IMPROVING READING COMPREHENSION INSTRUCTION THROUGH PROFESSIONAL DEVELOPMENT IN A COLLABORATIVE THINK ALOUD PROTOCOL

by

Linda H. Grace

An Education Leadership Portfolio submitted to the Faculty of the University of Delaware in partial fulfillment of the requirements for the degree of Doctor of Education in Educational Leadership

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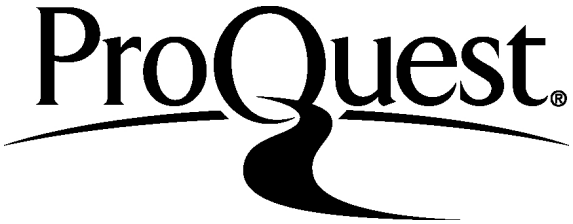

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My grandmother, Helen Marinelli, who was one of the most intelligent people that I have ever known, did not have the opportunity to participate in education beyond elementary school. She taught me that education affords you opportunity and choices in life. Six years ago she asked me to promise her that I would complete my doctorate degree. I wish that she could have been here to see me fulfill that promise, but I know that I bring a part of her with me as I complete this program.

Finally, it is only through the love, sacrifice and support of my husband, Larry, and my daughters, Helena and Monica, that I have been able to complete this ELP and the Ed.D program. I would like to thank them for their patience and understanding over the past six years when sometimes working on my doctorate had to take priority over family activities. I hope that they will always know that they are the loves of my life, my most precious gifts, and by far, my greatest achievements.

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ABSTRACT

This Executive Leadership Portfolio (ELP) addresses the need to improve the reading comprehension skills of students in the Brandywine School District (BSD) so that they will be able to meet the increasing comprehension demands that the Common Core State Standards (CCSS) and the Smarter Balanced Assessment Consortium (SBAC) assessment require. The overarching improvement goal of the ELP is to improve reading comprehension instruction by creating a professional development module for the district. To achieve that goal, a professional development project with five reading specialists was conducted to examine whether professional development using a collaborative think aloud protocol would change teachers' understanding of and instruction of comprehension strategies.

Data from the project showed that a combination of workshop trainings, classroom practice and coaching feedback was generally effective in improving both understanding and instruction in reading comprehension. Reading specialists strengthened both their understanding and classroom practice of metacognitive modeling and responsive elaboration techniques after the workshop trainings and follow-up coaching sessions. However, reading specialists did not change the guided practice they provided for students during metacognitive modeling, even though they increased their understanding in this area. Reading specialists did improve their existing responsive

elaboration instructional techniques but did not change in their understanding or practice of alternative instructional strategies to help students correct misunderstandings during responsive elaboration.

Recommendations for future professional development were to focus on implementing structured instructional routines in the classroom, to include longer professional development to improve unstructured practices, to offer additional opportunities to practice the following three components of scaffolding: lessening the level of support, making connections to new knowledge, and including scaffolding in existing instructional programs and routines. The next steps include the implementation of a revised professional development module that will be offered to all fourth- and fifth-grade teachers in the district. The revised module will include multiple resources in a blended format for teachers.

Chapter 1

INTRODUCTION

The ultimate goal of reading is comprehension. In order for comprehension to occur, readers must be able to efficiently extract meaning from text through word recognition strategies and then efficiently organize and integrate that information into their current knowledge to create new knowledge. Both extracting and constructing information are essential for students to comprehend text (RAND Study Group, 2002; Snow & Sweet, 2003). Reading interventions in the past two decades have focused mainly in improving word recognition in the primary grades (Biancarosa & Snow, 2006). While the evidence is clear that the acquisition of word recognition skills in the primary grades is essential for students learning to read (Juel, 1988; Adams, 1990; Pressley, 2006), these interventions do not address the consistent percentage of students who begin to develop reading comprehension problems in fourth grade. Studies of these "late-emerging" difficulties portray students who have proficient decoding and spelling skills and read fluently, but struggle solely with constructing meaning from text (Kucan & Palincsar, 2011).

Confounding this problem for students in fourth grade and above are the ambitious expectations of the Common Core State Standards (CCSS, 2010). According to the standards, students should be able to understand texts that have challenging ideas and organizations, evaluate the presented information, and construct new meanings. In addition, students in the state of Delaware are required to demonstrate that understanding

in the new Smarter Balance Assessment Consortium (SBAC) assessment, which presents students with more complex text and higher-level questions than ever before. If students are to meet the increased demand for comprehension, teachers will need to provide instruction that prepares students to perform on challenging assessments. However, teachers may not always have knowledge of best practices and may not be confident in ways to support students' reading comprehension development (Pressley, 2006).

