6-19-2011

Use of a Tier 3 Evidence-Based Intervention with Progress Monitoring, Formative Assessment, and Student Goal-Setting: An Evaluation of the Immediate and Long-Term Effects on Student Reading Achievement

Angela B. McMasters
Indiana University of Pennsylvania

USE OF A TIER 3 EVIDENCE-BASED INTERVENTION WITH PROGRESS MONITORING, FORMATIVE ASSESSMENT, AND STUDENT GOAL-SETTING: AN EVALUATION OF THE IMMEDIATE AND LONG-TERM EFFECTS ON STUDENT READING ACHIEVEMENT

A Dissertation

Submitted to the School of Graduate Studies and Research

in Partial Fulfillment of the

Requirements for the Degree

Doctor of Education

Angela B. McMasters

Indiana University of Pennsylvania

May 2011

Indiana University of Pennsylvania
The School of Graduate Studies and Research
Department of Educational and School Psychology

We hereby approve the dissertation of

Angela Blayne McMasters

Candidate for the degree of Doctor of Education

March 4, 2011 — Signature on File
Lynanne Black, Ph.D.
Chair, Department of Educational and School Psychology

March 4, 2011 — Signature on File
Joseph F. Kovaleski, D.Ed., NCSP
Professor of Educational and School Psychology

March 4, 2011 — Signature on File
Mark Staszkiewicz, Ph.D.
Professor of Educational and School Psychology

March 4, 2011 — Signature on File
Timothy J. Runge, Ph.D., NCSP
Assistant Professor of Educational and School Psychology

ACCEPTED

Signature on File
Timothy P. Mack, Ph.D.
Dean
The School of Graduate Studies and Research

Title: Use of a Tier 3 Evidence-Based Intervention with Progress Monitoring, Formative Assessment, and Student Goal-Setting: An Evaluation of the Immediate and Long-Term Effects on Student Reading Achievement

Author: Angela B. McMasters

Dissertation Chair: Dr. Lynanne Black

Dissertation Committee Members: Dr. Joseph Kovaleski
Dr. Mark Staszkiewicz
Dr. Timothy Runge

ABSTRACT

Early identification and intervention for students at risk for reading failure is essential to establish the foundational skills necessary for students to become skilled readers. The focus on evidence-based practices and data-driven decision making leads educators to consider additional instructional approaches, such as formative assessment (FA) and student goal-setting (SG), as part of an intervention program to prevent reading failure.

This quantitative and qualitative research study examines the effect of FA and SG on the reading achievement of students at risk for reading failure, as well as evaluates teachers' perceptions of its influence on students' learning habits, motivation toward reading tasks, and self-efficacy. Further, a review of archival special education data investigates the effect of FA and SG on the identification of students with specific learning disabilities (SLD).

Additionally, survey data and summaries from a focus group discussion gathered from reading specialists about FA and SG are discussed.

Overall, the analysis yielded insignificant results when examining the effect of FA and SG on students' reading achievement when comparing PSSA scores; however, closer examination of proficiency categories suggested a positive effect on reading skills. Based on the findings, significantly fewer students from the FA and SG group were identified with a SLD in reading than students instructed without an evidence-based intervention. The results from the survey and discussion group added further insight into the effects of FA and SG on reading skill acquisition. Commonly, teachers reported observing positive effects on students' achievement, learning habits, motivation toward reading tasks, and reading self-efficacy.

The use of a convenience sample and archival data collected over the course of different academic school years limits the generalizability of the results from the present study. A review of archival data from the same academic year would have been more methodologically sound and produced more conclusive findings. Additionally, the results of the survey and discussion group are limited due to the small sample size and potential of respondents to respond in a socially

desirable way. Therefore, further research should be conducted to examine the impact FA and SG has on students' achievement.

ACKNOWLEDGEMENTS

As a child I remember sitting at the coffee table in my parents' living room with paper and pencils asking them to write my name, so I could trace the letters, to draw me lines, so I could copy my name, to give me lined paper, so I could write a story. They created in me a love of learning, a thirst for knowledge, and a desire to achieve. Nearly thirty years later, I have reached my greatest accomplishment, earning this degree. It has been a long journey; however, not one that I have endured alone. The support I have received from my colleagues, friends, and family has been overwhelming.

I'd like to thank Dr. Lynanne Black. Without Dr. Black as my chair to provide her wisdom, support, and guidance, I never would have seen the finish line. I also would have gone through this daunting process without a very dear friend. Additionally, I commend the support and expertise offered by the rest of my committee, Dr. Kovaleski, Dr. Runge, and Dr. Staszkiewicz. Their contributions, insights, and criticisms reminded me that, even at this point, the task of writing a dissertation is a learning experience. I value all of the knowledge I've taken from this process and thank them for patiently teaching me along the way. I also thank Dr. Beverly Long, Dr. Matthew Pawk, Dr. Michael Glew, Mr. Thomas

Dinga, Ms. Paula Kijowski, and the reading specialists of the Title I program at Armstrong School District, for supporting and contributing to this project.

My friends have equally played a role in the successful completion of my doctoral degree. They have been my sounding-board, a place for me to vent my frustrations, and my cheerleaders along the way. Without them, I may have completed my dissertation with a little less sanity than I have now. Thank you, IUPcohort listerv members, Darcie Buffone, Beth Blystone, Angela Wyman, Gina Dorsey, Alecia Morrow, Erika Henderson, Dina Hunsinger, Sean McLafferty, Roseanne Daisley, and Sue Dracz. I also extend my greatest thanks to my side-kick and dear friend, Marissa Reed. She encouraged me every step of the way and provided me with unwavering support and advice, which led me to this great accomplishment.

I am so thankful for my wonderful, supportive family. I especially thank my parents, Jeffery and Kimberly Christy, and my parents through marriage, Marsha and Harold McMasters, for their love and inspiration. I also thank my Grandma and Grandpa Christy and Grandma Alwine for supporting this endeavor and celebrating the mini-milestones with me that have been a part of this long journey. In addition, I'd like to thank my grandfather, Ray S. Alwine, for instilling the

same passion for teaching and learning in me that he shared with his students and our family. And for my aunt, Natalie A. George, I accept this degree with honor and in your memory. My angels in Heaven, this is for you. To my brother, Daniel Christy, and my sister, Laura Overly, thank you for being my best friends and greatest supports through the years. To my husband Jeremy, without you I never would've seen this day. Throughout this process, I realized more than ever how blessed I am to be married to you. I love you deeper than the ocean and higher than the sky. Congratulations, you officially have your wife back! My dearest children, Makenna, Brennan, and our new Sunflower, thank you for spilling juice on my papers, coloring the walls with my highlighters, and wearing me out. These times reminded me to take breaks to celebrate the small things in life, to laugh, and to spend time acting silly. You bring so much joy to my life. I love you! Addie, my little four-footed friend, thank you for being my quiet listener and staying by my side all the days and nights I spent writing.

Lastly, thanks be to God, my heavenly Father. It is through you that all things are possible. In the words of Maya Angelou, "It is not through effort alone that I have what I have. That would be impossible. It is the grace of God – I make no mistake."

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CHAPTER 1

STATEMENT OF THE PROBLEM AND RESEARCH QUESTIONS

Background

Reading has consistently been the focus of legislators and educators as reading continues to be a building block of American society. President George W. Bush further highlighted this focus when he signed into law the No Child Left Behind Act of 2002, which set high standards for all students. Refusing to allow illiteracy rates among disadvantaged and minority students to grow, the No Child Left Behind Act of 2002 sought to decrease the achievement gap between these students and their peers by increasing educators' accountability for student performance. As a result, school administrators have shifted their focus to research-based programming, universal screenings of all students, and targeted interventions.

Students at risk for reading failure will continue to struggle throughout their educational career if they do not receive appropriate instruction in reading in the early grades (Foorman, Francis, Fletcher, Schatschneider & Mehta, 1998; Hosp & MacConnell, 2008). As a result of significant educational advances with respect to how students learn to read and how to teach students to read (National Reading Panel, 2000), educators are in an optimal position to make

an impact on the large population of students that have not yet achieved a basic level of proficiency in reading (National Assessment Educational Progress, 2005). The nation's 2007 Reading Report Card indicates the country is moving in the right direction as 67% of fourth grade students are achieving at or above the basic and proficient levels in reading, which is higher than in 1992 and 2005 (National Assessment of Educational Progress, 2007). Therefore, it is even more imperative that students at risk for being identified as having reading disabilities receive systematic, direct instruction in the primary grades as research suggests these students may potentially achieve commensurate with their grade-level peers when intervention occurs early in their educational careers (Torgesen, 2000).

The No Child Left Behind Act (2002) sought to increase accountability for student performance by establishing research-based programs in schools in order to close the achievement gap and to improve literacy by putting reading first. In order to accomplish these goals, the No Child Left Behind Act (2002) mandated that all students in grades three through eight be assessed yearly in reading and math in order for schools to demonstrate that their students are making adequate yearly progress (AYP) toward state content and performance standards.

As a result of the No Child Left Behind Act (2002), several innovations in education came to fruition. The *Reading First* initiative was proposed by President Bush as part of the No Child Left Behind Act (2002) through which schools were provided with flexible funding options, which would enable them to invest in scientifically-based reading programs for primary grades. Indeed, this ensured that more effective reading instruction was instituted before students fell behind their peers. Additionally, revisions were made to the Individuals with Disabilities Education Improvement Act (IDEIA) in 2004. These revisions proposed the use of a three-tiered model, Response to Intervention (RtI), in order to determine students' eligibility for special education under the classification of Specific Learning Disability (SLD). The RtI model suggested under the IDEIA is a regular education initiative. It espouses a three-tiered problem-solving model used to meet the needs of all students through the use of universal screenings, evidence-based interventions, and data-driven decision making.

Following the national RtI model, students are educated within three tiers of protection. Tier 1 instruction takes place in the general education classroom with all students receiving instruction from a research-

based core reading program and differentiated instruction (Allain & Kukic, 2008; Batsche, et al., 2005). Within Tier 1, universal screening measures lead to data-driven decision making, as at this level, students are either identified at risk for reading failure, or not (Ikeda, Neessen & Witt, 2008). Benchmark assessments, such as the Diagnostic Indicators of Basic Early Literacy Skills (Good & Kaminski, 2002) (DIBELS) and the 4Sight (Success for All Foundation, 2008) test are administered in Tier 1 to gauge and monitor the learning of all students and to assure they are meeting predetermined benchmarks for their respective grade levels. Approximately 80% of students are hoped to achieve at Tier 1 level with instruction in the core curriculum and differentiated instruction (Ikeda et al., 2008). Instruction in Tier 2 occurs in a small group setting and includes targeted, strategic, evidence-based interventions derived from the assessment of student skills and progress monitoring data. Nearly 15% of students are expected to require supplemental instruction in addition to the core curriculum at the Tier 2 level, while the remaining 5% call for intensive, individual interventions that are prescriptive and systematic at the Tier 3 level in order to achieve academically (Batsche et al., 2005; Ikeda et al., 2008). Tier 3 includes instruction that provides

intensive, systematic intervention to individuals requiring an alternative education program in order to demonstrate academic success (Ikeda et al., 2008).

According to the Pennsylvania multi-tiered model (PaTTAN, 2009), within Tier 1, high expectations are established and high quality, effective instruction is provided for all students, as well as support to enhance student participation in the learning process. In Pennsylvania, instruction in Tier 2 provides strategic intervention and includes those programs which are aligned to state-approved standards, are offered as a supplement to core reading instruction in a small group, and are demonstrated in research to be evidence-based interventions. Additionally, strategic interventions used within Tier 2 are generally standard protocol interventions, which are intensive, highly structured, supplemental interventions demonstrated to be effective for a large number of students (Fuchs, Fuchs, & Compton, 2004; Torgesen et al., 2001). Standard protocol interventions are delivered to small groups of students with the idea that those students who do not respond may warrant further evaluation while those who do respond are not learning disabled and should be integrated back into the general education program (Batsche et al., 2005). Pennsylvania's students in Tier 3 also

receive standard protocol interventions in an intensive small group setting that focuses on specific skill development (PaTTAN, 2009). Within Tier 3, the intervention is provided during the school day over a 10 to 20 week period with weekly progress monitoring. Through the use of data-driven decision making, instructional changes are made based on the students' progress with these intensive interventions.

In order to identify students for Tier 2 and Tier 3 intervention, universal screenings are conducted three times per school year on all students using a diagnostic assessment tool, such as DIBELS (Good & Kaminski, 2002) or 4Sight (Success for All Foundation, 2008) data. The process for targeting students for strategic and intensive interventions is generally defined by school district administrators; however, most often, data and instructional support teams, which usually include principals, teachers, school psychologists, and reading specialists, review data to make decisions regarding appropriate intervention based on this assessment data (Batsche et al., 2005).

For students participating in Tier 2 and Tier 3 interventions, data-driven decision making becomes even more crucial. At this level, students are monitored at a higher frequency, providing data teams with progress

monitoring results that guide the decision-making process with respect to individual students' needs. Overall, the purpose of using data to assist in the decision-making process is to ensure an instructional match for students based on individual skills, modify interventions for students not responding to research-based interventions, and assist data teams in intervening early with reading problems in order to prevent future reading difficulties.

In order for effective data-driven decision making to occur, progress monitoring practices must be used when students are receiving strategic (Tier 2) and intensive (Tier 3) interventions. The purpose of progress monitoring is to demonstrate student growth within an instructional program (Stecker, Lembke & Foegen, 2008). Consequently, progress monitoring of students participating in Tier 2 and Tier 3 interventions is essential in order to assess their development within the intervention for the purposes of instructional planning (i.e., formative assessment) and overall evaluation of the intervention's effectiveness (i.e., summative assessment).

Since progress monitoring occurs more frequently for students participating in Tier 3 interventions, it is necessary that the assessment tool be reliable, valid, and quick and easy to administer. Additionally, the measure

needs to be sensitive to small increments of change and be relevant to the students' education and acquisition of core academic skills (Shinn, 2002). Curriculum-based measurement (CBM) is a brief assessment that offers a reliable and valid method of progress monitoring in several academic areas including reading, mathematics computation, spelling, and written language. The results of CBM provide indicators of students' levels of proficiency in an academic area, such as reading.

Research has demonstrated the wide-ranging positive effects of CBM. Aside from its strong technical adequacy, CBM is a direct assessment of student performance; therefore, it is less subjective to bias with respect to ethnicity, race, or gender (Stecker et al., 2008). Additionally, research has demonstrated that when students are monitored using CBM and when instructional decisions are made based on the CBM data, students show significantly higher levels of achievement than those evaluated using teacher measures alone (Fuchs & Fuchs, 2002; Hintze, Shapiro, & Lutz, 1994; Stecker, Fuchs & Fuchs, 2005; Wayman, Wallace, Wiley, Ticha, & Espin, 2007).

According to Fuchs (1986) the frequency of measurement has a direct impact on student academic achievement. In fact, early research supported daily measurement for the

most sound data base; however, time constraints were found to often allay daily measurement. A quantitative synthesis of relevant controlled studies conducted by Fuchs and Fuchs (1986) found no significant difference associated with measurement that occurred twice weekly, three times weekly, or daily. Therefore, although daily measurement was considered most ideal in early research, later it was discovered that the effects on student achievement were similar for students monitored daily and those monitored twice weekly. While progress monitoring twice weekly continues to be upheld in the literature, current research also supports weekly progress monitoring at the very least (Fuchs, Hamlett, & Fuchs, 1999; Shinn, 2002; Shinn, 2007; Stecker et al., 2008) for students participating in intensive interventions.

Students targeted to receive Tier 3 interventions are typically those who failed to respond in Tier 2 and were identified for Tier 2 intervention after achieving significantly below benchmark on the universal screening. Once identified in need of intensive reading intervention, Tier 3 students participate in supplemental, evidence-based reading programs in a small group setting in addition to receiving instruction within the core reading curriculum. Most often students in Tier 3 are progress monitored weekly

due to the intensive nature of the interventions being implemented. The frequent progress monitoring ensures the intervention is appropriate and allows for immediate instructional changes to be made should the student stop responding or fail to respond to an intervention (Shinn, 2007).

It is important to note that in order for intervention at Tier 3 or any tier to be effective, it must be evidence-based and implemented with fidelity over an extended period of time. Currently, literature cites a range of approximately 10-30 weeks of instruction within an evidence-based intervention (Santi & Vaughn, 2007), although time spent in an intervention varies depending on the individual progress of students. In addition to ensuring students have received sufficient exposure to an intervention, the degree to which the intervention was delivered with fidelity is a necessary consideration when drawing valid conclusions regarding treatment outcomes (Sanetti & Kratochwill, 2009). By establishing that the intervention is being delivered as intended and for an appropriate period of time, valid adjustments are able to be made to the level of intervention based on the results of individual progress monitoring data for each student participating in Tier 3 (Stecker et al., 2005).

Research has shown that students will continue to struggle with reading throughout the course of their lives if they do not learn to read proficiently by the age of eight (Menzies, Mahdari & Lewis, 2008). Existing research describes the process of learning to read proficiently from the cognitive developmental standpoint; however, Stanovich's (1986) work on the Matthew Effect leads to consideration of a third variable in the acquisition of literacy, exposure to written language. Students exposed to a larger volume of text have the upper hand according to Stanovich (1986). The concept of the Matthew Effect is such that children exposed to a considerable amount of literature possess an extensive vocabulary, which in turn motivates them to read more, learn more meanings of words, and thus become better readers (Stanovich, 1986). Therefore, early intervention strategies that provide supplemental, direct instruction within an evidence-based program are the greatest hope for students to remediate reading difficulties before special education services are needed and for the student to make academic gains.

Clearly, children of the 21st century are part of a new era of educational approaches to reading instruction, evaluation, and intervention. Innovative advances in educational strategies for teaching students in reading are

transpiring steadily in educational research. With an overwhelming variety of evidence-based reading interventions in the current literature, educators have a plethora of programs and strategies to choose from in order to perfect their recipe for enhancing students' reading skills and achievement outcomes.

Recently, students as well have been taking a more active role in their learning through formative assessment coupled with student goal-setting. Formative assessment dates back to the 1960s when it was first introduced by Scriven in 1967 and adapted shortly thereafter by Bloom in 1968 (Allal & Lopez, 2005). Scriven presented formative assessment as a mode of providing data that would allow for adaptations of programs and development during implementation (Baroudi, 2007), while Bloom (1968) added the application of formative assessment to his innovative model of mastery learning. In the current study, formative assessment is assessment for learning as the process of learning occurs (Stiggins, 2006; Moss & Brookhart, 2009). Since its introduction to instructional practice in education, a trail of positive effects of formative assessment has been left in educational research. Bloom (1984) found significantly higher student achievement, motivation, and time on task when formative assessment

techniques were used. Additionally, research supports the approach of setting a learning goal and self-evaluating progress toward that goal, as results show this leads to gains in students' self-efficacy (Schunk, 1996; Schunk & Swartz, 1993).

Formative assessment practices are a learner-centered approach to acquiring new skills. McCombs, Daniels, and Perry (2008) studied children's and teachers' perceptions of learner-centered practices and student motivation. Students grades K to 3 indicated a higher interest in school and learning in addition to a greater sense of self-efficacy, when they perceived the teacher was utilizing learner-centered practices. Additionally, the beliefs and practices of the teachers using these approaches were associated with higher academic achievement and greater motivation. According to Stiggins (2006) students' motivation to achieve waxes and wanes based on the scores obtained on assessments. Those scoring high tended to view themselves as capable learners and exhibited high levels of self-confidence. Students earning low scores were more likely to doubt their academic abilities and have lower levels of confidence in their skills. By assessing for learning during instruction rather than at the conclusion of instruction with a single measure, Stiggins (2006)

concluded that engaging students in the process of learning not only positively influenced their academic achievement, but also their academic motivation and confidence in their skills.

Miller and Lavin (2007) also documented the positive interpersonal effects of formative assessment indicating enhanced self-esteem and self-competence in children lacking confidence in their abilities, as well as for children of the lowest ability group. In addition, research substantiates the effectiveness of the process of formative assessment for closing the achievement gap that exists between high and low ability students (Meisels, Atkins-Burnett, Xue, & Bickel, 2003; Rodriguez, 2004; Stiggins, 2006; Yin et al., 2008).

Therefore, it is necessary for educators to use students' performance on assessments to provide them with information that will allow their instructional needs to be met and simultaneously to permit an opportunity for students to be actively involved in the learning process. Based on the research findings of Sweet, Guthrie, and Ng (1998), students, who are more self-determined and actively involved in their learning, tend to become more active in reading tasks, implement appropriate strategies when needed, and experience greater success. Consequently, as the

literature suggests (Bloom, 1984; Clark, 2008; Miller & Lavin, 2007; Nicol & Macfarlane-Dick, 2006; Schunk, 1996; Schunk & Swartz, 1993; Stiggins, 2006; Yin et al. 2008), a combination of formative assessment and student goal-setting will lead students to be more motivated and therefore, more successful in reading. As a result, one would hope this would lead to greater achievement outcomes for students at risk for reading failure.

Statement of the Problem

The focus for many years in education has been on improving student achievement. In the past decade, the role of the student in instruction and assessment has been altered to incorporate the student as a more active participant in their learning. Despite documented positive effects of formative assessment and student goal-setting in the literature, its use with students at risk for failure and involvement in the learning process has not been vastly studied. By shifting the focus to student-centered learning and the enhanced relationship between the teacher and student, there are greater opportunities to close the achievement gap and use feedback to improve teaching (Moss & Brookhart, 2009; Nicol & Macfarlane-Dick, 2006). For the most part, research on evidence-based instruction, progress monitoring, formative assessment, and student goal-setting,

has been studied independently. Research examining the collective effects of these educational approaches is limited. Additionally, closer inspection of the apparent impact of assessment for learning and student goal-setting on students' learning habits is needed.

The current study seeks to determine the effects of formative assessment and student goal-setting on third grade students' reading achievement in Tier 3. These students participated in a supplemental evidence-based intervention with progress monitoring. Additionally, the study investigated whether gains in students' reading achievement were maintained over time by examining the students' fourth grade reading achievement one year later. To examine teachers' perceptions of formative assessment and student goal-setting on students' reading achievement, self-efficacy related to learning tasks, academic motivation, and learning habits, surveys also were distributed and a focus group discussion held. The final component of the study examined whether fewer students were identified with SLD after participating in a supplemental, evidence-based intervention with progress monitoring, formative assessment, and student goal-setting. To accomplish these goals, DIBELS, 4Sight, and Pennsylvania System of School Assessment (PSSA) data for three groups of

Tier 3 students were analyzed. Additionally, through the distribution of surveys and a focus group discussion held with Title I reading teachers, the study attempted to ascertain an understanding of teachers' observations and impressions of the impact of formative assessment and student goal-setting on student academic achievement in reading as well as the impact on students' academic motivation, self-confidence related to reading tasks, and learning habits.

Research Questions and Hypotheses

The research questions for this study sought to determine whether there were greater improvements in the achievement outcomes for Tier 3 students who participated in an evidence-based intervention with progress monitoring when learner-centered approaches were utilized, and if so, whether those gains were maintained one year later. Additionally, the study sought to determine whether fewer students were identified with SLD in reading after participating in an evidence-based intervention with progress monitoring, formative assessment, and student goal-setting, when compared to students who were not instructed with an evidence-based intervention or progress monitored and students who were only in an evidence-based intervention with progress monitoring. The study also

aimed to ascertain whether formative assessment and student goal-setting enhanced students' view of the learning process, such as motivation, self-efficacy, improved time on task, and learning habits, by surveying and meeting with teachers working with this group of students. Concurrently, the study explored teachers' perceptions of the impact of formative assessment and student goal-setting on students' reading achievement. In particular, the research questions and hypotheses include:

1. Did students receiving evidence-based intervention in Tier 3 with progress monitoring (Group 2) and students receiving evidence-based intervention in Tier 3 with weekly progress monitoring, formative assessment, and student goal-setting (Group 3) make progress from fall DIBELS benchmark assessment to spring DIBELS benchmark assessment? It is first hypothesized that both the Groups 2 and 3 will have made gains in academic achievement in reading. It is also hypothesized that Group 3 will have scored significantly higher on the post-test than Group 2.
2. Are there differences between third grade students' reading achievement when comparing students who did not receive an evidence-based intervention (EBI) or weekly progress monitoring (PM) (Group 1) to students

who received an evidence-based intervention with progress monitoring only (Group 2) to students who were formatively assessed, engaged in goal-setting, and received an evidence-based intervention with weekly progress monitoring (Group 3)? It is hypothesized that Group 3 will score significantly higher on measures of reading achievement than Group 2 and that Group 3 will score significantly higher than Group 1 as measured by the third grade PSSA.

The literature suggests that, for students at risk for reading failure, supplemental, direct instruction within an evidence-based program leads to academic gains (Menzies, Mahdari, & Lewis, 2008).

3. Did students participating in Group 3 score significantly higher than students in Group 2 on the 4Sight benchmark assessment at the beginning of fourth grade? It is hypothesized that students in Group 3 will score significantly higher than students in Group 2 at the beginning of fourth grade.
4. Are there differences in the number of third grade students in Group 1, Group 2, and Group 3 identified with a specific learning disability in reading? It is hypothesized that fewer students from the Group 2 will be identified with a SLD in reading than Group 1 and

that fewer students from Group 3 will be identified with SLD in reading than Group 2.

Menzies et al. (2008) found that of 42 students participating in evidence-based interventions in small groups, 90% reached grade level proficiency. Of the four students who did not demonstrate mastery of grade-level standards, three were identified in need of special education. By providing supplemental, intensive early interventions, students are able to access special education services earlier and with more confidence that specially designed instruction is necessary for success, thereby reducing the misdiagnosis of SLD.

5. How do teachers perceive the value of results provided by formative assessments when compared to traditional assessments?

According to the findings of a study conducted by Yin et al. (2008), teachers are more likely to modify their teaching when formative assessment practices are employed in their classrooms. Additionally, after using formative assessment techniques, teachers often begin to view traditional assessments as only partial measures of student learning and begin to find more

value in formative assessments for guiding student learning than traditional assessments (Clark, 2008).

6. Do teachers perceive that the use of formative assessment practices and student goal-setting increases students' academic motivation toward reading tasks?

    According to a study conducted by Miller and Lavin (2007), students evaluated using formative assessments and goal-setting displayed in an increase in reading for leisure or enjoyment. Also, students tended to participate more often in class and were more interested in obtaining feedback on their performance. In general, student goal-setting and active involvement in learning led to improved motivation and engagement in academic tasks (Clark, 2008).

7. How do teachers perceive the role of formative assessment and student goal-setting on students' learning habits (improved time-on-task, increased participation in classroom discussions, assisting others)?

    Current research suggests that formative assessment and student goal-setting led students to show more interest in tasks, be more confident about

their skills, make positive statements about their abilities, offer support/help to others, and take an active role in their learning (Clark, 2008; Miller & Lavin, 2007). Students who were evaluated using formative assessment tend to become intentional learners by taking responsibility for their learning, putting forth effort toward their learning, and becoming aware of strategies they are using (Black, McCormick, James, & Pedder, 2006).

8. How do teachers perceive the impact of formative assessment and student goal-setting on students' self-efficacy related to their learning?

According to current research (Brookhart, Moss & Long, 2008; Clark, 2008; Miller & Lavin, 2007;), formative assessment tended to result in students being more confident in their skills, make more frequent positive statements about their skills, and share progress with teachers, parents, and peers. Additionally, these students showed more interest in helping and supporting others with their work (Moss & Long, 2008).

9. How do teachers perceive the role of formative assessment and student goal-setting in improving students' academic achievement in reading?

Miller and Lavin (2007) found that formative assessment and student goal-setting increased students' ability to focus on classroom instruction and tasks and had a positive effect on their academic achievement. Additionally, students were more willing to participate in class discussions and attend more to the quality of their work. In general, formative assessment is an effective manner by which to close the achievement gap that exists between high and low ability students (Yin et al., 2008). Students also tended to become intentional learners by taking responsibility for their learning, putting forth more effort, and becoming aware of strategies they are using to make progress in their learning (Black et al., 2006).

Problem Significance

Students will continue to struggle with reading throughout the course of their lives if they do not learn to read proficiently by the age of eight (Menzies et al., 2008). Therefore, in order to remediate reading difficulties before specially designed instruction is necessary, early intervention strategies that provide supplemental, direct instruction within an evidence-based program offer a hopeful outlook for students in danger of

failing. Moreover, the benefits of learner-centered approaches to reading instruction through the use of formative assessment and student goal-setting are substantial and have the potential to have a significant impact on student reading achievement when coupled with an evidence-based intervention with progress monitoring (Moss & Brookhart, 2009; Stiggins, 2006).

Consequently, not only is this proactive, preventative approach beneficial for Tier 1 and Tier 2 students to ensure each is provided with appropriate instruction and has the opportunity to learn to read, but even more so for students participating in intensive Tier 3 interventions. With the potential to reintegrate three-fourths of students participating in strategic, supplemental reading interventions back into the general education program (O'Connor, 2007), it is imperative to closely evaluate the plethora of research-based tools available to educators to determine which combination is most effective in enhancing students' learning habits, reducing inappropriate special education placement, and reducing illiteracy in the United States.

The research questions outlined in this study are of significance due to the limited amount of current research examining the collective effects of an evidence-based

intervention, progress monitoring, formative assessment, and student goal-setting on student achievement outcomes and the learner. The field is teeming with an abundance of studies confirming the positive effects of each of these practices individually; however, there is scant research investigating the use of these applications together and their impact on the students and achievement in reading.

Definition of Terms

Benchmark assessment: Assessments given to all students periodically throughout the school year (generally three times per year) to evaluate students' progress when compared to grade level benchmarks and standards (PaTTAN, 2009).

Curriculum-based measurement (CBM): An assessment technique that is utilized to obtain accurate, reliable data regarding student achievement and progress and assists in instructional planning and data-based decision making (Shinn, 2002).

