Kaldon et al. (2013), which looked at 320 K-2 students in a mixed method randomized controlled trial in Denver public schools. The treatment group participated as first graders for 18 weeks, while the kindergarten treatment group only received supplemental instruction for 12 weeks. Students in the control group received no additional instruction until after the study was completed. Scores in all three grade levels outperformed their control group peers in the Fountas and Pinnell benchmark assessment. Scores from the STAR in kindergarten and first-grade testing did not show the same results, but students on STAR scored equal to their control group peers. Second-grade students did score higher on their STAR testing than their control group peers. Ransford-Kaldon et al. (2013) found that LLI made a positive impact on urban student literacy development and achievement when implemented with fidelity and would be beneficial to continue implementation.

Summary

In summary, the review of literature shows a need for early identification with intense interventions for at-risk readers. Students should be provided supplemental, small-group lessons that focus on phonemic awareness, phonics, accurate and fluent reading of connected text, reading comprehension, vocabulary, and language skills. Students should be assessed using formative assessments, and instructional plans should be adapted based on the data. Programs or instructional plans should be created to grow students in their reading achievement. Key words found in this body of research that best describe an intervention program that is effective are explicit, intense, consistent, individualized, led by trained teachers, immediate, and supportive. It is imperative to determine if the LLI program used by the district in this study to address reading gaps makes an impact on student achievement.

It is up to educators to be aware and empathetic to the differences among students who come to school, yet create a learning environment that is culturally responsive and future driven and provides the resources and opportunities for students to engage in the learning program (Comber, Badger, Barnett, & Nixon, 2002).

Research is clear that students must learn to read in order to be successful in life. In education, we must not continue to present a one-size-fits-all approach to learning to read; or according to Allington (2009), we must plan to get expert reading instruction for these at-risk students and provide them with intense interventions so they can become literate readers, high school graduates, and successful citizens in our country. This study determined the type of effect LLI had on students identified as at risk by measuring their growth and achievement on mCLASS: Reading 3D TRC. The results were designed to support the direction the district in this study would take in planning and preparing to

meet the needs of all learners.

According to Comber et al. (2002), an important factor in increasing achievement is the connection made between what the schools and teachers provide, instruction, and what students are able to do with it, performance or application, that directly impacting the literacy growth students experience at school.

Chapter 3: Methodology

The purpose of this study was to investigate the impact of a specifically defined literacy instructional model, LLI, on K-2 reading achievement as measured by the TRC component of mCLASS: Reading 3D. Chapter 3 addresses the methods for comparing growth and achievement of student literacy development in Grades K-2.

Participants

This study was designed to collect data from four Title I elementary schools in a large rural district in North Carolina which serves approximately 32,000 students. Seven hundred seventy-seven students participated in this study throughout the 2010-2015 school years. In the analysis of the study, the students were broken down by ethnicity, gender, grade, and school.

The four schools being studied were selected because they are the only elementary schools that have utilized mCLASS: Reading 3D to assess and track students for 3 years prior to the mandated implementation of LLI. Title I Schools are identified to receive additional instructional funds from the Federal Government based on the percentage of students attending each school that are living in poverty. Poverty is measured for Title 1 eligibility by the percentage of students receiving free and reduced lunch at the school. The percentage of students receiving free and reduced lunch for the four schools in this study range from 75.93-94.83% of the total school population. Studies show that a higher number of students who enter kindergarten without school readiness skills also live in poverty (Neuman, 2006; Wells, 2012).

Unidentifiable data were collected on individual students, grade levels, and schools to determine the type of effect supplemental intervention instruction had and how it impacted student achievement. Data were coded to protect the identity of the

individual students. Kindergarten, first, and second grade were the focus for the study. Students who were identified as at risk in reading based on their BOY mCLASS TRC score were eligible for participation. At risk in this study was defined by the initial mClass: Reading 3D TRC data. LTs completed a prioritized list of students based on their scores, and the sample served was selected from the prioritized list based on the number of students a teacher's schedule allowed them to serve. All students who were served by the Title 1 LT, received LLI, and were assessed by mCLASS Reading 3D TRC were used in this study.

Research Design

The researcher completed a quantitative causal, comparative study using archival data. An analysis was conducted to compare multiple years of supplemental literacy instruction with a formal structured program used district wide to a process of each school choosing their own materials and presentation methods. The researcher also analyzed mCLASS TRC data of students receiving supplemental instruction to determine the degree of impact the LLI program had on the growth of the individual readers as well as their overall proficiency as determined by the state. This methodology sought to determine the impact the program was making on student reading achievement and growth as a reader and the influence the implementation of a consistent, structured program had on reading achievement across the district.

Instruments

mClass Reading 3D is a research-based assessment that uses data to document student growth as they gain literacy skills and was created through a collaborative effort of Dr. Roland Good III, author of DIBELS next generation and Dr. Ruth Kaminski of the University of Oregon (Good & Kaminski, 2002). Three decades of research were used to

create reliable goals. The assessment is easy, repeatable, and sensitive to growth and change. Assessments are 60-second measures that focus on the Big Ideas in Beginning Reading: phonemic awareness, alphabetic principle, accuracy and fluency, comprehension, and vocabulary.

The TRC or Running Record in a digital format is invaluable because it allows teachers to diagnose the type of errors students make when reading aloud, while DIBELS addresses the essential early literacy domains (mClass Training, personal communication, 2012). The TRC is given when assessing for accuracy, fluency, comprehension, and vocabulary (LT Summer Training, personal communication, 2012). The TRC is effective in monitoring a student's progress of the application of reading strategies within a text. According to Montgomery County Public Schools and the Office of Shared Accountability, fall and winter benchmarks were found to correlate with EOY performance (mClass Reading 3D, n.d.). For students in North Carolina in 2010-2011, mCLASS: Reading 3D was 79% accurate in predicting performance on the state's EOG Reading Comprehension Test in third grade (mCLASS Reading 3D, n.d.)

mClass: Reading 3D empowers teachers to accurately and reliably assess their students; make effective, data driven instructional decisions; and continually adjust instruction to meet individual needs as well as track data by student from year to year. The commonality in the rules and materials increase inter-rater reliability and confidence. According to the National Center on Response to Intervention, the marginal reliability is .86, and the inter-rater reliability is .73. The predictive validity is .76, and the concurrent validity is .72 (mClass Reading 3D, n.d.) The data collected from mCLASS: DIBELS indicators allow teachers to screen and diagnose students in order to create individualized instruction, therefore increasing student success. A number of studies show that

identification of students starting in kindergarten with deficits in pre-reading skills is crucial to implementing early interventions that are intensive and appropriate, allowing early reading skills to be mastered and prevent students from entering the downward spiral (Torgesen, 2004). LNF has been proven to be a reliable indicator of future reading success and risk. Responsibility belongs to all educators to use good, formative assessments to guide their instruction and see large reading gains in the at-risk student population.

In an attempt to answer the research questions, this study analyzed historical data collected through mCLASS: Reading 3D to provide a clear understanding of the type of impact LLI used as a supplemental program by the LTs in the district being studied had on student achievement.

Procedures

The researcher analyzed the historical data from North Carolina Report Cards for Grades 3-5. The data in Table 5 in Chapter 1 showed that schools were not creating literate readers based on Grades 3-5 EOG proficiency scores.

This study was necessary because students in Grades 3-5 in this district were not proficient on their state standardized test in reading. Data from mCLASS showed that students in K-2 were not proficient entering third grade as shown in Table 7. The district in this study used the results of this study for instructional planning and purchasing of resources in order to more effectively grow students and close the achievement gap.

Table 7

mCLASS: Reading 3D Proficiency – 2010-2011

	School A N (%)	School B N (%)	School C N (%)	School D N (%)
2010-2011	21 (40%)	10 (24%)	15 (35%)	13 (45%)

Note. District Title I Cumulative mCLASS Reading 3D report – 2010-2012.

The district being studied created a plan to address deficits in reading proficiency and began to implement the LLI program with all Title I elementary schools beginning with the 2012-2013 school year. There were multiple components of the plan that would be required by the district in this study. Each school was assigned a full-time Title I LT who had the primary responsibility of teaching selected children using the LLI system from Fountas and Pinnell. They were to provide students small group reading instruction, each group consisting of three to five students depending on reading level of the students, 4 days per week for 30-45 minutes per session. One day per week, LTs had to progress monitor students based on the data and documented needs. mCLASS: Reading 3D was the tool to be used for BOY, MOY, and EOY assessments in addition to the built-in assessments from LLI. The expectation as stated in the handbook, for all LTs is that instructional planning is data driven and their responsibility was to communicate assessment results and student progress with the regular education teacher about the students being served in their classroom and with the parents of the students they are serving.

Data Collection

To conduct this study, written permission was obtained from the superintendent of the school district as well as the school board to complete this study. Written permission to conduct the study was given by the director of Title 1. Principals of the schools being

studied were informed that their data were being analyzed. Prior to beginning the study, the researcher received approval from the IRB. All information collected is kept anonymous. The researcher identified each school with a code to match mCLASS data to the appropriate school, and students were also identified with a coding system to analyze their growth, proficiency, and trends among school, grade, days served, and achievement.

The study created a baseline using the analysis of the data that were collected from the mClass tool on each student based on his/her entry date into the Title 1 supplemental reading intervention program between August 2010 and May 2015. Data were collected at the BOY, MOY, and EOY. These historical data sets served to measure growth of individual students.

During the consent phase, the researcher acquired administrative data rights to the county mCLASS: Reading 3D program. Permission from the district office has been given authorizing access to necessary data for the study in order to help the Title 1 office determine the effectiveness of the Reading program implemented by Title 1 LTs. Once access was given, the researcher retrieved baseline data and began assigning identifiers to students. Schools were coded with the word school and a letter following. Letters were chosen in alphabetic order, for example school A. Grade level represented all grades; for example, kindergarten is K, 1 for first grade, and 2 for second grade. Students were then assigned a number. For example, AK1 represents student 1 in kindergarten from school A. All coding was assigned for the students at their entry date but was analyzed over entire time served by the Title I LT.

BOY, MOY, and EOY data were collected in mCLASS: Reading 3D. The TRC data were disaggregated to look at growth and proficiency by student, grade, and time served and at each school. Data collected for 2012-2015 years were compared to data

collected for the 2010-2012 years to determine the impact that LLI had on reading achievement and gains. Electronic data collection is stored in a password protected file on a Dell laptop. A backup has been completed and stored on an external hard drive in a password protected file. All collection of data from students was transcribed and assigned based on the unique identifier.

Growth data were collected and recorded by the increase in level measurements. TRC begins at letters RB and progresses through the alphabet until the letter U. Each TRC reading level was assigned a numerical value for this study as shown in Table 8.

Table 8

TRC Level Conversion

Level	Code	Level	Code	Level	Code
RB	0	H	7	O	14
B	1	I	8	P	15
C	2	J	9	Q	16
D	3	K	10	R	17
E	4	L	11	S	18
F	5	M	12	T	19
G	6	N	13	U	20

Another data source is the attendance logs that are kept by each Title I LT documenting the number of days students are provided instruction using the LLI model. The data from these logs were collected and entered into the password-protected spreadsheet by student name.

Data Analysis

A major component of this study was to determine if the Title 1 literacy instructional program LLI was a cause agent to the type of impact; therefore, a comparative analysis was completed linking growth from the 2012-2015 school years (after implementation of LLI) to the historical mClass data that were collected for 2010-

2012 (prior to LLI). The researcher analyzed the mean growth of students by school and grade. These data were used to compare growth prior to implementation of LLI to growth after implementation of the LLI program.

The researcher analyzed the mCLASS data for any correlations between achievement at the grade level, the individual schools, or the number of days served under the LLI program.

The coding system was used to identify students and schools and the mCLASS student data were collected and entered into Statistical Package for the Social Sciences (SPSS) for analysis. To determine the effectiveness of the implementation of LLI by the Title 1 literacy instructors, the research questions were analyzed using descriptive statistics looking at four groupings: (1) students who received no LLI instruction, (2) students who received 2 years prior to LLI and 1 year LLI instruction, (3) students who received 1 year prior to LLI and 2 years of LLI instruction, and (4) students who only received LLI instruction. Other groupings that were used were (1) students served <=100 and (2) students served >100 in analyzing the type of relationship between days served and growth and achievement.

The researcher used an analysis of variance (ANOVA) to compare the growth between the BOY score and the EOY score by student and school. The growth measurement equates one growth point for each level of increase. The growth measurement was then compared for classification groups 1-4, by year and by days served. The comparison allows the researcher to determine if any difference exist between implementation prior to LLI and after LLI.

The researcher used the EOY score by student to determine if grade-level proficiency was achieved. The achievement is a yes or no measurement. The yes

measure, or met, equates to one point; and the no measure, or not met, receives a zero. Achievement was presented on a frequency chart. Grade level proficiency cut scores are shown in Table 9.

Table 9

TRC Proficiency Cut Scores at BOY, MOY, and EOY by Grade

Grade	BOY	MOY	EOY
K	RB/B	C	D
1st	D	G/H	J/K
2nd	J/K	L	M/N

Note. mClass Reading 3D.

Another component of this study is to see what correlation, if any, exists between the number of days students received supplemental instruction and the growth that was made by students. The researcher used the Pearson's r to quantify the relationship between the two groups and present the results in a scatterplot graph.

The researcher analyzed data to see if there were schools that have higher growth rates as a launch for district discussions and further research. The results may help the district office refine the process being implemented in order to raise the achievement of all at-risk students.