This ELP was conceived with these issues in mind. In order for students in fourth grade and above to meet the higher expectations of the CCSS and to perform well on SBAC, all stakeholders will need to find effective ways to support student comprehension in teachers' classrooms. Therefore, this ELP had the following three goals: 1) to create an effective professional development (PD) module that would help teachers improve their understanding and implementation of comprehension instruction, 2) to test this professional development with district reading specialists, and 3) to design an improved professional development module for classroom teachers based on the results.

This ELP is organized into five additional chapters and includes eleven appendices. Chapter 2 explains the problem with reading comprehension achievement and instruction of comprehension in the Brandywine School District (BSD). Chapter 3 explains the main improvement strategy of the ELP – the collaborative think aloud PD project that was designed to address comprehension instruction. Chapter 4 summarizes the results of the PD project. Chapter 5 provides a reflection on the PD project and summarizes the new PD project that was revised based the results of the pilot PD. Chapter 6 is a reflection on my development as a candidate in the Ed.D. program.

The eleven appendices are a compilation of all of the artifacts created to help improve reading comprehension instruction in BSD. A detailed list of appendices and their contribution to the goal of the ELP is included in the following section.

Description of Appendices

All of the appendices in the paper are intended to help support teachers and administrators in learning new ways to implement effective comprehension instruction in the classroom and to help students become better comprehenders.

Appendix A – ELA Walkthrough Data Analysis

This artifact includes an analysis of the data collected during ELA walkthroughs in the BSD. The data contribute to understanding the root cause of problems with reading comprehension in BSD.

Appendix B - EDUC 850 Comprehension Study

The EDUC 850 project investigated the facilitators and barriers to reading comprehension instruction with a fourth grade teacher. One interview and one observation were conducted in this short study. The paper contributes to the rationale for choosing to work on professional development for teachers.

Appendix C – Literature Review of the Fourth Grade Slump in Reading Comprehension

This document is an investigation into the contributing factors of the fourth grade slump in reading comprehension. It helped to identify the reasons why late-emerging difficulties with comprehension occur in fourth grade. The investigation into the fourth grade slump led to the decision to focus on fourth and fifth grade students in the professional development study.

Appendix D – Think Aloud Literature Review

In the think aloud literature review I surveyed the scholarly literature on thinking aloud as an instructional technique. It informed the decision to use a research-based, collaborative think-aloud protocol as the basis of the PD project.

Appendix E – Professional Development Literature Review & Power Point Presentation

The PD literature review surveyed the literature on effective PD for reading comprehension instruction. The information informed the type of activities and the structure of the PD project. The Power Point presentation summarizes the main points for the PD literature review, and was presented to the district Curriculum and Instruction team during the November meeting.

Appendix F – Pilot Professional Development Project

This is a brief PD project that focused on changing a teacher's understanding and practice of reading comprehension by implementing a collaborative think aloud protocol. The PD project is the main improvement strategy of this ELP.

Appendix G – Collaborative Think Aloud White Paper

To help improve reading specialists' understanding the research, rationale, and classroom applications for collaborative think alouds, I created a white paper entitled *Improving Comprehension through Think Alouds.* The paper was designed to provide an overview of the scholarly literature on collaborative think alouds and their implementation the classroom. It was given to the reading specialists as a resource at the end of the pilot professional development project and is integrated into the revised professional development project in the blended format.

Appendix H – Presentation of What to Look for in Reading Comprehension Instruction for Administrators

A presentation of what to look for in reading comprehension for district elementary principals and assistant principals took place in August of 2015. The presentation provided administrators with a brief overview of the *Cognitive Model* (McKenna & Stahl, 2003) for reading comprehension. Next, I reviewed the necessary elements of a *Comprehension Curriculum* (Stahl & Garcia, 2015): comprehension strategies and regulation, questioning and discussion, vocabulary development, and writing. Administrators were instructed about what to look for in each element of the comprehension curriculum. Administrators were provided with a walkthrough checklist that supported what to look for in comprehension instruction.

Appendix I – Pilot Study Data Analysis

This document includes a detailed analysis of the observation and interview data collected from the pilot study with district reading specialists.