Data-based decision making: A technique that involves teachers and administrators using assessment data that has been systematically collected and analyzed to guide decisions to improve students' achievement and determine appropriate interventions, intervention effectiveness, and rates of progress (Marsh, Pane, & Hamilton, 2006).

The Dynamic Indicators of Basic Early Literacy Skills (DIBELS): A research-based progress monitoring assessment tool that uses a set of procedures and measures of oral reading fluency measures to evaluate students' development of early literacy and basic reading skills (Good & Kaminski, 2002).

Evidence-based practice: An intervention or educational practice/strategy supported by scientific research studies (National Center on Response to Intervention, 2010).

Extrinsic motivation: The external factors that persuade an individual to engage in a particular activity (i.e., earning a high grade) (Sweet, Guthrie, & Ng, 1998).

Formative assessment: Formative assessment is assessment for learning as the process of learning occurs (Moss & Brookhart; Stiggins, 2006). Moss and Brookhart elaborated on Stiggin's view of formative assessment by further defining it as a dynamic learning process that requires a partnership between the teacher and the learner during the teaching/learning process that generates active student engagement as well as intentional learning. Moss and Brookhart's model also added clear communication of learning targets, effective feedback, self-assessment, and

classroom discourse through questioning as part of their definition and model of formative assessment.

Intensive interventions: Standard protocol interventions provided in flexible groups to students who are achieving significantly below state-approved standards based on the results of benchmark assessments (PaTTAN, 2009). Examples of standard protocol interventions include, *Read Well, Read Naturally, Lexia, Leveled Literacy Intervention, or LiPS.*

Intrinsic motivation: an individual's desire to participate in an activity without expectation of an external reward (Sweet et al., 1998).

Progress monitoring: frequent, direct assessment of student performance in order to demonstrate student growth within an instructional program and evaluate intervention effectiveness (Shinn, 2002).

Response to intervention (RtI): a multi-tier service delivery model that utilizes universal screening of all students and provides interventions to those requiring strategic or intensive behavioral or academic intervention; RtI also necessitates the monitoring of student progress and the use of data to make instructional decisions about students within each tier (Kovaleski, 2007).

Self-efficacy: An individual's belief in his/her ability to successfully accomplish a task (Mruk, 1999).

Self-esteem: The combined feelings of self-worth (being a good person) and self-competence (confidence in overcoming challenges) (Mruk, 1999).

Specific learning disability (SLD):

> A disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, which disorder may manifest itself in the imperfect ability to listen, think, speak, red, write, spell, or do mathematical calculations (United States Code (20 U.S.C. §1401 [30]).

Standard protocol intervention (SPI): A scientifically based, highly structured intervention that is implemented systematically with a small group of students who have the same needs (Fuchs, Fuchs, & Compton, 2004; Torgesen et al., 2001). SPIs are demonstrated in research to be effective for large numbers of students when implemented with fidelity. Therefore, students who respond to a SPI are not disabled and are integrated back into the core reading program, while non-responders are often referred for further evaluation to determine the presence of a disability.

Strategic interventions: According to Pennsylvania's model of RtI, approximately 15% of students require strategic interventions at Tier 2. Tier 2, or strategic interventions, are generally standard protocol interventions used/provided within the general education classroom for students requiring additional support to foster the learning process in order for the students to meet grade-level benchmarks (PaTTAN, 2009). For example, lessons in the leveled readers provided as part of the core reading curriculum.

Student goal-setting: A process of asking, "Where am I going? Where am I now? What strategy or strategies will help me get to where I need to go?" (Moss & Brookhart, 2009, p. 61). Once established, the goal specifies what the student is aiming to achieve or learn.

Universal screening: A brief, direct, and systematic evaluation measure of all students, which is conducted at least three times per year in order to identify those students achieving below grade-level benchmarks.

Assumptions

The current study is based on several assumptions. First, it is assumed that teachers implemented the evidence-based intervention with fidelity with the support from administration (classroom walk-throughs, review of

lesson plans, use of walk-through observations to provide additional reinforcement of skills). Another assumption is that the elements of formative assessment were implemented as intended. Title I reading teachers participated in regular meetings with administration to review their implementation of the core elements of formative assessment, which supports this assumption. Students' regular attendance in the program also is assumed. An assumption related to the survey and focus group discussion also needs to be considered. It is assumed that survey respondents and focus group participants provided honest responses to the survey items and discussion questions and were not compelled to respond in a socially desirable way.

Limitations and Delimitations

The results from the present study provide limited generalizability to other populations of third grade students at risk for reading failure. The data that were analyzed were collected from three different academic school years, therefore, there is inadequate evidence to suggest that all three groups were the same in regard to their reading development at the start of the intervention and that the assessment measures that were utilized to evaluate their achievement were the same (i.e. same edition of the test). Additionally, although administrators

conducted regular walk-throughs, examined lesson plans, and provided additional training when necessary, the lack of concrete data regarding the fidelity of treatment implementation further limits the findings from this study. Data analyzed as part of the present study were from the 2004-2005, 2006-2007, and 2007-2008 school years. During the 2005-2006 school year, a new research-based reading curriculum was introduced. Therefore, any improvements in academic achievement when comparing data from the 2004-2005 school year and the other two years may have been due in part to the new core reading series.

Even though the survey was designed based on the findings of peer-reviewed research and piloted with a group of teachers with similar training, it was not reviewed by a panel of experts. Further evidence of the construct validity of the survey instrument would support its reliability for measuring teachers' perceptions of formative assessment and student goal-setting on students' achievement, learning habits, motivation toward reading tasks, and self-efficacy. Moreover, the perceptions and observations reported and analyzed in this study reflect that of only those who chose to respond to the invitation to participate in the study. The small sample size of survey respondents and focus group participants further

limit the generalizability of the findings. Additionally, consideration should be given to the fact that teachers may have felt obliged to respond in socially desirable ways since the implementation of formative assessment and student goal-setting has been a strong focus of the administration. This poses a threat to the validity of the survey results.

Participation in this study was delimited to third grade, Title I reading students identified as at risk for reading failure who took part in the program during the 2004-2005, 2006-2007, and 2007-2008 school years. Participation in the survey and focus group discussion was delimited to Title I reading teachers with experience with the Title I reading program before and after formative assessment practices were implemented. Title I teachers who did not meet this criteria were excluded from the study. Only the impact of formative assessment and student goal-setting on reading achievement was investigated. Other subject areas, such as math or science, were not considered. The current study also was delimited to the examination of formative assessment and student goal-setting on students' academic achievement, learning habits/study skills, motivation, self-efficacy related to reading tasks as perceived by Title I reading teachers, and identification

of students with SLD in reading. Additionally, consideration was not given to the effect of formative assessment and student goal-setting on students with average academic achievement. Academic achievement in reading was examined by reviewing archival PSSA, 4Sight, and DIBELS data for students in third grade who were identified at risk for reading failure and participated in the Title I reading program. The special education data included in this study only included those students from the sample which were identified with a SLD in reading. Other disability categories were excluded. Teachers' perceptions were measured on a slide scale (indicating percentage of time) with a survey designed specifically for the current study.

Summary

The window of opportunity for preventative intervention to positively affect students at risk for reading failure is limited. Timely attention and early intervention are essential. The use of formative assessment and student goal-setting for students at risk for reading failure as part of participation in an evidence-based intervention with progress monitoring provides promise for these students. In addition to carefully monitoring student progress within an evidence-

based intervention, a shift of focus to student-centered learning creates greater opportunity to close the achievement gap and use feedback to improve teaching. Given the clear benefits of early reading intervention for struggling readers, the present study examined the effects of formative assessment and student goal-setting on reading achievement of students at risk for reading failure. The study also explored teachers' perceptions of the effects of formative assessment and student goal-setting on reading achievement, motivation, self-efficacy related to reading tasks, and learning habits, since formative assessment and student goal-setting practices were employed. The aim of investigating the aforementioned areas was to identify avenues for further research and highlight effective practices for educators to enhance student learning.

CHAPTER 2

REVIEW OF THE LITERATURE

Background

Accountability for student achievement dates back to the 19th century in the United States. However, within the past decade, public education in the United States has been transformed by the Bush administration and Department of Education with the primary focus on accountability and the institution of the No Child Left Behind Act of 2001 (2002). These revolutionary changes brought about by the federal government sought to hold schools and administrators accountable for students' academic achievement. Refusing to allow the achievement gap between disadvantaged and minority students and their peers to widen, the government provided opportunities for educational agencies to focus on preventing academic failure by supporting students at risk, primarily in reading.

NCLB also holds that students with disabilities will be held to the same standards as those in general education. Therefore, revisions to federal law protecting students with disabilities, the Individuals with Disabilities Education Improvement Act of 2004, reexamined approaches to the identification of students with specific learning disabilities and called for high-quality instruction for

ALL students by introducing Response to Intervention (RtI). RtI is an initiative that seeks to ensure the success of all students. Through the use of universal screenings and data-based decision making within this problem-solving model of RtI, schools are able to examine the achievement of all students and evaluate their needs to provide instruction and/or intervention within three tiers of support. The third tier of support provides students at risk for reading failure with small group, supplemental reading instruction using an evidence-based intervention. Additionally, students' progress in Tier 3 is closely monitored in order to make adjustments to their programs or level of intervention.

The prevention program in the current study has gone a step further from providing a small group, evidence-based intervention only to incorporating formative assessment practices and student goal-setting into the supplemental reading program for students at risk. The benefits of utilizing formative assessment and student goal-setting, an evidence-based intervention, and progress monitoring are widespread. The following literature review cites studies where improvements in reading achievement, students' academic motivation, learning habits, and self-confidence, were found in programs that included these approaches.

The literature reviewed as part of the current study highlights the fundamentals of educational reform in the United States and early reading prevention and intervention, as well as the underpinnings of RtI with a focus on Tier 3. Moreover, it will provide a review of current research with respect to the use of evidence-based interventions, progress-monitoring, and formative assessment and student goal-setting, and the impact formative assessment has on student reading achievement and learning practices.

Legislation

Elementary and Secondary Education Act

A strong foundation for education has been a tenet of American society. Decades ago, President Johnson held education to the highest standard and believed in full educational opportunities for all citizens of the United States. In his 1965 State of the Union Address, President Johnson emphasized the importance of education on the freedom of the citizens of the United States, identifying education as the foundation for a strong military, economy, and system of government (Johnson, 1965.) Thus, President Johnson passed the Elementary and Secondary Education Act (ESEA) in 1965 as part of the War on Poverty and his strong beliefs in education. The ESEA of 1965 sought to

strengthen and improve the quality of the Nation's elementary and secondary education programs.

No Child Left Behind Act of 2001 and Reading First Initiative

President Bush's 2002 signing of the No Child Left Behind (NCLB) Act of 2001 was the most extensive reform of the ESEA since 1965 when the law was originally enacted. According to the U.S. Department of Education (2002), the NCLB Act redefined the role of the federal government in K-12 education – to close the achievement gap between disadvantaged and minority youth and their peers. In order to close the achievement gap, four guiding principles were established as part of the NCLB Act, (a) accountability – achieving strong results, (b) increased flexibility and local control, (c) expanded options for parents, and (d) emphasis on teaching methods that have been proven to work.

The aforementioned changes in educational law through the institution of NCLB have forced administrators and teachers to focus on students at risk for school failure. Therefore, as part of NCLB, the *Reading First* initiative was offered to educational agencies interested in applying for additional funding to support early intervention services to students grades K – 3 at risk for reading failure (20 U.S.C. 6301, 2002). According to a report

provided by the U.S. Department of Education (2002), *Reading First* is the greatest early reading initiative ever commenced in the United States. It is the foundation of NCLB, which adheres to the importance of increasing reading achievement and employing research-based programs and strategies that are proven to be effective. The fundamental goal of *Reading First* is for all students to read at or above grade level no later than third grade by providing training to educators, assisting in the development of screening procedures, and supporting the selection of research-based reading interventions, all of which are important factors in the intervention groups that are a part of the current study.

As part of this government initiative, districts were offered a flexible funding option where they were permitted to allocate funding to provide preventative programs to students at risk for reading failure prior to the need for special education services (20 U.S.C. 6301, 2002). Therefore, an impact study was conducted by independent researchers as required by the Department of Education to evaluate the effectiveness of *Reading First* (Moss et al., 2008). In order to ascertain whether student achievement improves more rapidly in schools with *Reading First* funds and whether there is a relationship between schools'

implementation of *Reading First*-aligned practices and students' reading achievement, two nationally representative samples of public *Reading First* schools and public non-*Reading First* Title I schools were surveyed in 2004-2005 (1,649 schools) and 2006-2007 (1,018 schools). The survey response rate in 2004-2005 was 96% across all types of respondents and all schools. The response rate was 91% in the 2006-2007 data collection period. Additionally, school-level reading scores on state assessments were examined to look for improvements in students' reading achievement.

The results of the study concluded that non-*Reading First* Title I schools reported more activities aligned with the principles of *Reading First* than when initially surveyed. This included the utilization of a research-based core reading program, programs and materials to assist struggling readers, and professional development opportunities in reading for teachers. Furthermore, the findings suggested statistically significant evidence that consecutive groups of third and fourth grade students in *Reading First* schools improved their reading achievement on state assessments over time more quickly than did their peers in non-*Reading First* Title I schools. Specifically, on average, third graders gained two to three percentage

points more from pre- to post-*Reading First* implementation than non-*Reading First* Title I programs. The findings were similar for fourth grade students from *Reading First* schools with a two to three percentage point gain from pre- to post- implementation.

Individuals with Disabilities Education Improvement Act

Before 1966, assistance was not provided by the Federal government to educate students with disabilities. According to the U.S. Office of Special Education Programs (OSEP), in 1970, 1 in 5 students with a disability were educated in the U.S. public school system. In 1975, the Education for All Handicapped Children Act (EHA) was instituted, which required states to devise and put into effect policies to guarantee a free appropriate public education (FAPE) to all students with disabilities in order to receive Federal funding. In 1990, EHA became the Individuals with Disabilities Education Act (IDEA); however, it continued to assure FAPE in the least restrictive environment (LRE) for students with disabilities. IDEA focuses on meeting the educational needs of children ages birth to 21 years with disabilities by governing how states and public entities provide early intervention, special education, and related services (20 U.S.C. 1432(1); 20 U.S.C. 1412(a)(1)(A)).

IDEA was amended in 1997 and most recently in 2004 with several provisions made to align with NCLB. Most notable were the revisions made to the identification of students with specific learning disabilities (SLD), which came about during the process of the 1997 reauthorization of IDEA by the National Joint Committee on Learning Disabilities (NJCLD). A letter written by the NJCLD to OSEP communicated the concern that students with SLD were being identified neither early nor accurately (Bradley, Danielson, & Doolittle, 2007). In response, OSEP formulated the Learning Disabilities (LD) Initiative that brought together a variety of experts to improve the identification of students with SLD. This led to the emergence of Response to Intervention (RtI) as a means for early and accurate identification of SLD.

Response to intervention. The IDEIA (Public Law 108-446), which went into effect July 1, 2005, left it up to individual States to employ criteria for the determination of SLD as defined in 34 CFR 300.8(C)(10), criteria of which,

- Must not require the use of a severe discrepancy between intellectual ability and achievement for determining whether a child has a specific learning disability, as defined in 34 CFR 300.8(c)(10);

- Must permit the use of a process based on the child's response to scientific, research-based intervention; and

- May permit the use of other alternative research-based procedures for determining whether a child has a specific learning disability, as defined in 34 CFR 300.8(c)(10).

With this, the national focus shifted to RtI implementation, opening up doors and opportunities for all students at risk for failure. RtI is conceptualized as a three-tier prevention model that promotes quality, research-based instruction for all students based on universal screenings (Bradley et al., 2007). A review of states' RtI implementation in 2007 (Berkeley, Bender, Peaster, & Saunders, 2009) indicated that most states were in some phase of RtI implementation or development. Through a review of state department of education Web sites and conversations with representatives in each state Department of Education, it was found that 30% of states implemented the RtI model on a large (9 states) or small (6 states) scale. Forty-four percent of states were in the development phase, 20% of states' schools were receiving guidance from their state Department of Education without the requirement for implementation, and 6% of states were not in the process of development or receiving guidance on implementation.

Several additional studies document the positive effects of utilizing a preventative, three-tiered problem-solving approach with students at risk for reading failure. A review of several field studies of RtI models conducted by Dexter, Hughes, and Farmer (2008) concluded that the use of tiered intervention programs resulted in higher academic achievement for students at risk for failure, primarily in the early grades. Studies included in the metanalysis were peer-reviewed, employed instruction practices or interventions in at least two tiers, and provided quantifiable measures of student outcomes. The authors' review of pertinent studies that examined outcome measures in reading within an RtI model were specifically relevant to the present study. Achievement on state assessments and curriculum-based measures were the outcome measures utilized to gauge students' success in an RtI program. In the studies reviewed by Dexter, Hughes, and Farmer, those associated with RtI in reading, implemented supplemental reading instruction three times per week in Tier 2 and five times per week in Tier 3. Improvement in academic achievement of students at risk for reading failure was noted in each of the studies reviewed, specifically for students in primary grades, which further emphasizes the need for early intervention.

Bursuck et al. (2004) examined the acquisition of reading skills within a multi-tier service delivery model through Project PRIDE (Preventing and Remediating Reading Problems through Early Identification and Direct Teaching of Early Literacy Skills). Project PRIDE was a federally funded grant aimed at preventing reading problems in students at risk through use of evidence-based practices, which included instruction in the essential elements of reading (phonemic awareness, alphabetic principle, reading fluency, vocabulary, and reading comprehension) using the PRIDE reading curriculum. Students in Tier 2 were instructed with the PRIDE reading curriculum, while students in Tier 3 were serviced with the Reading Mastery program. Project PRIDE was implemented in three high-poverty, ethnically diverse schools in an urban Midwest school district. The targeted group of 136 students received interventions in kindergarten, first, and second grades. Fifty-three percent were achieving as expected in the core reading program (Tier 1), 17% were receiving small group skill practice through review and repetition (Tier 2), while 30% percent of participants received supplemental, intensive small-group instruction in *Reading Mastery* in Tier 3.

Students participating in the PRIDE group were maneuvered through the three tiers based on their progress, which was monitored monthly or bi-monthly. A school that was demographically comparable to the PRIDE schools was added as a control group. PRIDE students' performance on the Dynamic Indicators of Basic Early Literacy Skills (DIBELS) Nonsense Word Fluency and Oral Reading Fluency measures were compared to the performance of the control group students on the same measures. Bursuck et al. (2004) found significant gains in students' reading achievement for all three instructional tiers when compared to the control group, supporting a multi-tiered approach to reading instruction utilizing evidence-based practices.

After implementing a three-tiered model of intervention in kindergarten and following students at risk through grade three, O'Connor, Harty, and Fulmer (2005) found moderate to large differences in reading achievement for students participating in the tiered interventions specifically in decoding, word identification, oral reading fluency, and comprehension. Two schools participated in the study. In grades kindergarten through third, there were 100 students per grade level. Forty-five percent of students received free or reduced lunches, 68% were European American, 98% spoke English as a primary language,

and 15% of the third grade population received special education services. Over the course of four years, a three-tiered model was implemented with Tier 1 consisting of enhanced classroom instruction through professional development, Tier 2 consisting of 10 to 15 minutes of small group instruction three times per week, and Tier 3 consisting of individual or paired instruction 30 minutes, five times per week. After each year of implementation, with the same students, the number of students at risk for reading failure was reduced by half. In the first year of implementation, 31 students were identified at risk for reading failure in kindergarten. After the second year of implementation, only 16 students in first grade were at risk, followed by only 8 second grade students in year three of implementation. Over four years of implementation, the number of students identified for special education dropped from 15% to 8%.

A RtI model was implemented in 318 Florida *Reading First* schools with an ethnically and socioeconomically diverse population of students (72% receiving free or reduced lunch, 62% minority students, and 14% of students with English as a second language) (Torgesen, 2009). Based on the results of a national standardized test of reading comprehension, notably fewer students were identified in

grades K – 3 with specific learning disabilities from Year 1 to Year 3 of implementation. Eighty-one percent fewer kindergarten students were identified with a specific learning disability from Year 1 to Year 3 with similar results for Grades 1, 2, and 3, which were reductions of 67%, 53%, and 42%, respectively. These findings further substantiate the need for early intervention with reading problems given the fact that there appeared to be a better response to the interventions in the primary grades. In addition to fewer students being identified with specific learning disabilities, reductions were also noted in the percentage of students with significant reading problems from Year 1 to Year 3 of implementation of the RtI instructional model. In kindergarten, 10% fewer students finished the year with significant reading problems from Year 1 to Year 3 while students in Grades 1 to 3 dropped 7% to 8% over the three year period.

Fidelity of treatment implementation. According to the National Research Center on Learning Disabilities (2006), to make eligibility determinations using the problem-solving model RtI, the components need to be implemented with high fidelity. The results of new initiatives, such as RtI, adopted by name only without fidelity to necessary program features tend to be poor

(Kovaleski, Gickling, Morrow, & Swank, 1999). Additionally, to draw valid conclusions regarding the outcomes of treatments on students' academic achievement, treatment integrity data are critical (Peterson, Homer, & Wonderlich, 1982; Shadish, Cook, & Campbell, 2002).

Sanetti and Kratochwill (2009) cited that a review of 15 years of treatment outcome literature in related fields indicated that, on average, about 20% of researchers gave quantitative data regarding treatment integrity in their studies. Examination of treatment outcome studies published in five school psychology journals from 1995-2007 showed that 45% of studies reported quantitative data regarding treatment fidelity. Unfortunately, oftentimes treatment fidelity in research has been assumed rather than evaluated and empirically demonstrated, which was described as a "pervasive methodological flaw" (Sanetti & Kratochwill, 2009, p. 450). Therefore, to perfect and optimize the effectiveness of treatments, it is necessary to understand the relationship between treatment integrity and outcomes (McLeod, Southam-Gerow, & Weisz, 2009).

In a case study examining the impact of the maintenance of program fidelity on student achievement outcomes as part of a model of instructional support, Kovaleski, Gickling, Morrow, and Swank (1999) utilized a

stratified sampling procedure to select Pennsylvania instructional support team (IST) schools and non-IST schools, which were broken down by school building to acquire individual student participants at risk for failure. Participants included 492 IST students and 237 non-IST students at risk for failure. It was hypothesized that students' degree of progress (time on task, task completion, and task comprehension) would depend on the school's level of implementation (either high or low) of the essential program elements. The findings indicated that groups with high fidelity of implementation had significantly greater gains with respect to time on task, task completion, and task comprehension. Additionally, Kovaleski et al. (1999) discovered that the achievement outcomes for students with low-level implementation of IST were commensurate with students from non-IST schools, which further emphasizes the importance of careful implementation of the critical components of a program to maximize students' success.

By studying the use of formative assessments embedded in instruction in six middle school physical science classes, Furtak et al. (2008) sought to determine whether teachers implemented the essential components with fidelity and whether implementation fidelity was linked to students' learning. The six teachers randomly selected to be a part

of the experimental group taught the science curriculum to class sizes ranging from 20 to 31 students. In an attempt to evaluate the alignment between the execution of a treatment and its original design, the researchers coded videotaped lessons specifically looking for the core teaching strategies of formative assessment during instruction. The researchers discovered that there was a 0.71 correlation between teachers' employment of formative assessment and student learning when the quantity of core teaching strategies delivered were high. The findings suggested that the consistency of treatment implementation was linked to student learning.

Telzrow, McNamara, and Hollinger (2000) investigated the fidelity of problem-solving implementation by multidisciplinary teams (MDTs) in 227 Ohio schools and the relationship to student outcomes. MDTs submitted case documentation after engaging in student problem-solving. Each team completed a problem solving worksheet and an evaluation team report. Once received, individual case reports were evaluated using a Likert scale and scoring rubric with specific ratings for each area to be assessed (1 = no evidence of the component of problem-solving to 5 = clear evidence of the component of problem-solving to an exceptional degree). Similar to previously cited studies,

the researchers found that high levels of implementation fidelity with respect to the critical components of MDTs (problem identification, intervention implementation and progress monitoring, and eligibility determination) were clearly related to positive student outcomes.

Data-based decision making. According to years of research on assessment and instructional decision-making conducted by Ysseldyke (2001), there has been a paradigm shift from searching for deficiencies within a student to evaluating the effects of interventions on students' educational outcomes. Ysseldyke's work altered the views of assessors and educators, focusing on competency enhancement, or moving students forward in an appropriate progression given their needs by utilizing effective data-based decision-making. Years of research support the use of assessment data acquired through direct, frequent measurement to make instructional decisions and improve teaching practices (Deno, Marston, & Mirkin, 1982; Deno, Mirkin, & Chiang, 1982; Fuchs & Deno, 1981; Wesson, Fuchs, Tindal, Mirkin, & Deno, 1986). Data-based decision making is the crux of instructional planning, corrective and formative feedback, and pacing, all of which lead to enhanced instructional outcomes for students (Ysseldyke, 2001). Fuchs and Fuchs (1986) found that the use of data

utilization rules coupled with ongoing progress monitoring was associated with a .5 standard deviation increase in students' achievement when compared to systematic monitoring without rules. The data utilization rules referred to by Fuchs and Fuchs (1986) required teachers to evaluate patterns in students' progress monitoring data relative to an aimline that connected baseline data with current performance to monitor students' performance in relation to an anticipated date of goal attainment. Establishment of these rules provided teachers with a guide about when and how to alter programs based on on-going assessment data collected in an intervention (1986).

Data-based decision making held a significant role in improving the achievement outcomes of hundreds of middle school students in an urban school district in Florida (Larocque, 2007). The school district's population was made up of 800 students from 159 countries. Forty-five percent were black, 35% white, and 20% Latino. Seventy-six percent received free or reduced lunch. After implementing a process for school improvement and sustainability, which emphasized principal leadership, parent and community partnerships, data-based decision making, and a celebration of cultural diversity, a grant-funded research study sought to evaluate the impact of school reform on student

achievement outcomes on the Florida Comprehensive Achievement Test (FCAT).

The descriptive study used questionnaires to examine each of the elements of school improvement outlined above. Questionnaires were distributed to the principal, teachers, parents, and community partners. In the study, data-based decision making emphasized utilizing data for a purpose in order to make instructional decisions. Students falling below benchmarks were targeted for corrective action and were given support that included supplemental, small group instruction with trained paraprofessionals. Discipline, attendance, and academic achievement data were analyzed regularly in order to implement necessary interventions quickly. The study concluded that data-based decision making, in conjunction with strong leadership, parent and community partnerships, and celebration of cultural and ethnic diversity, contributed to this district's improved FCAT grade from a 'D' to a 'B' in three academic years.

The findings from studies examining the effective use of data in California schools were summarized by the California Comprehensive Center (CCC), in partnership with the American Institutes for Research and School Services of California (2006). Two of the studies included in the review used data from interviews with administrators to

compare schools that demonstrated significant achievement growth to other schools with similar demographics. The third, privately funded study used the results from a large scale survey of elementary schools in California to evaluate the relationships between instructional practices and student achievement. In all three studies, data-based decision making was among the most important factors contributing to students' gains in achievement. High achieving schools that frequently used ongoing data-based decision making reported using the data in more than one way. The schools in the study reported that the data were used as an indicator of student understanding, to determine students' grades, to identify areas of need, to plan or alter instruction, and to plan for individual students.

In the Immediate Intervention/Underperforming Schools Program (II/USP) study (2006), differences between growth and low growth schools emerged with respect to the data use practices of schools making greater achievement gains. The primary difference that surfaced was the extent of data used to inform instruction. Schools experiencing higher levels of growth indicated frequent and extensive use of data to guide instruction; whereas, other schools predominantly utilized the data for the sole purpose of identifying students who were achieving below State-

approved standards. By and large, the evidence from these studies indicate that the use of data to inform teams, guide instruction, cultivate interventions, evaluate student progress, and modify instruction, is most effective in advancing student achievement and school-wide improvement.

Consistent with the research on data-based decision making summarized by the CCC were the findings of a study conducted by Brunner et al. (2005), who investigated how data in New York City (NYC) schools were used and thought about in classrooms. The research was structured into three phases to examine teachers' use of the Grow Network, a data warehouse that generates customized reports that include overviews of standards-based, class-wide priorities, students' learning needs and strengths and weaknesses, as well as other assessment data.

Phase 1 included structured interviews with 47 administrators. Phase 2 consisted of ethnographic research conducted in 15 schools across four districts in NYC where 45 semi-structured interviews were conducted with principals, teachers, and staff developers. Also, as part of Phase 2, thirty-one interviews were completed with teachers in two high-stakes testing grades (4 and 8). Lastly, data collected from 146 administrators and 213

teachers' surveys of data interpretation and conceptualization for instructional planning were analyzed in Phase 3 (Brunner et al., 2005).

Based on survey and interview data collected in each of the phases described above, Brunner at al. (2005) found that the most effective form of data-based decision making in NYC was one that involved the use of data in a variety of ways, not just for identifying students below benchmark. Effective data-based decision making in NYC consisted of using the data to meet the needs of students, support discussions with parents and other professionals, enhance teachers' professional development, and promote self-directed learning by sharing individual data with students.

Marsh, Pane, and Hamilton (2006) examined the factors that influence the use of data to make decisions in education. The results of their research suggested that there are several factors that influence educators' use of data, which include accessibility, quality of data, motivation to use data, timeliness of data, staff support, lack of time, organizational culture and leadership, and curriculum pressures. A major barrier cited in the study was the lack of accessibility to the data. Teachers, principals, and administrators were more likely to utilize the information if there was access to a data system with a

reporting component to effectively and accurately summarize the data. Furthermore, real or perceived quality of the data influenced data-based decision making practices. If district stakeholders questioned the reliability or validity of the assessment results to be used to drive the decision making process, they were less likely to use the data to engage in the process. Despite these findings, the authors also indicated that high stakes testing encouraged the decision making process regardless of a real or perceived lack of quality in the results. External and internal motivators also contributed to the use of data for decision making. Teachers were more eager to engage in the process when time was allocated in their day and/or incentives were offered. In general, according to Marsh, Pane, & Hamilton (2006), the most effective use of data occurs when teachers received effective training, adequate time, and user-friendly data systems. Additionally, the findings suggested that equal time needed to be spent analyzing and taking action based on the data.