The researcher contributed results to the body of research about the impact supplemental instruction has on student achievement, positive or negative. Once the type of impact was determined, the researcher presented the findings to the Title 1 department who will use the information for instructional planning. Significant findings, if determined, will be presented to the cabinet and the Board of Education.

Limitations

Schools that have had Title 1 status for multiple years had to transition from school-based decisions that determined their own program and who was hired as the

reading teacher(s) at their school to a predetermined program and personnel. Migration of transient students as well as student attendance may have skewed the data. Data-driven instruction also may have affected the results in that some teachers were using current data and adapting their lessons to meet the individual needs of the students, where some teachers were not aware of nor understood the data enough to make the changes based on individual needs. Assessment results when using the TRC scores were subject to being skewed because of the 1:1 administration. Another area of limitation was the percent of at-risk students in a school. Research states that early identification must be followed with intense interventions in order to help students make up for their lack of early experiences necessary in building a strong foundation that promotes becoming a successful reader (Hart & Risley, 2003). Some schools had higher free and reduced lunch populations than others, but all schools were given one Title 1 reading teacher.

Delimitations

One delimitation for this study was that in spite of having a large population, students attending Title 1 schools were often transient, so the data group could have changed within the study limited by the number of participants who were enrolled in school from August to May. Another delimitation was that all Title 1 schools were not being used in this study because they did not match the parameters set by the researcher. The parameters were being identified as a Title 1 school for the past 5 years and having served students in K-2 for supplemental reading intervention and assessed students using mCLASS:Reading 3D for the 5-year period.

Summary

In summary, this chapter provided guidelines for the implementation of the study design. Successful achievement in early literacy is the launching pad for later academic

success (Cunningham & Stanovich, 1997). The results from this study helped determine if the instructional process implemented by Title 1 LTs was providing students with higher achievement results.

Chapter 4: Results

The purpose of this study was to investigate the impact of a specifically defined literacy instructional model, LLI, on K-2 reading achievement as measured by the TRC component of mCLASS: Reading 3D. Chapter 4 describes how the data were collected and how the analyses of the descriptive statistics were utilized in order to address each of the research questions as well as a summary of the study results.

The following research questions were used in this quantitative study.

1. What difference in mean growth scores on the mCLASS TRC exist between Title I students prior to the LLI program (2010-2012) and after the LLI program was implemented (2012-2015)?
2. What difference in mean growth scores on the mCLASS TRC exist between Title 1 schools prior to the LLI program (2010-2012) and after the LLI program was implemented (2012-2015)?
3. What impact did the LLI instruction have on the grade-level achievement of K-2 students being served in Title I as measured by the mClass TRC compared to the grade-level achievement of students being served in Title I prior to LLI also measured by mCLASS TRC?
4. What comparison, if any, can be made between reading growth and achievement and days served for students served in the LLI program and students served prior to LLI program as measured by mCLASS TRC and attendance logs?

Data Collection and Screening Procedures

The data for this study were collected from Powerschool, NCDPI, and mCLASS: Reading 3D, the state system for collecting demographic and assessment data as well as

county attendance charts. All demographic and assessment data were gathered and entered into an Excel spreadsheet using appropriate coding. Data entry was completed with the help of an additional viewer to ensure accuracy. Once data entry was conducted, it was then imported into SPSS statistical program database.

The participants in this study were enrolled in Grades K, 1, or 2 at one of the four schools studied during the 2010-2015 school years. Students were eligible to participate in the study if they met the following criteria: (a) attended Grades K-2 at one of the four identified Title I schools, (b) identified as having a reading deficit that met the guidelines for a reading intervention group, (c) served in LLI groups for intervention between 2012-2015, and (d) had a baseline score and exit or EOY score from mCLASS Reading 3D. All students meeting criteria a-d were eligible for participation except students identified EC using NCEXTEND 1 for reading assessment. The initial data collected included 802 participants. After screening all student data, 25 students did not meet eligibility; therefore, the total sample size was 777 students. School A had 213 participants, School B had 193 participants, School C had 189 participants, and School D had 182 participants in the study.

Descriptive statistics as well as inferential statistics were used to analyze the data from study participants seeking to answer the research questions. Descriptive statistics are a way to organize and describe data in a meaningful, yet simple way (Lund Research Group, 2013). Data analyses were calculated for the K-2 participants to determine the difference, if any, between categories in growth and achievement scores.

Inferential statistics is different in that it allows the researcher to infer or make generalizations about a specific group or population (Cronk, 2014). Methods of inferential statistics were used to further analyze data to determine what relationships, if

any, exist between growth and achievement of students and the time students were served in the small group reading program. The criterion for all inferential tests of significance is a=.05.

The following tables organize the overall growth of students and schools tracked in the study. Table 10 presents the average growth by classification for each of the 5 years. Classification within this study is defined in two ways: two groups to compare time served as defined by LLI – (1) <=100 and (2) >100 – and four groups when comparing the specific types of services provided to each student – (1) pre-LLI, (2) 2 years pre-LLI and 1 year LLI, (3) 1 year pre-LLI and 2 years LLI, and (4) LLI only.

Table 10

Mean Growth by School Year by Classification

Year		Prior to LLI	2 Years prior to LLI & 1 Year LLI	1 Year prior to LLI & 2 Years LLI	LLI
2010-2011	Mean	5.1	4.0	1.1	
	N	197	1	18	
	SD	2.8		.7	
2011-2012	Mean	4.1	7.0	6.5	
	N	197	1	18	
	SD	2.5		2.2	
2012-2013	Mean		4.0	4.6	4.2
	N		1	18	561
	SD			1.9	2.4
2013-2014	Mean			3.0	4.8
	N			18	561
	SD			3.4	2.6
2014-2015	Mean				4.0
	N				561
	SD				2.1

Mean growth scores in Table 10 show that over the 5-year period there were more students [N=216 (2010-2011), 216 (2011-2012), 580 (2012-2013), 579 (2013-2014), and

561 (2014-2015)] involved in the program during the 2012-2015 school years and scores are sporadic and inconsistent in measuring increases or decreases in growth. Growth is, however, positive in each of the categories for each year throughout the 5 years of the study.

The schools in this study have their growth data described in Table 11. Schools started reading instruction/intervention in school year 2010 with school based decision making in the area of Title 1 funds. In 2012, a structured and consistent approach was launched in the district. Consistencies among each of the categories include daily, small-group instruction as well as reading teachers who are certified in the area of reading. This study was examining the structure and results to see if there was a difference by school when comparing the data from before the LLI and after the LLI.

Table 11

Mean Growth by School Year by School

School		2010-2011	2011-2012	2012-2013	2013-2014	2014-2015
A	Mean	3.719	4.500	3.759	5.308	4.565
	N	57	24	58	52	62
	SD	2.7565	2.3406	2.2812	2.2011	2.3443
B	Mean	5.061		4.069	5.056	3.387
	N	49		58	54	62
	SD	2.0146		2.0593	2.6020	1.8935
C	Mean	7.455	4.808	5.523	4.129	4.033
	N	22	26	44	70	60
	SD	3.1126	3.1115	1.9228	2.5017	1.8683
D	Mean	5.108	4.105	3.745	4.909	3.981
	N	37	19	55	55	53
	SD	2.7967	2.1831	2.6191	2.9013	1.9264
Total	Mean	4.927	4.507	4.200	4.797	3.992
	N	165	69	215	231	237
	SD	2.8490	2.5988	2.3366	2.5888	2.0543

Inconsistent increases and decreases are described among schools each year over the 5-year time period in Table 11. Highest growth scores in the all category occurred during 2010-2011 and 2013-2014 school years with school C showing higher gains than the other schools. All schools demonstrated reading growth each of the 5 years in this study. Each school in this study meets criteria for Title 1 eligibility and are made up of a diverse population. Tables 12 and 13 describe the diversity and the mean growth for each subgroup area.

Table 12

Growth by School Year by Gender

Gender		2010-2011	2011-2012	2012-2013	2013-2014	2014-2015
Female	Mean	4.718	4.148	4.168	4.607	3.948
	N	71	27	107	112	135
	SD	2.7002	2.7133	2.3371	2.3302	2.0418
Male	Mean	5.097	4.738	4.231	4.975	4.049
	N	93	42	108	119	102
	SD	2.9748	2.5285	2.3466	2.8088	2.0795

Table 12 describes the growth for each gender subgroup by year. The data show that the male students scored higher than the female students each of the 5 years. Students scored higher in years 2010-2011 and 2013-2014 than the other 3 years. The table also shows that males and females were served comparatively.

Table 13

Mean Growth by School Year by Ethnicity

Ethnicity		2010-2011	2011-2012	2012-2013	2013-2014	2014-2015
Caucasian	Mean	4.971	5.036	4.282	4.802	4.000
	N	70	28	117	106	102
	SD	2.8991	2.5456	2.4595	2.2821	2.1108
African American	Mean	5.098	4.042	4.339	4.908	4.120
	N	51	24	62	76	92
	SD	2.5554	2.7581	2.1573	2.8104	2.0480
Multi-race	Mean	3.000		3.000	9.000	2.500
	N	3		1	1	2
	SD	2.6458		.	.	2.1213
Asian	Mean	4.667	5.250			3.000
	N	3	4			1
	SD	4.5092	3.3040			.
Hispanic	Mean	5.552	3.545	3.600	4.595	3.848
	N	29	11	30	42	33
	SD	2.8981	2.0671	2.2066	2.7503	2.0935
Other	Mean	2.125	6.500	4.400	4.000	3.429
	N	8	2	5	6	7
	SD	2.5877	.7071	2.6077	3.6878	1.2724
Total	Mean	4.933	4.507	4.200	4.797	3.992
	N	164	69	215	231	237
	SD	2.8568	2.5988	2.3366	2.5888	2.0543

Diversity is a key factor in the Title 1 schools as shown in Table 13. The Caucasian and African-American students are the largest ethnicity subgroups in the study. Regardless of gender or ethnicity, growth scores are inconsistent across the subgroups and school years. In spite of the inconsistencies, scores do show positive growth in each area each of the 5 years.

Findings

In this section the findings will be more specifically presented by each research

question.

Research Question 1. What difference in mean growth scores on the mCLASS TRC exist between Title I students prior to the LLI program (2010-2012) and after the LLI program was implemented (2012-2015)?

Descriptive statistics was used to organize and describe the data collected. Students were classified into four groups based on the instructional program in which they were served. Table 14 presents the growth data for each of the four groupings and the years they were served. This information is also provided in Figure 1 to show the breakdown by year and by classification. Growth in this study is measured by the increase in levels. Table 9 in Chapter 3 provides the coding for the TRC conversion which allows for growth to be measured. Each level of increase is equivalent to one point growth. For example, a child whose BOY TRC score is a level C and EOY TRC score is a G would have an equivalent to 4 points growth.

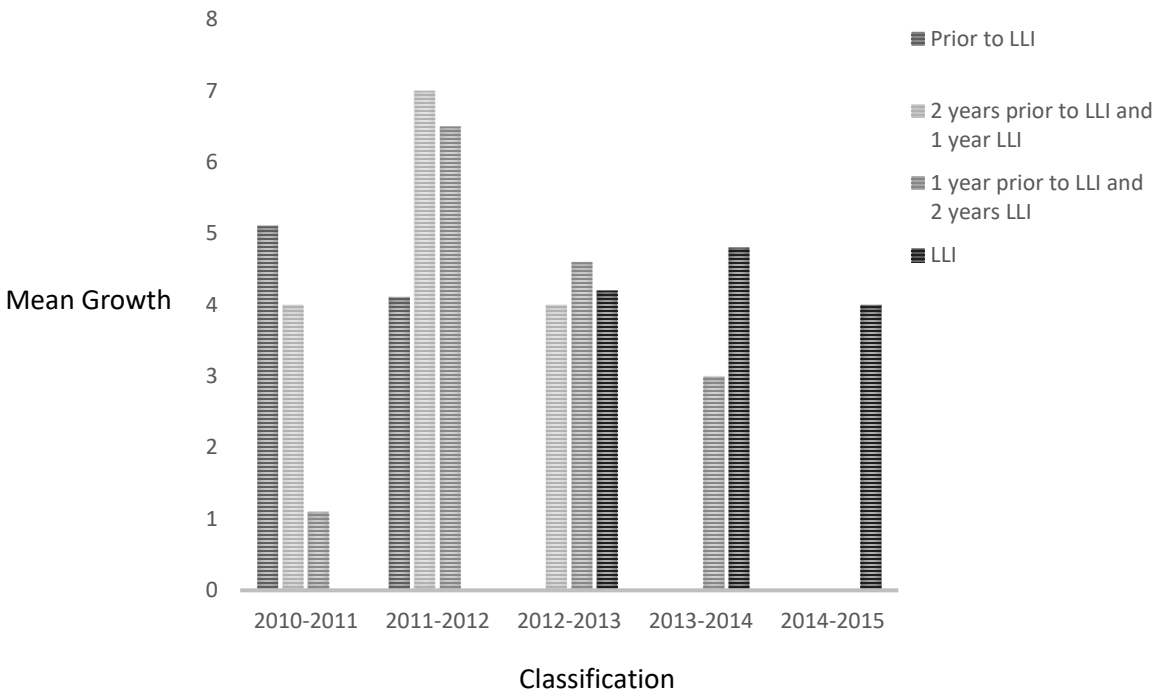

Figure 1. Mean Average K-2 mCLASS TRC Scores by Classification.