Appendix J – Revised Professional Development Project

The revised professional development project is housed in the district Learning Management System (LMS), Schoology. The revised project incorporates the lessons learned from the pilot study into a highly interactive online module that includes lesson plan examples and allows for additional reflection and practice.

Appendix K – Comprehension Resources for Teachers

This final resource is also housed on the Schoology site. It contains scholarly articles and information about teaching comprehension as well as classroom

comprehension activities. Additionally, the site contains an annotated bibliography of research-based books about the teaching of reading comprehension.

Appendix L – Determination of Exempt Status

Included on the last page of this document is a letter from the University of Delaware Research Office acquired prior to the beginning of my project. The letter states that the project was found to be exempt from International Research Bureau (IRB) review.

Chapter 2

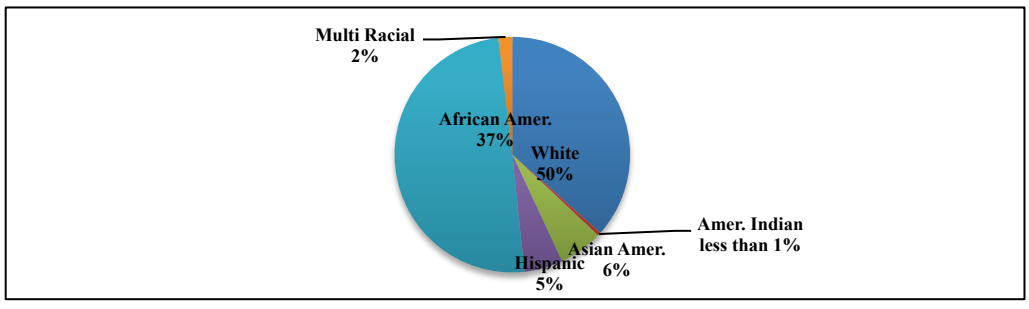
PROBLEM ADDRESSED

Organizational Context

This Executive Leadership Project (ELP) took place in the Brandywine School District (BSD), which is located in Wilmington, DE. BSD provides pre-kindergarten to 12th grade public educational services for 10,802 children who live in North Wilmington and Claymont, DE. The district includes 16 schools: one pre-kindergarten, nine elementary, three middle, and three high schools. Overall, 14 of the schools are suburban schools, and two schools are urban. The district has been experiencing changing demographics, with an increase in the number of minority and low-income families over the last five years.

According to the District's demographic information, which is included in the State of Delaware website (2015), the highest percentage of students is Caucasian/White while African American students make up the second highest percentage. Other minority groups make up less than 10% of the student population respectively (See Figure 1).

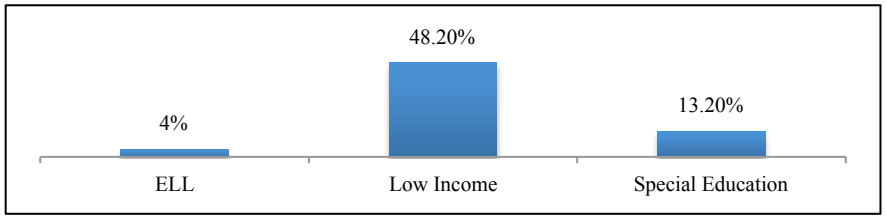
Figure 1: Fall 2014 Student Characteristics



Source: State of Delaware: The Official Website of the First State (2015)

The State of Delaware also reports that almost half of the students in the district are from low-income families. Less than 5% of students are classified as English Language Learners for their proficiency in English (ELL). The district also services a substantial percentage of special education students – over 13% of the total student population (see Figure 2).

Figure 2: Fall 2014 Demographic Information



Source: State of Delaware: The Official Website of the First State (2015*)*

Organizational Role

My current position in BSD is the Elementary Literacy and Intervention Specialist. In this role, I am responsible for managing the elementary English Language Arts (ELA) curriculum and instruction and its implementation in the district. My additional responsibilities include designing and delivering PD trainings for administrators and teachers, carrying out ELA walkthroughs with principals, and planning and delivering coaching sessions for teachers. I also facilitate the implementation of reading Response to Intervention (RTI) in elementary schools, and guide the work of the elementary reading specialists who primarily teach students receiving RTI support services.