In addition to reviewing the components of effective use of data for decision making, Stecker and Fuchs (2000) examined whether the use of CBM data to make instructional adjustments resulted in enhanced achievement. Twenty-two special education teachers from 12 schools in a

southeastern metropolitan school district participated in the study. Eight-four students in second to eighth grade with mild disabilities participated in this study. Forty-two students were CBM target students, or students whose teachers made instructional adjustments based on those individual students' own CBM data, while the other 42 students were referred to as partners, or students whose teachers made instructional changes based on other students CBM data. The results from the study indicated that programs were more effective when data-based, instructional decision making was linked to the individual students' assessment profile, rather than to a group of similar peers.

Progress monitoring practices and curriculum-based measurement. A current theme in education is the use of assessment to demonstrate accountability. The NCLB Act utilizes a single measurement, a statewide assessment system such as the PSSA, to determine schools' success and whether schools met the requirements of adequate yearly progress (2002). While a statewide assessment meets the requirements for demonstrating adequate yearly progress, several other assessment tools are available for ongoing monitoring of students' progress throughout the course of a school year. One method of evaluation that has not been debated in education for its effectiveness is the use CBM

as a progress monitoring tool to improve instruction and demonstrate student progress (Santi & Vaughn, 2007). According to these authors, teachers are more likely to adjust their instruction to meet the needs of all the students in their classroom when they use ongoing progress monitoring measures. Consequently, there are increases in student performance. Meaningful assessments linked to instruction are a powerful component not only of classroom instruction, but also of planned interventions for students at risk for reading failure.

For decades, the positive effects of monitoring students' progress with curriculum-based measures have been documented in the literature. Fuchs and Fuchs (1986) found an average gain of .7 standard deviations in academic achievement for students whose programs were monitored systematically and developed formatively over time when compared to students whose programs were not monitored. In addition to overall improved learning outcomes, research also showed improvements in reading comprehension and decoding skills when oral reading fluency was monitored and the results were used to enhance instruction (Fuchs, Deno, & Mirkin, 1984).

A clear question emerging from the research on the positive effects of the use of progress monitoring is how

frequently students should be monitored to benefit. According to Fuchs (1986), the frequency of measurement has a direct impact on student academic achievement. In fact, early research supported daily measurement for the most technically adequate data base; however, time constraints often allayed daily measurement according to teacher reports. A quantitative analysis of relevant controlled studies conducted by Fuchs and Fuchs (1986) found no significant difference in students' achievement when measurement occurred twice weekly, three times weekly, or daily. Therefore, although daily measurement was considered most ideal in early research, it was later determined that the effects on student achievement were similar for students monitored daily and those monitored twice weekly. While progress monitoring twice weekly continues to be upheld in the literature, current research also supports weekly progress monitoring at the very least (Fuchs, Hamlett & Fuchs, 1999; Shinn, 2002; Shinn, 2007; Stecker et al., 2008) for students participating in intensive interventions.

In conjunction with the documented positive effects of progress monitoring, the wide-ranging positive effects of CBM as a tool to monitor students' progress within a program has been demonstrated in the research. Aside from

its strong technical adequacy, CBM is a direct, authentic assessment of student performance; therefore, it is less subjective to bias with respect to ethnicity, race, or gender. Additionally, according to the findings of Stecker et al. (2005), when students are monitored using CBM and when instructional decisions are made based on the CBM data, students show significantly higher levels of achievement than those evaluated using teacher measures. The overall utility of CBM probes are ideal for practical application in the classroom setting since they are quick and easy to administer, provide reliable and valid assessment results, and are sensitive to small increments of change (Shinn, 2002). Stecker and Fuchs (2000) examined the importance of individual progress monitoring to affect superior achievement in students with mild disabilities. The results indicated that instructional changes made to students' programs produced optimal achievement when students' individual CBM data was used to plan and adjust interventions.

Schilling, Carlisle, Scott, and Zeng (2007) examined the relationship between students' performance on the DIBELS, a curriculum-based measure, and the Iowa Test of Basic Skills (ITBS) for students in grades 1 to 3. Specifically, the researchers investigated whether

students' performance on DIBELS measures conducted in fall and winter were predictive of students' achievement on the ITBS in the spring. Lastly, the researchers explored the accuracy of DIBELS oral reading fluency (ORF) measures in identifying second and third grade students who are and are not reading at grade level at the end of the year. Data from nine districts in Michigan's Reading First schools were examined.

As indicated in the findings, students' performance on DIBELS at any point in the year (fall, winter, or spring) correlated significantly with students' performance on the ITBS. Similar to the findings of other researchers, Shilling et al. (2007) found that the magnitude of the relationship between DIBELS ORF and the ITBS reading total decreased from the spring of second grade to the spring of third grade, suggesting that fluency is less closely associated with reading comprehension as students gain understanding of reading connected text and become more fluent.

At each grade level, DIBELS subtests administered in the fall and winter significantly predicted students' performance on the ITBS reading total, with Letter Naming Fluency (LNF) and Nonsense Word Fluency (NWF) being most predictive for students' performance at the end of first

grade. As hypothesized, the Fall ORF was accurate in identifying students who would achieve within the below average range on the ITBS in the spring. The findings demonstrated that 76% of students at risk on the DIBELS in second and third grade were also below the 25th percentile on the ITBS total reading. Eighty-six percent of students in second grade and 88% of students in third grade were accurately identified with DIBELS as at risk in reading as confirmed by their low average performance on the ITBS.

Within a problem-solving model, a three-phase study was conducted by Marston et al. (2007). They investigated the technical adequacy of early literacy measures, one measure of alphabetic understanding and two measures of phonemic awareness, as a universal screener for kindergarten by examining concurrent and predictive validity. They also looked at the effectiveness of a district's implementation of this universal screening within a problem-solving model that supported reading improvement. In Phase I, 154 kindergarten and 170 first grade students from four elementary schools in a large, urban school district participated. Three measures of early literacy (letter-sound correspondence, onset phoneme identification, and phoneme segmentation) were administered in the fall, winter, and spring. These data were used to

explore the reliability, validity, and growth trends of these measures, which were determined to provide stable, consistent results over time. The Pearson product-moment correlation coefficients for measures of test-retest reliability ranged from .90 to .97. The high interrater reliability as evidenced by the Pearson product-moment correlation coefficients, which ranged from .96 to .99, also suggested that scoring was consistent across raters.

In Phase II, the same measures described above were administered to approximately 3,500 kindergarten students as a universal screening measure given three times per year (fall, winter, and spring). Seventy-one percent of students received free or reduced lunches and came from ethnically diverse backgrounds. Due to attrition, only complete kindergarten and first grade data were available for 2,107 students. Results showed that correlations among early literacy and oral reading fluency measures administered in the fall, winter, and spring, were moderate to moderately high and were statistically significant at or below the $p < .01$ level for kindergarten students.

In Phase III, district's use of data within a problem-solving model was examined. At this district, the problem solving model involved four steps: a) define the problem, b) develop and implement intervention strategies, c) measure

student progress and evaluate the effectiveness, and d) continue the sequence of steps as necessary. The school examined in Phase III consisted of 300 students in pre-K through grade 5. Early literacy measures were administered in fall, winter, and spring. Results indicated that students at the school implementing a problem-solving model made greater gains from fall to spring on early literacy measures when compared to other students from schools not implementing a problem-solving model. As part of a problem-solving model, the CBM measure provided reliable, valid data with which to make decisions, which supported greater achievement outcomes for students.

A metanalysis on curriculum-based measurement in reading was conducted by Wayman et al. (2007) with a focus on oral reading, comprehension, and word identification used with school-age students. Sixty-six studies were included and analyzed with respect to the technical adequacy of CBM, effects of text materials (i.e. consistent readability across all grade level probes), and measuring growth. Wayman et al. (2007) found a strong relationship between CBM oral reading measures and reading proficiency. Positive results were noted for using CBM measures to predict performance on state standardized tests. With respect to curricular differences and difficulty levels,

CBM measures were found to function consistently without regard to difficulty level or curriculum; however, it was noted that when using CBM data as part of eligibility determinations, equivalence of passage difficulty needs to be established. It was concluded that CBM oral reading measures are valid tools to evaluate performance and progress of students in grades 2 to 5. Furthermore, this synthesis of literature found that CBM in reading are flexible and durable across different measures, materials, settings, students, and situations, which provides a basis for the development of a system of progress monitoring to be used across student populations of varying ages and performance levels.

CBM has been cited throughout the literature as an assessment tool that enhances student achievement. Stecker et al. (2005) further documented its effectiveness by reviewing the research related to the use of CBM to improve student achievement. Twelve peer-reviewed studies in which teachers used reading and math CBM for progress monitoring and instructional decision-making were examined to evaluate the effect of CBM on student achievement. In general, teachers' use of CBM generated significant gains in students' achievement when data-based decision rules were

employed, feedback was given, and data were used to modify instruction.

Using the results of reading CBM measures administered to 7,544 students in grades 2 to 6 in the fall, winter, and spring, Silberglitt and Hintze (2007) examined reading growth rates and reading CBM as part of a problem-solving model. The findings indicated significantly lower growth rates, as demonstrated by slope of oral reading fluency, for students in the bottom and uppermost deciles when compared to aggregated average student performance on fall benchmark measures. Furthermore, this finding was more pronounced for students in grades 2 and 3 when compared to grades 4 to 6, which supports the fact that the achievement gap between students at risk for failure and average achieving students is unlikely to be reduced unless intervention strategies are developed and employed early on in students' educational careers.

Use of standard protocol interventions. According to the research findings of Menzies et al. (2008), students will continue to struggle with reading throughout the course of their lives if they do not learn to read proficiently by the age of eight. Therefore, early intervention strategies that provide supplemental, direct instruction within an evidence-based program are the

greatest hope for students to remediate reading difficulties before special education services are needed (Stecker et al., 2008). According to Pennsylvania's RtI model (PaTTAN, 2009), this level of intervention is also categorized as Tier 3.

According to Torgesen (2000), there are two conditions that need to be met for students to obtain sufficient reading skills. First, the ability to identify words that are used to impart meaning is necessary, and second, the ability to formulate meaning from the words once they are identified. Generally, students who demonstrate weaknesses in phonological processing, oral language skills, and vocabulary knowledge, have difficulty learning to read. Therefore, preventative activities need to be implemented to sustain growth in phonetic decoding and word recognition. A meta-analysis on early intervention in reading conducted by Torgesen (2000) indicated that by applying what is known about reading instruction, a majority of students at risk for reading failure will achieve at or near grade level, when intervention is provided in the primary grades.

According to the work of Scammacca, Vaughn, Roberts, Wanzek, and Torgesen (2007), there are several research-based practices that lead to effective early reading intervention in the primary grades. First, successful

interventions for students at risk for reading failure provided instruction in phonological awareness, decoding, word study, guided and independent reading of increasingly more challenging texts, writing exercise, and practice of comprehension strategies while reading. Additionally, small group size, daily frequency of intervention, and early identification of students in need of supplemental instruction were attributed to improvements in students' reading achievement. A large number of studies document the positive effects of the use of a scientifically-based, highly structured intervention implemented systematically with a small group of students who have the same needs.

Mathes et al. (2005) examined the effectiveness of utilizing high-quality reading instruction and intense supplemental intervention with first grade students at risk for reading failure. Students from diverse ethnic and socioeconomic backgrounds from six urban schools in Texas participated in this study. In order to identify students at risk for reading failure, students had to read less than five words on the Letter-Word Identification subtest of the Woodcock Johnson Tests of Achievement, 3rd Edition (WJ-III ACH), read text at Level D or lower on the Observation Survey of Early Literacy Achievement, and read at a rate of five words per minute or less on a measure of oral reading

fluency. Mathes et al. randomly assigned students at risk for reading failure to one of three groups, (a) enhanced classroom instruction and Proactive Reading intervention, (b) enhanced classroom instruction and Responsive Reading intervention, or (c) enhanced reading instruction only. Additionally, a group of students with typically-developing reading skills were randomly selected from the same classrooms to assess normal growth within each group. Students in the Proactive Reading or Responsive Reading intervention groups received 40 minutes of supplemental reading instruction five days per week at a student-teacher ratio of 3:1.

The findings suggested that students at risk for reading failure who received small group, supplemental instruction in an intervention achieved higher than at risk students receiving only enhanced classroom instruction. Specifically, they demonstrated greater improvement in phonological awareness, word reading, passage fluency, and spelling. Even though students at risk for reading failure did not achieve at a rate commensurate with typically-developing peers after the intervention, most did reach average achievement levels on normative measures (WJ-III ACH). Additionally, all groups of at risk readers had

steeper slopes than typically developing peers suggesting a move toward closing the achievement gap.

Santa and Hien (1999) investigated the effects of Early Steps, a program for struggling readers, on reading achievement. Participants included the lowest 20% of first grade students in reading in each class (n = 49) from four, Title I elementary schools in Montana. The population was primarily lower and middle class, Caucasian families. Students in the intervention group received 30 minutes of Early Steps supplemental instruction daily in a small group while the other group received small group daily intervention for 30 minutes. The latter group was involved in guided reading followed by repeated reading in pairs and then independently. Intervention was provided for 35 weeks. Fidelity checks were completed monthly through observation. The findings indicated that the intervention group participating in Early Steps scored significantly higher on all posttest measures, which consisted of spelling, word recognition, reading of increasingly more difficult passages, and subtests of the Woodcock Reading Mastery Test administered as a follow-up in second grade. The results were astounding in that 52% of students in the Early Steps intervention group were reading at or above grade level at

posttest compared to only 24% of students in the comparison group.

An examination of a phonics based intervention for first grade students, Sound Partners (SP), and a reading and comprehension strategies intervention for second grade students, Thinking Partners (TP), was conducted by Vadasy, Sanders, Peyton, and Jenkins (2002). The researchers sought to evaluate the effectiveness of the continuation of an intervention for students already receiving a year of intervention. The 65 students who participated in this study were chosen from 12 urban elementary schools in the Pacific Northwest. Interventions were provided for 30 minutes, four days per week for 35 weeks. The researchers reported that fidelity was 92% for Sound Partners tutors and 91% for Sound and Thinking Partners tutors across both years of implementation. At the end of first grade, students receiving SP and SP + TP demonstrated gains of 17 standard score points on average. Gains from the SP group were maintained in second grade without additional intervention. The findings supported the importance of the use of a standard protocol intervention in early phonics-based instruction for students at risk for reading problems.

RtI: The Identification of Students with a SLD within a Problem-Solving Model

The most effective approach for the prevention of learning disabilities in reading is early identification and treatment (Bos, Mather, Friedman Narr, & Babur, 1999; Coyne, Kame'enui, & Simmons, 2001). In fact, there is literature to suggest that students who demonstrate poor reading skills in first grade often remain poor readers in fourth grade unless interventions are made available to them early on in their education (Juel, 1988). For interventions to be effective, students must receive instruction that is sufficient in time, intensity, and duration over the course of a school year. The all encompassing preventative approach that is embedded in the RtI model guarantees that students are identified through universal screenings and receive appropriate levels of intervention prior to being identified with a SLD. There is a plethora of research on the effectiveness of early intervention in reading and data-based decision making, which leads to the appropriate identification of treatment resisters who need to be considered for special education.

Menzies et al. (2008) examined the impact of the use of progress monitoring, supplemental, small group instruction, and standard protocol intervention (Writers'

Workshop method by Fountas and Pinnell) on the reading achievement of students who were identified at risk for reading failure. Forty-two first grade students in an urban elementary school in Southern California participated in the study. Seventy-eight percent of the students qualified for free or reduced lunches, 26% were English language learners, 28% of parents did not complete high school, and less than 10% of parents had post-secondary education. By the end of a year of implementation of progress monitoring and supplemental, small group instruction with a standard protocol intervention, 90% of the target group met or exceeded grade level expectations. Of the remaining 10% of students, only three students were determined to be eligible for special education services of the eight that were below grade level.

In collaboration with the National Research Center on Learning Disabilities and Vanderbilt University (Fuchs, Fuchs, & Compton, 2006) two research studies were conducted to examine how RtI would impact the identification of students with specific learning disabilities.

The purpose of the reading study was to investigate the effects of Tier 2 reading intervention on first grade students' reading performance and risk for learning disability identification. Eight Title I and eight non-

Title I elementary schools in two districts in Nashville, Tennessee, participated in this study. The Rapid Letter Naming (RLN) subtest of the Comprehensive Test of Phonological Processing (CTOPP), Word Identification Fluency (WIF) CBM, and teacher judgment, were used to screen forty-two first grade classes in order to identify the six lowest students per class. Once identified, students were randomly assigned to one of three groups, Tier 1: fall tutoring (n = 84), Tier 2: spring tutoring (if unresponsive to fall instruction) (n = 84), and Control (n = 84). Supplemental, small group (2 to 4 students) instruction was provided outside of the general education classroom for 45 minutes, four times per week for nine weeks. Each intervention session was scripted for the tutors and fidelity was considered strong based on checklists completed throughout the intervention period. The results of this study concluded that fewer students receiving supplemental, small group instruction with progress monitoring in a scripted intervention were identified with a reading disability when compared to students in the control group.

O'Connor et al. (2005) examined the effects of second- and third- tier interventions provided as needed from kindergarten through third grade on students' reading

acquisition and growth, and subsequent consideration for special education by the end of third grade. After agreeing to a four-year commitment, two schools were selected to participate in the study. In grades K through 3, there were approximately 100 students per grade. Forty-five percent received free or reduced lunch, 68% were European American, and 98% spoke English as their primary language. In Tier 1, teachers received professional development to enhance core instruction in the general education program. Tier 2 consisted of small group instruction for students at risk for reading failure three days per week. Students in Tier 3 received daily small group or individual instruction. After four years of implementing an RtI framework, the incidence of placement in special education decreased from 15% to a rate of 8%.

After implementing the RtI instructional model for 3 years in 318 Reading First schools in Florida, an exploration of the effects on the identification of students with a learning disability was conducted (Torgesen, 2000). It was hypothesized that, if implemented effectively, there would be a gradual reduction in the percentage of students with significant reading deficiencies, and subsequently, a reduction in the identification of students for special education after

receiving instruction within the RtI model. From Year one to Year three of implementation, 30% fewer students were achieving below the 5th percentile on the state standardized measure of reading comprehension. Even more astonishing is that from year one to year three, 81% fewer kindergarten students were identified with a SLD. In grades one, two, and three the corresponding figures were 67%, 53%, and 42%, respectively. In general, this research showed that the use of the RtI approach, when implemented as intended, results in earlier identification of students in need of intervention, and therefore, fewer students waiting to fail to receive support or being misidentified with SLD.

Formative Assessment, Student Achievement Outcomes, and Learning Habits

Poor reading skills coupled with low motivation toward reading tasks is a recipe for disaster. When compared to typical peers, students at risk for reading failure often avoid reading tasks, have more negative self-concepts, and feel more helpless (Morgan et al., 2008). In fact, outside of school these students read two-thirds *less* than same-age, highly motivated peers (Wingfield & Guthrie, 1997). The findings of Morgan et al. indicated that in addition to targeting specific skills with interventions, students' motivation toward academic tasks also needed to be a focus.

Therefore, it is necessary for educators to use students' performance on assessments to provide information that will allow their instructional needs to be met and simultaneously to permit an opportunity for students to be actively involved in the learning process. Based on the research findings of Sweet et al. (1998), students, who are more self-determined and actively involved in their learning, tend to become more active in reading tasks, implement appropriate strategies when needed, and experience greater success. The frequent feedback and monitoring enhances students' engaged time, thereby, increasing their time-on-task (Gibbs & Simpson, 2004). Consequently, as the literature suggests (Bloom, 1984; Schunk & Swartz, 1993; Schunk, 1996; Nicol & Macfarlane-Dick, 2006; Miller & Lavin, 2007; Clark, 2008; Yin et al., 2008), a combination of formative assessment and student goal setting led students to be more motivated and therefore, more successful in reading. As a result, one would hope this would lead to greater achievement outcomes for students at risk for reading failure.

Formative assessment is not a newly invented concept in instruction and assessment. In the 1960s, Scriven introduced formative assessment as a method of collecting data that would permit adaptations during the development

and implementation of programs (Baroudi, 2007). Bloom further developed the notion by adding formative assessment to his model of mastery learning in 1968 (Allal & Lopez, 2005). The positive effects of formative assessment have been documented in educational research; however, nearly forty decades later, limited research exists on the effects of this instructional approach with students at risk for reading failure as part of an evidence-based, Tier 3 intervention.

Aside from improved academic achievement, student achievement, motivation, and time on task were significantly higher in classes using a formative assessment approach (Bloom, 1984). Additionally, goal-setting and self-evaluating learning by monitoring progress toward that goal led to gains in self-efficacy as part of a formative assessment approach (Schunk & Swartz, 1993; Schunk, 1996).

Extant research is available to demonstrate that effective feedback through formative assessment leads to learning gains. Black and Wiliam (1998) conducted a meta-analysis of 250 studies examining formative assessment and feedback. The findings revealed that feedback resulted in significant gains in learning and achievement across all content areas, knowledge and skill types, and levels of

education. Furthermore, the self-regulated learning fostered by formative assessment results in more effective learners who are persistent, resourceful, confident, and high achievers (Pintrich, 1995; Zimmerman & Schunk, 2004).

Most recently, Nicol and Macfarlane-Dick (2006) examined the research on formative assessment and feedback linked to self-regulated learning, which led to the development of seven principles of effective feedback practice that support and develop self-regulation within learners. These include (a) clearly defining good performance, (b) facilitating self-assessment, (c) delivering high quality feedback, (d) encouraging dialogue between the teacher and peers, (e) encouraging positive motivation and self-esteem, (f) providing opportunities to close the gap, and (g) using feedback to improve teaching. Given these principles, Nicol and Macfarlane-Dick concluded that, although students have been given more responsibility for their learning, there has been a reluctance to relinquish responsibility for assessment processes to students. Nonetheless, in order to cultivate students' capacity to regulate their own learning throughout life, valuable formative feedback and assessment are essential.

Formative assessment practices are a learner-centered approach to acquiring new skills. McCombs et al. (2008)

studied children's and teachers' perceptions of learner-centered practices and student motivation. Students grades K to 3 indicated a higher interest in school and learning in addition to a greater sense of self-efficacy, when they perceived the teacher was utilizing learner-centered practices. Additionally, the beliefs and practices of the teachers using these practices were associated with higher academic achievement and greater motivation in their students.

A study conducted by Miller and Lavin (2007) also found enhanced self-esteem and self-competence in children lacking confidence in their abilities, as well as for children of the lowest ability group, when formative assessment techniques were used, learning goals were shared, and success criteria were defined. In addition to the positive interpersonal effects, Yin et al. (2008) examined the effectiveness of formative assessment on closing the achievement gap between high and low achievers and found that formative assessment has been shown to be an effective process for closing the achievement gap that exists between high and low ability students.

Moreover, Brunner et al. (2005) investigated how data in New York City (NYC) schools is used and thought about in classrooms by gathering qualitative and quantitative

information through interviews and surveys. The researchers not only found that the most effective form of data-based decision making was one that involved the use of data in a variety of ways, not just for identifying students below benchmark, but for the promotion of self-directed learning by sharing individual data with students. When data were distributed and explained to students and goals were set, Brunner et al. discovered that students improved targeted skills, took responsibility for their academic progress, and demonstrated enhanced motivation toward learning.

A plethora of research also exists to support the use of formative assessment in the form of progress monitoring with CBM in order to make effective instructional decisions regarding students' programs (Fore III, Boon, Lawson, & Martin, 2007; Ysseldyke, 2001; Brunner et al., 2005), which thereby supports the early identification of students at risk for failure. Ysseldyke, Spicuzza, and McGill (2000) found significant gains in math achievement for students in a large urban school district when direct instruction was provided that met the specific needs of the students. Immediate and corrective feedback through careful progress monitoring, as well as appropriate pacing and use of

learners' performance data to plan instruction were also linked to enhanced outcomes for students.

In addition to these findings, Ysseldyke (2001) generalized from twenty-five years of research on assessment and instructional decision making, improved instructional outcomes for students whose progress was monitored with direct, frequent, curriculum-based measures within an instructional program. Ysseldyke (2001) also cited formative assessment and direct, frequent measurement to be powerful measurement methodologies for enhancing students' achievement. Furthermore, Fore III et al. (2007) reviewed current literature on the use of CBM in mathematics within a problem-solving model and found that math CBM is an effective method to formatively evaluate progress and adjust interventions due to the ease of administration and the reliability and validity of the assessment instrument.

Revolutionized Approach to Formative Assessment

The Center for Advancing the Study of Teaching and Learning (CASTL) led by Connie Moss at Duquesne University in Pittsburgh, Pennsylvania, examined the existing research on formative assessment and developed a modernized approach to advance formative assessment in today's classrooms (CASTL, 2007). According to Moss and Brookhart (2009),

this approach to formative assessment affects teacher quality and student learning through their active engagement in the process. Teachers learn effective instructional approaches by examining the efficacy of their own instructional decisions while students develop into self-regulated learners who "view themselves as autonomous, confident, and capable" (p. 12). The authors also hold that formative assessment enhances students' intrinsic motivation by strengthening the important elements of motivation to learn, which include self-efficacy, self-regulation, self-assessment, and self-attribution. The model proposed by CASTL is comprised of six interrelated elements, which include 1) sharing learning targets and criteria for success, 2) providing feedback that feeds forward, 3) fostering student goal setting, 4) promoting student self-assessment, 5) teaching students to ask powerful questions, and 6) enriching classroom discourse through effective teacher questions.

Sharing Learning Targets and Criteria for Success

The purpose of communicating shared learning targets is to ensure that students are not only able to identify the objectives of a lesson, but comprehend what the objective represents and what mastery looks like (CASTL, 2007). Beyond sharing the learning target with students,

the second necessary component of this element of formative assessment is to utilize assignments that match the learning goal (Moss & Brookhart, 2009). Therefore, if the student is able to effectively complete the task, then he/she knows she is able to perform the learning target.

Providing Feedback that Feeds Forward

According to Moss and Brookhart (2009), "feedback is a teacher's response to student work with the intention of further learning" (p. 44). In this regard, students use the information about their performance received from the teacher for internal regulation and learning. The feedback students are given describes areas of accomplishment and areas of weakness. Feedback as part of the formative assessment process leads students to utilize their strengths to improve weaknesses by providing them with information about their learning in relation to the learning target. The feedback cycle enhances students' awareness of their thinking as they are often evaluating their work in relation to the defined criteria for success. This level of scaffolding thereby teaches students to develop self-assessment skills.

Fostering Student Goal-Setting

A goal specifies what a student is attempting to achieve (CASTL, 2007). The process of setting a goal is

directed by three questions, "Where am I going? Where am I now? What strategy or strategies will help me get to where I need to go?" (Moss & Brookhart, p. 61). This cognitive process whereby students evaluate what is realistic for them to achieve and determine the strategies necessary for them to be successful at attaining the goal, can successfully lead students to become more productive learners (Locke & Latham, 2002). In general, goal-setting is an ongoing process of learning how to learn that is led by specific learning targets with clearly defined criteria for success (CASTL, 2007). Additionally, the feedback cycle of formative assessment stimulates the goal-setting process and assists students in choosing effective strategies that lead students to make informed choices about where to focus their learning efforts.

Promoting Student Self-Assessment

Student self-assessment happens when students review their own work and strive to improve their performance by identifying their strengths and weaknesses (CASTL, 2007). As part of the formative assessment model, self-assessment is a tool that students utilize to examine the gap between where he/she is and where he/she wants to be in relation to the learning goal. This process of self-assessment then leads students to make an informed decision about the next

step in reaching their goal. Notably, self-assessment is not a means for assigning a grade. Within the formative assessment approach, self-assessment is a process that students perform as part of the learning activities (Moss & Brookhart, 2009).

Teaching Students to Ask Powerful Questions

In classrooms with well-established formative assessment practices "the teacher is not the only skilled questioner" (Moss & Brookhart, 2009, p. 115). According to these authors, students must possess the knowledge, skill, and will to learn to use powerful questions. Students become more active in their learning when they have been taught how to enhance their questioning abilities and are encouraged to ask questions in the classroom (CASTL, 2007). Once these skills are developed, students then begin to glean deeper meaning from the content, become more accountable for their learning, employ self-assessment practices to examine and assess their understanding, and think intensely about the skills they are attempting to attain (Clarke, 2005; Hale & City, 2006; Spiegel, 2005). The teacher's role is to teach and enhance students' critical thinking and questioning skills by providing opportunities for practice (Moss & Brookhart, 2009).

Enriching Classroom Discourse through Effective Teacher Questions

Strategic teacher questioning is an essential component of formative assessment. CASTL (2007) outlined three characteristics of strategic teacher questions, 1) the questions are planned for, 2) they help students channel the workings of their minds, and 3) they use suitable wait time thereby increasing student responsibility and complexity of student responses. Effective questioning practices used during formative discussions have several purposes. Strategic questions promote active student engagement with the content, assist and assess student achievement, and direct students' attention to the learning goal (Moss & Brookhart, 2009). These practices also enhance teachers' awareness of their questioning techniques, leading them to evaluate their questioning patterns.