Figure 1 shows that the group LLI only is comparable in the growth consistency. Growth in the year 2011-2012, ranging from 4-7 points mean growth above the three subgroups, was the year with the highest overall mean average of 5.87. Prior to LLI (M=4.56), 2 years prior to LLI and 1 year LLI (M=5.0), 1 year prior to LLI and 2 years LLI (M=3.799), and LLI only (M=4.33) are the mean growth scores for each one of the classification groups for the cumulative 2010-2015 time period. The difference among groups is small and inconsistent.

The Kruskal-Wallis H Test was conducted comparing the mean EOY student growth with different classifications of instructional programs. The Kruskal-Wallis H test is a nonparametric inferential statistical test that is used when comparing two variables with one of them having three or more groupings or classifications. The Kruskal-Wallis H test is also a test that uses ordinal level data. Like an ANOVA, the

Kruskal-Wallis test makes the assumption that the groups are equal, therefore results that are significant indicate one group is different from the others. Table 14 shows the significance for each of the classifications.

Table 14

Significance of Growth across Classification, Kruskal-Wallis Test

	Significance
2010-2011	p=.002
2011-2012	p =.001
2012-2013	p=.704
2013-2014	p =.127
2014-2015	Unable to compute

A significant result was found for 2010-2011 (p=.002) and 2011-2012 (p=.001), indicating the growth across categories during these years was different. No significant difference was found for 2012-2013 (p=.704) or 2013-2014 (p=.127), indicating the growth across categories did not differ significantly from each other. The Kruskal-Wallis test was unable to compute significance for 2014-2015 due to only having one category or grouping.

The growth for each of the categories within each school is broken down in Figure 2. The data in Figure 2 can also be found in Appendix A.

Figure 2 shows that only school A had participants in the programs from Grades K-2 during the life of the study. This was in part because prior to the implementation of the structured Literacy Intervention Model, schools were given the autonomy to use their Title I monies in ways they felt would best meet the needs of their schools. There is growth evident in each of the categories in Figure 2 and while the growth is inconsistent between categories, the mean growth is at a minimum of four levels of increase for each category at each school. LLI, while not the highest mean growth score, has the most

stable mean growth score with only .43 difference in the mean growth scores when measured at each of the four schools within the study in each of the classification groups. Other categories range from .95-1.55 in difference.

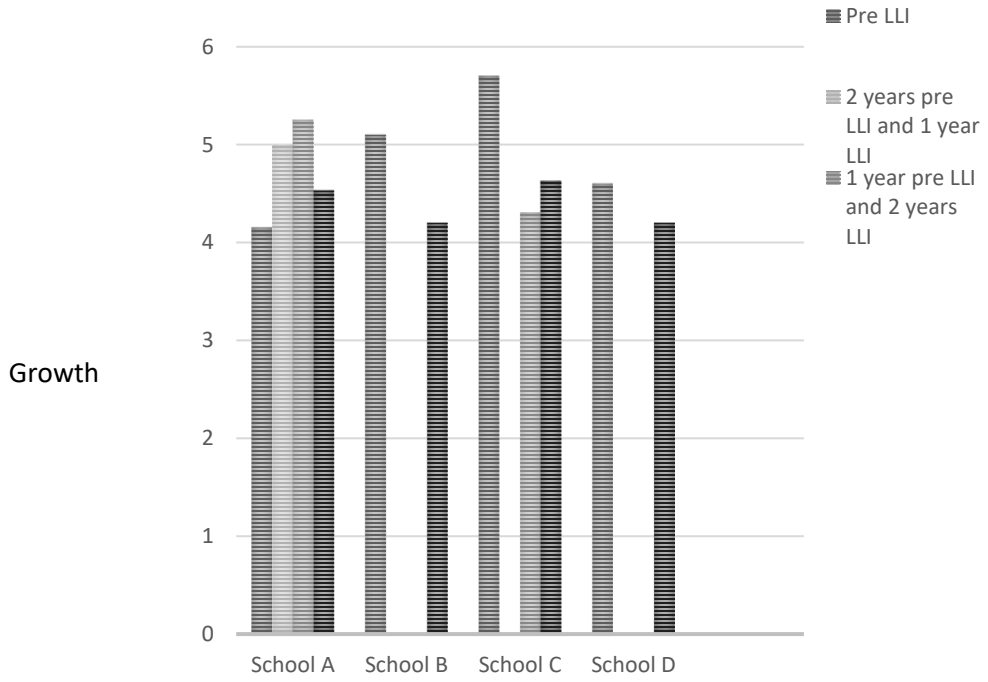

Figure 2. Mean Average Growth by Categories by School.

Research Question 2. What difference in mean growth scores on the mCLASS TRC exist between Title 1 schools prior to the LLI program (2010-2012) and after the LLI program was implemented (2012-2015)?

In order to answer the research question, descriptive statistics were used to collect and describe the data. Data collected are presented in Figure 3 for individual school years by school by their growth per year during the 5-year time period of the study.

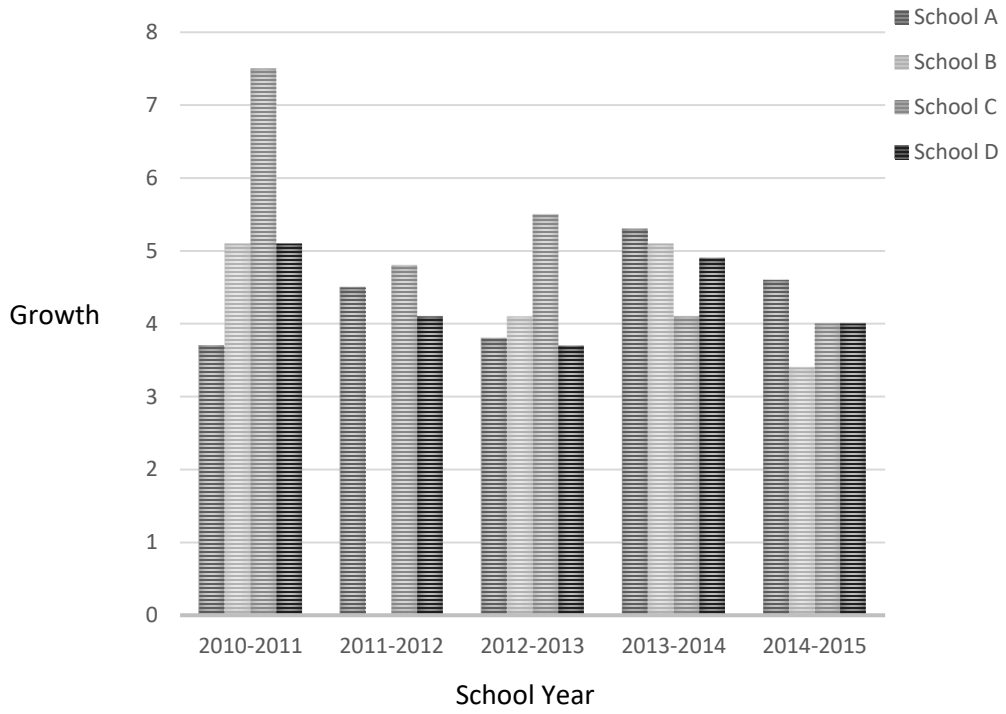

Figure 3. Mean Growth by School by School Year.

Grade-level scores show a minimum of 3 points gained per school during every school year. The 2013-2014 year showed the most consistent growth across the schools with an average of 4.85 points mean growth. The highest mean growth by year was in 2010-2011 with a spike from school C of 7.5 points mean growth. Table 11 presents the mean growth scores by school by year. The mean growth scores by school are consistently close with school A (M=4.38), School B (M=4.43), School C (M=5.18), and School D (M=4.36). Using the data in Table 11 and Figure 3, 2010-2011 (M=5.35), 2011-2012 (M=4.46), 2012-2013 (M=4.28), 2013-2014 (M=4.85), and 2014-2015 (M=4.0), the findings show that the difference in mean growth scores from pre-LLI to post-LLI is pre-LLI having a slightly higher overall score (M=4.91) for the 2010-2012 school years than the overall score for post-LLI (M=4.38) for the 2012-2015 school years. To answer the research question, Figure 4 shows the mean growth score prior to

the LLI program (2010-2012) and after the LLI program was implemented (2012-2015).

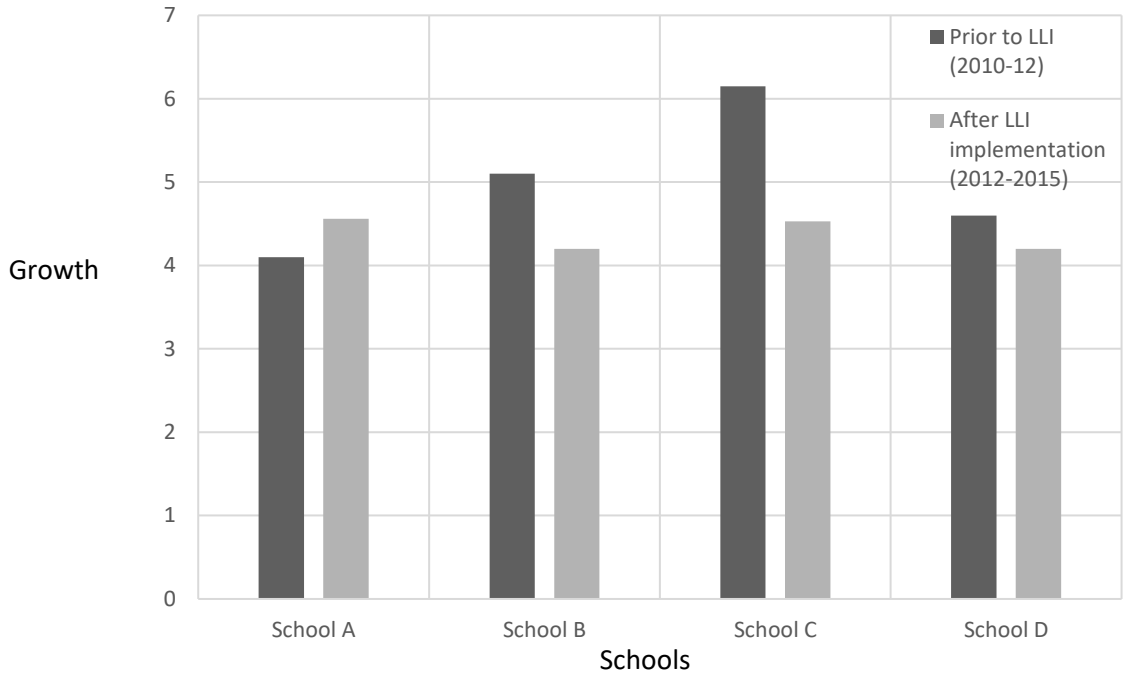

Figure 4. Mean Growth Comparison between Scores/Schools prior to LLI and after LLI.

The difference in mean growth scores by school when comparing prior to LLI (2010-2012) to after LLI implementation (2012-2015) was higher with the prior to LLI category (M=4.985) than the after LLI implementation (M=4.595). One other analysis that was made was that while the prior to LLI growth was higher, it was more inconsistent between years ranging from 4.1 to 6.15 points mean growth. However, after LLI implementation, the mean growth score, while lower, was more consistent across years with a difference (M=.36) in score ranging from 4.2 to 4.56.

Within each of the schools in this study, there is great diversity. Table 15 shows the analysis of mean growth scores by gender by year and by school and Table 16 shows the mean growth scores by ethnicity by year and by school.

Table 15

Mean Growth Scores by Gender by Year and by School

	2010-2011		2011-2012		2012-2013		2013-2014		2014-2015	
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
A	3.8	3.7	4.6	4.5	3.4	4.5	5.5	5.1	4.9	4.8
B	5.3	4.9	--	--	4.7	3.6	4.6	5.6	3.4	3.3
C	6.5	8.0	4.1	5.2	5.0	6.0	3.9	4.4	3.8	4.4
D	4.3	5.8	3.8	4.4	4.2	3.4	4.8	5.0	3.8	4.2

There were inconsistent differences among the genders within the school years. Their mean growth scores fluctuated among gender and years. The only school with a trend among gender was School C. The male students scored higher each of the five years than the females with a mean score of .94 above the female score.

Table 16

Mean Growth Scores by Ethnicity by School by Year

Ethnicity	School	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015
Caucasian	A	3.7	5.1	3.9	5.2	4.9
	B	5.5	--	3.9	4.9	3.3
	C	7.5	5.1	5.3	4.0	3.1
	D	7.3	4.0	4.7	4.8	3.8
African American	A	4.1	3.6	3.4	5.8	4.3
	B	4.8	--	4.4	4.8	3.5
	C	8.8	4.7	5.8	4.2	4.3
	D	5.0	3.3	3.4	5.7	4.7
Multi-race	A	3.0	--	--	--	--
	B	--	--	--	9.0	
	C	--	--	--	--	--
	D	--	--	3.0	--	2.5
Asian	A	5.0	3.0	--	--	--
	B	--	--	--	--	--
	C	--	--	--	--	--
	D	4.5	7.5	--	--	3.0
Hispanic	A	4.8	--	3.7	5.8	4.0
	B	5.1	--	3.8	6.7	2.5
	C	7.2	3.3	5.6	4.1	3.8
	D	5.5	3.6	2.9	4.4	4.1
Other	A	.5	--	3.3	1.0	2.3
	B	2.0	--	7.0	5.0	4.0
	C	1.0	7.0	5.0	3.0	4.5
	D	3.3	6.0	--	--	--

The diversity within the schools in this study is evident in Table 16. There was no consistency in looking for trends among ethnicity within the schools. One area that is evident is that the schools in the study have growth among all subgroups. The Other ethnicity group has the lowest overall mean growth levels yet still show growth.