Meetings with district reading specialists take place once a month in Professional Learning Communities (PLC). I provide professional development and coaching support for the group as a whole at our monthly meetings and individual support during school

visits. While I do not supervise the reading specialists, I do take on a leadership role with them. I work closely with them to implement district RTI policies in their buildings and to disseminate information that relates to RTI to their schools.

My focus on reading comprehension directly connects with and derives from my role in BSD. I am responsible for the reading achievement of every K-5 student in the district (a responsibility that I share with other district administrators and teachers). Therefore, I am responsible for making sure that all students have access to curriculum and receive instruction that prepares them to achieve the reading comprehension standards of the Common Core State Standards (CCSS) and the comprehension strategies necessary to perform well on the Smarter Balanced Assessment Consortium (SBAC) assessment or any future assessments.

Recent Professional Development in Reading Comprehension

Professional development in reading comprehension has been addressed by the district in recent years. In the 2012-2013 school year professional development for teachers in English Language Arts (ELA) focused on how to implement the newly purchased *Journeys Common Core* (2013) basal series. Additionally, some teachers were trained in close reading strategies (Paul & Elder, 2003) to help improve reading comprehension instruction. Close reading strategies require students to carefully and purposefully reread texts to deepen comprehension (Paul & Elder, 2003).

The district has also invested in Learning Focused Strategies (LFS) PD model to train all district teachers over the past six years. LFS provides teachers in all subject areas with an instructional model that includes research-based strategies and best pedagogical practices (Learning Focused Strategies, 2015). Teachers are encouraged to include

activities that require students to use these strategies as part of their lesson plans across all subject areas, including reading comprehension.

Response to Intervention (RTI)

Most recently, much professional development in reading focused on intervention programs for RTI, which is designed to provide specific, targeted intervention for students who score at or below the 25th percentile on benchmark assessments for reading. Students are assessed and placed into tiers based on their response to increasing levels of instructional support. Initially, students are placed into Tier 2, and if they do not respond to Tier 2 interventions, students are place into more intensive Tier 3 interventions.

All K-5 district teachers and reading specialists were trained in the Walpole and McKenna (2009) *Differentiated Reading Instruction K-3* and Walpole, McKenna and Philippakos (2011) *Differentiated Reading Instruction 4-5* model for Tier 2 intervention during the 2014-5 school year. This method helps teachers assess, place, and teach students in groups based on their reading needs. In this model, two groups include a specific focus on reading comprehension. The *Fluency and Comprehension Group* focuses on improving fluency through multiple re-readings of grade-level text followed by a rich comprehension discussion. The *Vocabulary and Comprehension Group* focuses on reviewing a reading strategy taught in class, then practice reading, writing, and discussing what they have read.

In addition to the other comprehension trainings described above, a few reading specialists in the district were trained in the *Soar to Success* (Cooper, Boschken & Pistochini, 2001) program for students who need more intensified Tier 3 comprehension support. The *Soar to Success* (Cooper et.al, 2001) program attempts to improve reading

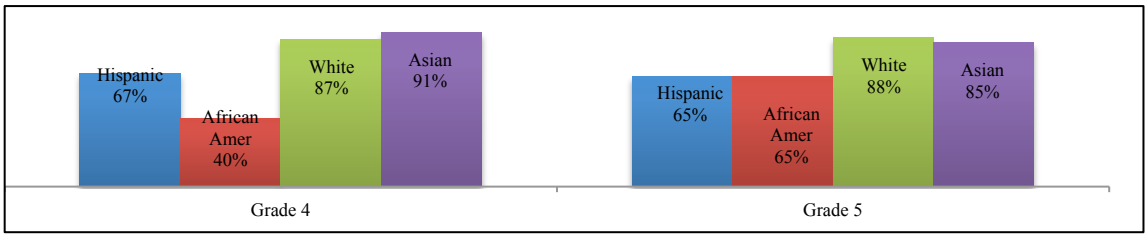
comprehension through strategy instruction using increasingly difficult texts. *Soar to Success* (Cooper et al, 2001) focuses on the four strategies: predict, question, summarize, and clarify. While the program was purchased in many buildings over the last 10 years, it is not clear how many teachers received professional development in the method.

As evidenced by the multiple overlapping comprehension trainings in this section, teachers and reading specialists have been trained in a number of instructional methods for teaching reading comprehension. However, it has not been clearly articulated to teachers and reading specialists how all of the different instructional methods for teaching reading comprehension should be integrated into their daily reading instruction. Further, aside from the RTI interventions, there has been very little data collected from the district to study the effectiveness of any one of the instructional models for improving comprehension.