Description and Technical Adequacy of DIBELS, PSSA, and 4Sight Assessments

DIBELS

The DIBELS include measures of initial sound fluency, phoneme segmentation fluency, nonsense word fluency, and oral reading fluency. This tool was designed to assess growth in the attainment of essential early literacy skills

in order to find students in need of intervention as well as to appraise the effectiveness of interventions (Good, Gruba, & Kaminski, 2002). For the purpose of the present student, the primary focus is on the measure of oral reading fluency (ORF) for third grade students. This was the measure utilized as the progress monitoring tool for students in the Title I reading program. The DIBELS ORF measure is a benchmark and progress monitoring assessment that includes 29 passages for students in third grade. The alternate form reliability of a single DIBELS ORF probe was reported as .90 while the criterion-related validity was .70 to .80, according to technical reports distributed by the University of Oregon (Good & Cummings, 2006).

PSSA

Adopted by the Pennsylvania State Board of Education in 1999, the Academic Standards guided the development of the PSSA. The Academic Standards specified what students should know and be able to do at each grade level (PSSA Technical Report, 2010). Performance levels in reading were defined by the State Board who set criteria for defining Below Basic, Basic, Proficient, and Advanced performance in reading. The PSSA is criterion-referenced, standards-based assessment utilized to evaluate students' achievement of the Academic Standards in addition to gauge

the success of schools' programs. Aside from evaluating student achievement, the data obtained from the PSSA assists educators in identifying the strengths and weaknesses in their programs to improve instruction and core curricula. The PSSA reading measure assesses comprehension and reading skills in addition to students' ability to interpret and analyze fictional and nonfictional text (PSSA Technical Report, 2010). The PSSA data examined in the current study were from the 2004-2005, 2006-2007 and 2007-2008 school years.

The reliability of the third grade reading measure in 2004-2005 and 2006-2007 was .924 and .908, respectively when Cronbach's Alpha reliability indices were calculated (PSSA Technical Report, 2005; PSSA Technical Report, 2007). The decision consistency related to the performance level was not reported for 2004-2005; however, for 2006-2007, according to the Hanson and Brennan method was .71. Additionally for this year, Pearson's Correlation Coefficient was reported to provide construct-related evidence of validity. In 2006-2007 the coefficient for the third grade reading measure was .91. The reliability and validity of the 2007-2008 PSSA were also reported. The Alpha Coefficient was .90 indicating highly consistent test scores for the instrument with a decision consistency

of .70 using the Hanson and Brennan method (PSSA Technical Report, 2008). Again, Pearson's Correlation Coefficient was reported as evidence of the validity of the third grade reading measure. The construct validity was .90 for this year.

4Sight Benchmark Assessment

Constructed to give an estimate of student performance on the PSSA, the 4Sight Benchmarks also offer educators data to direct their instruction and teacher training (Success for All Foundation, 2008). The 4Sight Benchmarks are aligned to the Academic Standards and are designed to give an estimate of student performance on the PSSA had the PSSA been taken on that day rather than the 4Sight. The concurrent validity of the 4Sight Reading Benchmark when correlated with the PSSA was .74 to .89, while the predictive validity on the PSSA was .81 for students in third grade. The inter-form reliability was analyzed using the Pearson correlation coefficient, which was .76 for students in third grade. Therefore, the reliability and validity of the 4Sight Reading Benchmark is considered to be strong.

Summary

Research carried out over the past several years has demonstrated the positive effects of a tiered approach to

preventing and remediating reading difficulties, particularly for students in grades K to 3. Additionally, substantial research supports the use of curriculum-based measurement as a tool to monitor student progress to facilitate data-based decision making and guide instruction. Within the tiers, students significantly at risk for reading failure and possible SLD identification are provided supports within Tier 3. Several studies document the use of supplemental, small group instruction with a standard protocol intervention to enhance the reading outcomes of the 3% to 5% of students requiring substantial supports. Through early identification and intervention, students can be reintegrated into Tier 1 with minimal supports. Additionally, a number of studies have shown a reduction in the referral rate and identification of students with a specific learning disability as a result of the implementation of the RtI model.

Historically, the benefits of formative assessment and student goal-setting on student achievement outcomes have been demonstrated in the research. Specifically, students exhibit greater time on task, enhanced motivation toward learning tasks, and greater academic achievement. Formative assessment also has been shown to promote self-

regulated learning to further improve students' achievement and develop qualities of lifelong learners.

Despite the documented positive effects of tiered intervention, progress monitoring, data-based decision making, and formative assessment and student goal-setting, there is scant research investigating whether, when used collectively, there are enhanced student outcomes and a reduction in the identification of students with specific learning disabilities.

CHAPTER 3

METHODOLOGY

Introduction

The present study utilized a combination of archival and qualitative survey and focus group discussion data to examine the effects of a Tier 3 evidence-based intervention with progress monitoring, formative assessment, and student goal-setting on students' reading achievement, as well as teachers' perceptions related to the effects on students' learning habits, reading achievement, academic motivation, and self-efficacy related to reading tasks. Subsequent outcomes related to academic achievement, learning habits, academic motivation, and self-efficacy related to reading tasks were investigated. Furthermore, special education data were examined to determine whether formative assessment and student goal-setting led to the identification of fewer students with SLD in reading.

This chapter serves to identify the methods and procedures used in this study. The population sampled is defined and the sampling techniques are explained. The process used to analyze the data and research instrumentation utilized to analyze the data is described.

A combination of descriptive analyses, tests of significance, and qualitative data analyses were utilized

to explore each research question. Archival third and fourth grade achievement data from 270 third grade students identified at risk for reading failure was examined to determine the immediate and long-term effects of a Tier 3 evidence-based intervention with progress monitoring and student goal-setting when formative assessment techniques were employed, on students' reading achievement. Additionally, data obtained through the distribution of a survey to Title I reading teachers, as well as reports provided during a focus group discussion were also used to explore whether teachers perceived that the use of formative assessment and student goal-setting affected students' learning habits, academic achievement in reading, academic motivation, and self-efficacy related to reading tasks.

Population

The population of participants in the present study are from a rural Southwestern Pennsylvania school district comprised of approximately 6,500 students and 486 teachers district-wide. The students in the district are predominantly white, 98% Caucasian and 2% African American. Approximately 43% of the students receive free or reduced lunches. There are seven elementary schools and five secondary schools.

The current study included third grade students at risk for reading failure and Title I reading teachers providing small group, evidence-based reading interventions with formative assessment and student goal-setting. Sixteen Title I reading teachers serviced the students identified at risk for reading failure in third grade.

Sample

In order to evaluate the effects of formative assessment and student goal-setting on Tier 3 third grade students receiving a supplemental evidence-based reading intervention with weekly progress monitoring, PSSA data from 2004-2005 and DIBELS benchmark, PSSA, and 4Sight Benchmark Assessment data from the 2006-2007 and 2007-2008 school years from approximately 270 third grade students from a rural school district participating in Title I reading programs were collected and analyzed. Additionally, fourth grade 4Sight data from the intervention groups for the same students from the 2005-2006, 2007-2008, and 2008-2009 school years were analyzed to examine their achievement one year later.

Students were identified to participate in the Tier 3 intervention, *Read Naturally,* based on their performance on the Kottmeyer Diagnostic Spelling Test in 2004-2005, and the DIBELS benchmark assessments, which were conducted

three times per year (fall, winter, spring) in 2006-2007 and 2007-2008. Students whose scores on the DIBELS fell within the range that required intensive intervention (53 words per minute or less, Fall; 67 words per minute or less, Winter; 80 words per minute or less, Spring;) were invited to participate in the Title I reading program (University of Oregon Center on Teaching and Learning, 2008). The DIBELS Fall and Spring and 4Sight benchmark data for Groups 2 and 3 and third grade PSSA data for all groups were utilized to examine differences in reading achievement among the groups of third grade students, as well as to evaluate differential retention of reading achievement over time. Data from both males and females were included.

A convenience sample of 16 Title I reading teachers was used to investigate teachers' perceptions related to the effects of formative assessment and student goal-setting on students' reading achievement, motivation, self-efficacy related to learning, and learning habits. Only teachers who taught Title I reading in 2004-2005, 2006-2007, and 2007-2008, were eligible to complete the survey. Responses from both males and females were included. The potential age range of participants is 21 to 65 years of age. The same convenience sample of Title I reading

teachers was utilized for the focus group session, which was held two months after the survey was distributed.

Assignment

The archival data used in this study consists of a convenience sample. There was no random assignment of students to particular treatment groups.

Potential survey respondents and focus group participants were selected based on their position as a Title I reading teacher and the years this position was held. There is no random assignment. It also was a convenience sample.

Procedures

A combination of the DIBELS benchmark, 4Sight Benchmark Assessment, PSSA, and special education identification archival data, from a rural school district's third grade Title I reading students was utilized to evaluate the effects of formative assessment and student goal-setting on student achievement outcomes in reading compared to students receiving an evidence-based intervention with weekly progress monitoring and to students not receiving an evidence-based intervention or weekly progress monitoring. Permission to use the archival data included in this project was obtained from the school

district's superintendent prior to conducting the study and is included in Appendix A.

Description of Groups and Treatments

Archival data from three academic school years, 2004-2005, 2006-2007, and 2007-2008 were included in this study. Group 1 were students in Title I reading during the 2004-2005 school year who participated in the program with no evidence-based intervention or weekly progress monitoring. Students included in Group 1 were first referred for Title I reading intervention by the classroom teacher due to poor performance on classroom-based assessments, and then screened with the Kottmeyer Diagnostic Spelling Test (Kottmeyer, 1970). The Kottmeyer Diagnostic Spelling Test is a curriculum-based assessment in spelling that also provides information about students' phonetic skills (Jones, 2001). Students falling within the Partially Proficient range qualified to participate in the Title I reading program (0 to 22 points). Group 1 participated in small group reading instruction with a Title I teacher for 30 minutes daily in addition to participating in the core reading instruction in the general third grade classroom. The supplemental instruction provided reinforced the skills and content from the core reading curriculum.

Group 2 included students in Title I reading during the 2006-2007 school year who participated in the program with an evidence-based intervention (*Read Naturally)* and weekly progress monitoring. The *Read Naturally* (Ihnot, 2001) supplemental reading program is designed to improve students' oral reading fluency by targeting speed, accuracy, and expression while reading. Students in Group 2 were identified to participate in the Title I reading program based on the results of the universal screening with the DIBELS oral reading fluency (ORF) measure. Students classified as at risk when compared to grade level benchmarks were invited to participate in the Title I reading program. Group 2 participated in *Read Naturally* five days per week for 30 minute sessions with the Title I teacher in addition to receiving core instruction in the general education classroom. Weekly progress monitoring was conducted utilizing the DIBELS ORF measure. Words read correct per minute and number of errors were recorded.

Group 3 consisted of students in Title I reading during the 2007-2008 school year who participated in the program with an evidence-based intervention (*Read Naturally)*, weekly progress monitoring, formative assessment and student goal-setting. Students included in Group 3 were identified as at risk using the same

procedures as students in Group 2. Group 3 participated in the intervention five days per week for 30 minute sessions with the Title I reading teacher. Similar to Group 2, students' progress was monitored weekly with DIBELS ORF probes with words read correct per minute and number of errors recorded.

The formative assessment practices that were a part of the intervention program for students in Group 3 were trained by Connie Moss and a team from the Center for Advancing the Study of Teaching and Learning (CASTL) at Duquesne University as part of a district-wide, Title I initiative. The training was provided to the Title I teachers monthly and included case study practice for each module, which mirrored an online course where the training modules were presented and assignments were completed. Teachers were accountable for completing each case study assignment and submitting their data online to the CASTL team. Following submission, feedback was provided to the Title I reading teachers. At the next meeting, the feedback was reviewed. Follow-up training and/or skill reinforcement was then provided at subsequent meetings. Additionally, each module was designed in such a manner that each component introduced built on the previous skill that was taught. Therefore, each element of formative

assessment as it was introduced was reinforced and used in the classroom as a result. In addition to case study tasks, random administrative walk-throughs were conducted each semester to document the implementation of each module as it was introduced in the teacher trainings. Furthermore, the components of formative assessment were built into teachers' annual evaluations. Administrators documented each element of formative assessment being utilized during their observations.

The focal point of formative assessment according to Moss's and Brookhart's (2009) model is such that assessment occurs as learning happens. Therefore, as a result, students are engaged in an active and intentional learning process that spawns motivation to learn and leads students to develop into self-regulated learners. The training for Title I reading teachers consisted of six modules, (1) overview of formative assessment, (2) defining and communicating learning targets, (3) feedback that feeds forward, (4) feedback strategies, (5) student goal-setting and self-assessment, and (6) rich classroom discourse and strategic questioning. While student goal-setting is a component of the formative assessment model, it is the only component that directly and actively engages the student in their own learning by giving them a role in the formative

assessment process – to set a goal and monitor their progress in relation to that goal. Clearly, students benefit from and are also indirectly involved in the other elements of formative assessment; however, those are through instructional tools the teacher utilizes to define learning targets, provide feedback, and create rich classroom discourse through strategic questioning. Table 1 summarizes the content covered in each CASTL training module.

Description of Archival Data Analyzed

PSSA data from the three groups of third grade students who participated in a Tier 3 intervention were investigated in this study. In addition to PSSA reading data, the results from DIBELS Benchmark assessments were also compared in this study. The data were examined to determine whether there was a significant difference in reading achievement in students from the three intervention groups defined above. Additionally, 4Sight data were inspected to determine the degree of difference in students' retention of reading achievement from third to fourth grade for each of the intervention groups. Table 2 further summarizes the interventions and assessments for the treatment groups.

Table 1

Formative Assessment Training Modules (Moss & Brookhart, 2009)

MODULE	CONTENT	SKILLS
1	Overview of Formative Assessment	- Purpose of assessment - When assessment occurs - Importance of assessment - Intentional learning - Teachers' role and skills - Student benefits
2	Defining and Communicating Learning Targets	- Clear, specific targets - Benefits of communicating targets with students - Targets and enhanced positive self-beliefs
3	Feedback that Feeds Forward	- Components of descriptive, quality feedback - Types of feedback prompts - Formative assessment and self-efficacy
4	Feedback Strategies	- Effective feedback - Principles of effective feedback and self-regulation - Effects of feedback on teachers and students
5	Student Goal-Setting and Student Self-Assessment	- Impact of student goal-setting on student performance - Goal-setting and motivation - Goal-setting and self-assessment - Link between self-assessment and formative assessment
6	Rich Classroom Discourse and Strategic Questioning	- Quality of classroom discourse - Questioning - Big ideas – attention, relevance, and satisfaction

Table 2

Summary of Interventions and Assessments for Treatment Groups

				Assessment					
	Intervention			3rd Grade			4th Grade		
Group	EBI	PM	FA/GS	PSSA	4SIGHT	DIBELS	PSSA	4SIGHT	DIBELS
Group 1 2004-2005	---	---	---	X	---	---	X	X F/W/SP	---
Group 2 2006-2007	Read Naturally	Weekly	---	X	X W/SP	X F/W/SP	X	X F/W/SP	X F/W/SP
Group 3 2007-2008	Read Naturally	Weekly	X	X	X F/W/SP	X F/W/SP	X	X F/W/SP	X F/W/SP

Note. F = fall benchmark; W = winter benchmark; SP = spring benchmark

Additionally, given that the PSSA data analyzed in this study were collected across three academic school years utilizing different PSSA forms, Tables 3, 4, and 5 offer a summary of raw score normative descriptive statistics for the third grade PSSA reading assessment by academic year as well as a summary of the tests' specifications with respect to the number and type of test items by school year for each skill assessed.

Table 3

Normative Raw Score Descriptive Statistics Third Grade PSSA Reading Assessment by Academic Year

School Year	N	L	M	S.D.	R	SEM
2004-2005	126161	42	32.85	8.180	.924	2.420
2006-2007	127194	42	30.11	9.455	.908	2.861
2007-2008	126402	42	30.64	8.869	.900	2.810

Note. L = Length; M = Mean; S.D. = Standard Deviation; R = Cronbach's Alpha reliability coefficient; SEM = Standard Error of Measurement

The 4Sight data were also collected over the course of several academic years using various forms of the third and fourth grade reading 4Sight Benchmark assessment. Table 6 summarizes the raw score descriptive statistics for third grade 4Sight reading assessment by form for the 2006-2007 and 2007-2008 academic years, while Tables 7 and 8 show the

Table 4

Table of Specifications for Third Grade Reading PSSA by School Year and Item Type

Skill	PA State Standard	Number of Test Items by School Year					
		2004-2005		2006-2007		2007-2008	
		MC	CR	MC	CR	MC	CR
Comprehension and Reading Skills	1.A.1. Understand Fiction	14	2	17	0	15	1
Comprehension and Reading Skills	1.A.2. Understand Nonfiction	14	0	13	1	14	0
Interpretation/ Analysis of Fiction/ Nonfiction Text	2.B.1. Understand components within and between texts	9	0	7	1	6	1
Interpretation/ Analysis of Fiction/ Nonfiction Text	2.B.2. Understand literacy devices in fictional and nonfictional text	1	0	1	0	1	0
Interpretation/ Analysis of Fiction/ Nonfiction Text	2.B.3. Understand concepts and organization of non-fictional text	2	0	2	0	4	0
Total Number of Items by Type		40	2	40	2	40	2
Total Number of Items per Test		42		42		42	

Note. MC = Multiple Choice; CR = Constructed Response

Table 5

Table of Specifications for Third Grade Reading PSSA by School Year and Percentage of Items by Skill

Skill	PA State Standard	Percentage of Test Items by Standard		
		2004-2005	2006-2007	2007-2008
Comprehension and Reading Skills	1.A.1. Understand Fiction	38%	40%	40%
Comprehension and Reading Skills	1.A.2. Understand Nonfiction	33%	33%	33%
Interpretation/ Analysis of Fictional/ Nonfictional Text	2.B.1. Understand components within and between texts	21%	19%	17%
Interpretation/ Analysis of Fictional/ Nonfictional Text	2.B.2. Understand literacy devices in fictional and nonfictional text	2%	2%	2%
Interpretation/ Analysis of Fictional/ Nonfictional Text	2.B.3. Understand concepts and organization of non-fictional text	5%	5%	10%

tests' specifications in regard to the number of test items by form for each skill assessed related to the PA State Standard for third grade students. Additionally, the same summaries are provided in Tables 9 through 11 for the fourth grade reading 4Sight Benchmark assessment for 2005-2006, 2007-2008, and 2008-2009 academic years.

Table 6

Table of Specifications for Third Grade Reading 4Sight Assessment by Form and Item Type for the 2006-2007 and 2007-2008 Academic Years

Skill	PA State Standard	Number of Test Items by Form 2006-2007				2007-2008					
		Form 1		Form 2		Form 1		Form 2		Form 3	
		MC	CR	MC	CR	MC	CR	MC	CR	MC	CR
Comprehension and Reading Skills	1.A.1. Understand Fiction	9	0	9	1	9	0	8	0	9	0
Comprehension and Reading Skills	1.A.2. Understand Nonfiction	10	1	10	0	10	1	11	1	10	1
Interpretation/ Analysis of Fictional/ Nonfictional Text	2.B.1. Understand components within and between texts	4	0	4	0	4	0	4	0	4	0
Interpretation/ Analysis of Fictional/ Nonfictional Text	2.B.2. Understand literacy devices in fictional and nonfictional text	1	0	1	0	1	0	1	0	1	0
Interpretation/ Analysis of Fictional/ Nonfictional Text	2.B.3. Understand concepts and organization of non-fictional text	3	0	3	0	3	0	3	0	3	0
Total Number of Items by Type		27	1	27	1	27	1	27	1	27	1
Total Number of Items per Test		28		28		28		28		28	

Note. MC = Multiple Choice; CR = Constructed Response

Table 7

Table of Specifications for Third Grade Reading 4Sight Assessment by Form and Percentage of Items by Skill for the 2006-2007 and 2007-2008 Academic Years

Skill	PA State Standard	Percentage of Test Items by Standard				
		2006-2007		2007-2008		
		Form 1	Form 2	Form 1	Form 2	Form 3
Comprehension and Reading Skills	1.A.1. Understand Fiction	32%	36%	32%	29%	32%
Comprehension and Reading Skills	1.A.2. Understand Nonfiction	39%	36%	39%	43%	39%
Interpretation and Analysis of Fictional and Nonfictional Text	2.B.1. Understand components within and between texts	14%	14%	14%	14%	14%
Interpretation and Analysis of Fictional and Nonfictional Text	2.B.2. Understand literacy devices in fictional and nonfictional text	4%	4%	4%	4%	4%
Interpretation and Analysis of Fictional and Nonfictional Text	2.B.3. Understand concepts and organization of non-fictional text	11%	11%	11%	11%	11%

Note. MC = Multiple Choice; CR = Constructed Response

Table 8

Normative Raw Score Descriptive Statistics for Third Grade 4Sight Reading Assessment by Form for 2006-2007 and 2007-2008 Academic Years

School Year	Test Period	Test Edition	Test Form	N	L	M	S.D.	R
2006-2007	Winter	2	2	137	28	19.44	6.25	.87
	Spring	2	1	142	28	22.20	4.45	.78
2007-2008	Fall	3	1	3713	28	20.11	6.16	.86
	Winter	3	2	2881	28	18.54	5.94	.86
	Spring	3	3	277	28	18.21	5.30	.86

Note. L = Length; M = Mean; S.D. = Standard Deviation; R = Pearson's correlation coefficient;

Table 9

Normative Raw Score Descriptive Statistics for Fourth Grade 4Sight Reading Assessment by Form for 2005-2006, 2007-2008 and 2008-2009 Academic Years

School Year	Test Period	Test Edition	Test Form	N	L	M	S.D.	R
2005-2006	Fall	3	1	155	28	21.67	4.20	.78
	Winter	3	2	90	28	18.88	5.37	.81
	Spring	3	3	NA	NA	NA	NA	NA
2007-2008	Fall	3	1	3586	28	19.24	6.19	.87
	Winter	3	2	2858	28	19.25	6.05	.88
	Spring	3	3	211	28	19.00	4.88	.84
2008-2009	Fall	4	1	11533	28	15.82	5.68	.85
	Winter	4	2	7790	28	18.66	5.99	.86
	Spring	4	3	9461	28	16.67	5.53	.87

Note. L = Length; M = Mean; S.D. = Standard Deviation; R = Pearson's correlation coefficient; NA = Not available

Lastly, special education identification data were utilized to evaluate whether there were notably fewer students identified with a SLD after participating in an evidence-based intervention with weekly progress monitoring, formative assessment, and student goal-setting (Group 3) when compared to students receiving an evidence-based

Table 10

Table of Specifications for Fourth Grade Reading 4Sight Assessment by Form and Item Type for the 2005-2006, 2007-2008, and 2008-2009 Academic Years

Skill	PA State Standard	Number of Test Items by Form																	
		2005-2006						2007-2008						2008-2009					
		Form 1		Form 2		Form 3		Form 1		Form 2		Form 3		Form 1		Form 2		Form 3	
		MC	CR	MC	CR	MC	CR	MC	CR	MC	CR	MC	CR	MC	CR	MC	CR	MC	CR
Comprehension and Reading Skills	1.A.1. Understand Fiction	10	0	9	1	10	0	10	0	9	1	10	0	10	0	10	0	10	0
Comprehension and Reading Skills	1.A.2. Understand Nonfiction	7	1	8	0	7	1	7	1	8	0	7	1	7	1	7	1	7	1
Interpretation/ Analysis of Fictional/ Nonfictional Text	2.B.1. Understand components within and between texts	3	0	3	0	3	0	3	0	3	0	3	0	3	0	3	0	3	0
Interpretation/ Analysis of Fictional/ Nonfictional Text	2.B.2. Understand literacy devices in fictional and nonfictional text	2	0	2	0	2	0	2	0	2	0	2	0	2	0	2	0	2	0
Interpretation/ Analysis of Fictional/ Nonfictional Text	2.B.3. Understand concepts and organization of non-fictional text	5	0	5	0	5	0	5	0	5	0	5	0	5	0	5	0	5	0
Total Number of Items by Type		27	1	27	1	27	1	27	1	27	1	27	1	27	1	27	1	27	1
Total Number of Items per Test		28		28		28		28		28		28		28		28		28	

Note. MC = Multiple Choice; CR = Constructed Response

Table 11

Table of Specifications for Fourth Grade Reading 4Sight Assessment by Form and Percentage of Items by Skill for the 2005-2006, 2007-2008, and 2008-2009 Academic Years

Skill	PA State Standard	Percentage of Test Items by Standard								
		2005-2006			2007-2008			2008-2009		
		Form 1	Form 2	Form 3	Form 1	Form 2	Form 3	Form 1	Form 2	Form 3
Comprehension and Reading Skills	1.A.1. Understand Fiction	36%	36%	36%	36%	36%	36%	36%	36%	36%
Comprehension and Reading Skills	1.A.2. Understand Nonfiction	29%	29%	29%	29%	29%	29%	29%	29%	29%
Interpretation/ Analysis of Fictional/ Nonfictional Text	2.B.1. Understand components within and between texts	11%	11%	11%	11%	11%	11%	11%	11%	11%
Interpretation/ Analysis of Fictional/ Nonfictional Text	2.B.2. Understand literacy devices in fictional and nonfictional text	7%	7%	7%	7%	7%	7%	7%	7%	7%
Interpretation/ Analysis of Fictional/ Nonfictional Text	2.B.3. Understand concepts and organization of non-fictional text	18%	18%	18%	18%	18%	18%	18%	18%	18%

Note. MC = Multiple Choice; CR = Constructed Response

intervention and weekly progress monitoring only (Group 2)and to students receiving no evidence-based intervention or weekly progress monitoring (Group 1).

In order to determine whether fewer students were identified with SLD in reading, the special education secretary reviewed the special education database for each group of students to determine whether an evaluation was conducted and documented the outcome.

Authentic data regarding treatment fidelity was not available, therefore, fidelity of implementation is assumed based on random administrator walk-throughs, review of weekly lesson plans by the program coordinator, teacher evaluations, and frequent teacher training and follow-up of the implementation of formative assessment techniques in the classroom. Further, the reports provided by the Title I reading teachers during the focus group discussion add to the fidelity of treatment implementation. Refer to chapters four and five for further discussion of the teachers' perceptions of the impact of formative assessment on student achievement and learning habits.

Description of Survey Procedures

The survey used in this study was designed by the researcher to answer research questions related to teachers' perceptions of formative assessment and student

goal-setting stemming from current literature in order to learn about teachers' impressions and contribute to a discussion of the findings. The survey was not statistically validated or reviewed by a panel of experts, however, the survey was developed based on current literature on formative assessment, progress monitoring, and student goal-setting. Following the design of the survey and prior to administration, the survey was piloted with a group of general education teachers. The pilot group received the same training by the same trainers as the Title I reading teachers and employed formative assessment practices in their classrooms. Then, the survey was distributed to Title I reading teachers who held this position during the years in which the data analyzed in this study were collected. Random selection of participants was not used since the target population was limited to those in one rural school district meeting the above specified criteria. Prior to distributing the surveys to teachers in the school district, permission to conduct the study and distribute the survey was granted by the superintendent and is included in Appendix X. Title I teachers were invited to participate in the survey via an e-mail request from Qualtrics, the program utilized to develop and conduct the electronic survey. Participation

in the survey was completely voluntary and had no bearing on their position or evaluation as a teacher in the school district. The survey data summarized in the Qualtrics program protected the anonymity of the participants did not provide any identifying information about the survey respondents. Ten days following the initial request to participate in the survey, a follow-up e-mail was sent to the Title I teachers thanking those who already participated in the survey and reminding others of the deadline to complete the survey if they chose to participate in the study. The Informed Consent Letter outlined for participants that individual survey responses were held in strict confidence. Participants were also given the option to complete an entry form for a drawing to win one of five gift cards to Borders bookstore offered as an incentive by the researcher. At the end of the survey period, five gift cards were distributed by the department secretary to respondents who chose to participate in the drawing.

Description of Focus Group Procedures

In order to clarify the findings obtained from the review of archival data and survey, Title I teachers were invited to participate in a focus group discussion. The purpose of the voluntary focus group was to discuss

formative assessment and student goal-setting as part of an evidence-based intervention program for students at risk for reading failure. Specifically, the discussion aimed to further investigate the impact formative assessment and student goal-setting on Title I teachers' teaching, students' academic achievement in reading, the identification of students with SLD, and students' study skills/learning habits.

Participants were asked as a group a variety of questions about their experiences with formative assessment and student goal-setting as part of an evidence-based intervention program. The questions explored Title I teachers' perceptions of the impact of formative assessment and student goal-setting on their views of traditional assessments of student learning, students' reading achievement and learning/study habits, instructional approaches to teaching, benefits to students at-risk for reading failure, and evaluation and identification of students with SLD. Appendix F lists the questions asked during the focus group.

For the purposes of accurate transcription, the focus group was audio recorded. Each participant was provided a number for identification purposes. Throughout the focus group session, it was requested that the participants

referred to themselves and other participants by number, not by name. Following the focus group session, the tape recording was transcribed into a word processed document. After the session was transcribed, the audio recording was destroyed. In order to protect participants' confidentiality, their name was not linked with any responses provided to focus group questions during the discussion. Participation in the focus group was completely voluntary and had no influence on their position as a Title I teacher in the school district.

The responses from the focus group were analyzed by coding trends in NVivo9, a statistical software program designed specifically for investigating trends in qualitative data collected through interviews, open-ended surveys, or discussions (QSR International, 2010). The qualitative coding enabled by this program allows the researcher to identify themes and assess the applicability of the raw data associated with the research questions investigated in this study. The transcript from the focus group discussion facilitated the investigation of pre-determined themes and trends as well as others that emerged as the qualitative data were explored. See Appendix G for a summary of NVivo9 qualitative codings.