Research Question 3. What impact did the LLI instruction have on the grade-level achievement of K-2 students being served in Title I as measured by the mClass TRC compared to the grade-level achievement of students being served in Title I prior to LLI also measured by mCLASS TRC?

In 2012, the state of North Carolina adopted the Excellent Public Schools Act (2013) which incorporates the North Carolina Read to Achieve section that establishes a focus of improving reading achievement, providing effective reading instruction, and using mCLASS: Reading 3D as an common assessment tool. Districts now have the ability to consistently determine if a student is proficient in the area of reading based on the grade-level achievement standards set by the state. Each assessment determines the level of mastery based on the student's performance and skill set. This level of mastery is recorded with a letter correlation from the A to U criterion. Achievement is determined as a yes or no rating. If a student in this study met the level established by the state, he or she received a point for achievement; and if they did not, no point was awarded.

In this study, achievement data were analyzed by classification, school, gender, ethnicity, by the number of days students were served in the instructional program, and by the life of their instructional time served. Classification of groups allow achievement rates to be compared among groups served prior to LLI, with some of LLI and prior to LLI and LLI only. These data are presented in Table 17.

Table 17

Achievement by Classification by Year

		Classification				
		Prior to LLI	2 years prior to LLI & 1 Year LLI	1 year prior to LLI & 2 years LLI	LLI	Total% Proficient by Year #P/N (%)
2010-2011	Nonproficient Proficient	136 21	1	6 1		31/174 (18%)
2011-2012	Nonproficient Proficient	47 10	1	10 1		11/69 (16%)
2012-2013	Nonproficient Proficient		1	7 8	114 84	93/214 (44%)
2013-2014	Nonproficient Proficient			4	101 125	125/230 (54%)
2014-2015	Nonproficient Proficient				124 113	113/237 (48%)
Total% Proficient by Classification #P/N (%)		31/214 (14%)	1/3 (33%)	10/37 (27%)	322/661 (49%)	

Descriptive statistics were used to organize and present these data. Achievement scores demonstrate an understanding of reading as a whole unit as the assessment measures reading skills, accuracy, fluency, and comprehension; both oral and written. The mean achievement levels for the classifications in this study are drastically different. Student achievement was much higher in the LLI classification group compared to the prior to LLI group. The difference ranged from 16-35 percentage points. Only 14% of the students served prior to LLI were proficient compared to 49% of students served by LLI.

In Table 17, one is able to see that the proficiency increased by great numbers

over the years on implementation changes. Student proficiency grew from 16-18% proficient in 2010-2012 to 44-54% in years 2012-2015.

Achievement scores are compared by classifications within the school. These data are presented in Table 18.

Table 18

Achievement by Classification by School by Year

School			Classification				
			Prior to LLI	2 years prior to LLI & 1 Year LLI	1 year prior to LLI & 2 years LLI	LLI	Total Proficient by School by Year #P/# (%)
A	2010-2011	Nonproficient	38	1	6		12/57 (21%)
		Proficient	11		1		
	2011-2012	Nonproficient	15	1	1		12/29 (41%)
		Proficient	7		5		
	2012-2013	Nonproficient			2	36	15/53 (28%)
		Proficient		1	1	13	
	2013-2014	Nonproficient				23	29/52 (58%)
		Proficient				29	
	2014-2015	Nonproficient				28	34/62 (55%)
		Proficient				34	
B	2010-2011	Nonproficient	49				0/49 (0%)
		Proficient					
	2011-2012	Nonproficient					----
		Proficient					
	2012-2013	Nonproficient				23	35/58 (60%)
		Proficient				35	
	2013-2014	Nonproficient				22	31/53 (59%)
		Proficient				31	
	2014-2015	Nonproficient				31	31/62 (50%)
		Proficient				31	
C	2010-2011	Nonproficient	16				6/16 (38%)
		Proficient	6				
	2011-2012	Nonproficient	15		10		1/26 (.05%)
		Proficient	1				
	2012-2013	Nonproficient			2	21	21/44 (48%)
		Proficient			6	15	
	2013-2014	Nonproficient			3	41	25/69 (36%)
		Proficient				25	
	2014-2015	Nonproficient				48	12/60 (20%)
		Proficient				12	
D	2010-2011	Nonproficient	33				4/33 (12%)
		Proficient	4				
	2011-2012	Nonproficient	17				2/17 (12%)
		Proficient	2				
	2012-2013	Nonproficient				34	21/55 (38%)
		Proficient				21	
	2013-2014	Nonproficient				15	40/55 (72%)
		Proficient				40	
	2014-2015	Nonproficient				17	36/53 (70%)
		Proficient				36	

A positive impact on reading achievement was found in all but one school within

this study according to Table 18. School C did not make the gains that were found in schools A, B, and D. The average gain in schools A, B, and D was 52 proficiency points. School C increased 20 proficiency points from their lowest proficiency to their highest proficiency. Another difference is school C ended up with completely different scores at the end of 2014-2015 compared to the other schools. The final LLI score in 2014-2015 for School C was 18 proficiency points lower than their score in 2010-2011 prior to LLI implementation. While not meeting the proficiency standards for achievement, school C, as shown in Figure 3 above, showed that they were the school in the prior to LLI classification that had the highest growth consistently. The growth became consistent with other schools after the implementation of LLI, still not showing enough growth to improve the proficiency or achievement levels of their clientele.

Analyzing the impact LLI had on the achievement of subgroups within the classification groups, Table 19 presents data for achievement by gender. Information is disaggregated and presented by gender by category as well as the percent proficient by gender by year.

Table 19

Achievement by Classification by Year by Gender

Gender			Classification				
			Prior to LLI	2 years prior to LLI & 1 Year LLI	1 year prior to LLI & 2 years LLI	LLI	Total Proficiency by Gender by Year #P/# (%)
Female	2010-2011	Nonproficient Proficient	58 11		1 1		12/71 (17%)
	2011-2012	Nonproficient Proficient	21 3		3		3/27 (11%)
	2012-2013	Nonproficient Proficient			3 1	61 42	43/107 (40%)
	2013-2014	Nonproficient Proficient			1	52 58	58/111 (52%)
	2014-2015	Nonproficient Proficient				75 60	60/135 (44%)
Male	2010-2011	Nonproficient Proficient	77 10	1	5		10/93 (11%)
	2011-2012	Nonproficient Proficient	26 7	1	7 1		8/42 (19%)
	2012-2013	Nonproficient Proficient		 1	4 7	53 42	50/107 (47%)
	2013-2014	Nonproficient Proficient			3	49 67	67/119 (56%)
	2014-2015	Nonproficient Proficient				49 53	53/102 (52%)

Table 19 shows a consistent positive impact on achievement scores from 2010-2015. Growth in the male subgroup over the last 3 years (2012-2015) was consistently higher than the female subgroup. The male population that was served was equivalent to the female population served with only 12 more males served during the 2010-2015 time frame.

Ethnicity achievement data are presented in Table 20 and 21. In Table 20, the data are organized to present the proficiency of each ethnicity subgroup by classification group. Table 21 presents the percentage of proficient students by ethnicity by year.

Table 20

Mean Achievement Score by Ethnicity by Classification by Year

Ethnicity	Class	2010-2011		2011-2012		2012-2013		2013-2014		2014-2015		Total Prof by Ethnicity by class. #P/# (%)
		Non-prof.	Prof.	Non-prof.	Prof.	Non-prof.	Prof.	Non-prof.	Prof.	Non-prof.	Prof.	
Caucasian	1	55	9	16	8	--	--	--	--	--	--	17/88 (19)
	2	1	0	1	0	0	1	--	--	--	--	1/3 (33)
	3	4	1	3	0	4	4	--	--	--	--	5/16 (31)
	4	--	--	--	--	65	42	46	60	45	57	159/315 (50)
African	1	45	6	16	1	--	--	--	--	--	--	7/68 (11)
American	2	--	--	--	--	--	--	--	--	--	--	0/0 (0)
	3	--	--	6	1	1	3	4	--	--	--	4/15 (27)
	4					27	31	32	40	53	39	110/222 (50)
Multi-race	1	1	2	--	--	--	--	--	--	--	--	2/3 (67)
	2	--	--	--	--	--	--	--	--	--	--	0/0 (0)
	3	--	--	--	--	--	--	--	--	--	--	0/0 (0)
	4	--	--	--	--	1	0	0	1	1	1	2/4 (50)
Asian	1	2	1	4	0	--	--	--	--	--	--	1/7 (14)
	2	--	--	--	--	--	--	--	--	--	--	0/0 (0)
	3	--	--	--	--	--	--	--	--	--	--	0/0 (0)
	4	--	--	--	--	--	--	--	--	0	1	1/1 (100)
Hispanic	1	26	3	10	--	--	--	--	--	--	--	3/39 (.08)
	2	--	--	--	--	--	--	--	--	--	--	0/0 (0)
	3	--	--	1	--	--	1	--	--	--	--	1/2 (50)
	4	--	--	--	--	19	10	21	21	21	12	43/1047 (41)
Other	1	6	0	1	1	--	--	--	--	--	--	1/7 (14)
	2	--	--	--	--	--	--	--	--	--	--	0/0 (0)
	3	--	--	--	--	2	0	--	--	--	--	0/2 (0)
	4	--	--	--	--	2	1	2	4	4	3	8/16 (50)

Note. 1=prior to LLI; 2=2 years prior to LLI & 1 year LLI; 3=1 year prior to LLI & 2 year LLI; 4=LLI.

Table 21

Total Percent Proficient by Ethnicity by Year

Ethnicity	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015
Caucasian	10/70 (14)	8/28 (29)	47/116 (41)	60/116 (52)	57/102 (56)
African American	6/45 (13)	2/24 (.09)	34/62 (55)	40/76 (53)	39/53 (74)
Multi-Racial	2/3 (67)	0/0 (0)	0/1 (0)	1/1 (100)	1/2 (50)
Asian	1/3 (33)	0/4 (0)	0/0 (0)	0/0 (0)	1/1 (100)
Hispanic	3/26 (12)	0/11 (0)	11/30 (37)	21/42 (50)	12/33 (36)
Other	0/6 (0)	1/2 (50)	1/5 (20)	4/6 (67)	3/4 (75)

In analyzing Tables 20 and 21, it is difficult to use data from multi-racial, Asian, and the Other subgroups when making a comparison, as the populations are six or less in each year. The proficiency levels by year are scattered, ranging from 20% proficient to 100% proficient. When comparing their proficiency by classification or category, Asian and Other subgroups made increases in the level of percent proficient with implementation of LLI whereas Multi-Racial had a higher proficiency rating prior to LLI.

Caucasian, African American, and Hispanic populations, when comparing proficiency among classifications (Table 20), had a large increase in percent proficient. The increase in overall proficiency by subgroup from 2010-2011 to 2014-2015 was 36.6 percent points. Table 21 shows that years 2013-2014 and 2014-2015 are consistently higher in overall percent proficient than the overall proficiency in years 2010-2013, with the exception of the Hispanic subgroup in 2014-2015. 2013-2015 percent proficient were all at 50 or higher with the exception of the Hispanic subgroup in 2014-2015.

The descriptive data show that the LLI program makes an overall positive increase in the achievement of the students served when compared to the data from before implementation of LLI. To determine the significance of the impact LLI has on achievement across the classification, the researcher conducted a nonparametric test since

the data do not follow the normal curve. The Kruskal Wallis Test was used because we have ordinal level data and there are more than two groups for our variables. Making the assumption that all groups are equal, the results of the Kruskal Wallis that are significant indicate that one group is different from the other groups. Table 22 presents the results of the Kruskal Wallis test determining the significance of the distribution of the achievement across the classification. An inferential test of significance has the criterion p=.05.

Table 22

Significance of Achievement across Classification, Kruskal Wallis

Year	Significance
2010-2011	.924
2011-2012	.714
2012-2013	.373
2013-2014	.028
2014-2015	Unable to compute

The Kruskal Wallis was conducted for each year of the study. School year 2014-2015 was unable to be computed because there was only one classification of students, therefore not enough variables to conduct. The only significance was found in 2013-2014 (a=.028). This result indicates that the achievement levels across the classification were not distributed the same. Growth scores were different in 2013-2014 across the classification groups. Years 2010-2013 had results of no significance, indicating that the groups did not differ significantly from each other.

Research Question 4. What comparison, if any, can be made between reading growth and achievement and days served for students served in the LLI program and students served prior to LLI program as measured by mCLASS TRC and attendance logs?

Achievement and growth data were analyzed using descriptive and inferential statistics to determine if there was a relationship between the achievement and growth of students participating in the LLI instructional model and the number of days they were served as evident in Appendix B. Students who are served in the LLI program should, based on the design of the program identification and implementation, be identified according to the guidelines and served five times per week for 30 minutes per session with four or fewer students. According to Heinneman (2009), this structure along with the foundational big 5 ideas of reading being addressed throughout their weekly sessions should make a significant increase in their reading levels and students should reach expected achievement levels within the 90 days of instruction. Table 23 shows the number of students and the proficiency rate for students served according to the LLI design.