Student Performance on Standardized Assessments

One piece of data that the district used to measure reading comprehension in previous years was the Delaware Comprehensive Assessment System (DCAS). Overall results for the spring 2014 DCAS data showed that over 75% of students in fourth and fifth grade met state standards for ELA. However, all racial groups did not reach the same levels of reading achievement. The percentage of Asian and white students who met the benchmark at fourth and fifth grade was higher than the district average. Conversely, the percentage of Hispanic and African American students meeting the benchmark was below the district average. The testing data indicate that African Americans and Hispanics scored at a significantly lower level than their white and Asian classmates (see Figure 3).

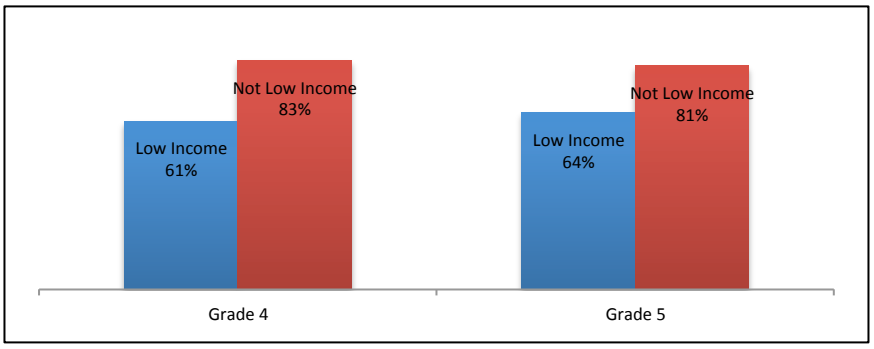
Figure 3: BSD Percentage of Students Meeting the State Standard in Reading 2014 DCAS by Race



Source: State of Delaware: The Official Website of the First State (2015)

In addition to inequities in achievement among ethnic groups, achievement on the DCAS also differed by socio-economic status. Students from low-income backgrounds achieved an average of 20 percentage points lower than those who were not from low-income backgrounds (see Figure 4). It is clear that in addition to students from minority backgrounds, students from low-income backgrounds scored lower on the DCAS reading assessment.

Figure 4: Percentage of BSD Students Meeting State Standards on 2014 Reading DCAS by SES



Source: State of Delaware: The Official Website of the First State (2015)

Common Core State Standards (CCSS) for English Language Arts (ELA)

The adoption of the CCSS for ELA by the state of Delaware has brought an additional focus on reading comprehension for BSD. The standards set high demands for reading comprehension, requiring students to identify and analyze key ideas and details

from text, recognize the craft and structure of texts, integrate knowledge from multiple sources, and read and comprehend texts that are at a high level of complexity. Therefore, BSD students will need to learn to construct meaning from complex texts to meet the expectations of the CCSS and to meet proficiency on assessments designed to measure the new standards. Overall, these expectations are much more challenging than the previous Delaware standards for comprehension. The next section explains those challenges in detail.

Smarter Balanced Assessment Consortium (SBAC)

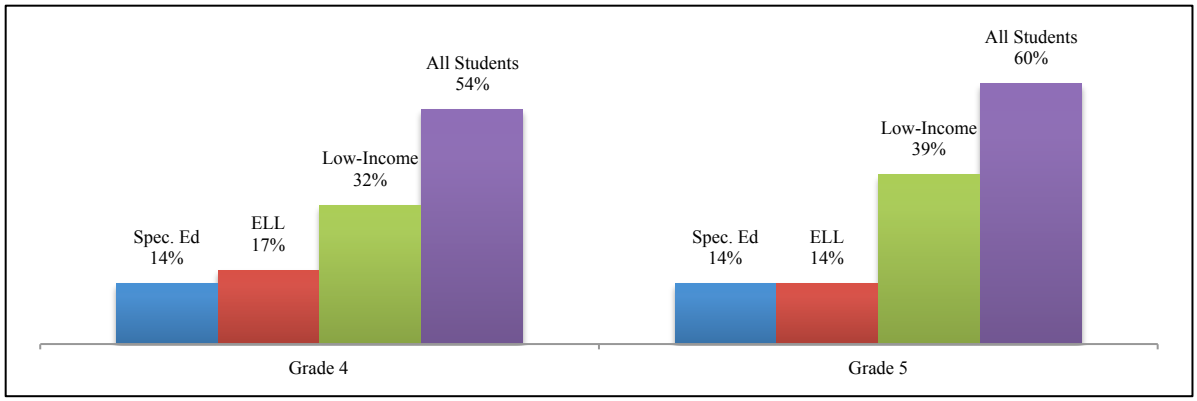
The increased demands of the SBAC assessments, which replaced the DCAS in the spring of 2015, revealed to BSD the challenges that students faced with reading comprehension. Unlike DCAS, SBAC assessments measure ELA growth in four areas: reading comprehension, listening comprehension, research, and writing (DCAS did not include writing). The SBAC assessment requires students to demonstrate reading comprehension across genres and text structures. Students are asked to integrate and apply knowledge learned from reading multiple texts into their writing. Therefore, students are required to demonstrate a higher level of reading comprehension knowledge in order to achieve proficiency on the SBAC assessments.