Design

The study is a causal comparative design with intact groups. The goal of the study was to determine whether formative assessment and student goal-setting resulted in greater achievement outcomes for third grade students participating in a Tier 3 evidence-based intervention with weekly progress monitoring. Data from three groups of students were utilized in this study and are summarized in Table 1. Therefore, random assignment was not used since the study involved a review of archival data. Groups 2 and 3 were given the DIBELS ORF benchmark assessment and 4Sight Benchmark Assessment as a pre-test and post-test. All groups participated in the PSSA assessment at the end of the school year. The dependent variables are 1) the students' academic achievement in reading as measured by the DIBELS (Groups 2 and 3), PSSA (all groups grade 3), 2) 4Sight Benchmark Assessment (Groups 2 and 3 grades 3 and all groups grade 4), and identification as a student with a learning disability as determined by the review of special education identification data. The independent variable is the treatment: no evidence-based intervention or weekly progress monitoring (Group 1), evidence-based intervention and weekly progress monitoring (Group 2), or evidence-based

intervention, weekly progress monitoring, plus formative assessment and student goal-setting (Group 3).

The present study of quasi-experimental, causal comparative design with intact groups seeks to address the following research questions and hypotheses:

1. Did students receiving evidence-based intervention in Tier 3 with progress monitoring (Group 2) and students receiving evidence-based intervention in Tier 3 with weekly progress monitoring, formative assessment, and student goal-setting (Group 3) make progress from fall DIBELS benchmark assessment to spring DIBELS benchmark assessment?

   Hypothesis 1: It is hypothesized that both Group 2 and Group 3 will have made gains in academic achievement in reading.

   Hypothesis 2: It is hypothesized that Group 3 will have scored significantly higher on the post-test than Group 2.

2. Are there differences between third grade students' reading achievement, as measured by the PSSA, when comparing students who did not receive an evidence-based intervention (EBI) or weekly progress monitoring (PM) (Group 1) to students who received an evidence-based intervention with progress monitoring only

(Group 2) to students who were formatively assessed, engaged in goal-setting, and received an evidence-based intervention with weekly progress monitoring (Group 3)?

Hypothesis 3: It is hypothesized that Group 3 will score significantly higher on measures of reading achievement than Group 2 and that Group 3 will score significantly higher than Group 1 as measured by the third grade PSSA.

3. Did students participating in Group 3 score significantly higher than students in Group 2 on the 4Sight benchmark assessment at the beginning of fourth grade?

Hypothesis 4: It is hypothesized that students in Group 3 will score significantly higher than the Group 2 at the beginning of fourth grade.

4. Are there differences in the number of third grade students in Group 1, Group 2, and Group 3 identified with a specific learning disability in reading?

Hypothesis 5: The hypothesis is that fewer students from Group 2 will be identified with a SLD in reading than Group 1 and that fewer students from Group 3 will be identified with SLD in reading than Group 2.

The survey and focus group parts of the study are descriptive in design and provided data with respect to teachers' perceptions of formative assessment and student goal-setting on students' reading achievement, learning habits, academic motivation, as well as self-efficacy related to reading tasks. The dependent variables are student achievement, self-efficacy, motivation, and learning habits. The independent variable is the teachers' perception of formative assessment and student goal-setting.

The descriptive design of this study seeks to address the following research questions:

1. How do teachers perceive the value of results provided by formative assessments when compared to traditional assessments?
2. Do teachers perceive that the use of formative assessment practices and student goal-setting increases students' academic motivation toward reading tasks?
3. How do teachers perceive the role of formative assessment and student goal-setting on students' learning habits (improved time-on-task, increased participation in classroom discussions, assisting others)?

4. How do teachers perceive the impact of formative assessment and student goal-setting on students' self-efficacy related to their learning?
5. How do teachers perceive the role of formative assessment and student goal-setting in improving students' academic achievement in reading?

Research question five will be investigated by the following survey items assessing teachers' perceptions related to the value of results provided by formative assessments compared to traditional assessments:

1. Since I have been using formative assessment with student goal-setting,
    a. my teaching is more often modified by using the feedback received from the formative assessments (Yin et al., 2008).
    b. I view traditional assessment methods as only partial measures of student learning (Clark, 2008).
    c. I have found more value in the use of formative assessment for guiding student learning than traditional assessments (Clark, 2008).

Research question six will be investigated by the following survey items assessing teachers' perception related to the use of formative assessment practices and student goal-setting on students' academic motivation toward reading tasks:

1. After I began using formative assessment practices with my students, I have observed a majority of my students to

a. more often choose to read during leisure or free-time (Miller & Lavin, 2007).

b. participate more in class discussions (Miller & Lavin, 2007).

c. be more eager to obtain feedback on their performance (Miller & Lavin, 2007).

2. Since I have been using formative assessment with student goal-setting, I have observed a majority of my students to

a. be more eager to communicate with their parents, teachers, and peers about their progress (Clark, 2008).

b. demonstrate greater motivation toward academic tasks after becoming more actively involved in their learning (Clark, 2008).

c. demonstrate greater motivation and higher self-esteem after receiving instruction and effective feedback on their performance (Clark, 2008).

Research question seven will be explored by the following survey items assessing teachers' perceptions related to the effects of the use of formative assessment practices and student goal-setting on students' learning habits:

1. After I began using formative assessment practices with my students, I have observed a majority of my students to

a. be more focused on classroom instruction and tasks (Miller & Lavin, 2007).

b. attend more to the quality of their work (Miller & Lavin, 2007).

2. Since I have been using formative assessment with student goal-setting, I have observed a majority of my students to

    a. show more interest in helping/supporting others with their work (Clark, 2008).

    b. show higher levels of engagement in learning tasks after becoming more actively involved in their learning (Clark, 2008).

3. My students have become "intentional learners" by (Black et al., 2006)

    a. taking more responsibility for their learning.

    b. putting forth more effort toward learning.

    c. becoming aware of strategies they are using.

Research question eight will be investigated via the following survey items assessing teachers' perceptions related to the impact of the use of formative assessment practices on students' self-efficacy related to their learning:

1. After I began using formative assessment practices with my students, I have observed a majority of my students to,
    a. show more confidence in their reading skills (Miller & Lavin, 2007).

    b. make more frequent positive statements about their skills in reading (Miller & Lavin, 2007).

2. Since I have been using formative assessment with student goal-setting, I have observed a majority of my students to,

    a. demonstrate greater motivation and higher self-esteem after receiving instruction and effective feedback on their performance (Clark, 2008).

b. exhibit greater self-efficacy or confidence about their performance on reading tasks (Jinks & Morgan, 1999).

Research question nine will be explored via the following survey items assessment teachers' perceptions of the effect of formative assessment and student goal-setting on students' academic achievement in reading:

1. Since I have been using formative assessment with student goal-setting, I have observed a majority of my students to,

    a. improve their academic achievement in reading (Miller & Lavin, 2007).

    b. display greater mastery of skills when learning targets have been clearly communicated (Clark, 2008).

2. Formative assessment and student goal-setting has positively altered the way my students view the learning process (Miller & Lavin, 2007).

Statistical Analyses

One aim of this research study was to investigate the effect of formative assessment and student goal-setting on students' reading achievement and whether their achievement was maintained over time. Additionally, the study sought to determine whether fewer students were identified with a specific learning disability after participating in an evidence-based intervention with progress monitoring, formative assessment and student goal-setting, compared to the other groups. Descriptive statistics, such as mean,

frequency distributions, and standard deviations, were used to summarize the data. A univariate ANCOVA, univariate ANOVA and a paired t-test were conducted in order to determine whether there was a significant difference between the means of the groups of Tier 3 students receiving no evidence-based intervention or weekly progress monitoring, evidence-based interventions and progress monitored weekly, and formative assessment and student goal-setting in addition to the evidence-based intervention and weekly progress monitoring. A chi-square test also was performed to examine the categorical proficiency levels on the PSSA for each of the three groups. See Table 12 at the end of this chapter for a summary of research questions, dependent variables, and statistical analyses.

Teachers' perceptions of the effects of formative assessment and student goal-setting on student reading achievement and learning habits, as well as students' academic motivation and self-efficacy related learning, were explored with the survey. Additionally, a few items examined teachers' perceptions of formative assessment compared to traditional assessment. Specifically, those research questions investigated with the survey were teachers' perceptions of the value of formative assessments compared to traditional assessments; teachers' perceptions

of the effect of formative assessment practices and student goal-setting on students' academic motivation toward reading tasks; teachers' perceptions of the use of formative assessment practices and student goal-setting on students' learning habits; teachers' perceptions of the use of formative assessment practices on students' self-efficacy related to their learning; and teachers' perception of the use of formative assessment and student goal-setting on students' academic achievement in reading. Data from the surveys were analyzed using reports generated from the Qualtrics electronic survey software to examine teachers' perceptions related to the effects of formative assessment and student goal-setting on students' motivation, academic achievement, self-efficacy related to learning tasks, and learning habits, as well as to support a discussion of the findings of this study.

The transcript produced from the focus group discussion was coded and analyzed using the qualitative research software, NVivo9. Trends and themes within each question asked of the focus group were examined and summarized to further explore teachers' perceptions of formative assessment and student goal-setting.

Summary

In the present study, nine research questions exploring the effects of the use of a Tier 3 evidence-based intervention with progress monitoring, formative assessment, and student goal-setting, on students' reading achievement, as well as teachers' perceptions regarding its impact on students' academic motivation, learning habits, self-efficacy related to learning, and academic achievement, were investigated. In addition to the use of descriptive statistics, the use of analyses aimed at identifying differences between variables, were employed to answer the research questions, such as t-tests, univariate ANCOVA, univariate ANOVA, and chi-square. The research questions sought to determine the presence of significant differences between the intervention groups and student achievement outcomes, student learning habits, identification of students with specific learning disabilities, and teachers' perceptions related to formative assessment and student goal-setting.

Table 12

Summary of Research Questions, Dependent Variables, and Statistical Analyses

Research Questions	Dependent Variables	Statistical Analyses
1. Did students receiving evidence-based intervention in Tier 3 with progress monitoring (Group 2) and students receiving evidence-based intervention in Tier 3 with weekly progress monitoring, formative assessment, and student goal-setting (Group 3) make progress from fall DIBELS benchmark assessment to spring DIBELS benchmark assessment?	DIBELS	paired t-test univariate ANCOVA adjustment for pre-test differences
2. Are there differences between third grade students' reading achievement when comparing students who did not receive an evidence-based intervention (EBI) or weekly progress monitoring (PM) (Group 1) to students who received an evidence-based intervention with progress monitoring only (Group 2) to students who were formatively assessed, engaged in goal-setting, and received an evidence-based intervention with weekly progress monitoring (Group 3)?	PSSA	Conversion to z-scores univariate ANCOVA chi-square

Research Questions	Dependent Variables	Statistical Analyses
3. Did students participating in Group 3 score significantly higher than students in Group 2 on the 4Sight benchmark assessment at the beginning of fourth grade?	4SIGHT	univariate ANCOVA adjustment for pre-test differences post hoc comparisons
4. Are there differences in the number of third grade students in Group 1, Group 2 and Group 3 identified with a specific specific learning disability in reading?	Special Education Data	
5. How do teachers perceive the value of results provided by formative assessments when compared to traditional assessments?	Teacher perceptions indicated on survey items	descriptive statistics
6. Do teachers perceive that the use of formative assessment practices and student goal-setting increases students' academic motivation toward reading tasks?	Student motivation as perceived by the teachers	descriptive statistics
7. How do teachers perceive the role of formative assessment and student goal-setting on students' learning habits?	Student learning habits as perceived by the teachers	descriptive statistics

Research Questions	Dependent Variables	Statistical Analyses
8. How do teachers perceive the impact of formative assessment and student goal-setting on students' self-efficacy related to their learning?	Student self-efficacy as perceived by the teachers	descriptive statistics
9. How do teachers perceive the role of formative assessment and student goal-setting in improving students' academic achievement in reading?	Student reading achievement as perceived by the teachers	descriptive statistics

CHAPTER 4

RESULTS

Introduction

The focus of this study was to explore the impact of the use of formative assessment (FA) and student goal-setting (SG) practices on the reading skills of third grade students' identified as at risk for reading failure. Archival PSSA, 4Sight, and DIBELS scores, and special education data were analyzed and Title I reading teachers' observations of students' learning habits and academic motivation were surveyed to determine the effectiveness of these approaches. Additionally, a focus group was held with Title I reading teachers to clarify the findings from the survey responses. The responses received during the focus group were transcribed and analyzed with NVivo in order to report trends and further explain survey results.

Specifically, this research project addressed the following nine questions and hypotheses:

1. Did students receiving evidence-based intervention in Tier 3 with progress monitoring (Group 2) and students receiving evidence-based intervention in Tier 3 with weekly progress monitoring, formative assessment, and student goal-setting (Group 3) make progress from fall

DIBELS benchmark assessment to spring DIBELS benchmark assessment?

Hypothesis 1: It is hypothesized that both Group 2 and Group 3 will have made gains in academic achievement in reading.

Hypothesis 2: It is hypothesized that Group 3 will have scored significantly higher on the post-test than Group 2.

2. Are there differences between third grade students' reading achievement when comparing students who did not receive an evidence-based intervention (EBI) or weekly progress monitoring (PM) (Group 1) to students who received an evidence-based intervention with progress monitoring only (Group 2) to students who were formatively assessed, engaged in goal-setting, and received an evidence-based intervention with weekly progress monitoring (Group 3)?

   Hypothesis 3: It is hypothesized that Group 3 will score significantly higher on measures of reading achievement than Group 2 and that Group 3 will score significantly higher than Group 1 as measured by the third grade PSSA.

3. Did students participating in Group 3 score significantly higher than students in Group 2 on the

4Sight benchmark assessment at the beginning of fourth grade?

Hypothesis 4: It is hypothesized that students in Group 3 will score significantly higher than the Group 2 at the beginning of fourth grade.

4. Are there differences in the number of third grade students in Group 1, Group 2, and Group 3 identified with a specific learning disability in reading?

Hypothesis 5: The hypothesis is that fewer students from Group 2 will be identified with a SLD in reading than Group 1 and that fewer students from Group 3 will be identified with SLD in reading than Group 2.

5. How do teachers perceive the value of results provided by formative assessments when compared to traditional assessments?
6. How do teachers perceive the impact of the use of formative assessment and student goal-setting on students' academic motivation toward reading tasks?
7. How do teachers perceive the impact of formative assessment and student goal-setting on students' learning habits (improved time-on-task, increased participation in classroom discussions, assisting others)?

8. How do teachers perceive formative assessment and student goal-setting related to students' self-efficacy related to their learning?
9. How do teachers perceive the role of formative assessment and student goal-setting in improving students' academic achievement in reading?

Summary of Statistical Analyses of Archival Data

Question 1: Academic achievement as Measured by DIBELS

The first question was, "Did students receiving evidence-based intervention in Tier 3 with progress monitoring (Group 2) and students receiving evidence-based intervention in Tier 3 with weekly progress monitoring, formative assessment, and student goal-setting (Group 3) make progress from fall DIBELS benchmark assessment to spring DIBELS benchmark assessment?"

The two hypotheses for this question were that first, both Group 2 and Group 3 would make gains in academic achievement in reading, and second, Group 3 would have scored significantly higher on the post-test than Group 2. The descriptive data for the two groups for the pre, post, and adjusted post-test scores appear in Table 13.

Table 13

Descriptive Statistics for Intervention Groups and DIBELS Oral Reading Fluency Measures

	Pre-Test (Fall)			Post-Test (Spr)			
Group	n	M	SD	n	M	SD	Adjusted Post-Test M
Group 2	49	51.7	13.5	49	85.0	18.8	87.7
Group 3	86	56.7	10.6	86	87.2	14.7	85.6

Note. Mean represents words read correct per minute;

When examining the descriptive statistics for both Group 2 and Group 3, there was an increase in oral reading fluency from the pre- to post- test; however, when adjusted for initial fall difference between groups, the adjusted post-test mean was higher for Group 2 than Group 3. When assessed in the fall with DIBELS, both groups were not equal with regard to their reading achievement. There was a five word per minute difference between Group 2 and Group 3. Therefore, as a result, the pre-test mean was adjusted for this difference to reflect commensurate levels of achievement prior to intervention.

The first hypothesis for this question was analyzed using a paired t-test for each of the two groups. The results for Group 2 were, $t(48) = -16.71$, which is significant at the $p < .0001$ level. The results for Group 3

were also significant at the p <.0001 level, t(85) = -22.76. The first hypothesis was accepted.

The second hypothesis for this question was analyzed using a univariate ANCOVA with the DIBELS spring ORF assessment as the dependent variable, DIBELS fall ORF assessment as the covariate, and intervention group as the independent variable. As summarized in Table 14, there was no significant difference between students' reading achievement as measured by DIBELS ORF when comparing Group 2 and Group 3, after adjusting for pre-test differences, *F* (1, 132)=.851, p = .388. Therefore, the second hypothesis for research question one was rejected.

Table 14

Analysis of Covariance for Variables Impacting ORF

Source of Variation	Sum of Squares	df	Mean Square	F	P
Intervention Group	141.895	1	141.895	.851	.358
Error	21999.308	132	166.661		
Total	1042498.000	135			

Question 2: Academic Achievement as Measured by PSSA

The second research question asked, "Are there differences between third grade students' reading achievement when comparing students who did not receive an evidence-based intervention (EBI) or weekly progress monitoring (PM) (Group 1) to students who received an evidence-based intervention with progress monitoring only

(Group 2) to students who were formatively assessed, engaged in goal-setting, and received an evidence-based intervention with weekly progress monitoring (Group 3)?"

The hypothesis for this question was that Group 3 will score significantly higher on measures of reading achievement than Group 2 and that Group 3 will score significantly higher than Group 1 as measured by the third grade PSSA.

Because the data for these groups occurred over multiple years, the scores were not directly comparable, therefore, data were converted to z-scores. The third grade PSSA scaled scores from 2004-2005 (Group 1), 2006-2007 (Group 2), and 2007-2008 (Group 3), were converted to z-scores using the Statewide mean and standard deviation from each respective academic year in order to make comparisons between groups. The z-score means and standard deviations of the PSSA by intervention are shown in Table 15.

Table 15

Descriptive Statistics for Intervention Groups and PSSA, z-score Means and Standard Deviations

Intervention Group	n	M	SD
Group 1	119	-.352	2.729
Group 2	50	-.429	.685
Group 3	88	-.413	.609

When examining the descriptive statistics for these three groups, all scored below the respective state mean. Group 1 remained closest to the mean, while Group 2 and Group 3 were farther removed from the mean, scoring below the state average and the average of Group 1. These observations are further discussed in Chapter 5.

In order to determine whether students participating in Group 3 scored significantly higher on the PSSA reading assessment, their scores were compared to the scores of students in Group 1 and Group 2. Data were analyzed using univariate ANOVA with the third grade Reading PSSA as the dependent variable and intervention group as the independent variable.

Despite some differences in this sample descriptively, when generalized to the population, there was not a significant difference between students' scores on the PSSA among these groups when comparing Group 1 to Group 2 to Group 3. The results of this analysis are shown in Table 16. Therefore, no follow-up tests were necessary. The third hypothesis was rejected.

While this was not a research question, a follow-up analysis was conducted to see if there was a significant difference at each level of proficiency on the PSSA per intervention group, above what would be expected by chance

Table 16

Analysis of Covariance for Variables Impacting PSSA Scores

Source of Variation	Sum of Squares	df	Mean Square	F	P
Intervention Group	.919	2	.459	.125	.883
Error	933.915	254	3.677		
Total	978.574	257			

alone. Therefore, a chi-square was performed in order to examine differences between the levels of proficiency on the PSSA (Below Basic, Basic, Proficient, Advanced) among the three groups. The actual and expected counts for each level of proficiency on the PSSA for the intervention groups are summarized in Table 17.

Table 17

Observed and Expected Counts by Level of Proficiency on the PSSA for Groups 1, 2, and 3

Intervention Group		PSSA Descriptor BB	B	P	A	Total
Group 1	Actual	27	46	43	3	119
	Expected	19.0	36.6	60.7	2.8	119.0
Group 2	Actual	8	9	31	2	50
	Expected	8.0	15.4	25.5	1.2	50.0
Group 3	Actual	6	24	57	1	88
	Expected	14.0	27.1	44.9	2.1	88.0
Total	Actual	41	79	131	6	257
	Expected	41.0	79.0	131.0	6.0	257.0

Note. BB = Below basic; B = Basic; P = Proficient; A = Advanced

The chi-square test was used to determine the significance of the distribution in Table 17. Significant

differences between the actual and expected counts were found between the PSSA descriptors of Below Basic, Basic, Proficient, and Advanced, for the three intervention groups with significantly more students from Group 3 obtaining Proficient to Advanced ratings than expected X^2 (6) = 24.171, p = <.001. Closer inspection would suggest that larger numbers of students were in the Below Basic/Basic categories when compared to the other two groups. Group 2 and Group 3 have fewer students scoring in the Below Basic/Basic categories than expected by chance.

Question 3: Reading Achievement from Grades 3 to 4

The third research question sought to determine whether students participating in Group 3 scored significantly higher than students in Group 2 at the beginning of fourth grade on the 4Sight Benchmark assessment.

It was hypothesized that students in Group 3 would score significantly higher than Group 2 at the beginning of fourth grade.

Since students in fourth grade are evaluated relative to standards in fourth grade, direct comparison from third to fourth grade was not possible; however, it was possible to compare the groups at the beginning of fourth grade using the raw 4Sight scores from the end of third grade as

the covariate. Refer to Tables 6 through 11 in Chapter Three, which provide a summary of the third and fourth grade 4Sights' specifications and normative descriptive data for each form administered. In the opinion of the researcher, examination of the descriptive statistics and break down of items by standard and skill being assessed by the 4Sight are correlated across test editions and forms; therefore, demonstrating that each assessment of the 4Sight administered were measuring the same skills across each year of 4Sight data analyzed. The descriptive data for the two groups for the actual and adjusted scores appear in Table 18.

Table 18

Descriptive Statistics for Intervention Groups and 4Sight Benchmark Assessment for Fall Grade 4

Intervention Group	n	Actual M	SD	Adjusted M
Group 2	50	13.60	4.262	13.341
Group 3	83	14.55	4.385	14.710

When examining the descriptive statistics for the intervention groups and 4Sight data from fall of fourth grade, the mean fourth grade fall 4Sight score for Group 3, before adjustment for initial differences, was higher than Group 2. After adjustment for initial differences, the

mean fourth grade fall 4Sight score for Group 3 remained higher than that of Group 2.

The hypothesis for this question was analyzed using a univariate ANCOVA with the 4Sight fall benchmark assessment as the dependent variable and intervention group as the independent variable, Group 2 or Group 3. The third grade spring 4Sight benchmark assessment was used as the covariate to allow for comparison between the fall fourth grade 4Sight achievement of Group 2 and the fall fourth grade 4Sight achievement of Group 3 using raw scores obtained on the 4Sight benchmark assessments. When inferentially generalized to the population the results of this analysis did not yield significant results; however, it approached significance at $p = 0.054$. The summary of the results of this analysis are included in Table 19. As a result, the hypothesis for research question three was rejected.

Table 19

Analysis of Covariance for Variables Impacting Achievement in Fourth Grade as Measured by 4Sight Benchmark Assessment

Source of Variation	Sum of Squares	df	Mean Square	F	P
Intervention Group	57.810	1	57.810	3.788	.054
Error	1983.774	130	15.260		
Total	29296.000	133			

While research question three focused primarily on whether students from Group 3 scored significantly higher at the beginning of fourth grade than students in Group 2, spring fourth grade 4Sight data were compared for all three intervention groups. Examination of these groups at the end of fourth grade altered the intervention groups as previously defined. At the end of fourth grade, intervention Group 1 had received an evidence-based intervention with weekly progress monitoring, intervention Group 2 had received an evidence-based intervention with weekly progress monitoring and one year of formative assessment and student goal-setting, while intervention Group 3 had received an evidence-based intervention with weekly progress monitoring, formative assessment, and student goal-setting for two years. The follow-up analyses sought to determine whether students who received an evidence-based intervention with weekly progress monitoring and two years of formative assessment and student goal-setting (Group 3) achieved significantly higher than the other two intervention groups, one year formative assessment and student goal-setting with progress monitoring and an evidence-based intervention (Group 2) and evidence-based intervention and progress monitoring only (Group 1).

To answer this question, the data were analyzed using a univariate ANCOVA to establish whether there was a significant difference among the three groups. The fourth grade spring 4Sight data were the dependent variable, the fourth grade fall 4Sight data were the covariate, and the independent variable was the intervention group. There was a significant difference among students' reading achievement as measured by the 4Sight benchmark assessment at $p < .005$ level after adjusting for pre-test differences, F (2, 204) = 5.612, p = .004. The descriptive data for the three groups, including the actual and adjusted means are summarized in Table 20, while Table 21 summarizes the results of the ANCOVA.

Table 20

Descriptive Statistics for Intervention Groups and 4Sight Benchmark Assessment for Spring Grade 4

Intervention Group	n	Actual M	SD	Adjusted M
No FA/SG Group 1	71	16.90	5.243	16.936
1 Year FA/SG Group 2	50	17.18	5.344	17.458
2 Years FA/SG Group 3	84	19.31	3.973	19.115

After adjustment for initial fall difference among groups, the means change in the expected direction for each

intervention group, with the group receiving two years of formative assessment and student goal-setting as part of an evidence-based intervention with weekly progress monitoring (Group 3) scoring higher than the other two groups (Group 1 and Group 2).

Table 21

Analysis of Covariance for Variables Impacting Reading Achievement as Measured by the 4Sight Benchmark Assessment

Source of Variation	Sum of Squares	df	Mean Square	F	P
Intervention Group	198.506	2	99.253	5.612	.004*
Error	3555.053	201	17.687		
Total	70993.000	205			

Since there was a significant difference among the three groups, a Scheffe post hoc analysis was conducted, which yielded significant differences between Group 1 and Group 3 at the .05 level (p = .002). Furthermore, a significant difference was noted between Group 2 and Group 3 at the .05 level (p = 0.029). When comparing the Group 1 to Group 2, there was no significant difference between the groups at the .05 level (p = .50). The results of the post hoc analyses are summarized in Table 22 below.

Table 22

Results of Scheffe Post Hoc Analyses

Pairwise Comparisons		Mean Difference	Std. Error	P
Group 1	Group 3	-2.180	.679	.002**
Group 2	Group 3	-1.658	.754	.029*
Group 1	Group 2	-0.522	.777	.503

Question 4: Analysis of Archival Special Education Data

The fourth research question asks, "Are there differences in the number of third grade students in Group 1, Group 2, and Group 3 identified with a specific learning disability in reading?"

The related hypothesis was that fewer students from the Group 2 would be identified with a SLD in reading than Group 1 and that fewer students from Group 3 would be identified with SLD in reading than Group 2.

A chi-square test was performed to examine the differences between the intervention received and the number of students identified with SLD in reading among the three intervention groups. The relation between these variables was significant between Group 1 and Group 3 on the Linear-by-Linear Association chi-square test, X^2 (1) = 8.026, $p < .005$. Table 23 shows the actual and expected counts of the number of students at risk for reading failure identified with a SLD in reading for students in the three intervention groups.

Closer inspection shows that nine fewer students were in regular education than expected and that nine more students than expected from Group 1 were identified with SLD in reading than expected. From Group 2, the actual and

Table 23

Observed and Expected Counts of Students Identified with Specific Learning Disability in Reading

Intervention Group		Identified with SLD NO	YES	Total
Group 1	Actual	85	34	119
	Expected	94.0	25.0	119.0
Group 2	Actual	41	9	50
	Expected	39.5	10.5	50.0
Group 3	Actual	77	11	88
	Expected	69.5	18.5	88.0
Total	Actual	203	54	257
	Expected	203.0	54.0	257.0

expected counts were similar. It was expected that 40 students from Group 2 would not be identified with a SLD in reading and the actual count was 41. Additionally, it was expected that 11 students from Group 2 would be identified with a SLD in reading and nine was the actual count. More notable is that from Group 3, seven more students than expected (Expected Count = 70; Actual Count = 77) were not identified with a SLD in reading and eight fewer students than expected (Expected Count = 19) were identified with a SLD in reading (Actual Count = 11) than expected by chance alone.

Summary and Description of Survey Responses

Presentation of the Descriptive Characteristics of Survey Respondents

Of 18 electronically distributed surveys, usable data from 8 respondents (n = 8) was collected and analyzed. Data from one survey (n = 1) was not included in the data analysis as the respondent did not meet the inclusionary criteria of holding the position of Title I reading teacher prior to the implementation of formative assessment practices. All respondents indicated that they were Title I reading teachers in possession of a bachelor's degree in elementary education K-6 and early childhood development, master's degree in education, reading specialist certification, or a combination of each of the abovementioned.

Age. Respondent age was aggregated into quartiles. Quartile 1 consisted of two respondents age 21 to 30 and represented 25% of the overall sample. Quartile 2 consisted of five respondents age 31 to 40 and represented 63% of the sample. No respondents were of age 41 to 50; therefore, quartile 3 consisted of zero respondents. Quartile 4 consisted of 1 respondent age 51+ and represented 13% of the sample. Table 24 summarizes the age of survey respondents.

Table 24

Summary of the Age Range of Survey Respondents

Quartile	n	Age Range in Years	Percentage of Respondents
1	2	21 to 30	25%
2	5	31 to 40	63%
3	0	41 to 50	0%
4	1	51 +	13%

Sex. Of eight respondents, seven (88%) were female and 1 (13%) was male. Table 25 summarizes the sex demographic information of the survey respondents.

Table 25

Summary of the Sex Demographic of Survey Respondents

Sex	n	Percentage of Respondents
Male	1	13%
Female	7	88%

Years as full-time teacher. Years as a full-time teacher ranged from 4 to 21 years. The average years of full-time teaching were 10 years. Participants' years of full-time teaching were further summarized into quartiles. Quartile 1 consisted of 1 respondent with less than five years of full-time teaching (four years) and represented 13% of the overall sample. Quartile 2 consisted of four respondents with 6 to 10 years of full-time teaching and represented 50% of the sample. Quartile 3 consisted of two participants with 11 to 15 years of full-time teaching and

represented 25% of the overall sample. Quartile 4 consisted of one participant with 16+ years of full-time teaching and represented 13% of the sample. The demographic data of survey respondents' years as a full-time teacher are summarized in Table 26.