Table 23

Proficiency of Students Served According to LLI Guidelines

Year Served	Number Served	Number Proficient	Number Nonproficient	Percent Served Proficient
2010-2011	124	18	106	17
2011-2012	40	10	30	25
2012-2013	210	92	118	44
2013-2014	203	121	82	60
2014-2015	221	108	113	49
Total Prior LLI (2010-2012)	164	28	136	17
Total LLI (2012-2015)	634	321	313	51

Achievement results shown in Table 23 are higher in the LLI groups served from 2012-2015 (M=51%) than those served prior to LLI from 2010-2012 (M=17%). These

results state that 51% of the students served from 2012-2015 were at a level of proficiency within 100 days or less of LLI instruction.

The district in this study reassesses every student at the beginning of each school year (BOY) to determine who receives services by the reading instructional specialist. Some students who scored nonproficient in their initial year of enrollment in the program are served over multiple years based on the results of their consecutive nonproficient BOY scores. Figures 5-8 present a graphical depiction of the impact LLI had on students within their 90 days of instruction as well as tracking those students who are served over multiple years. In Figures 5-8, results are shown from cross tabulation which was conducted to measure the achievement of students who started the intervention program and the type of impact, if any, extended time in the program had on their achievement levels when exiting the program.

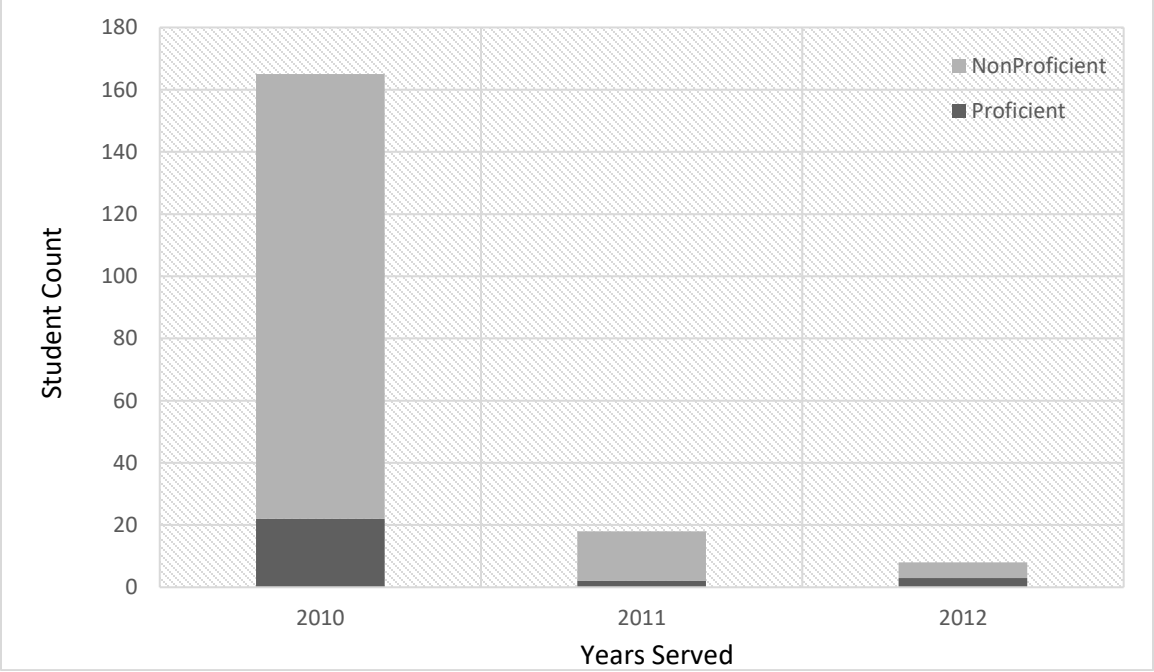

Figure 5. Achievement of Students Who Started in 2010 and Were Served Multiple Years.

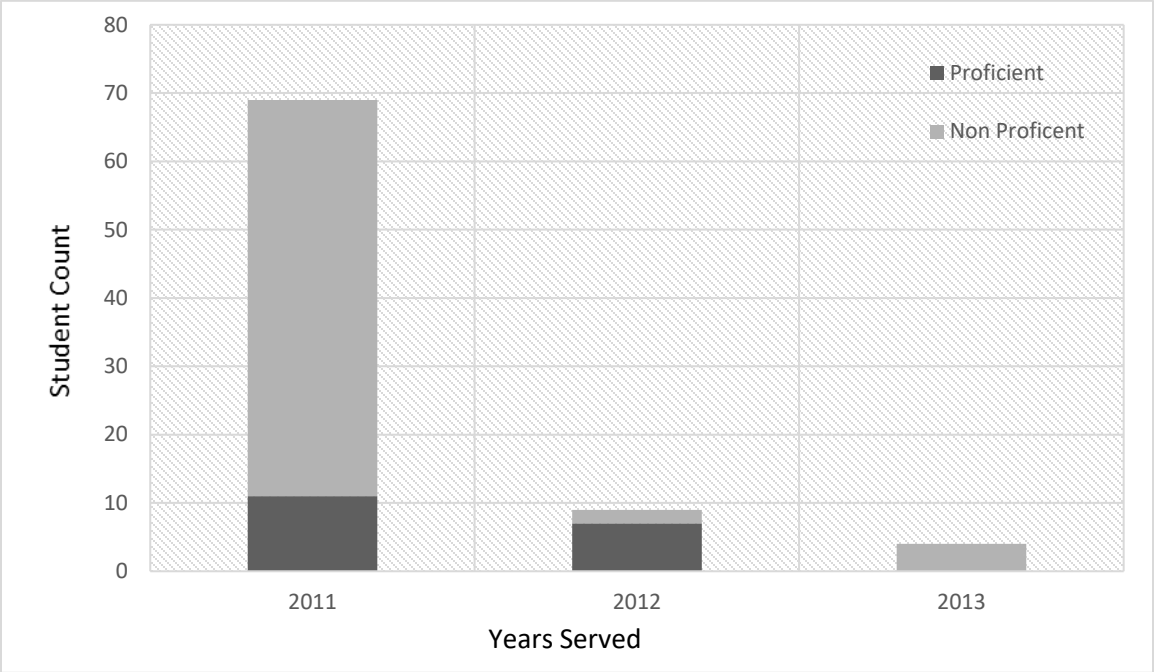

Figure 6. Achievement of Students Who Started in 2011 and Were Served Multiple Years.

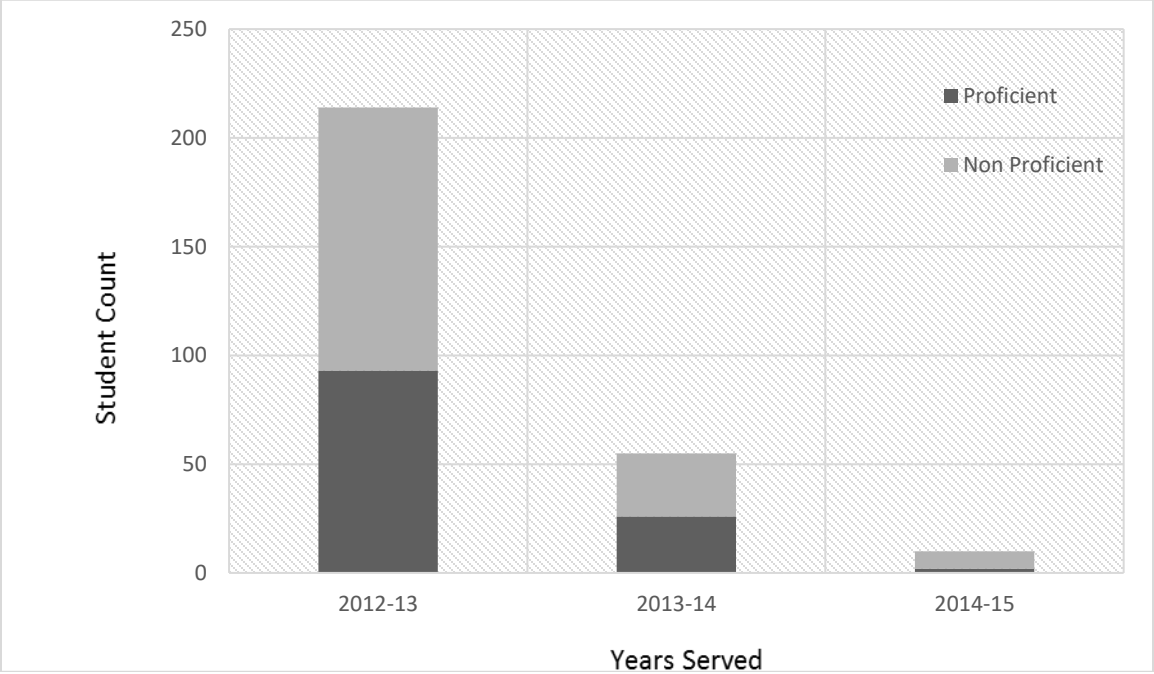

Figure 7. Achievement of Students Who Started in 2012 and Were Served Multiple Years.

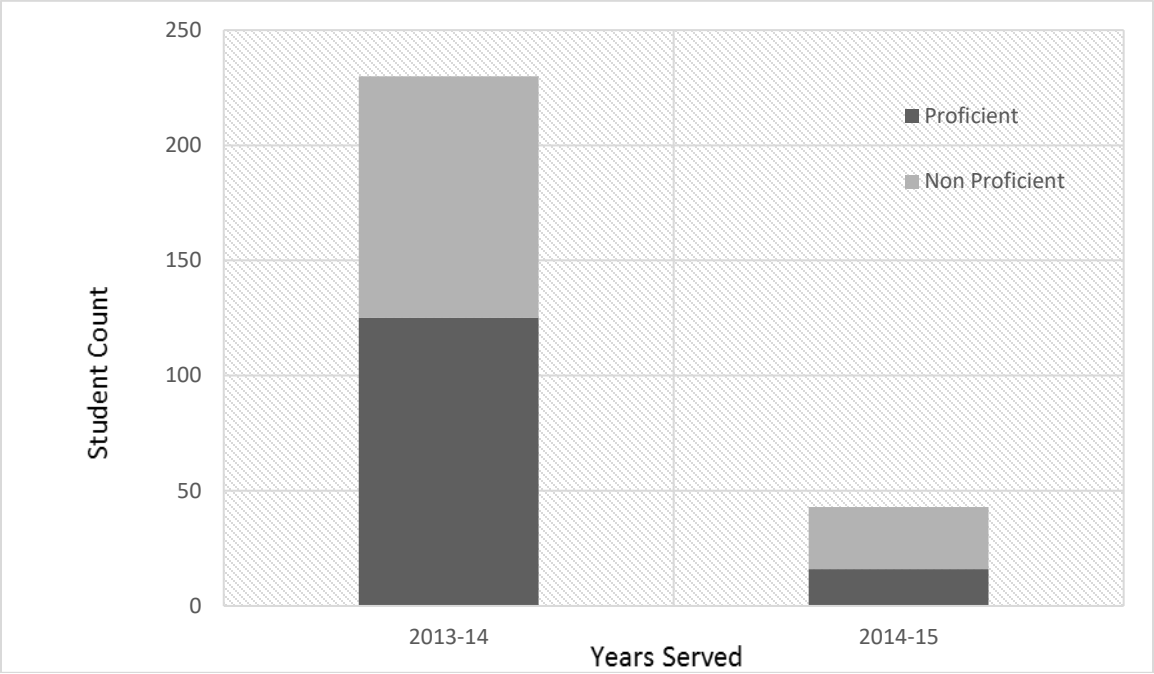

Figure 8. Achievement of Students Who Started in 2013 and Were Served Multiple Years.

According to Figure 5, 165 students were being served by a reading specialist initially during the 2010-2011 school year; 143 students did not meet the achievement level for their grade level. In 2011-2012, 18 of the 143 students received an additional year of intervention instruction. During year 2, only two students reached proficiency. In 2012-2013, only eight of the non-proficient students were served by the reading specialist, using LLI. Of those eight students, three reached the achievement level by the EOY.

The 2011-2012 school year, just as the 2010-2011 school year, had no formal, structured program that guided the determination about which students were to be selected and/or the materials used for instruction. The only similarity in the program expectations was that students were to be served five times per week in small groups for

30 minutes each session. Figure 6 shows that only 69 students were served in Grades K-2 during the 2011-2012 school year. Of those 69 students, 11 were proficient at the EOY. Of the 58 students, nine were provided an additional year of instruction by a reading specialist in 2012-2013, this time following the LLI program. Seven students reached the EOY proficiency goal. In 2013-2014, four students who started in 2011-2012 were served again with a second year using LLI. None of these students reached proficiency that year.

Beginning in 2012-2013, the district in the study implemented LLI as a reading intervention model that was to be implemented with fidelity. Initial counts involved in the intervention show a greater, more consistent approach to student selection among schools. Two hundred fourteen students were served in 2012-2013; and according to Figure 7, 93 students finished the year proficient. Ninety-two of those students finished proficient within 100 days of instruction. In 2013-2014, 55 of the 121 students were provided additional instructional time. Twenty-six students reached proficiency within the 100 days of instruction. Of the 10 students who were served in 2014-2015, only two met the proficiency expectation at the EOY.

Figure 8 shows the students who started receiving instruction through LLI in 2013-2014. There were 231 students who participated and 125 were proficient by the EOY with 121 meeting their goal within the 100 days. The following year, 2014-2015, 43 students were provided LLI instruction and 16 of the students grew to the level of proficient.