Due to these challenges, a smaller percentage of students met the ELA proficiency levels on the SBAC in 2014-2015 than they did on the DCAS the previous year. On the 2015 SBAC ELA Assessment, only 54% of all fourth grade students scored at or above the ELA benchmark, and only 58% of fifth grade students scored at or above the benchmark, compared to over 75% of students performing at or above the benchmark on the reading DCAS the previous year. Even though the assessments involved different

students, the differences in performance indicate the challenging nature of the SBAC assessment.

Unfortunately, student scores on SBAC demonstrated achievement gaps in proficiency among racial groups. Asian students scored better than students from all other ethnic backgrounds in both fourth and fifth grade. White students scored higher than Hispanic and African American students in both grade levels. African American students scored lower than all other ethnic groups in both grade levels (See Figure 5).

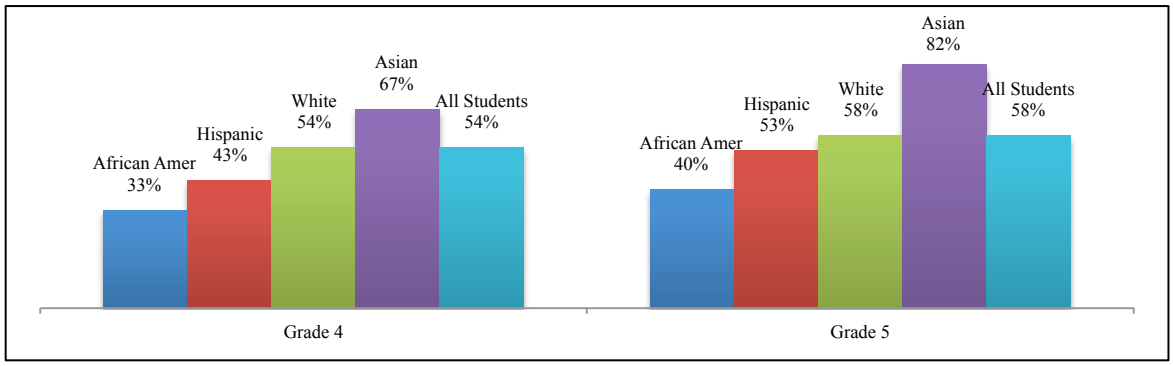
Figure 5: Percentage of 4th & 5th Grade BSD Students Scoring at Proficiency on 2015 SBAC ELA Assessment by Ethnic Group



Source: State of Delaware: The Official Website of the First State (2015)

Differences in SBAC 2015 ELA scores also existed for students in special populations (see Figure 6). Less than 17% of special education students met the benchmark in fourth and fifth grade. Less than 40% of fourth and fifth grade low-income students scored at a proficiency level. The percentage of students in special populations scoring at proficiency is considerably lower than the population as a whole in BSD.

Figure 6: Percentage of 4th & 5th Grade BSD Students Scoring at Proficiency on 2015 SBAC ELA Assessment by Special Population



Source: State of Delaware: The Official Website of the First State (2015)

Nearly half of the students in grades four and five scored below grade level expectations in ELA. Additionally, the percentage of African American and Hispanic students who scored at proficiency on the SBAC assessment was lower than white and Asian students at both grade levels. The percentage of students in special populations such as special education, ELL, and low-income who scored at proficiency was significantly lower than all students who took the assessment.

It should also be mentioned that district demographics have been changing in recent years. The number of African American and low socio-economic families enrolling in the district has been increasing over the last five years, and is projected to continue to increase in the coming years. The achievement gap in BSD will need to be addressed and most definitely should not be ignored.