Table 26

Summary of Years of Full-Time Teaching of Survey Respondents

Quartile	n	Years of Full-Time Teaching	Percentage of Respondents
1	1	0 to 5	13%
2	4	6 to 10	50%
3	2	11 to 15	25%
4	1	16 +	13%

Question 5: Traditional versus Formative Assessment

The fifth research question asked, "How do teachers perceive the value of results provided by formative assessments when compared to traditional assessments?"

To answer this question, Title I reading teachers were asked to respond to two questions regarding their view of the results of formative assessments when compared to traditional assessments and modification of instruction in response to student learning.

When using assessments to guide student learning, teachers found formative assessments to be of more value than traditional assessments 86% of the time (Min Value = 65; Max Value = 99; SD = 10.86). Individual responses were

further aggregated into quartiles to facilitate more meaningful analysis. Thirteen percent of respondents fell within the third quartile, 56 to 75 percent of the time, while 88% fell within the fourth quartile, 76 to 100 percent of the time.

A second question asked about the frequency with which teachers modify their teaching in response to the results of formative assessments compared to previous years when traditional assessments were most often used as measures of student learning. Compared to previous years, an average of 74.5% of the time, teachers more often modify their teaching based on the feedback received from formative assessments (Min Value = 50; Max Value = 95; SD = 17.50). Table 27 provides a summary of teachers' views of formative versus traditional assessments as reported on the survey.

Table 27

Summary of Teachers' Views of Formative versus Traditional Assessments

Teachers' Perceptions of Formative versus Traditional Assessments	Average Percentage of Time	Percentage of Respondents Rating 76% of Time or Higher
Using assessments to guide learning formative assessments viewed as more valuable	86.0%	87.5%
More often modify instruction	74.5%	50.0%

Question 6: Academic Motivation and Reading Tasks

To investigate the influence of formative assessment and student goal-setting on students' academic motivation toward reading tasks, the sixth research question asked, "How do teachers perceive the impact of the use of formative assessment and student goal-setting on students' academic motivation toward reading tasks?"

In order to answer this question, Title I reading teachers were asked six questions about classroom behaviors related to academic motivation. Of the six items examining students' motivation toward reading tasks, most often teachers perceived that students were observed to be more eager to obtain feedback on their performance 77.75% of the time (Min Value = 25; Max Value = 97; SD = 24.27). On average, teachers perceived 69.38% of the time that students demonstrated greater motivation toward reading tasks after becoming more actively involved in their learning (min value = 40; max value = 95; SD = 20.95). Participants also noted that 68.50 percent of the time, students demonstrated greater motivation and higher self-esteem after receiving instruction and specific feedback on their performance (min value = 30; max value = 95; SD = 21.99).

Less often teachers perceived students to be more eager to communicate with their parents, teachers, and peers about their progress, indicating 62.50 percent of the time, on average (min value = 30; max value = 95; SD = 22.44). Examination of the frequency of the quartiles showed that almost half of the respondents perceived students to be any more eager to communicate their progress than previously (less than %50 percent of the time), while the other half of respondents perceived that students showed greater interest in sharing their progress 76% of the time or higher.

Additionally, 75% of respondents indicated that 50% of the time or more, students were more eager to participate in class discussions (M = 60.63; min value = 10; max value = 90; SD = 27.57), while only 25% of respondents observed that 50% of the time or more, students chose to read during leisure or free-time (M = 45.63; min value = 20; max value = 81; SD = 21.89) than before FA/SGS was a part of their intervention program. Table 28 summarizes survey responses regarding teachers' perceptions of the impact of formative assessment on students' motivation toward reading tasks.

Table 28

Summary of Teachers' Perceptions of the Impact of Formative Assessment and Student Goal-Setting on Motivation Toward Reading Tasks

Teachers' Perceptions of Student Behavior	Average Percentage of Time	Percentage of Respondents Rating 76% of Time or Higher
More eager to obtain feedback	77.75%	75.0%
Active involvement in learning and motivation toward reading	69.38%	37.5%
Motivation after instruction and feedback	68.50%	37.5%
Interest in communicating progress	62.50%	50.0%
More eager to participate in discussions	60.63%	75.0%
Greater interest in reading for leisure	45.63%	12.5%

Question 7: Formative Assessment and Student Learning Habits

The seventh research question asked, "How do teachers perceive the role of formative assessment and student goal-setting on students' learning habits (improved time-on-task, increased participation in classroom discussions, assisting others)?"

Compared to previous years before formative assessment and student goal-setting, teachers were asked to estimate the percentage of time that they observe their students to

engage in positive learning habits since formative assessment and student goal-setting was introduced. Teachers were asked to respond to four items indicating percentage of time related to observing the specified learning habits and three items indicating percentage of students showing characteristics of intentional learners.

Items examining formative assessment related to students' learning habits were rank ordered from highest percentage of time observed to lowest percentage of time observed. Sixty-six percent of the time teachers observed students to show higher levels of engagement in learning tasks after becoming more actively involved in their learning (min value = 30; max value = 95; SD = 23.11). The second highest percentage of time was indicated by participants when asked if students were more focused on classroom instruction and tasks at 62% of the time (min value = 35; max value = 95; SD = 23.40), although half of respondents observed this to be at less than 50% of the time. The third highest percentage of time was observed by respondents who noted that 60% of the time students attend more to the quality of their work (min value = 19; max value 95; SD = 33.14). Despite the range of percentage of time (19 – 95), 75% of respondents indicated that 50% of the time or more, students attend more to the quality of

their work than before FA became a part of their intervention program. Less often teachers observed students showing more interest in helping/supporting others, at 56.25 percent of the time (min value = 20; max value = 91; SD = 24.32). Table 29 summarizes survey data about teachers' perceptions of the impact of formative assessment and student goal-setting on students' learning habits.

Table 29

Teachers' Perceptions of the Impact of Formative Assessment and Goal-Setting on Students' Learning Habits

Teachers' Perceptions	Average Percentage of Time	% of Respondents Rating 76% of the Time or Higher
Increased engaged time when actively involved	66.00%	37.5%
Focused on instruction	62.00%	37.5%
Attend more to quality of work	60.00%	50.0%
Interest in helping others	56.25%	12.5%

Participants were also asked what percentage of students demonstrated characteristics of intentional learners. Teachers estimated that 82% of students are more aware of the strategies they are using than before FA was introduced. Additionally, 73% put forth more effort toward their learning and 63% are taking more responsibility for their learning. Table 30 offers further summation of the

survey data collected about FA and habits of intentional learners.

Table 30

Teachers' Perceptions of Formative Assessment and Goal-Setting Related to Characteristics of Intentional Learners

Teachers' Perceptions	Average Percentage of Students	% of Respondents Rating 76% of Students or Higher
More awareness of the strategies they are using	82%	75.0%
Put more effort toward their learning	73%	50.0%
Take more responsibility for their learning	63%	50.0%

Question 8: Formative Assessment and Students' Self-Efficacy

The eighth research question asked, "How do teachers perceive the impact of formative assessment and student goal-setting on students' self-efficacy related to their learning?"

Teachers were asked four questions in regard to their observations of students' self-efficacy or confidence in reading. For each question, teachers estimated a percentage of time.

Seventy-five percent of participants indicated that 50% of the time or more, students have demonstrated greater motivation and higher self-esteem after receiving

instruction and specific feedback on their performance (min value = 30; max value 95; M = 68.50; SD = 21.99). As summarized in Table 31, seventy-five percent of participants also indicated that 50% of the time or more, students show more confidence in their reading skills (min value = 30; max value = 93; M = 66.63; SD = 22.32) and exhibit greater self-efficacy or confidence about their performance on reading tasks (min value = 30; max value = 95; M = 65.63; SD = 22.75). Additionally, fifty percent of participants noted that students made more frequent positive statements about their skills in reading %50 of the time or more (min value = 30; max value = 91; M = 59; SD = 24.30). Table 31 also further summarizes survey respondents ratings about the influence of FA on students' self efficacy related to reading tasks.

Table 31

Teachers' Perceptions of the Influence of Formative Assessment and Goal-Setting on Students' Self-Efficacy Related to Reading Tasks

Teachers' Perceptions of Students' Self-Efficacy	Average Percentage of Time	Percentage of Respondents Rating 76% of Time or Higher
Instruction, feedback and self-efficacy	68.50%	37.5%
Confidence in reading skills	66.63%	37.5%
Self-efficacy about performance on reading tasks	65.63%	25.0%
Positive self-statements	59.00%	25.0%

Question 9: Formative Assessment and Academic Achievement in Reading

The ninth research question asked, "How do teachers perceive the role of formative assessment and student goal-setting in improving students' academic achievement in reading?"

Teachers were asked three questions related to formative assessment, student goal-setting, and academic achievement in reading. All respondents indicated that students displayed greater mastery of skills when learning targets were clearly communicated 70% of the time or higher (min value = 70; max value = 100; M = 80.88; SD = 11.85). All respondents noted that formative assessment and student goal-setting have positively influenced the way students view the learning process 50% of the time or higher (min value = 50; max value = 95; M = 78.88; SD = 15.86). Lastly, all respondents have observed students to improve their academic achievement in reading 50% of the time or higher since they have been using formative assessment and student goal-setting practices (min value = 50; max value 96; M = 73.25; SD = 17.69). Refer to Table 32 for a summation of the survey results indicating teachers' perceptions of the effect of FA and goal-setting on students' reading achievement.

Table 32

Teachers' Perceptions of the Effect of Formative Assessment and Goal-Setting on Students' Reading Achievement

Teachers' Perceptions of Student Behavior	Average Percentage of Time	Percentage of Respondents Rating 76% of Time or Higher
Clear communication of learning targets and mastery of skills	80.88%	62.5%
Positively influenced students' view of the learning process	78.88%	75.0%
Improvement in academic achievement in reading	73.25%	62.5%

Summary and Description of Focus Group Results

Title I reading teachers were invited to participate in a focus group discussion about their experiences with formative assessment and student goal-setting as part of an evidence-based intervention program with progress monitoring. Specifically, the questions aimed to explore the impact of formative assessment and student goal-setting on their views of traditional assessments of student learning, students' reading achievement and learning/study habits, instructional approaches to teaching, benefits to students at risk for reading failure, and evaluation and identification of students with specific learning

disabilities. Nine Title I teachers agreed to participate in the focus group discussion (n=9).

Formative versus Traditional Assessments

Focus group participants were asked about their views of traditional assessments of student learning after receiving formal training and using formative assessment in their classrooms. Several participants reported that now their assessments are more focused on specific skills that link directly to their daily instruction. Compared to traditional assessments, many participants also indicated that they more often actively involve their students in the assessment process and engage in discussions with them about their performance, and in turn, use that information to set goals for the next assessment period. Few participants cited the specific feedback obtained on formative assessments to be more beneficial than the results of a traditional assessment where a letter grade or percentage is assigned. Furthermore, participants indicated that formative assessments led students to start thinking about their own learning and gave them ownership of the process, and they provided teachers with more useful information to guide instruction. Lastly, a couple participants reported that the results from the formative assessments did not always match that of the traditional

assessments given in the general classroom. However, formative assessment results on specific skills related to reading showed that students were mastering skills that would eventually lead to achievement in reading.

Formative Assessment and Motivation toward Reading Tasks

Participants in the focus group were engaged in a discussion about students' motivation toward reading tasks since the formative assessment approach was employed. Rather than observing an increased interest in reading for leisure, participants reported greater interest in demonstrating mastery and achievement of skills (80%). Specifically, one teacher commented on the positive self-talk observed within her groups, "'I can do this. I can have achievement.' Where in the past, they [students] did not have a specific skill to work on or strategy to apply, so they did not know how to better their skills. They know how to do better, whereas, in the past, they only knew they *needed* to do better." Another teacher reported the eagerness of her students to progress monitor and see their improvements. Furthermore, she noted that her students were more often comparing their pre- and post- assessments, sharing with their peers, and being motivated by their progress. In general, a theme among 80% of the participants was that students' active involvement in the

process of learning and monitoring their progress had motivated their students to work toward greater achievement. On the other hand, concerns were expressed about the emphasis on assessment and skills, "We are looking at the parts, but the whole picture is missing sometimes."

Formative Assessment, Student Goal-Setting, and Learning Habits

Title I teachers were asked about their perception of the impact of formative assessment and student goal-setting on students' learning habits. A focus group participant reported that the consistent use and teaching of reading and study strategies has led students to more often apply the strategies when reading or test-taking without teacher prompts or cues. Another indicated improved engaged time with her students, who often have difficulty attending to task and seem disinterested in reading, particularly when engaged in progress monitoring activities. Additionally, yet another participant mentioned that her students have been better able to describe difficulties or interpret their performance on progress monitoring exercises. Specifically, "They are aware of what they need. They have words for it, so that helps them. It gives them something to learn and target for." There also was a noted eagerness

observed in students to share academic accomplishments with peers and teachers.

Impact of Formative Assessment and Student Goal-Setting on Teaching and Instruction

Focus group participants were engaged in a discussion about the impact the use of formative assessment and student goal-setting had on their teaching. Participants were also asked about the difference in their instruction with regard to the strategies they used and the skills they taught compared to previous years. Teachers indicated that their teaching was more focused and there was a more heightened awareness while teaching, such as what questions to ask and how students' responses would drive the instruction. As stated by one participant, "It is a lot less overwhelming now that I have learning targets set and am engaging the students more in the process of learning." Another reported, "I also find that my instruction is better focused and I have direction in my lessons." A reported theme among participants was the use of learning targets and common language in all classrooms (i.e., "Get in target position."; "What is your learning target?"; "How will you know you reached your learning target?"). Participants cited the use of learning targets as beneficial to both the teacher and the student. One

participant stated, "We would teach it before, but we wouldn't let them [the students] know what it was they were learning or why they were learning it. It gears my mind toward what I need to teach and gears them towards what they need to learn."

Formative Assessment, Student Goal-Setting, and Academic Achievement in Reading

As part of the focus group, participants were asked about their perceptions regarding the effect formative assessment and student goal-setting has on student achievement in reading based on their observations. Common among all participants was that they have observed formative assessment and student goal-setting to have a positive influence on students' academic achievement in reading. By and large, the teachers attributed greater academic success to students' more active involvement in their learning through goal-setting and progress monitoring. One teacher reported, "It means more to them because they're a part of it, too." Another commented, "We take the big picture and break it down for them to look for those pockets of skills they're working on and their progress within those skills. They see success and achievement in at least reaching their little goal that time, which will eventually add up in the end." Commonly,

teachers also reported that immediate results on the 4Sight or PSSA were not always observed; however, students were showing signs of achievement by mastering their individual goals and moving forward onto the next.

Formative Assessment, Student Goal-Setting, and Identification of Students with SLD

Focus group participants were engaged in a discussion about the impact of formative assessment and student goal-setting as part of an evidence-based intervention with progress monitoring on progress for students at risk for reading failure. None of the participants felt that it necessarily reduced the number of students identified with a SLD in reading; however, each of them (100%) felt confident when referring the student for an evaluation that the interventions attempted and data collected provided evidence that may suggest a learning disability exists. Additionally, others reported that the process of engaging in the formative assessment and student goal-setting approach provided them with more valuable data than the DIBELS or 4Sight assessments, as they perceived it was not always the best indicator of students' progress within an intervention program or his/her overall reading achievement.

Summary

Analysis of the data showed the findings that both Group 2 and Group 3 made gains in academic achievement in reading as measured by the DIBELS, $t\ (48) = -16.71$, $p < .0001$, yet there was no significant difference between students' reading achievement on this measure when comparing Group 2 and Group 3. Additionally, after conversion of PSSA scaled scores to z-scores for comparability, Group 3 did not achieve significantly higher on the PSSA than the other two groups; however, the results of a chi-square test indicated that there was a significant difference between the actual and expected counts with more students from Group 3 obtaining Proficient to Advanced ratings than expected, $X^2\ (6) = 24.171$, $p = <.001$, when compared to the other two groups. When investigating whether students from Group 3 scored significantly higher than Group 2 at the beginning of fourth grade on the Fall 4Sight Benchmark assessment, analysis of the data resulted in the finding that Group 3 did not score significantly higher at the beginning of fourth grade; however, when examining students' achievement as measured by the 4Sight at the end of fourth grade, students from Group 3 scored significantly higher than the other groups after receiving two years of intervention with formative assessment and

goal-setting, F (2, 204) = 5.612, p = .004. Moreover, significantly fewer students from Group 3 were identified with a specific learning disability than expected as indicated by the results from a chi-square test, X^2 (1) = 8.026, p < .005.

Analysis of survey data indicated that, on average, 86% of the time teachers found formative assessment to be of more value than traditional assessments and 74.5% of the time teachers more often modified their teaching based on the feedback received from the formative assessments. When investigating teachers' perceptions of formative assessment and student goal-setting on student motivation, on average, 77.75% of the time, teachers observed that students were more eager to obtain feedback on their performance, 69.38% of the time teachers perceived that students showed greater motivation toward reading tasks after becoming more involved in their learning, and 68.50% of the time students demonstrated greater motivation after receiving instruction and effective feedback on their performance. Of survey items investigating students' motivation, less often teachers perceived students to be more eager to communicate about their progress with their parents, teachers, or peers (M = 62.5% of the time) or to be more eager to participate in classroom discussions (M = 60.63% of the time). Only

25% of survey respondents observed students to choose more often to read during leisure or free-time than previously (M = 45.63% of the time).

In regard to students' learning habits, 75% of respondents indicated that students show higher levels of engagement in learning tasks since they have become more actively involved in their learning (50% of the time or higher). Additionally, half of respondents observed students to be more focused on classroom instruction and tasks (M = 62% of the time). Survey results also suggested that students attend more to the quality of their work than previously (M = 60% of the time). Less often were students observed to show more interest in helping or supporting others (M = 56.25% of the time). Overall, responses from survey participants indicated that students are more often exhibiting characteristics of intentional learners as, on average, 82% of the time, students are more aware of the strategies they are using than before, 73% of the time, put forth more effort toward their learning, and 63% of the time, are taking more responsibility for their learning.

Survey items examining teachers' perceptions of students' self-efficacy or confidence in reading since formative assessment and student goal-setting practices were employed indicated that 75% of participants perceived

students, 50% of the time or more, to demonstrate greater self-confidence after receiving instruction and effective feedback on their performance. Additionally, 75% of the respondents reported that 50% of the time or more, students showed more confidence in their reading skills and greater self-efficacy about their performance on reading tasks. Half of the teachers surveyed indicated that students made more frequent positive statements about their skills in reading than before formative assessment was a part of their intervention program.

Teachers were asked to respond to three questions related to formative assessment, student goal-setting, and achievement in reading. Seventy percent of the time or greater, teachers observed students to display greater mastery of skills when learning targets were clearly communicated. All of the respondents reported that 50% of the time or higher, formative assessment and student goal-setting positively influenced the way students viewed the learning process. Similarly, 100% of respondents indicated that 50% of the time or more, students improved their academic achievement in reading since formative assessment and student goal-setting practices were introduced.

Responses provided by Title I reading teachers who participated in a focus group discussion offered strong

insights into each of the research questions investigated as part of this study. Teachers reported that their instruction is more focused and targets specific skills with detailed goals. Additionally, clear communication of learning targets, active involvement of students in the learning process, and meaningful progress monitoring and goal-setting, have seemingly yielded positive results for students at risk for reading failure. By and large, teachers reported improved achievement for students engaged in formative assessment and student goal-setting as part of an evidence-based intervention with progress monitoring; however, this achievement was not always demonstrated on a standardized test. Teachers' reports also pointed to enhanced motivation toward reading achievement and improved focus on learning tasks. In sum based on teachers' observations and experiences, formative assessment and student goal-setting focuses instruction, assesses for learning, engages the student in the process, and enhances outcomes for students and teachers alike.

CHAPTER 5

DISCUSSION

Summary of the Study

The present study sought to investigate the effects of the use of formative assessment and student goal-setting as part of an evidence-based intervention with weekly progress monitoring on students' academic achievement in reading as part of a Tier 3 intervention. An additional goal of the study was to examine special education data to determine whether fewer students were identified with a specific learning disability in reading than prior to the implementation of formative assessment and student goal-setting practices. Furthermore, teachers' perceptions of the use of formative assessment practices and impressions related to students' academic achievement, motivation toward learning tasks, learning habits, and assessment practices, were explored.

In order to answer the proposed research questions, archival PSSA, DIBELS, and 4Sight assessment and special education data were analyzed. Additionally, Title I reading teachers were surveyed, and through a discussion held during a focus group, provided further insight into the impact of formative assessment and student goal-setting. While considering the limitations and delimitations

discussed later in this chapter, the results of this quantitative and qualitative research study provides interesting findings about the use of formative assessment and student goal-setting with students at risk for reading failure.

Discussion of Findings

To answer the research questions, archival quantitative assessment and special education data, survey data, and data collected from a focus group discussion, were utilized. Results from these three sources were examined collectively to discuss the findings related to the effect of formative assessment and student goal-setting on students at risk for reading failure. Specifically, the discussion focuses on formative assessment and student goal-setting relative to academic achievement, identification with a specific learning disability, and teachers' perceptions about traditional assessments, motivation toward reading tasks, students' learning habits and self-efficacy. Furthermore, a common theme from teacher reports during the focus group is the impact formative assessment has had on their instructional practices and approaches.

Formative Assessment and Academic Achievement in Reading

Examination of students' reading achievement from Group 2 and Group 3 as measured by the DIBELS from the Fall benchmark period to the Spring benchmark period, did not yield significant results for one group over another. However, both intervention groups receiving instruction within an evidence-based intervention with weekly progress monitoring progressed significantly from the pre- to post-assessment. While significantly greater achievement was not observed for the group that was formatively assessed and engaged in goal-setting, the findings support the notion that supplemental, direct instruction produces achievement gains in students at risk for reading failure (Mathes et al., 2005; Stecker et al., 2008;).

Equally important is the use of curriculum-based measures as a tool to monitor progress and provided a basis for instructional decision-making. As cited in the current literature and evidence from the findings of the current study, progress monitoring with curriculum-based measures as part of students' intervention produces significant achievement gains when utilized to make instructional decisions (Fuchs, Deno, & Mirkin, 1984; Santi & Vaughn, 2007; Stecker & Fuchs, 2000; Stecker et al., 2008). Additionally, as reported by the teachers, progress

monitoring with CBM leads them to more often alter their instruction accordingly to best meet the needs of individual students (Santi & Vaughn, 2007). Despite the fact that students in Group 3 did not demonstrate greater achievement as measured by the DIBELS assessment, compared to previous years, teachers' perceptions were such that students were demonstrating higher achievement in reading based on observation of individual, basic skills. Strikingly, more than half of the Title I reading teachers surveyed (62.5%) perceived that students were demonstrating greater mastery of skills when learning targets were clearly communicated and improvement of their academic achievement in reading was shared with them than before formative assessment and student goal-setting was introduced.

Additionally, on average, 78.88% of the time, teachers perceived that formative assessment and student goal-setting had positively influenced the way their students viewed the learning process. Moreover, 62.5% of teachers surveyed indicated that 76% of the time or more, students improved their academic achievement in reading compared to previous years when students were not formatively assessed. This also was a common theme reported by Title I teachers during the focus group session, although, interestingly,

teachers seemed to view improved achievement differently than a score produced from an assessment tool. In fact, oftentimes teachers indicated that students did not necessarily show a level of achievement expected on the DIBELS or 4Sight assessment, yet their progress within the intervention and mastery of specific skills was evident. The immediate effects of formative assessment and student goal-setting were more focused instruction, effective questioning to drive instruction, increased student awareness of their learning, and greater mastery of specific skills that eventually led to overall improved reading achievement.

When examining third grade students' performance on the PSSA for the three groups, all fell below the state mean, which would be expected since the sample consisted of students at risk for reading failure. Statistically speaking, there was no significant difference among the intervention groups' mean performance on the PSSA. Examination of the number of test items per State standard and skills assessed across each of the years analyzed suggests that measures are comparable despite the fact that the different versions of the test were given at these various points in time. This information is further summarized in Tables 3 through 5 in Chapter Three.

Therefore, these findings do not appear to be due to the fact that the PSSA administered to each of the three groups was a different edition of the test. Moving away from scores obtained on the PSSA, a follow-up analysis examined whether more students scored within the proficient to advanced range from Group 3 than the other two groups. In fact, substantially more students than expected from Group 3 scored within the proficient to advanced range than Group 1, which suggested that formative assessment and student goal-setting practices coupled with an evidence-based intervention and progress monitoring positively affected students' academic achievement in reading.

Considering the same students' academic achievement in reading as measured by the 4Sight in 4th grade, it was hypothesized that Group 3 would score significantly higher than Group 2 on the fall benchmark assessment. Assuming the groups were equal in the spring of third grade and start of fourth grade, students from Group 3 did score higher, although not significantly higher, than Group 2 who received only an evidence-based intervention and weekly progress monitoring. The difference approached significance at the $p < .05$ level at $p = .054$. Nearing significance at this level suggests that students, who are formatively assessed and set goals as part of their

participation in an evidence-based intervention with weekly progress monitoring, show achievement moving in a direction of scoring higher on measures of reading achievement than students who were not engaged in this process.

When considering students' achievement on the 4Sight benchmark assessments at the end of fourth grade after adjustment for initial fall differences, students who participated in an evidence-based intervention with progress monitoring and two years of formative assessment and student goal-setting scored significantly higher than the other two groups. Interestingly, there was not a significant difference between students, who participated in an evidence-based intervention with weekly progress monitoring only and those whose intervention program included only one year of formative assessment and student goal-setting. These findings suggest that at least two years of an evidence-based intervention coupled with weekly progress monitoring, formative assessment, and student goal-setting, are necessary to significantly affect reading achievement for students at risk for failure.

Formative Assessment, Student Goal-Setting, and the Identification of Students with SLD in Reading

Evidence-based reading practices coupled with data-based decision-making and accountability are the driving

force behind effective instruction and targeted intervention for students at risk for reading failure. Reliance upon the discrepancy model for the identification of students with SLD in reading is waning. When examining the potential impact of formative assessment and student goal-setting as part of a Tier 3 intervention with progress monitoring on the identification of students with SLD in reading, the results from this study indicated that significantly fewer students from Group 3 were identified with SLD in reading than expected when special education data for the three groups were examined, particularly when compared to the Group 1. As pointed out in the literature, early identification and treatment of learning difficulties is the most effective approach for the prevention of SLD in reading (Bos et al., 1999; Coyne et al., 2001; Juel, 1988; Menzies et al., 2008; O'Connor, et al., 2005; Torgesen, 2000). Therefore, these factors in combination with the use of effective instructional practices, clear communication of learning targets, and active engagement of students in the learning process, which are all core components of formative assessment, may remediate reading difficulties before specially designed instruction is needed.

From the teachers' perspective, the identification of fewer students than expected in previous years is due to the magnitude of the data collected through formative assessments and progress monitoring. Many reported that they have a better gauge as to whether students are progressing or stagnating in an intervention, and therefore, are more confident recommending students for further evaluation after intervention attempts have failed.

Formative versus Traditional Assessments

In order to assign a letter grade or number to a students' performance, classroom teachers rely on traditional assessments to report about students' learning. As part of this current study, the Title I teachers were surveyed and also discussed the current role of formative assessment and its value compared to traditional assessments. An astonishing 86% of the time, teachers reported that the results of formative assessments were of more value than traditional assessments to guide student learning. Furthermore, teachers were more often likely to modify their teaching in response to formative assessments compared to previous years when traditional assessments were the primary mode of evaluation.

During the focus group discussion, the Title I teachers noted several other advantages of formative

assessment over traditional assessment. The focus has shifted from a number or letter grade to the specific feedback obtained from a formative assessment that leads the teachers to assess students' progress toward a pre-defined goal. In addition, the teachers reported that they used the feedback to drive further instruction and engage students in a discussion about their achievement rather than return a paper with a grade and move on to the next skill without students' demonstrated mastery of the previously taught skill. The Title I teachers also discovered that the information obtained from formative assessments is more useful, particularly in regard to the more active involvement of the students in what they are learning. The goal-oriented nature of formative assessment through the clear communication of learning targets has been beneficial to both the teacher and the student.

Perceived Impact of Formative Assessment and Goal-Setting on Students' Motivation, Learning Habits, and Self-Efficacy

The frequent feedback, focused instruction, goal-setting and monitoring, and students' more active involvement in tracking their achievements leads to positive outcomes for students. Specifically, the literature suggests that formative assessment and student goal-setting enhances students' engaged time and leads them

to be more motivated, and therefore, more successful in reading (Bloom, 1984; Clark, 2008; Gibbs & Simpson, 2004; Miller & Lavin, 2007; Nicol & Macfarlane-Dick, 2006; Schunk, 1996; Schunk & Swartz, 1993; Yin et al., 2008). In addition, the incremental monitoring of students' short-term goals and recognition of reading successes enhances students' confidence in their abilities (McCombs et al., 2008; Miller & Lavin, 2007).

Motivation. The survey of Title I teachers' perceptions of the impact of formative assessment and student goal-setting on academic motivation toward reading tasks yielded interesting results. Teachers did not report an increase in students' interest in reading for leisure; however, over half of the survey respondents indicated that students were more often eager to obtain feedback on their performance, show greater interest in instructional reading tasks after becoming more actively involved in their learning, and in general, demonstrate greater motivation after instructed and provided with feedback on their performance. When learner-centered practices are employed, students' motivation increases, which is associated with higher academic achievement and a greater sense of self-efficacy (McCombs, et al., 2008).

Although not as frequently observed, teachers also indicated that 62.5% of the time students were more eager to communicate their progress to parents, teachers, and peers, than before formative assessment and student goal-setting was instituted as part of their program. During the focus group discussion, one teacher commented, "They [the students] are more motivated because they see success...and their successes are more recognized now that they are engaged in formative assessment and feedback." Even though the teachers have not observed more students reading for leisure, another teacher commented, "I see my students from last year reading chapter books on their own, where I did not see that ability or interest the year prior."