Students served additional time may or may not benefit from the extension of time for small-group instruction as the results were inconsistent among year, school, and classification. In 2010, prior to LLI, 13% of the students with extended time reached

proficiency. In 2011, 19% of the students who were provided additional time reached proficiency. The implementation of LLI occurred during 2012, and 42% of the students who were provided additional time reached achievement levels for their grade level. Only 29% of the students who were provided additional time in 2013-2014 reached their goal of proficiency by the end of the study in 2014-2015. These numbers show that LLI does have a greater impact on achievement within the 100 days and with extended instructional time when comparing the data from 2012-2015 to 2010-2012.

Analyzing the amount of growth within the number of days served categories, the researcher used descriptive statistics to present the findings. Table 24 provides a description of the achievement by days served for each of the years in the study. Table 25 presents the summary of growth by comparing days served within the classification of pre-LLI (2010-2012) and LLI (2012-2015). Figures 9-13 portray the amount of growth for students compared to the days served by students.

Table 24

Achievement by Days Served Category by School Year

Year		Categories of Days					
		<=30	>30<=60	<60<=90	>90<=120	>120<=150	>150
2010-2011	Nonprof.	17	39	34	31	10	12
Achievement	Proficient	2	7	7	3	2	1
2011-2012	Nonprof.	9	15	4	22		8
Achievement	Proficient	1	2	6	2		
2012-2013	Nonprof.	33	53	28	5	2	
Achievement	Proficient	27	44	17	5		
2013-2014	Nonprof.	17	43	16	28	1	
Achievement	Proficient	18	77	16	13	1	
2014-2015	Nonprof.	24	49	27	18	6	
Achievement	Proficient	23	48	30	11	1	

Table 25

Percentage of Students Proficient by Days Served by Classification

	<=30	>30<=60	>60<=90	>90<=120	>120<=150	<150
Pre LLI (2010-2012)	10.5	13.5	38.5	8.0	17.0	7.0
LLI (2012-2015)	48.3	53.0	47.0	40.0	21.3	na

Achievement using LLI in this study shows an increase over not using LLI. Students who had the opportunity to continue through the program due to nonproficiency, even after 90 days of instruction as designed by the program have been completed, showed some increase in proficiency. The greatest increase in achievement occurred when using the LLI program for 90 days or less.

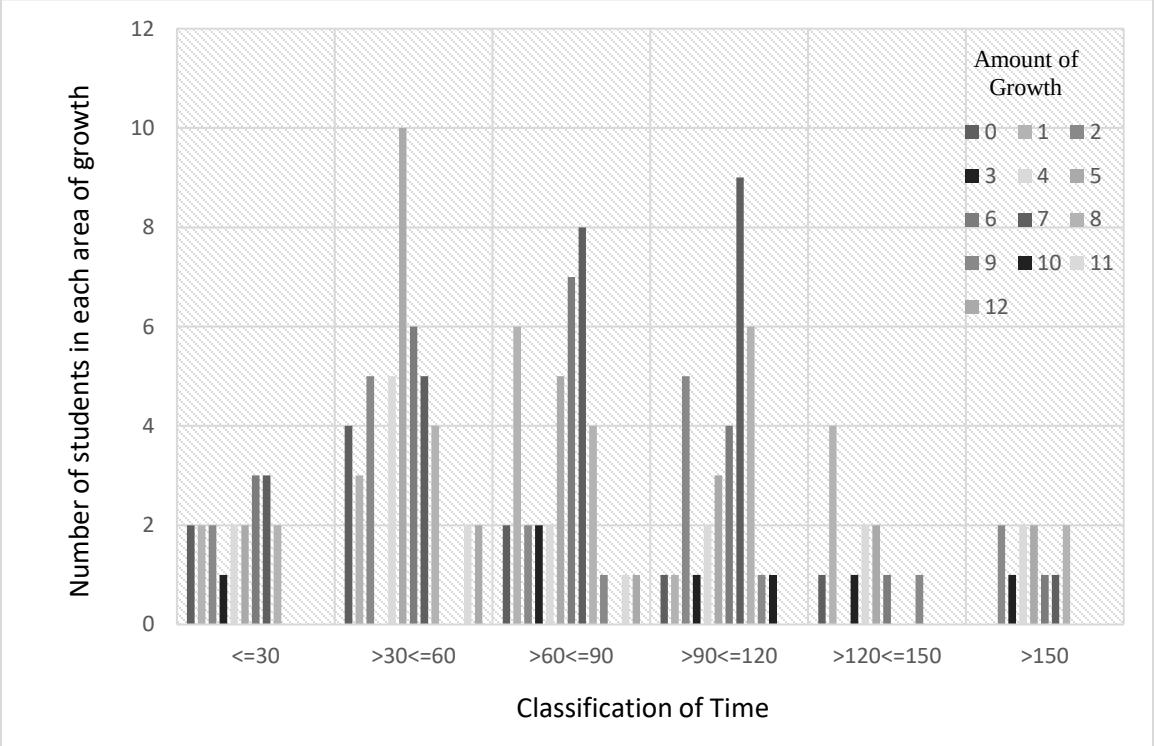

Figure 9. Amount of Growth within Time Classification for 2010-2011.

Growth is sporadic as seen in Figure 9 during the 2010-2011 school year. Most growth occurs during the >30 <=120 categories. Mean growth scores for 2010-2011 for

the days served categories are <=30 (M=4.32), >30<=60 (M=5.04), >60<=90 (M=5.14), >90<=120 (M=5.61), >120<=150 (M=3.33), and >150 (M=4.92). Greatest growth occurred in the 90-120 day time period but was consistently close with the 30-60 and 60-90 categories.

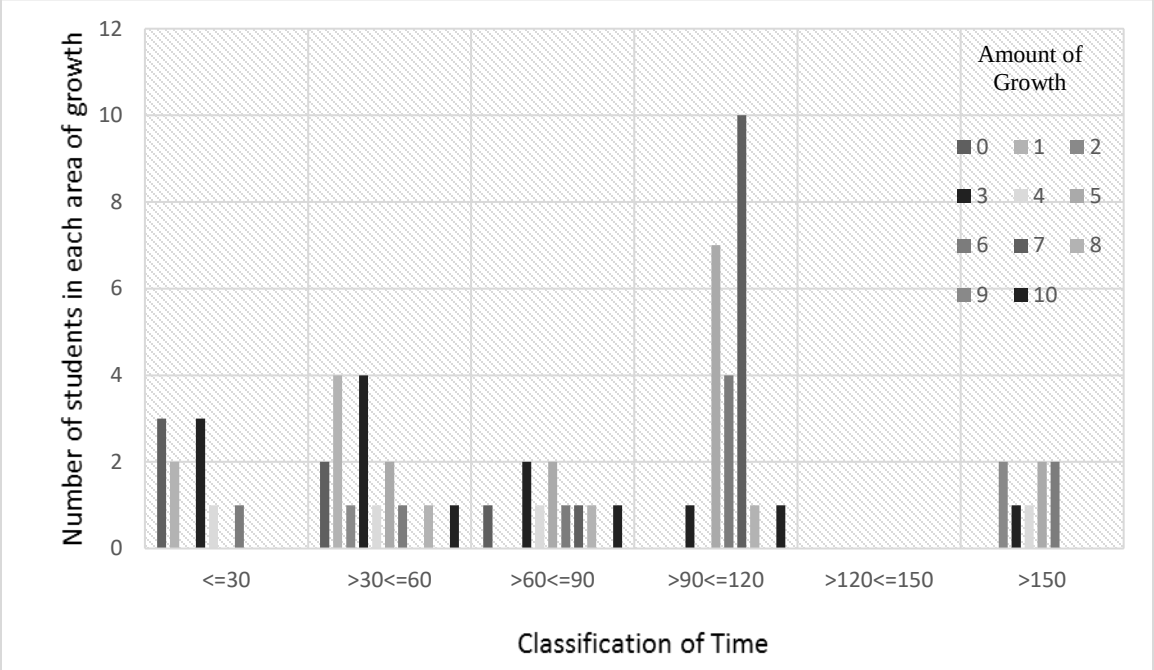

Figure 10. Amount of Growth within Time Classification for 2011-2012.

Students in 2011-2012 did not show high growth until after being provided with 60 days of instruction. The mean growth scores for each time classification are <=30 (M=2.1), >30<=60 (M=3.24), >60<=90 (M=5.1), >90<=120 (M=6.25), >120<=150 (M=0.), and >150 (M=4.125). Inconsistent and lack of growth are factors that create the need for supplemental reading instruction. This school year had few students growing more than an average of three levels until after 90 days of instruction, when students started showing 5-10 levels of reading growth. Growth is again measured by ordinal level data.

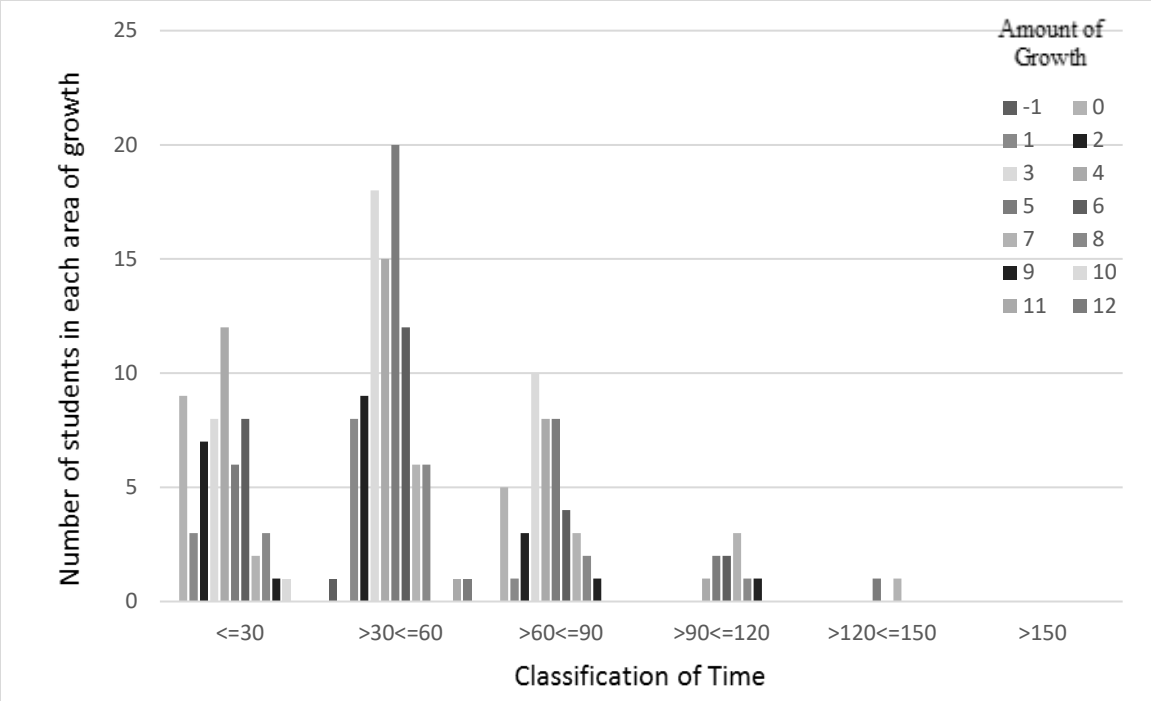

Figure 12. Amount of Growth within Time Classification for 2012-2013.

The graphical representation of the numbers in Figure 12 show a valid description of how the numbers should look in an LLI small-group setting. The program is designed to grow students between 0-90 days. Mean growth scores by time category are <=30 (M=3.73), >30<=60 (M=4.62), >60<=90 (M=3.97), >90<=120 (M=6.4), >120<=150 (M=6.5), and >150 (M=0). Growth after 90 days is still occurring, but the major emphasis is to help students place out of the program because they have reached proficient levels as determined by the state.

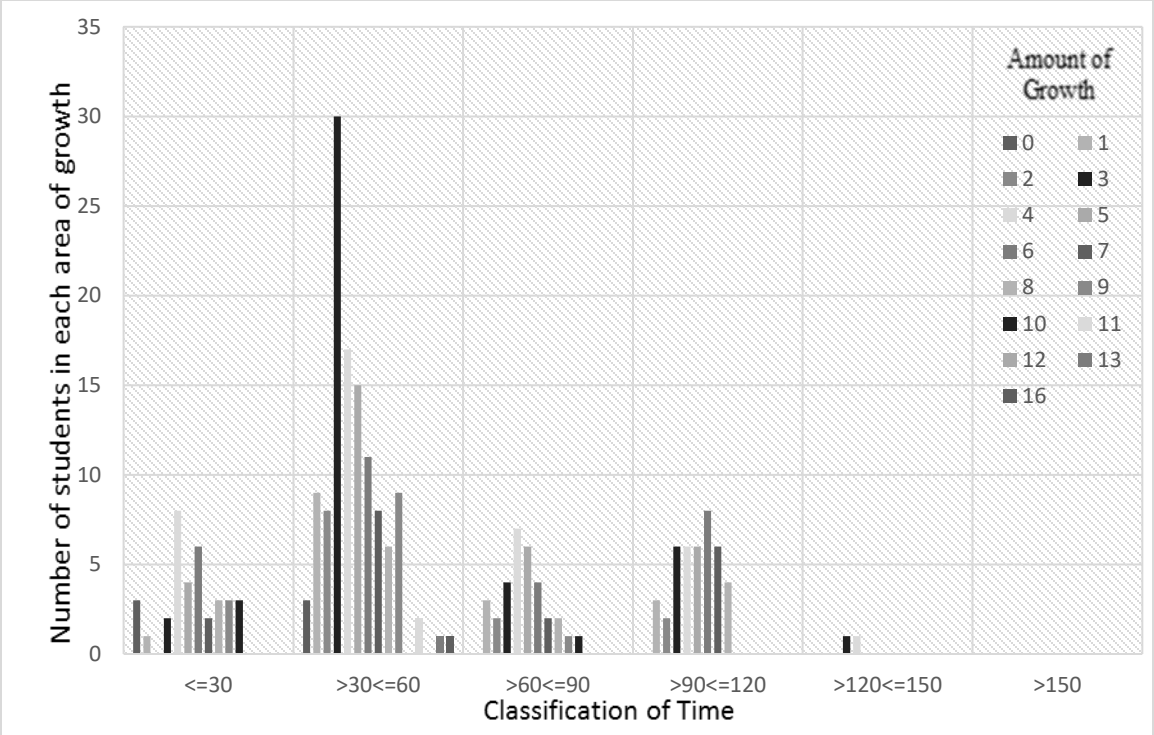

Figure 13. Amount of Growth within Time Classification for 2013-2014.

Figure 13 again shows the breakdown of growth data by classification. In this grouping, >30<=60 has the highest levels of growth, but each one of the classification groups leading up to <=120 have tremendous growth scores ranging from 1-9 consistently. Mean growth scores by time classification are <=30 (M=5.49), >30<=60 (M=4.6), >60<=90 (M=4.75), >90<=120 (M=4.95), >120<=150 (M=3.5), and >150 (M=0). Figure 13 also shows that few students were served after the >90<=120 time classification.

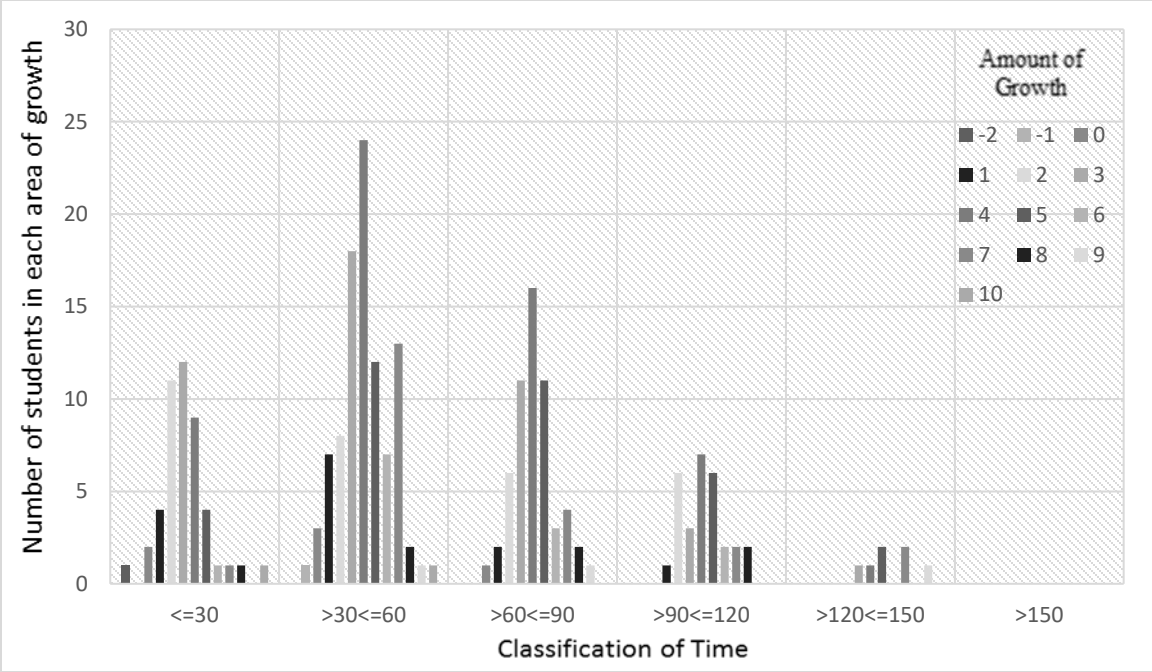

Figure 14. Amount of Growth within Time Classification for 2014-2015.

Information from Figure 14 shows that more students are starting to be served up to the 120-day mark and beyond. The design of the program is for kids to be served 90-100 days and then either provided different learning interventions or reach achievement level. Students in 2014-2015 are showing the most growth past the 90-day time period. Mean growth scores of students by time classification are <=30 (M=3.17), >30<=60 (M=4.13), >60<=90 (M=4.16), >90<=120 (M=4.51), >120<=150 (M=5.71), and >150 (M=0).

Students served in the prior to LLI classification showed a range of 0-10 point increase in growth regardless of the time served. Most high levels of growth, being referred to as more than five levels of growth, occurred between the >60<=120 time categories. 2010-2012 showed the highest growth in the >90<=120 category, while 2012-2013 and 2014-2015 showed highest gains in the >120<=150 category; and the

gains for 2013-2014 were greatest in <=30 category. Students served in the LLI implementation classification showed a range of 0-30 points increase in growth regardless of the time served, but most of the highest levels of gain occurred between the >30<=90 time categories.

A nonparametric statistical analysis was conducted to determine if there was any relationship between days served and growth or achievement. The Mann-Whitney U test is similar to the independent *t* test in that it tests whether or not two independent groups are from the same distribution. The Mann-Whitney U uses ordinal data and tests using the rankings of data. This test makes no assumptions about the distribution. The dependent variable in this test is growth or achievement, and the independent variable is the classification of time. The Mann-Whitney U tests two groupings to determine significance. A significant Mann-Whitney U result indicates that the two groups are different in their average ranks. Table 26 presents the Mann-Whitney U results signifying the significance.

Table 26

Mann-Whitney U Results – Significance of Days Served and Growth

Year	Mann-Whitney U	Asymp. Sig (2 tailed)
2010-2011	2415.00	.630
2011-2012	336.500	.003
2012-2013	234.500	.453
2013-2014	2632.5	.737
2014-2015	1259.500	.052

To answer the research question, is there any relationship between days served and the growth that students make, the researcher conducted the inferential test. The Mann-Whitney U test was used to examine the difference in the growth of students served within different time classifications. No statistically significant difference was

found for years 2010-2011, 2012-2013, 2013-2014, and 2014-2015. Regardless of their classification (<=100 or >100), the distribution of the scores were the same across the categories. However, in 2011-2012, scores were much lower and the distribution was not the same across categories as evident with a significance of *p*=.003. Days served provided growth for students whether 0-30 or 90-120. Students in this study grew in all time classification groups.

Achievement was also looked at through Mann-Whitney U to determine if there was a significant difference between time classification groups and achievement of the students. Table 27 shows the results from the Mann-Whitney U test.

Table 27

Mann-Whitney U Results – Significance of Days Served and Achievement

Year	Mann-Whitney U	Asymp. Sig (2 tailed)
2010-2011	2421.000	.438
2011-2012	455.000	.017
2012-2013	341.000	.453
2013-2014	1513.000	.000
2014-2015	1456.500	.175

The Mann-Whitney U test was calculated examining the achievement of students with varying levels of time in the instructional program. The distribution of achievement is the same across categories for school years 2010-2011, 2012-2013, 2014-2015, with no statistical significance found. In 2011-2012, there were statistically significant results (*p*=.017) showing that the achievement levels across the classifications were different. The same type of results were found for 2013-2014 (*p*=.000), suggesting that one group did significantly poorer than the other group.

Summary

The data collected in this study were used to determine the type of impact, if any,

LLI had on reading growth and achievement over a 5-year time period in four Title 1 schools. The researcher also compiled data to investigate the relationship between the amount of time a student is provided with small group reading intervention and their growth and achievement. Measurement of growth and achievement both came from mCLASS TRC scores. Growth was measured from BOY to EOY and calculated based on the number of levels of increase. Achievement was measured with a met or not met classification based solely on the EOY TRC score.

The key findings for this quantitative study were that growth scores were positive for every group of students tested in this study based on descriptive statistics. Overall, growth was made by all students in the study. There were higher gains in growth prior to the LLI implementation; however, students instructed with LLI had the highest achievement scores. Students also continued to grow in the extended time periods of instruction but there was little increase in proficiency. The researcher also explored growth and achievement by school, gender, year, and ethnicity. The findings to these research questions were reported in this chapter using descriptive and inferential statistics.

Chapter 5 further examines these analyses and report trends among data. The researcher reports these findings in terms of purpose, impact, and the connection to literature. The researcher also links this study to topics for future research.

Chapter 5: Discussion and Conclusion

Introduction

The purpose of this study was to investigate the impact of a specifically designed literacy instructional model, LLI, on K-2 reading achievement as measured by the TRC component of mClass: Reading 3D. In this study, the following research questions were explored.

1. What difference in mean growth scores on the mCLASS TRC exist between Title I students prior to the LLI program (2010-2012) and after the LLI program was implemented (2012-2015)?
2. What difference in mean growth scores on the mCLASS TRC exist between Title I schools prior to the LLI program (2010-2012) and after the LLI program was implemented (2012-2015)?
3. What impact did the LLI instruction have on the grade-level achievement of K-2 students being served in Title I as measured by the mCLASS TRC compared to the grade-level achievement of students being served in Title I prior to LLI also measured by mCLASS TRC?
4. What comparison, if any, can be made between reading growth and achievement and days served for students served in the LLI program and students served prior to LLI program as measured by mCLASS TRC and attendance logs?

In this chapter, the researcher provides answers to the research questions, draws conclusions, makes recommendations based on the results of the study, and makes recommendations for future studies as well as provides information about additional limitations.

In order to answer the research questions, quantitative historical data were collected from the BOY and EOY mClass: Reading 3D TRC scores between 2010-2015. Descriptive statistics were used to describe the overall demographics and assessment data for the study participants. Inferential statistics were used by the researcher to analyze the data even further to determine if any relationships were present between growth or achievement and the instructional time provided in the intervention setting.

Answers to Research Questions

Research Question 1. What difference in mean growth scores on the mCLASS TRC exist between Title I students prior to the LLI program (2010-2012) and after the LLI program was implemented (2012-2015)?

The difference in mean growth scores on the TRC between Title I students was determined by analyzing the descriptive and inferential statistics. The researcher compared the data for students between categories as well as by gender and ethnicity. One observation was that LLI provided more consistent and stable growth. When comparing the summative data, student growth in LLI was more consistent, staying within .43 levels between the highest and lowest data points. The mean LLI growth (m=4.3), however, was less than the mean average growth from those served prior to LLI (m=4.6).

The researcher used inferential statistics to analyze the data. A Kruskal-Wallis H, a nonparametric test, was used to determine if any differences existed in mean growth across categories. There were significant growth differences across the classifications in 2010-2011 (p=0.002) and 2011-2012 (p=0.001). These significances show that the growth across classifications was actually different during 2010-2011 and 2011-2012. There were no significant differences across categories during 2012-2015 which supports

the observation made by the researcher that with the implementation of LLI, growth scores became more stable and consistent.

By comparing data from the gender and ethnicity categories, the researcher made an observation where male students who were served over the 5-year time period scored higher each of the 5 years compared to the female students. Ethnicity analysis showed inconsistencies when comparing growth across the categories but did show positive growth each of the 5 years. The difference in mean scores between the prior to LLI category and the LLI category were sporadic and inconsistent. Growth in this study was positive for each of the categories throughout the 5-year data sample showing a minimum average of four levels of growth as measured by TRC. This correlates with the contribution to literature made by Menzies et al. (2008) that no single program for reading instruction and intervention will close the achievement gap; however, it is imperative that identification of students and appropriate interventions be provided to ensure that students have the opportunity to catch up and access grade-level curriculum.

The findings about the growth of students in this study were not supported by Ransford-Kaldon et al.'s (2011, 2013) studies that stated if LLI programs are implemented effectively, a positive impact in student growth would be evident, with students in the Ransford-Kaldon's study showing an average of 9.7 months growth in 5 months of instruction. Students in this study did show positive growth but not at the same rate as the Ransford-Kaldon's study.

Research Question 2. What difference in mean growth scores on the mCLASS TRC exist between Title I schools prior to the LLI program (2010-2012) and after the LLI program was implemented (2012-2015)?

The researcher used descriptive statistics to organize the data for analysis.

Growth scores by school were compared for each of the 5 years. Pre-LLI (2010-2012) scores of m=4.91 were higher than the LLI scores (2012-2015) of m=4.38. Inconsistent increases and decreases are described among schools each year over the 5-year time period in Table 11 of Chapter 4. The growth for 2010-2011 and 2013-2014 were the highest, and school C showed the highest gains of all of the schools in this study.

One observation made by the researcher is that while the difference in mean growth scores by school was inconsistent, all schools did show growth each of the 5 years of data examined. Other observations made were that males scored higher at each of the school levels and the ethnicity differences were inconsistent across subgroup and classification. A final observation regarding growth across the school was that students who participated in LLI instruction showed more consistent, reliable growth with a difference in scores of .36 levels, whereas the pre-LLI category had a difference in scores of 2.05 levels. This difference was determined by comparing the least amount of gain to the highest amount of gain for each of the categories.

Research Question 3. What impact did the LLI instruction have on the grade-level achievement of K-2 students being served in Title I as measured by the mCLASS TRC compared to the grade-level achievement of students being served in Title I prior to LLI also measured by mCLASS TRC?