Learning habits. In addition to increased motivation toward instructional reading tasks, teachers also perceived that students' learning habits have improved since formative assessment and student goal-setting practices have been employed. Particularly, students exhibited higher levels of engagement in learning tasks (66% of the time on average), were more focused on instruction and tasks (62% of the time on average), and attended more to the quality of their work (60% of the time on average), than previously. These findings are similar to those of

Black and Wiliam (1998), Pintrich, (1995), and Zimmerman and Schunk (2004), who found that the self-regulated learning exercises embedded in formative assessment practices produced more confident, persistent, and resourceful students, who were more motivated and self-efficacious. Less often teachers perceived students to assist or be more helpful to others (56.25 percent of time on average). Over half of the teachers surveyed indicated that students were more often demonstrating characteristics of intentional learning. Students tended to show greater awareness of strategies they were using, put forth more effort, and were overall more responsible for their learning. One teacher reported that, "The students are more often applying the study strategies that I've taught."

Self-efficacy toward reading tasks. Seventy-five percent of survey respondents perceive that 50% of the time or more, students appeared to have higher self-esteem after receiving instruction and effective/specific feedback on their performance, show more confidence in their skills, and exhibit greater confidence about their performance on reading tasks. These findings are also documented in the conclusions of several other researchers, who noted enhanced self-efficacy toward reading tasks as a result of students becoming more active participants in their

learning through formative assessment practices (McCombs et al., 2008; Miller & Lavin, 2007; Schunk, 1996; Schunk & Swartz, 1993;). Teachers' reports were similar during the focus group discussion. As one teacher stated, "I think their confidence level is a little bit higher, too. They can see the baby steps and see themselves becoming successful at reading, a little step at a time." Furthermore, the teachers have observed greater confidence in students' performance, and as a result, they are sharing their achievements with others. Half of the teachers surveyed reported that students make more frequent positive comments about their skills in reading than before formative assessment and student goal-setting practices were employed (59% of the time on average). When discussing the impact of formative assessment and student goal-setting on students' learning and study habits, a teacher commented that she has observed her students to be more positive about their reading skills. For example, "I can do this and I can have achievement."

Perceived Effect of Formative Assessment and Student Goal-Setting on Teaching and Instruction

A prominent theme emerged from discussions with the Title I teachers with regard to the impact formative assessment and student goal-setting has had on their

teaching and instructional approaches. Teachers reported that utilizing a formative assessment approach heightened their awareness during instruction. The learning target, questioning, and specific feedback to the students about their progress in relation to the learning target, are the primary focus of their instruction, as well as the core elements of Moss's and Brookharts' (2009) model of formative assessment. In addition, teachers cited the usefulness of the results from formative assessments that provided them with more specific feedback to use to guide the students to reaching their goals. Students' active involvement in their learning was another instructional shift for teachers. The teachers engaged students in discussions about their performance on skills and the students were using the same terminology as the teachers. More so than before, students have started to think about their own learning. One teacher added, "They are aware of what they need. They have words for it," while another stated, "The shared lingo of learning targets and the common language is beneficial to the students." The focus is no longer on a number for teachers or students, but the skills that need to be learned.

Formative Assessment and Student Goal-Setting as part of a Response to Intervention Approach to Instruction and Assessment

The accountability movement and expectation that all students will be proficient in reading by 2012 has called on educators to examine and realign their instructional and assessment approaches. High quality instruction in a research-based core reading program that utilizes the results of universal screening to identify and drive interventions for students at risk for reading failure is an essential component of RtI (Kovaleski & Black, 2010). Formative assessment, or the process of assessing for learning as learning occurs, in addition to actively engaging students in the instructional process, brings quality instruction to an even higher level (Moss & Brookhart, 2009; Stiggins, 2006). In the case of the current study, this added element of formative assessment enhanced the quality of instruction that occurred in Tier 3 in conjunction with those elements of RtI that are emphasized in the literature as producing positive results for students at risk (e.g., progress monitoring, data-based decision-making, standard protocol interventions) (2010). The combination of the core elements of RtI combined with formative assessment practices, as defined by Moss and

Brookhart (2009), have had a seemingly positive effect on students' achievement after two years of participating in an evidence-based program with progress monitoring, formative assessment, and student goal-setting. Moreover, teachers' perceptions reflected positive changes in students' academic motivation, learning habits, self-efficacy, and engagement in learning tasks. Given that poor motivation and confidence often accompany low reading achievement, it appears that, formative assessment gave students at risk for reading failure an opportunity to improve their achievement and enhance their academic motivation and confidence in their skills.

In a review of the vital elements of both RtI and multi-tier service delivery models, Kovaleski and Black (2010) summarized the literature examining the effects of multi-tiered approaches on the special education referrals and evaluations. A remarkable number of RtI models reviewed indicated decreases in both referrals, evaluation, and identification of students with SLD. This is consistent with the findings of the present study where significantly fewer students than expected from Group 3 were identified with SLD in reading than Group 1, suggesting high quality instruction in a standard protocol intervention with progress monitoring, formative assessment

and student goal-setting, provides promise for remediating reading difficulties before special education services are necessary.

Implications

The findings from the quantitative data examined in the current study did not conclusively support formative assessment with student goal-setting as part of a Tier 3 evidence-based intervention with progress monitoring as optimal to an evidence-based intervention with progress monitoring only for immediately improving students' academic achievement in reading; however, examination of students' achievement after two years of formative assessment and student goal-setting shows promise of the long-term effects on students' achievement in reading. The effects of formative assessment and student goal-setting on students' reading achievement were most significant after two years participating in an evidence-based intervention with progress monitoring when compared to only one year in a program that utilized formative assessment practices. Additionally, there are relevant points to be gleaned from the qualitative data provided by the survey and focus group discussion that support formative assessment and student goal-setting as a beneficial approach for students and teachers alike.

Formative assessment is a method of evaluation that occurs during instruction to guide teaching and mastery of skills through goal-setting. Therefore, the results obtained from a formative assessment are different than what would be expected from traditional assessments. Examination of proficiency levels of students from the formative assessment and student goal-setting group when compared to the other two groups suggests that more students than expected from Group 3 are meeting the adequate yearly progress guidelines by achieving within the proficient to advanced range on the PSSA than the other two groups. Descriptive categories aside, inspection of PSSA scaled scores indicate that students from Group 3 are not achieving significantly higher than students from Group 1 or Group 2.

Formative assessments do not produce a number, percentage, or letter grade. In fact, the focus is on measuring incremental changes in students' skills during instruction that leads to mastery of short-term goals. For individuals removed from the formative assessment and student goal-setting process, it appears as though the impact on student achievement is minimal statistically speaking, at least in the short-term (e.g., fall to winter or winter to spring). In fact, the Title I teachers

confirmed that students' performance on traditional classroom, benchmark, or State assessments does not often match the results of formative assessments in their small group setting that show improved achievement; however, all of the survey respondents have observed a positive change in students' academic achievement in reading, which is consistent with the findings in current literature (Black & Wiliam, 1998; McCombs et al., 2008; Pintrich, 1995; Yin et al., 2008; Ysseldyke, 2001; Zimmerman & Schunk, 2004;).

The impact of formative assessment on students' academic achievement in reading seems to be clouded by the traditional view of achievement, that it is measured by a number, is objective, or is pass or fail. Actually, the results produced by formative assessments about students' reading achievement are seemingly very different. Formative assessment is not just an evaluation tool, but an instructional approach. Instructionally, teachers reported that their teaching is more focused and goal-oriented. Students are more engaged in the learning process and are taking more responsibility for their learning. As a result, incremental changes in reading achievement are measured by the mastery of goals that are developed based on individual student needs. The teachers are measuring students' achievement by mastery of these targeted skills, which

eventually will add up to the holistic task of reading independently. Therefore, it seems as though increased achievement in reading is not necessarily immediate for students at risk for reading failure; however, teachers have a better gauge on students' progress with skill acquisition and goal mastery.

The findings from the current study also suggest that fewer students than expected are identified with SLD in reading, since they have been engaged in formative assessment and student goal-setting than previously. Is this due solely to the implementation of formative assessment practices? It would be naïve to assume so. An approach that includes an evidence-based intervention with progress monitoring, formative assessment, and student goal-setting with ongoing teacher training, data-based decision-making, and effective core reading instruction, collectively seems to be the most effective approach to preventing and intervening with students at risk for reading failure. Teachers reported that frequent traditional and formative measures of students' progress within general and supplemental reading programs provides them with more concrete data about students' reading skills. Therefore, teachers indicated that they are more confident

referring students for an evaluation for special education when intervention efforts have failed.

According to teachers' reports and observations, the adoption of formative assessment practices has undoubtedly had a positive influence on both teachers and students alike. A common theme reported by teachers is that their teaching is more focused when learning targets are set and clearly communicated with their students. They also indicated they are engaging in more effective questioning by asking meaningful questions that will produce informative responses from students about their learning in relation to their target. In turn, students' responses are utilized to drive further instruction. Formative assessment happens in the moment of instruction and while learning takes place. In the case of the present study, administrators were also dedicated to ongoing teacher training and evaluation, which led to effective practice and consistent implementation of formative assessment. This support, which was offered through monthly or more frequent meetings, was essential to teacher buy-in and execution of formative assessment and student goal-setting for the initiative to be successful.

Five of the six interrelated elements of the formative assessment process set forth by the Center for Advancing

the Study of Teaching and Learning (CASTL) directly involve students, a) shared learning targets and criteria for success; b) receipt of feedback that feeds forward; c) engagement in goal-setting; d) direct teaching for students about how to ask powerful questions; and e) student self-assessment. Consequently, it is not surprising that teachers' perceived effect of formative assessment and student goal-setting on students is positive. Teachers cited a variety of changes in students' learning attributes, since formative assessment and student goal-setting practices were employed. Many reported that the intentional and active engagement of students in the process of formative assessment has made students more aware of their learning and focused on particular outcomes.

Additionally, teachers perceived that students have demonstrated greater confidence in their reading skills and engage more in positive self-talk. Furthermore, both teachers and students are using common language, and as a result, students have words to describe their achievement or needs and more often engage in discussions with teachers about their progress. Teachers also observed the students to be more motivated and interested in reading tasks than before, although not necessarily more motivated to read for leisure. Throughout the process of formative assessment,

students are directly taught strategies to improve their skills. The consistency of incorporating strategies into daily instruction led students to more often apply the skills independently without prompting according to teacher reports.

Historically, the results of assessments are intended to inform teachers about learning that has already happened; however, in the case of formative assessment, the focus lies in assessment for learning (Stiggins, 2006). The line between instruction and assessment becomes obscured. There is no evidence of where one ends and the other begins in the realm of formative assessment (Moss & Brookhart, 2009). Instruction and assessment are interrelated. Teachers and their students engage in formative assessment together. While analysis of the quantitative data did not conclusively point to formative assessment and student goal-setting as a more beneficial approach for enhancing students' academic achievement immediately, the findings suggest improved achievement outcomes for students after at least two years of implementation as part of an evidence-based intervention with progress monitoring. Clearly when examined collectively with teachers' observations and perceptions, there are notable positive effects on teachers and students, as well as learning and instruction.

Overall, the results of the present study support a supplemental, evidence-based intervention with progress monitoring as part of Tier 3 in a RtI model. Specifically, positive effects on Tier 3 students' achievement were observed when the students were provided with supplemental daily instruction in a standard protocol intervention with weekly progress monitoring (Mathes et al., 2005; Scammacca et al., 2007; Stecker et al., 2008;). Additionally, fewer students than expected were identified with specific learning disabilities after receiving evidence-based interventions in a small group setting with progress monitoring and formative assessment, suggesting this is an appropriate program to remediate students' reading skills prior to the need for specially designed instruction (Fuchs, Fuchs, & Compton, 2006; Menzies et al., 2008; O'Connor et al., 2005).

In regard to the implementation of formative assessment and student goal-setting practices on students' achievement and learning habits, there is clear evidence from the survey data and focus group discussion that support this approach for students at risk for reading failure. As cited in the findings of existing literature on formative assessment and student goal-setting, teachers' reported observed improvements in students' time-on-task,

motivation toward reading tasks during instruction, more positive self-statements, and eagerness to obtain feedback in relation to their goals, when actively engaged in the learning process (Black & Wiliam, 1998; Clark, 2008; Gibbs & Simpson, 2004; Miller & Lavin, 2007; Schunk, 1996; Schunk & Swartz, 1993; Sweet et al., 1998; Yin et al., 2008;). Based on existing literature and the glimpse provided by the present study into the potential positive effects of formative assessment and student goal-setting, administrators and teachers need to give careful consideration to this approach for enhancing student outcomes educationally and metacognitively.

Limitations and Delimitations

Participation in this study was delimited to third grade, Title I reading students identified as at risk for reading failure and Title I reading teachers with experience with the Title I reading program before and after formative assessment practices were employed. Title I teachers, who did not hold this position before formative assessment and student goal-setting was implemented, were excluded from the study. The current study also was delimited to the examination of formative assessment and student goal-setting on students' academic achievement, learning habits/study skills, motivation, self-efficacy

related to reading tasks as perceived by Title I reading teachers, and identification of students with SLD in reading. The impact of formative assessment and student goal-setting in other subject areas were not considered.

Additionally, the effect of formative assessment and student goal-setting on students with average academic achievement was not considered. Academic achievement in reading was examined by reviewing archival PSSA, 4Sight, and DIBELS data for students in third grade, who were identified at risk for reading failure. The special education data included in this study only included those students from the sample, who were identified with a SLD in reading. Other disability categories were excluded. Teachers' perceptions were measured on a slide scale (indicating percentage of time) with a survey designed specifically for the current study. Items were piloted and revised after a panel of teachers with training in formative assessment provided feedback on the survey instrument. Further item analysis regarding the construct validity was not conducted.

The results of the present study are generalizable to 3rd grade, Title I reading students and teachers in a rural Pennsylvania school district. The results are not generalizable beyond the population included in this study

for a number of reasons. First, archival assessment data that was examined to investigate the impact of formative assessment and student goal-setting on students' academic achievement was collected over a number of school years. Additionally, during the 2006-2007 school year, a new core reading program was introduced in the district, which may also have a significant positive effect on students' reading achievement. Data regarding the fidelity of treatment implementation was not available with respect to the delivery of the evidence-based intervention or formative assessment practices; however, in the opinion of the researcher, the reports provided by the Title I reading teachers support the fidelity by which the formative assessment practices were employed in the district. Furthermore, even though students were determined to be eligible for Title I reading services, parent permission was required. Therefore, students' who were invited to participate, but whose parents did not consent, were not included in the study.

The effect of formative assessment and student goal-setting on students' learning habits/study skills, motivation and self-efficacy toward reading tasks was indirectly measured through teachers' perceptions and observations. This is considered a delimitation as

students may have an entirely different view of the impact of formative assessment and student goal-setting on their learning than their teachers. Furthermore, the perceptions and observations reported and analyzed in this study reflect that of only those, who chose to respond to the invitation to participate in the study. The results of the survey and focus group discussion are further limited by the small sample size. Additionally, the formative assessment and student goal-setting initiative has been a strong focus of the administration. Thus, as with any survey research, consideration needs to be given to the fact that teachers may have been compelled to respond in a socially desirable way, which poses a threat to the validity of the survey results. Another limitation with respect to the survey instrument itself is that, even though it was designed based on previous research and piloted with a group of teachers with similar training, it was not reviewed by a panel of experts. This would have provided further evidence of construct validity for the survey tool.

Future Directions

Since the results of the present study have limited generalizability to other populations of students identified at risk for reading failure, there are several

recommendations for further research. Future research examining the effect of formative assessment and student goal-setting on academic achievement should take on a more experimental approach rather than utilizing archival data to evaluate its effectiveness. This would include data collection on the fidelity of treatment implementation with regard to the evidence-based intervention and formative assessment practices. Additionally, the research should include not only students at risk for reading failure, but also students with typically developing reading skills. Consideration of a longitudinal study of the effects of formative assessment and goal-setting that follows students from first through sixth grades would contribute greatly to the existing literature on formative assessment in regard to its appropriateness at different grade levels and points in development.

Another suggestion for further research is to compare DIBELS assessment results from fall to spring benchmark periods to examine students' growth after participating in an evidence-based intervention with weekly progress monitoring, formative assessment, and student goal-setting, compared to the growth of the national norm. Were the gains commensurate with the norm? Did students participating in a closely monitored, evidence-based

intervention with formative assessment and student goal-setting demonstrate more growth as measured by the DIBELS?

Furthermore, given the existing literature on the positive impact of formative assessment on students' learning habits, motivation, and self-confidence toward reading tasks, further research focusing on students' perceptions and impressions of these practices on their learning would offer more insights regarding its influence on current and future learning. In addition to surveying students, systematic observation of students in their learning environment (with or without formative assessment) examining behavioral characteristics related to the aforementioned attributes would provide an interesting comparison.

Aside from a more refined methodological approach to researching the impact of formative assessment and student goal-setting on student achievement and learning habits, another recommendation for further research would be to examine the long-term effects on students' achievement and application of strategies after a Tier 3 intervention with progress monitoring including a formative assessment approach was withdrawn for a period of time. Acquiring an understanding of the long-term effects on students' learning and study habits is beneficial to understanding

its usefulness beyond its initial application in the classroom. Despite the history of formative assessment and student goal-setting, Moss and Brookhart's (2009) model is a rather innovative approach to the field of education, as the systematic implementation of formative assessment practices that include all elements of the process has been relatively dormant in classrooms during recent years. Therefore, it is a fertile ground for new research with several different avenues yet to be explored.

Recommendations to the Field

The role of the school psychologist continues to expand as instructional methods progress and ways of evaluation advance. Awareness of the ever-changing modes of classroom evaluation and the impact on students' learning and achievement is imperative to understanding assessment data, evaluating students' achievement, and providing substantive recommendations that will have a profound influence on students' academic futures. The potential benefits of formative assessment and student goal-setting as an approach to further the learning and achievement for students at risk for academic failure in reading cannot be ignored. Arguably, learners' more active role in the learning process enables them to internalize the strategies employed to learn new skills and demonstrate

proficiency in the skill of reading. Despite the limited generalizability of the results from the teacher survey and focus group, clear positive effects are evident for students academically and metacognitively.

As newly defined intervention specialists, school psychologists need to be aware of instructional approaches and methodologies that advance the whole student, including qualities of effective learners who are motivated and self-efficacious. Innovative practices, such as formative assessment and student goal-setting as part of a Tier 3 evidence-based intervention deserve attention and have the potential to enhance programming for students at risk for reading failure. Maximizing intervention efforts by utilizing effective programs and instructional techniques also assists school psychologists when evaluating students for possible SLD identification, particularly when utilizing a response to intervention approach.

Summary

The current study investigated the impact of formative assessment and student goal-setting as part of an evidence-based intervention on the reading achievement of students at risk for reading failure. Additionally, the study aimed to determine the influence of formative assessment practices on the identification of students with a SLD in

reading. Consideration also was given to teachers' perceptions and observations of the effect of formative assessment and goal-setting on students' learning habits, motivation, and self-efficacy toward reading tasks. To answer the associated research questions, archival PSSA, 4Sight, DIBELS, and special education data were analyzed. Additionally, Title I reading teachers were surveyed and engaged in a focus group discussion about their experiences with formative assessment and student goal-setting as a component of a Tier 3 intervention for students at risk for reading failure.

The results of the quantitative analyses did not support the immediate effects of formative assessment and student goal-setting as part of a Tier 3 evidence-based intervention with progress monitoring to elicit greater achievement for students at risk for reading failure. However, positive effects were noted after two years of participation in this type of intervention program. Furthermore, teachers' perceptions and observations suggested clear benefits for students, although not necessarily in the form of increased scores on standardized or classroom-based traditional assessments. Teachers perceived that students demonstrated greater mastery of reading skills, when learning targets were clearly

communicated and the students were engaged in discussions about their learning.

Additionally, teachers reported that they observed students to show increased motivation toward reading tasks and greater confidence in their reading skills. Students also exhibited characteristics of intentional learners to a marked degree compared to previous years before formative assessment was introduced. Specifically, students were taking more responsibility for their learning, were more aware of the strategies they are using, and were further attentive to the task of learning.

While considering the positive trends noted in the qualitative data, there are also several limitations to the current study. Since the archival data were collected over the course of several years, there is no evidence to support that the groups were the same at the beginning, or aside from examination of test specifications and descriptive data, that the tools used to measure their skills were comparable. Furthermore, a new research-based reading series was introduced in the midst of the years examined (2005-2006 school year), which may also account for improvements in students' reading achievement. The small sample size of teachers who, agreed to participate in the survey and discussion group, further limits the

generalizability of the current study. Additionally, even though the survey tool was designed from current peer-reviewed literature and piloted with a group of teachers with similar training in formative assessment and student goal-setting, it was not reviewed by a panel of experts nor were the constructs further examined and validated to ensure the accuracy of the tool in measuring what it was intended to measure.

Following the aforementioned limitations to the current study, it is recommended that further research be conducted to examine the effects of formative assessment and student goal-setting on academic achievement in reading using a more experimental methodological approach with careful attention to implementation and treatment fidelity. Additionally, further research should focus on the long-term effects on students' learning and achievement, since the current focus is on the immediate outcomes.

In sum, student goal-setting as part of a formative assessment approach for students at risk for reading failure provides promise for effective instructional practices and data-based decision-making. The crux of RtI is high quality instruction for all students that includes data-based decision making and accountability that gauges student achievement and allows for early intervention with

students at risk for failure. Therefore, formative assessment and student goal-setting deserve consideration as part of an effective intervention program for students with the prospect that it will enhance students' academic achievement, metacognitive skills, and learning habits and teachers' instructional practices, which will lead to improved outcomes for all.

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Appendix A

Letter Requesting Permission

Angela B. Christy-McMasters
34 North Twelfth Street
Indiana, PA 15701

May 3, 2010

Dr. William H. Kerr, Superintendent
Armstrong School District
410 Main Street
Ford City, PA 16226

Dear Dr. Kerr,

As a doctoral candidate at Indiana University of Pennsylvania (IUP), I am currently working toward completing my dissertation. I am working under the supervision of my Dissertation Chair, Dr. Lynanne Black, Assistant Professor in the Department of Educational and School Psychology. Additionally, I have been in consultation with Dr. Pawk and Dr. Long regarding my research project.

Completion of my dissertation is the final requirement of my doctoral degree in School Psychology. Hence, I write to seek your permission to conduct a study entitled, "*Use of a Tier 3 Evidence-Based Intervention with Progress Monitoring, Formative Assessment, and Student Goal-Setting: An Evaluation of the Immediate and Long-term Effects on Student Reading Achievement.*" In order to conduct the study as outlined in my proposal, I am requesting the use of archival DIBELS, 4Sight, and PSSA data gathered in the district and special education data for students identified with specific learning disabilities during the years of 2004-2005, 2006-2007, and 2007-2008. Additionally, I request your permission to distribute a questionnaire to Title I reading teachers in order to investigate their observations related to formative assessment and student goal-setting on reading achievement and student learning habits, as well as their impressions related to instruction, planning, and training, compared to previous years of programming for students at-risk for reading failure.

If you grant your permission to conduct this study in the Armstrong School District utilizing archival and questionnaire data, please complete and return the attached form to Lenape Elementary.

Please contact me if you have any questions regarding my research project. I may be reached at (724) 664-3955 or via email at chra@asd.k12.pa.us. Thank you for your support in my educational endeavor.

Sincerely,

Angela B. Christy-McMasters
Doctoral Candidate at Indiana University of Pennsylvania

PERMISSION TO CONDUCT RESEARCH STUDY

I have read and reviewed the research project proposal entitled, *"Use of a Tier 3 Evidence-Based Intervention with Progress Monitoring, Formative Assessment, and Student Goal-Setting: An Evaluation of the Immediate and Long-Term Effects on Student Reading Achievement"* submitted to me by Angela B. Christy-McMasters, doctoral candidate at Indiana University of Pennsylvania and school psychologist in the Armstrong School District. I hereby grant Mrs. Christy-McMasters permission to complete this research project in the Armstrong School District.

Dr. William H. Kerr	Superintendent, Armstrong School District
Print Name	Position
William H. Kerr	5/3/10
Signature	Date

Appendix B

SURVEY COVER LETTER

Dear Colleague:

I am currently a Doctoral Candidate at Indiana University of Pennsylvania. I am conducting a study regarding the effects of formative assessment and student goal-setting on students' reading achievement, motivation, and learning habits, and am asking for your help. Please consider participating in this study. The information below is provided in order to assist you in making an informed decision regarding your participation.

The purpose of this study is to examine the effects of a Tier 3, evidence-based intervention with progress monitoring, formative assessment, and student goal-setting, on student reading achievement, motivation, and learning habits. You will be asked to respond to several survey items regarding your perceptions related to the areas listed above and to provide demographic information. The survey should require 10 to 20 minutes of your time. No identifying information will be linked to your survey responses and your confidentiality will be protected.

Your participation in this study is voluntary and is not part of your duties or responsibilities as an employee of the Armstrong School District. If you choose to participate in this research study, all information will be kept confidential and no identifying information will be available to me or any other Armstrong School District administrator or faculty member at any time. Your responses will be considered only in combination with other participants. Confidentiality will be protected, if any information gathered as part of this study would be published in a scholarly journal or presented at a professional conference.

By returning this survey, you are giving consent to use the data you provide to investigate the effects of formative assessment and student goal-setting from the teachers' perspective. You may choose to opt out of this study by not returning the survey. This project has been approved by the Indiana University of Pennsylvania Institutional Review Board for the Protection of Human Subjects (Phone: 724-357-7730).

I would greatly appreciate your participation in this study. If you choose to respond to this survey, you may enter your name in a drawing to win one of five $25.00 gift cards to Borders. Please complete the survey by **Thursday, November 4, 2010,** by following the link below. Please feel free to contact me if you have any questions regarding the survey. Thank you in advance for your consideration.

Sincerely,

Angela B. Christy-McMasters
Doctoral Candidate
Lenape Elementary School
2300 Center Avenue
Ford City, PA 16226
(724) 763-5299
A.B.Christy@iup.edu

Lynanne Black, Ph.D.
Dissertation Chair
242 Stouffer Hall, IUP
Indiana, PA 15705
(724) 357-4757
Lynanne.Black@iup.edu

Appendix C

Survey of Teachers' Perceptions of Student Motivation, Learning Habits, Formative Assessment, and Student Goal-Setting

1. What is your position / title?

2. What is your sex?

- Male
- Female

3. List your degree(s) / certifications.

4. How many years have you been a full-time teacher?

5. How old are you?

- 21 - 30 years old
- 31 - 40 years old
- 41 - 50 years old
- 51+ years old

Below are several statements about formative assessment and student goal-setting related to students' academic motivation and learning habits. The purpose is to collect information regarding teachers' perceptions and observations of students participating in an evidence-based intervention in the Title I Reading Program related to formative assessment, student goal-setting, academic motivation, and learning habits. Please provide your opinion. There are no correct or incorrect responses. Your responses will remain CONFIDENTIAL.

Please base your ratings ONLY on students participating in the Title I Reading Program with an evidence-based intervention with formative assessment and student goal-setting.

For Items 1 - 3, read each statement and estimate the PERCENTAGE OF TIME you have observed your students to demonstrate these behaviors.