The impact LLI instruction had on grade-level achievement as measured by mCLASS TRC for students served prior to LLI compared to those served by LLI was analyzed from data organized with descripted statistics. Only 14% of students served in the category prior to LLI were proficient compared to 49% of the students scoring proficient who were served by LLI. The overall proficiency increased from 16-18% of students being proficient or meeting the expected achievement level in 2010-2012 to 44-

54% of students proficient in 2012-2015. The proficiency data only represent three of four schools as School C, the only outlier, did not show an increase in proficiency, actually dropping 18 proficiency points in 2014-2015 compared to the initial year of 2010-2011. The observation made by the researcher was that while school C was the only school to not meet the achievement increase, it performed at the highest level of growth compared to all schools in the study. Another observation made by the researcher is that the male classification scored higher in achievement when compared to the female classification. The overall ethnicity category increased in achievement 36.6 percentage points from 2010 to 2015 with 2013-2014 results consistently higher than the previous years across schools. To determine the significance of the impact LLI had on achievement, the researcher conducted the Kruskal-Wallis H test. The results of this test showed that 2013-2014 was the only year with significance in the distribution of achievement across categories, with achievement not distributed equally across the schools in that year. Analyzing the descriptive statistics, 2013-2014 had the highest overall achievement scores throughout the study, yet school C was only 36% proficient compared to school A (58%), school B (59%), and school D (72%). Results for 2010-2013 had no significance, indicating that the groups did not differ significantly from each other.

The results from this study are supported by the design of LLI and the expected results, which according to Heinneman (2009), are to meet struggling learners with an intense approach to close the achievement gap. Ransford-Kaldon et al. (2011) also showed that students of lower social economic status benefited from LLI as a small group instructional tool to increase achievement of at-risk readers.

Research Question 4. What comparison, if any, can be made between reading

growth or achievement and the days served for students served in the LLI program and students served prior to the LLI program as measured by mCLASS TRC and attendance logs?

One component of the LLI model was the amount of time students were provided reading intervention instruction. The program was designed for 18-20 weeks of intense intervention instruction and practice. Each small-group session of four or fewer students should be 30 minutes in duration for 5 days each week.

Descriptive and inferential statistics were used to determine if there was a relationship between the achievement and growth of students participating in the LLI model and the amount of time they were served in days. Students served in LLI have higher achievement results than those prior to LLI, according to Table 11 in Chapter 4. Achievement occurring within the first 90 days of the instructional model was greater than during any other time frame. These results support the design of the LLI model according to Heinneman (2009). Growth was evident over a broader time period, having a positive impact between >30<=120, with the greatest gains in the 90-120 time span. Heinneman (2009) described the impact of the program being most effective over 18 weeks with 5 days of instruction each week. The researcher conducted a nonparametric statistical analysis to determine if there was any relationship between days served and growth or achievement. No statistically significant difference was found according to the Mann-Whitney U for the years 2010-2011 and 2012-2015. However, there was a statistically significant difference in growth across time served classifications during 2011-2012 (p=.003). Mann-Whitney U was conducted to determine the significance of the achievement of students served within time classifications. Significance was found in the years 2011-2012 (p=.017) and 2013-2014 (p=.000) suggesting one group scored

significantly poorer with only 58% proficient in the prior to LLI group compared to the LLI group with 72% proficient.

Drawing Conclusions

Overall, based on the descriptive and inferential statistics, it can be stated that the impact LLI makes on student growth is consistent and stable but no greater than the group served prior to LLI. However, the achievement levels of students participating in LLI are higher than those not in the LLI program. Growth equivalent to the design of the program occurred for students served in the LLI intervention model. Schools A, B, and D were consistent in growth and achievement gains unlike school C, an outlier in the study, which increased in growth inconsistently but at a higher rate than the other schools. Schools C's growth, however, was not enough to meet the expected level of achievement as prescribed by the state.

As our nation continues to raise the bar for student achievement, schools must have effective assessment and intervention models that positively impact growth and achievement of at-risk readers. The results from this study suggest that together, mCLASS and LLI are cohesive when combined together to provide consistent and stable growth with increased achievement levels of students. This study shows that with the implementation of LLI, student growth occurred at a stable and predictable rate, which over time closed the achievement gap and allowed more students to access the core curriculum and be identified as proficient readers.

This study creates a baseline for the researcher to measure the future growth and achievement of students. The state of North Carolina has, since the onset of this study, created initiatives that mandate the use of mClass: Reading 3D as part of the Excellent Public Schools Act Read to Achieve House Bill 950/ S.L. 2012-142 Section 7A. Results

from this study support the identification of students appropriately through mClass, which allows educators to know and use their data to create plans addressing the individual needs of the learner.

Recommendations

With mClass as a required assessment tool and the rise of expectations for student growth and achievement, it is imperative that as an educator and the researcher of the study, the researcher analyze data and make recommendations to enhance the effectiveness of the program not only in the district being studied but also across the nation.

The first recommendation is for the district to focus on implementing the LLI program as designed beginning at the onset of identification in kindergarten. Early identification, according to Mathes and Torgesen (1998), is crucial. Mathes and Torgesen stated that we cannot wait for reading failure, but we must begin as early as the start of kindergarten. There must be a stronger focus on students coming into kindergarten without the school readiness skills and exposure to words, both of which slow reading progress according to Neuman (2006). Educators must change the mindset of intervention, moving away from the developmental lag theory to the deficit model (Francis et al., 1996).

Reading instruction in the lower grades is the "single best weapon against reading failure" (Snow et al., 1998, p. 343). In the literature review, an overview of the components of good reading instruction and intervention was provided as well as the need for early identification. Chapter 2 of this dissertation revealed that reading instruction, while it has changed over the years, must incorporate early identification through assessment and should occur beginning the very first week of kindergarten

(Neuman, 2006; Torgesen, 1998; Wells, 2012). The additional support for students who come to school without the necessary skills must be provided by a teacher who not only is trained to work with at-risk readers but also specifically trained in strategic reading instruction (Allington, 2009; Kamps et al., 2008).

Recommendations for Future Studies

The NRP (2000) stated that only 10-15% of students who experience the most significant reading problems graduate from high school. Only 34% of the fourth-grade students in our nation in 2013 scored proficient or higher (The Nation's Report Card, 2013). These two facts alone provide evidence for a need for change. According to Heinneman (2009), LLI is an intervention model that is designed to increase achievement levels of at-risk readers, decreasing the achievement gap.

The researcher's recommendation is for a future longitudinal study to be conducted following a group of students through intervention instruction. Students who reach proficiency would be tracked through their fifth grade standardized test to determine if the proficiency that was achieved in K-2 is maintained over time without the support of the intervention model.

Another recommendation is for a larger sample to be utilized and to expand the study by comparing to students who do not participate in the intervention program. The district in this study only had a small number of schools using the mCLASS assessment system at the launch of this study. A larger sample with comparison to like peers who do not participate in the intervention model would allow the researcher to determine the impact LLI has on leveled readers compared to like peers not receiving support.

A final recommendation for a future study is for the researcher to conduct a mixed-method study analyzing the TRC data to determine the type of impact progress

monitoring as designed by mCLASS: Reading 3D has on the growth and achievement of at-risk readers. mCLASS is a formative assessment that provides teachers with data to create an individualized progress monitoring plan. Clay (1987) used the term intervention to argue that at-risk readers should be considered for a learning disability but should have a plan created from data specifically for them (Scanlon et al., 2010). Olson (2007) conducted a study which discovered that teachers felt like the data being collected by mCLASS truly impacted student performance and students were less likely to fall behind because their teachers are in contact with them on a regular basis, addressing interventions that are specific to their individual needs as determined by mCLASS. The results of Olson's study showed a decrease in the number of students on an intensive reading plan from 29% to 2% in only 2 years, and the achievement level in kindergarten in the same 2 years increased from 28% to 93%.

Additional Limitations

Results from this study were comparable to that of previous research, still having some limitations that must be reflected upon. There were four schools which began the study with multiple approaches to identification and interventions with at-risk students. In 2012-2013, the district implemented a structured approach that every school followed. Differences in instructional practices can impact a student's performance, therefore making it difficult to drill down to the reason for growth prior to the implementation of the structured intervention model. If this study would be conducted again, comparing two specific groupings or comparing the test group to a control group may allow the researcher to get a clearer understanding of the specific strategies within the intervention model that impacted the growth and achievement.

Using historical data from Title I schools increases the likelihood that student

populations have changed due to transiency which prohibits the researcher from tracking all participants through completion of the program. Tracking students from school to school within the district would help in addressing this issue for future studies.

Any time a program is implemented within a classroom and observations are not conducted, the fidelity of the program implementation becomes a limitation. If this study were ever replicated, observations of classrooms would overcome this issue and ensure programs are being implemented consistent with the design. Teacher fidelity along with other extraneous factors such as attendance, effort of the students and/or teacher, the home life of students, and quality of the instruction or management within the classroom were out of the researcher's control.

Summary

Student achievement is at the forefront of all educators and parents. Some states are now comparing schools by student performance in a report card format. This increased focus on standardized assessments has carried over into the primary grades; therefore, the need for continued refinement of assessment, identification, and interventions among classroom teachers still exists. Teacher must have appropriate training in the assessment tools, intervention strategies, and analysis of data.

This study acknowledges the types of impact LLI has on at-risk readers. There were higher achievement rates for students who were involved in the LLI intervention model and the growth for these students was more consistent. The results also showed that growth from small-group instruction, whether LLI or prior to LLI, occurred in every category, school, and subgroup. Results from this study will contribute to the body of literature surrounding the impact of intervention and assessment on the growth and achievement of struggling readers. The district in this study will use these results to

guide its instructional planning and purchasing of resources that promote and support student growth and achievement in reading.

It is up to educators, in this district and across the nation, to be aware and empathetic to the differences among students who come to school, yet create a learning environment that is culturally responsive, future driven, and provides the resources and opportunities for students to engage in the learning program (Comber et al., 2002). We cannot afford to continue to offer a one-size-fits-all approach to learning to read. We must, according to Allington (2009), plan to get expert reading instruction for these at-risk students and provide them with intense interventions so they can become literate readers, high school graduates, and successful citizens in our country.

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Appendix A

Mean Growth by School by Category

Mean Growth for School A by School Year by Classification

		Prior to LLI	2 years Prior to LLI & 1 Year LLI	1 Year Prior to LLI & 2 Years LLI	LLI
10-11	Mean	4.1	4.0	1.1	
	N	63	1	8	
	SD	2.8	.	.7	
11-12	Mean	4.2	7.0	8.0	
	N	63	1	8	
	SD	2.2	.	.	
12-13	Mean		4.0	3.9	3.7
	N		1	8	141
	SD			1.8	2.4
13-14	Mean			8.0	5.3
	N			8	141
	SD			.	2.2
14-15	Mean				4.6
	N				141
	SD				2.3

Mean Growth for School B by School Year by Classification

		Prior to LLI	2 years Prior to LLI & 1 Year LLI	1 Year Prior to LLI & 2 Years LLI	LLI
10-11	Mean	5.1			
	N	49			
	SD	2.0			
11-12	Mean				
	N				
	SD				
12-13	Mean				4.1
	N				144
	SD				2.1
13-14	Mean				5.1
	N				144
	SD				2.6
14-15	Mean				3.4
	N				144
	SD				1.9

Mean Growth for School C by School Year by Classification

		Prior to LLI	2 years Prior to LLI & 1 Year LLI	1 Year Prior to LLI & 2 Years LLI	LLI
10-11	Mean	7.5			
	N	38			
	SD	3.1			
11-12	Mean	3.9		6.3	
	N	38		10	
	SD	3.3		2.3	
12-13	Mean			5.3	5.6
	N			10	141
	SD			1.8	2.0
13-14	Mean			1.3	4.3
	N			10	141
	SD			.6	2.5
14-15	Mean				4.0
	N				141
	SD				1.9

Mean Growth for School D by School Year by Classification

		Prior to LLI	2 years Prior to LLI & 1 Year LLI	1 Year Prior to LLI & 2 Years LLI	LLI
10-11	Mean	5.1			
	N	47			
	SD	2.8			
11-12	Mean	4.1			
	N	47			
	SD	2.2			
12-13	Mean				3.7
	N				135
	SD				2.6
13-14	Mean				4.9
	N				135
	SD				2.9
14-15	Mean				4.0
	N				135
	SD				1.9

Appendix B

Student Achievement by the Classification of Number of Days Served

Achievement by Year										
	10-11		11-12		12-13		13-14		14-15	
	1.0	2.0	1.0	2.0	1.0	2.0	1.0	2.0	1.0	2.0
Start Year	P/NP	P/NP	P/NP	P/NP	P/NP	P/NP	P/NP	P/NP	P/NP	P/NP
10-11	18/106	4/37	2/10	0/6	1/3	2/2				
Total P/NP		22/165		2/18		3/8				
Total % P		13		11		38				
11-12			10/30	1/28	1/1	6/1	1/1	3/3		
Total P/NP				11/69		7/9		4/8		
Total % P				16		78		50		
12-13					92/118	1/3	26/25	0/4	2/8	
Total P/NP						93/214		26/55		2/10
Total % P						44		47		20
13-14							121/82	4/23	10/23	6/4
Total P/NP								125/230		16/43
Total % P								54		37
14-15									108/113	5/11
Total P/NP										113/237
Total % P										48

(1.0 =<100 days; 2.0=served >101 days)