6. **After I began using formative assessment practices with my students, I have observed my students to,**

	Percentage of Time										
	0	10	20	30	40	50	60	70	80	90	100
Be more focused on classroom instruction and tasks											
More often choose to read during leisure or free-time											
Show more confidence in their reading skills											
Participate more in class discussions											
Make more frequent positive statements about their skills in reading											
Attend more to the quality of their work											
Be more eager to obtain feedback on their performance											

7. Since I have been using formative assessment with student goal-setting, I have observed my students to,

	Percentage of Time										
	0	10	20	30	40	50	60	70	80	90	100
Improve their academic achievement in reading											
Show more interest in helping/ supporting others											
Be more eager to communicate with their parents, teachers, and peers about their progress											
Demonstrate greater motivation toward academic tasks after becoming more actively involved in their learning											
Show higher levels of engagement in learning tasks after becoming more actively involved in their learning											
Demonstrate greater motivation and higher self-esteem after receiving instruction and effective feedback on their performance											

Exhibit greater self-efficacy or confidence about their performance on reading tasks	
Display greater mastery of skills when learning targets have been clearly communicated	

8. **What percentage of students who participated in an evidence-based intervention with formative assessment and student goal-setting have you observed to demonstrate characteristics of intentional learners by**

	Percentage of Time										
	0	10	20	30	40	50	60	70	80	90	100
Taking more responsibility for their learning											
Putting forth more effort toward learning											
Becoming more aware of the strategies they are using											
Becoming more aware of the strategies they are using											

9. **What percentage of time do you modify your teaching based on the feedback you receive from formative assessments?**

	Percentage of Time										
	0	10	20	30	40	50	60	70	80	90	100
Modify teaching											

10. **What percentage of time has formative assessment and student goal-setting positively influenced the way your students' view the learning process?**

	Percentage of Time										
	0	10	20	30	40	50	60	70	80	90	100
Positively influenced students' view of the learning process											

11. **When using assessments to guide student learning, what percentage of time do you find that the use of formative assessments is of more value than traditional assessments?**

	Percentage of Time										
	0	10	20	30	40	50	60	70	80	90	100
Formative versus traditional assessments											

Appendix D

Qualtrics Summary Report

1. What is your position / title?

Text Response
Title I Reading Teacher
Title I/Reading Specialist
Title 1 teacher
Reading Specialist
Title 1 teacher
Title I Reading
Teacher
reading teacher

Statistic	Value
Total Responses	8

2. What is your sex?

#	Answer		Response	%
1	Male		1	13%
2	Female		7	88%
	Total		8	100%

Statistic	Value
Min Value	1
Max Value	2
Mean	1.88
Variance	0.13
Standard Deviation	0.35
Total Responses	8

3. List your degree(s) / certifications.

Text Response
Elementary Education K-6 certification B.A. psychology M.Ed. educational and school psychology
Bachelor's in Elementary Education Reading Specialist Certification Master's in Education
BA in elementary eduacation Reading specialist MA reading
Bachelor's Degree in Elementary Education and Early Childhood Development Reading Specialist Certification Master's Degree in Reading Supervisor of Curriculum and Instruction Certification Principals K-12 Certification
Elementary Education (K-6) Reading Specialist (K-12)
B.S. Education (Elementary and Early Childhood) M.S. Education (Reading)
Early Childhood Education Special Education Reading Specialist
Bachelors of Science in Early Childhood and Elementary Education/concentration in Reading

Statistic	Value
Total Responses	8

4. How many years have you been a full-time teacher?

Text Response
8.5
7
21
14
7
4
10
11

Statistic	Value
Total Responses	8

5. How old are you?

#	Answer		Response	%
1	21 - 30 years old		2	25%
2	31 - 40 years old		5	63%
3	41 - 50 years old		0	0%
4	51+ years old		1	13%
	Total		8	100%

Statistic	Value
Min Value	1
Max Value	4
Mean	2.00
Variance	0.86
Standard Deviation	0.93
Total Responses	8

6. After I began using formative assessment practices with my students, I have observed my students to,

#	Answer	Min Value	Max Value	Average Value	Standard Deviation	Responses
1	be more focused on classroom instruction and tasks	35	90	62.00	23.40	8
2	more often choose to read during leisure or free-time	20	81	45.63	21.89	8
3	show more confidence in their reading skills	30	93	66.63	22.32	8
4	participate more in class discussions	10	90	60.63	27.57	8
5	make more frequent positive statements about their skills in reading	30	91	59.00	24.30	8
6	attend more to the quality of their work	19	95	60.38	33.14	8
7	be more eager to obtain feedback on their performance	25	97	77.75	24.27	8

7. Since I have been using formative assessment with student goal-setting, I have observed my students to,

#	Answer	Min Value	Max Value	Average Value	Standard Deviation	Responses
1	improve their academic achievement in reading	50	96	73.25	17.69	8
2	show more interest in helping/supporting others	20	91	56.25	24.32	8
3	be more eager to communicate with their parents, teachers, and peers about their progress	30	95	62.50	22.44	8
4	demonstrate greater motivation toward academic tasks after becoming more actively involved in their learning	40	95	69.38	20.95	8
5	show higher levels of engagement in learning tasks after becoming more actively involved in their learning	30	95	66.25	23.11	8
6	demonstrate greater motivation and higher self-esteem after receiving instruction and effective feedback on their performance	30	95	68.50	21.99	8
7	exhibit greater self-efficacy or confidence about their performance on reading tasks	30	95	65.63	22.75	8
8	display greater mastery of skills when learning targets have been clearly communicated	70	100	80.88	11.85	8

8. What percentage of students who participated in an evidence-based intervention with formative assessment and student goal-setting have you observed to demonstrate characteristics of intentional learners by

#	Answer	Min Value	Max Value	Average Value	Standard Deviation	Responses
1	taking more responsibility for their learning	20	95	63.38	25.74	8
2	putting forth more effort toward learning	30	96	73.25	21.18	8
3	becoming more aware of strategies they are using	60	98	81.63	13.51	8

9. What percentage of time do you modify your teaching based on the feedback you receive from formative assessments?

#	Answer	Min Value	Max Value	Average Value	Standard Deviation	Responses
1	modify teaching	50	95	74.50	17.50	8

10. What percentage of time has formative assessment and student goal-setting positively influenced the way your students' view the learning process?

#	Answer	Min Value	Max Value	Average Value	Standard Deviation	Responses
1	positively influenced students' view of the learning process	50	95	78.88	15.86	8

11. When using assessments to guide student learning, what percentage of time do you find that the use of formative assessments is of more value than traditional assessments?

#	Answer	Min Value	Max Value	Average Value	Standard Deviation	Responses
1	formative versus traditional assessments	65	99	85.88	10.86	8

Appendix E

SUMMARY OF SURVEY RESPONSES BY CONSTRUCT

TRADITIONAL/FORMATIVE ASSESSMENT	Min	Max	M	SD	R1	R2	R3	R4	R5	R6	R7	R8	RANK
When using assessments to guide student learning, what percentage of time do you find that the use of formative assessments is of more value than traditional assessments?	65	99	85.88	10.86	81	97	65	90	80	85	90	99	1
What percentage of time do you modify your teaching based on the feedback you receive from formative assessments?	50	95	74.50	17.50	70	90	70	85	50	95	50	86	2

MOTIVATION TOWARD READING TASKS	Min	Max	M	SD	R1	R2	R3	R4	R5	R6	R7	R8	RANK
After I began using formative assessment practices with my students, I have observed my students to,													
more often choose to read during leisure or free-time	20	81	45.63	21.89	39	40	20	75	30	30	50	81	6
participate more in class discussions	10	90	60.63	27.57	60	80	30	80	60	75	10	90	5
be more eager to obtain feedback on their performance	25	97	77.75	24.27	60	85	25	95	90	90	80	97	1
Since I have been using formative assessment with student goal-setting, I have observed my students to,													
be more eager to communicate with their parents, teachers, and peers, about their progress	30	95	62.50	22.44	59	50	30	95	80	49	50	87	4

demonstrate greater motivation toward academic tasks after becoming more actively involved in their learning	49	95	69.38	20.95	60	75	40	90	80	75	40	95	2
demonstrate greater motivation and higher self-esteem after receiving instruction and effective feedback on their performance	30	95	68.50	21.99	69	70	50	95	60	80	30	94	3

FORMATIVE ASSESSMENT AND LEARNING HABITS	Min	Max	M	SD	R1	R2	R3	R4	R5	R6	R7	R8	**RANK**
After I began using formative assessment practices with my students, I have observed my students to,													
be more focused on classroom instruction and tasks	35	90	62.00	23.40	70	50	40	90	40	81	35	90	2
attend more to the quality of their work	19	95	60.38	33.14	19	60	30	80	90	90	19	95	3
Since I have been using formative assessment with student goal-setting, I have observed my students to,													
show more interest in helping/supporting others	20	91	56.25	24.32	39	65	30	70	60	75	20	91	4
show higher levels of engagement in learning tasks after becoming more actively involved in their learning	30	95	66.25	23.11	60	80	40	90	60	75	30	95	1

FORMATIVE ASSESSMENT AND LEARNING HABITS	Min	Max	M	SD	R1	R2	R3	R4	R5	R6	R7	R8	RANK
What percentage of students who participated in an evidence-based intervention with student goal-setting have you observed to demonstrate characteristics of intentional learners by,													
taking more responsibility for their learning	20	95	63.38	25.74	50	62	40	95	80	70	20	90	3
putting forth more effort toward learning	30	96	73.25	21.18	60	80	70	95	80	75	30	96	2
becoming more aware of strategies they are using	60	98	81.63	13.51	60	95	65	85	90	80	80	98	1

FORMATIVE ASSESSMENT AND SELF-EFFICACY	Min	Max	M	SD	R1	R2	R3	R4	R5	R6	R7	R8	RANK
After I began using formative assessment practices with my students, I have observed my students to,													
show more confidence in their reading skills	30	93	66.63	22.32	40	75	30	90	60	75	70	93	2
make more frequent positive statements about their skills in reading	30	91	59.00	24.30	50	75	40	80	30	76	30	91	4
Since I have been using formative assessment with student goal-setting, I have observed my students to,													
demonstrate greater motivation and higher self-esteem after receiving instruction and effective feedback on their performance	30	95	68.50	21.99	69	70	50	95	60	80	30	94	1

exhibit greater self-efficacy or confidence about their performance on reading tasks	30	95	65.63	22.75	60	75	40	95	60	75	30	90	3

FORMATIVE ASSESSMENT AND ACADEMIC ACHIEVMENT	Min	Max	M	SD	R1	R2	R3	R4	R5	R6	R7	R8	**RANK**
Since I have been using formative assessment with student goal-setting, I have observed my students to,													
improve their academic achievement in reading	50	96	73.25	17.69	60	80	50	80	50	80	90	96	3
display greater mastery of skills when learning targets have been clearly communicated	70	100	80.88	11.85	70	80	70	80	80	70	100	97	1
What percentage of time has formative assessment and student goal-setting positively influenced the way your students view the learning process?	50	95	78.88	15.86	60	95	50	90	80	85	80	91	2

Appendix F

FOCUS GROUP COVER LETTER

My name is Angela McMasters and I am a doctoral student at Indiana University of Pennsylvania working on my dissertation. You are invited to participate in my research study. The following information is provided in order to assist you in making an informed decision about whether to participate. You are eligible to participate in this study because you are a Title I reading teacher using formative assessment and student goal-setting with students at-risk for reading failure.

The purpose of this voluntary focus group is to discuss formative assessment and student goal-setting as part of an evidence-based intervention program for students at risk for reading failure. Specifically, I am interested in knowing more about the impact formative assessment and student goal-setting has had on your teaching, students' academic achievement in reading, identification of students with specific learning disabilities, and students' study skills/learning habits.

Your participation in the focus group as part of this study is voluntary. You are free to decide not to participate in this study or to withdraw at any time without adversely affecting your relationship with the research investigator at IUP. Furthermore, your participation is not part of your duties or responsibilities as an employee of the Armstrong School District; therefore, your choice to participate or not will not affect you negatively in regard to your specific job/position in the Armstrong School District. If you choose to participate, you may withdraw at any time and none of your responses provided during the focus group will be included in the study. Your responses will be considered only in combination with other participants. All information will be held in strict confidence and will have no bearing on you as an employee of the Armstrong School District. No information from the focus groups will be shared with Armstrong School District administrative staff and confidentiality will be protected. If any information gathered as part of this study would be published in a scholarly journal or presented at a professional conference, no individually identifying information will be used.

If you choose to participate, I will ask the group a variety of questions about experiences with formative assessment and student goal-setting as part of an evidence-based intervention program. Specifically, the questions will be about the impact of formative assessment and student goal-setting on your views of traditional assessments of student learning, students' reading achievement and learning/study habits, instructional approaches to teaching, benefits to students at-risk for reading failure, and evaluation and identification of students with specific learning disabilities.

For the purposes of accurate transcription, the focus group will be audio recorded. You will be provided a number for identification purposes. Throughout the focus group session, it will be requested that you refer to yourself and other participants by number, not by name. Following the focus group session, the tape recording will be transcribed into a word processing document. After the session has been transcribed, the audio recording will be destroyed. In order to protect your confidentiality, your name will not be linked with any responses you provide to focus group questions during the discussion.

If you are willing to participate in this study, please sign your name below. By signing your name, you are agreeing to take part in this research study. Please understand that your confidentiality will be protected and that you have the right to withdraw from this study at any time by contacting one of the two individuals listed at the bottom of this page.

This project has been approved by the Indiana University of Pennsylvania Institutional Review Board for the Protection of Human Subjects (Phone: 724-357-7730).

Student Researcher:
Angela B. Christy-McMasters
Doctoral Candidate,
School Psychology
2300 Center Avenue
Ford City, PA 16226
(724) 763-5299

Dissertation Chair:
Lynanne Black, Ph.D.
Chair, Department of
Educational & School Psychology
1175 Maple Street
242 Stouffer Hall – IUP
Indiana, PA 15705
(724) 357-4757

FORMATIVE ASSESSMENT AND STUDENT GOAL-SETTING FOCUS GROUP

INFORMED CONSENT SIGNATURE PAGE

If you are willing to participate in this study, please sign your name below. By signing your name, you are agreeing to take part in this research study. Please understand that your confidentiality will be protected and that you have the right to withdraw from this study at any time by contacting one of the two individuals listed at the bottom of the Informed Consent Form.

_____ _____
Participant Name Date

_____
Participant Signature

Appendix G

QUESTIONS FOR TITLE I READING FOCUS GROUP ON FORMATIVE ASSESSMENT, STUDENT GOAL-SETTING, AND READING ACHIEVEMENT

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1. What impact has the use of formative assessment and student goal-setting had on your teaching?

2. Has your training on formative assessment and student goal-setting had an effect on your teaching or your view of traditional assessments of student learning? If so, how?

3. What effect has the use of formative assessment and student goal-setting had on your students related to their reading achievement?

4. What effect has the use of formative assessment and student goal-setting had on your students related to their learning and study habits?

5. Consider previous programming provided to students at-risk for reading failure. At one time, students had been instructed without an evidence-based intervention or progress monitoring. Now students are instructed using an evidence-based intervention, progress monitoring, formative assessment, and student goal-setting.

    a. In your opinion, how much difference is there in your instruction with respect to the strategies you use and the skills you teach?

    b. What benefits have you observed in the reading program for students at-risk for reading failure compared to previous years?

    c. In your opinion, what impact has formative assessment and student goal-setting as part of an evidence-based intervention with progress monitoring affected the identification of students with specific learning disabilities?

Appendix H

NVivo Qualitative Codings

FORMATIVE VERSUS TRADITIONAL ASSESSMENTS

<Internals\\FA SGS and Traditional Ass> - § 21 references coded – ASSESSMENT - [6.61% Coverage]

<Internals\\FA SGS and Traditional Ass> - § 13 references coded – MORE - [1.60% Coverage]

<Internals\\FA SGS and Traditional Ass> - § 7 references coded – GOAL - [0.92% Coverage]

<Internals\\FA SGS and Traditional Ass> - § 7 references coded – LEARN/LEARNING - [1.44% Coverage]

What I do so much more (Reference 1 - 0.12% Coverage) now is instead of just saying good job, I talk to them about why I thought it was a good job and give more (Reference 2 - 0.12% Coverage) specific feedback on what they need to improve on.

The more (Reference 3 - 0.12% Coverage) specific feedback focuses more Reference (4 - 0.12% Coverage) on improving skills than on a number or letter (Reference 1 - 0.18% Coverage) grade earned on a test.

Engaging students in a discussion about their performance on an assessment (Reference 1 - 0.31% Coverage) is something I do all the time whereas before, tests were returned and the group moved on.

Helps give more (Reference 5 - 0.12% Coverage) specific information to help them to guide them what to do better the next time and the kids are really familiar with the terms so that helps also. They'll say, "what's my target?"

They're starting to think about their own learning (Reference 2 - 0.25% Coverage). How did they learn (Reference 3 - 0.15% Coverage) and what do they need to do to reach their goal (Reference 1 - 0.12% Coverage). Not as focused on a number anymore but the skills they're working on.

Our assessments (Reference 2 - 0.34% Coverage) have changed a little bit as compared to how we might have assessed (Reference 3 - 0.25% Coverage) in the past. Instead of just observing or writing maybe what your observations are on that assessment (Reference 4 - 0.31% Coverage) or looking at an assessment (Reference 5 - 0.31% Coverage) from the classroom even, I think being more (Reference 6 - 0.12% Coverage) specific with that assessment (Reference 6 - 0.31% Coverage) towards that goal (Reference 2 - 0.12% Coverage) and my assessing (Reference 7 - 0.28% Coverage) now is more (Reference 7 - 0.12% Coverage) towards that goal (Reference 3 - 0.12% Coverage) instead of the whole big picture of reading, really specified on that specific goal (Reference 4 - 0.12% Coverage) and that assessing (Reference 8 - 0.28% Coverage). So I'm not looking at all five areas of reading at one time, but one area of reading and their progress with that one skill and meeting that goal (Reference 5 - 0.12% Coverage) and driving further instruction (Reference 4 - 0.34% Coverage).

My assessments (Reference 9 - 0.34% Coverage) are more (Reference 8 - 0.12% Coverage) focused toward the students' goals (Reference 6 - 0.15% Coverage) and learning (Reference 5 - 0.25% Coverage) targets. I get more (Reference 9 - 0.12% Coverage) useful information from the formative assessments (Reference 10 - 0.34% Coverage). I agree also that I learn (Reference 6 - 0.15% Coverage) more (Reference 10 - 0.12% Coverage) from the assessments (Reference 11 - 0.34% Coverage) I give now that they are more (Reference 11 - 0.12% Coverage) formative.

The other thing I think too that helps is having the students graph their own data and be a part of that. They're more (Reference 12 - 0.12% Coverage) actively involved in what they're doing and where they're going

Also with the traditional assessments (Reference 12 - 0.34% Coverage) in the past prior to doing this formative assessment (Reference 13 - 0.31% Coverage) approach, we would give the assessment, (Reference 14 - 0.31% Coverage) not talk about it, here's your score. Now, we actually take a look at it, here's what you did well, here's what you continue to need to work on, then we set the goals (Reference 7 - 0.15% Coverage) for what they need to work on for the next assessment (Reference 15 - 0.31% Coverage) period. So it is not even used just as an assessment (Reference 16 - 0.31% Coverage) tool, but a data tool for

the students to know (Reference 7 - 0.12% Coverage) what they need to work on next.

In relation to the traditional assessments (Reference 17 - 0.34% Coverage) we see in the classrooms, too I am noticing more (Reference 13 - 0.12% Coverage) that what the results in the traditional assessments (Reference 18 - 0.34% Coverage) in the classroom are showing do not always match up with what I see in the formative assessments (Reference 19 - 0.34% Coverage) and the things I do in my classroom. The achievement that I see with the kids sometimes does not come out in the traditional assessments (Reference 20 - 0.34% Coverage) in the classroom.

The achievement that we see isn't always what they get on the actual assessment (Reference 21 - 0.31% Coverage). Just like the progress monitoring we do during group time when they actually go to do the DIBELS or 4Sight test, the achievement does not match what they're doing on a weekly basis, which is frustrating, but at the same time you can say that they didn't get that score, but here's proof that they can do it.

FORMATIVE ASSESSMENT, STUDENT GOAL-SETTING, LEARNING HABITS AND MOTIVATION TOWARD READING TASKS

<Internals\\FA SGS and Student Habits> - § 15 references coded – LEARN/STUDY/TEST-TAKING/READ/WORK/WORKING [3.10% Coverage]

<Internals\\FA SGS and Student Habits> - § 8 references coded – USE/USING/HABITS/APPLY/APPLYING [1.53% Coverage]

<Internals\\FA SGS and Student Habits> - § 4 references coded – STRATEGY/STRATEGIES [1.45% Coverage]

<Internals\\FA SGS and Student Habits> - § 5 references coded – PROGRESS - [1.53% Coverage]

With what we use, (Reference 1 - 0.11% Coverage) just one thing I personally do where I saw a lot of progress (Reference 1 - 0.31% Coverage) with my fourth grade group, is using (Reference 2 - 0.19% Coverage) the test-taking (Reference 1 - 0.23% Coverage) skills and strategies (Reference 1 - 0.38% Coverage), but along with that we use (Reference 3 - 0.11% Coverage) a continual test-taking (Reference 2 - 0.23% Coverage) strategies (Reference 2 -

0.38% Coverage) guide. They learn (Reference 3 - 0.19% Coverage) how to study (Reference 4 - 0.19% Coverage) and read (Reference 5 - 0.15% Coverage) the questions and understand what the questions mean. What to do before they read (Reference 6 - 0.15% Coverage) the story, during the story, after the story so the study (Reference 7 - 0.19% Coverage) habits (Reference 4 - 0.23% Coverage) become ingrained in them so after a couple of months of using (Reference 5 - 0.19% Coverage) the study (Reference 8 - 0.19% Coverage) guide that they check off every time, they don't have to anymore, they can tell me what they need to do, so in hopes that it carries on with them. The students are more often applying (Reference 6 - 0.31% Coverage) the study (Reference 9 - 0.19% Coverage) strategies (Reference 3 - 0.38% Coverage) that I've taught.

When they know something specific that they need to work (Reference 10 - 0.15% Coverage) on it helps to drive them to do better because they see that I can do this and I can have achievement, where in the past, they didn't have a specific skill to work (Reference 11 - 0.15% Coverage) on or strategy (Reference 4 - 0.31% Coverage) to apply (Reference 7 - 0.19% Coverage) so they didn't know how to better their skills. They weren't focused on a specific skill, lost in the big picture. It is more focused for them. They know how to do better whereas in the past they only knew they needed to better.

I think their confidence level is a little bit higher, too. They can see the baby steps and see themselves becoming successful at reading (Reference 12 - 0.27% Coverage), a little step at a time.

With my fourth graders, they're using (Reference 8 - 0.19% Coverage) Rourke Reading (Reference 13 - 0.27% Coverage) Web. As part of this program, they do a pre-assessment and post-assessment and progress (Reference 2 - 0.31% Coverage) monitor themselves and their scores. It is amazing because some of them in the regular classroom and with me a lot of difficulty attending to task, being interested, and keeping their attention on anything are really interested in doing that and seeing their score at the end. When progress (Reference 3 - 0.31% Coverage) monitoring themselves, they're really excited that I went from a 2/5 to a 5/5 so they're comparing it, talking to each other about it, and sharing their scores and are very motivated by that.

I agree with that. When my kids come in and we progress (Reference 4 - 0.31% Coverage) monitor, they set how many words they're going to get or whatever we're working (Reference 14 - 0.27% Coverage) on and they really want to see themselves get better at it and when they go lower, they're able to tell you what happened so it has made them more motivated to do better. They will bring tests to group from their reading (Reference 15 - 0.27% Coverage) class and share their progress (Reference 5 - 0.31% Coverage) with the group.

The focus is so strong on assessment and skills that is where the disparity is. We're getting them to gain the skills and we're looking at the parts, but the whole picture is missing sometimes.

IMPACT OF FORMATIVE ASSESSMENT AND STUDENT GOAL-SETTING ON TEACHING AND INSTRUCTION

<Internals\\FA SGS and Teaching> - § 8 references coded - INSTRUCTION/TEACHING/LEARNING/DIRECTION 8.90% Coverage]

<Internals\\FA SGS and Teaching> - § 5 references coded - MORE - [2.41% Coverage]

<Internals\\FA SGS and Teaching> - § 5 references coded - FOCUS/FOCUSED [4.21% Coverage]

<Internals\\Title I Program Benefits> - § 10 references coded - READ/READING/TAKE/TAKING/LEARN [5.97% Coverage]

<Internals\\Title I Program Benefits> - § 5 references coded - BOOK/BOOKS/WORDS [2.35% Coverage]

<Internals\\Title I Program Benefits> - § 4 references coded - HOME/FAMILIES [1.96% Coverage]

<Internals\\Title I Program Benefits> - § 2 references coded - LOVE/ENJOYING [1.17% Coverage]

Makes you more (Reference 1 - 0.48% Coverage) aware of what you are doing because you are actually thinking about the questions that you are going to ask and how they are driving your instruction (Reference 1 - 1.32% Coverage).

It makes your teaching (Reference 2 - 0.96% Coverage) more

(Reference 2 - 0.48% Coverage) focused (Reference 1 - 0.84% Coverage) rather than I think maybe I think they need this and I think they need this and trying to put it all together I tend to focus (Reference 2 - 0.60% Coverage) more (Reference 3 - 0.48% Coverage) on one area that I know they need to work on.

I agree with what she said. My teaching (Reference 3 - 0.96% Coverage) is more (Reference 4 - 0.48% Coverage) focused (Reference 3 - 0.84% Coverage) by the formative feedback I am providing my students during instruction (Reference 4 - 1.32% Coverage).

Since I have been using formative assessment with my students, I also find that my instruction (Reference 5 - 1.32% Coverage) is better focused (Reference 4 - 0.84% Coverage) and I have direction (Reference 6 - 1.08% Coverage; Reference 5 - 1.08% Coverage) in my lessons.

Absolutely. It is a lot less overwhelming now that I have learning (Reference 7 - 0.96% Coverage) targets set and am engaging the students more (Reference 5 - 0.48% Coverage) in the process of learning (Reference 8 - 0.96% Coverage).

For the younger kids, being exposed to different books (Reference 1 - 0.49% Coverage) everyday seems to foster their love (Reference 1 - 0.39% Coverage) of reading (Reference 1 - 0.68% Coverage) that will hopefully continue for them as they get older.

The terminology again. They're aware of what they need. They have words (Reference 2 - 0.49% Coverage) for it. So that helps them, it gives them something to learn (Reference 2 - 0.49% Coverage) and target for.

I agree with her. I see the kids enjoying (Reference 2 - 0.78% Coverage) reading (Reference 3 - 0.68% Coverage) those books (Reference 3 - 0.49% Coverage) and reading (Reference 4 - 0.68% Coverage) them over and over again. Taking (Reference 5 - 0.59% Coverage) them home (Reference 1 - 0.39% Coverage) and reading (Reference 6 - 0.68% Coverage) them and a lot of them tell me they keep them at home (Reference 2 - 0.39% Coverage) and read (Reference 7 - 0.39% Coverage) them to their families (Reference 3 - 0.78% Coverage). They seem to be carrying that with them more and more.

I agree with that, too. When we don't do LLI for a day, they ask "aren't we getting a book (Reference 4 - 0.39% Coverage) to take (Reference 8 - 0.39% Coverage) home (Reference 4 - 0.39% Coverage) today?" I see that with my kids from last year. They're reading (Reference 9 - 0.68% Coverage) chapter books (Reference 5 - 0.49% Coverage) on their own where I didn't see that the year prior (interest in reading) (Reference 10 - 0.68% Coverage).

With the older kids, there wasn't a program that was really set for them. Now we're really focused and have a specific program for them.

FORMATIVE ASSESSMENT, STUDENT GOAL-SETTING, AND ACADEMIC ACHIEVEMENT IN READING

<Internals\\FA SGS and Achievement> - § 8 references coded - ACHIEVEMENT/ACHIEVEMENTS/SUCCESS/SUCCESSES/REACHING [4.98% Coverage]

<Internals\\FA SGS and Achievement> - § 7 references coded - GOAL/GOALS/END [1.83% Coverage]

<Internals\\FA SGS and Achievement> - § 7 references coded - MORE - [1.83% Coverage]

<Internals\\FA SGS and Achievement> - § 7 references coded - LEARN/SEE/PICTURE/LOOK [1.83% Coverage]

<Internals\\FA SGS and Achievement> - § 6 references coded - PROFICIENT/SKILL/SKILLS [2.55% Coverage]

I have observed a positive influence from formative assessment and student goal-setting (Reference 1 - 0.26% Coverage) on my students reading achievement (Reference 1 - 0.72% Coverage). I think that some of it is the student is focusing on the specific goal (Reference 2 - 0.26% Coverage) now too. It is not just about reading, it is about a specific goal (Reference 3 - 0.26% Coverage). Okay, I can learn (Reference 1 - 0.33% Coverage) how to compare and contrast and I'm going to work on that until the next 4Sight/PSSA. Then they see (Reference 2 - 0.20% Coverage) that they have this many more (Reference 1 - 0.26% Coverage) questions to get right and they see (Reference 3 - 0.20% Coverage) that Proficient (Reference 1 - 0.65% Coverage) is in sight. So I think that it has because they're more (Reference 2 - 0.26% Coverage) driven toward a

goal (Reference 4 - 0.26% Coverage).

I also think that they're more (Reference 3 - 0.26% Coverage) motivated because they see (Reference 4 - 0.20% Coverage) success (Reference 2 - 0.46% Coverage) and that motivates them. This is what I need to do. It is more (Reference 4 - 0.26% Coverage) cut and dry. Their successes (Reference 3 - 0.59% Coverage) are more (Reference 5 - 0.26% Coverage) recognized now that they are engaged in formative assessment and feedback. It is more (Reference 6 - 0.26% Coverage) specific and it means more (Reference 7 - 0.26% Coverage) to them because they're part of it to.

There are smaller sets of goals (Reference 5 - 0.33% Coverage) that we set and smaller achievements (Reference 4 - 0.79% Coverage) and not just the overall skill (Reference 2 - 0.33% Coverage) of reading. We may work on all of these skills (Reference 3 - 0.39% Coverage) from one 4Sight to the next and they may not come up that much per se, but in those areas and skills (Reference 4 - 0.39% Coverage) we targeted, they have shown achievement (Reference 5 - 0.72% Coverage) and they are, even though there score may not be what we wanted it to be, they see (Reference 5 - 0.20% Coverage) success (Reference 6 - 0.46% Coverage) and achievement (Reference 7 - 0.72% Coverage) and in at least reaching (Reference 8 - 0.52% Coverage) their little goal (Reference 6 - 0.26% Coverage) that time, which will eventually add up in the end (Reference 7 - 0.20% Coverage). Take the big picture (Reference 6 - 0.46% Coverage) and break it down for them to look (Reference 7 - 0.26% Coverage) for those pockets of skills (Reference 5 - 0.39% Coverage) they're working on and their progress within those skills (Reference 6 - 0.39% Coverage).

FORMATIVE ASSESSMENT, STUDENT GOAL-SETTING, AND IDENTIFICATION OF STUDENTS WITH SLD

<Internals\\FA SGS and SLD I.D.> - § 3 references coded - PROGRESS/PROGRESSING [4.92% Coverage]

<Internals\\FA SGS and SLD I.D.> - § 4 references coded - HAVE/GIVES/HAVING [3.46% Coverage]

<Internals\\FA SGS and SLD I.D.> - § 3 references coded - DATA [2.19% Coverage]

I’m not sure if it is a reduction, but when we send them for an evaluation, we have (Reference 1 - 0.73% Coverage) significant data (Reference 1 - 0.73% Coverage) that says we’ve tried this, this, and this, yet we haven’t seen progress (Reference 1 - 1.46% Coverage).

When you go to meetings, you have (Reference 2 - 0.73% Coverage) concrete data (Reference 2 - 0.73% Coverage) that you’re prepared to share with the school psychologist and classroom teacher.

Gives (Reference 3 - 0.91% Coverage) you a better gauge if they are having (Reference 4 - 1.09% Coverage) issues and not progressing (Reference 2 - 2.00% Coverage), and not just with the DIBELS or 4Sight, but with data (Reference 3 - 0.73% Coverage) produced from within the evidence-based program as the students’ progress (Reference 3 - 1.46% Coverage) through the intervention.