Connection Between the ELP and BSD

The CCSS set higher expectations for students and teachers. Unfortunately, even though BSD has provided PD in reading comprehension, many students continue to underperform on assessments that require them to demonstrate higher-order comprehension skills. Most recent assessment results reveal a decrease in student

performance and a consistent performance gap across different ethnic groups and special populations.

The goal of this ELP is to create a PD project that supports teachers' understanding, design, and delivery of reading comprehension instruction. This goal will support teachers in addressing the demands of the CCSS and assisting their students in becoming efficient comprehenders. Further, a practical goal for BSD is for students to perform well on Smarter Balanced Assessment Consortium (SBAC). This goal is also one that relates to my role in BSD as the Elementary Literacy and Intervention specialist. Therefore, the overarching goal of this ELP, to improve reading comprehension instruction in BSD, directly supports the work I do in the district.

Chapter 3

IMPROVEMENT STRATEGIES

In order to help BSD students in fourth grade and above become capable comprehenders who can construct meaning across a variety of text types and levels and close the performance gap in reading comprehension achievement, this ELP focused on three improvement goals: 1) Design a pilot PD project to help teachers improve their understanding and implementation of comprehension instruction, 2) Test this PD project with district reading specialists, and 3) Design an improved PD module for classroom teachers based on the results. This chapter will explain how goals one and two were addressed. Goal three is explained in Chapter 5, as the final PD model was created based on the results of the pilot project.

Rationale

This section of the ELP will explain the rationale behind the design and implementation of the pilot PD project as an improvement strategy. The need to improve students' reading comprehension was realized through the careful review of district data and related literature. The sources used were 1) walkthrough data, 2) a short study focusing on facilitators and barriers to reading comprehension instruction, and 3) reviews of scholarly literature.

Walkthrough Data

In order to investigate the factors that potentially contributed to the students' and teachers' challenges with reading comprehension, I reviewed district walkthrough data

conducted by the building administrators (See Appendix A). The walkthroughs took place during the ELA instructional block over a one-year period. It should be noted that there were limitations to the walkthrough data due to inconsistencies in the number of walkthroughs per building as well as inconsistencies in the administrator training and implementation of walkthrough checklists.

Overall, a total of 169 walkthroughs were completed. The number of ELA walkthroughs per building ranged from 1 to 76 walkthroughs. The data indicated that some schools had a much stronger emphasis on monitoring ELA instruction than others. Additionally, the walkthroughs showed that higher order comprehension activities in grades four and five had been marked as *not observed* in 31% of the walkthroughs conducted during the ELA block. Unfortunately, the data show that administrators observed teachers integrating the higher order comprehension strategies only a small percentage of the time, and that the frequency of monitoring visits varied widely from building to building.

Facilitators and Barriers to Reading Comprehension Project

In addition to the BSD classroom walkthroughs, data from my EDUC 850 *Qualitative Research* project also helped to inform my action steps to address the comprehension problem in the district (see Appendix B). The EDUC 850 project investigated the facilitators and barriers to reading comprehension instruction through an interview and observation of one fourth grade reading teacher.

Results showed that the teacher, who was also a graduate student at the University of Delaware, had a great deal of knowledge about her students' comprehension needs and current best practice in reading comprehension instruction. However, during the

interview she expressed frustration with the lack of student growth on comprehension assessments and the lack of time to teach comprehension.

The teacher was observed teaching comprehension strategies during whole group instruction, which revealed some interesting choices for comprehension strategy instruction. Multiple strategies were taught at once and were not practiced or included during small group instruction. These instructional choices caused observed confusion for students who were unable to use the strategies or to apply them during independent practice.

An analysis of the observation and comparison with the teachers' interviews revealed that even though this teacher had adequate knowledge about reading comprehension theory and instruction, she struggled with the implementation of comprehension strategy instruction and with providing guided practice that allowed for the gradual release of responsibility for performing the strategy to shift from teacher to student.

This result was of concern for two reasons. First, the teacher's high level of knowledge about her students and reading comprehension did not transfer to highly effective comprehension instruction in her classroom. Second, if a teacher who is highly educated in current best practice and extremely motivated has difficulty implementing those practices in her classroom, then further professional development in how to apply that knowledge into her classroom instruction is essential.

Literature Reviews

The PD project was developed based on research from three literature reviews: 1) *The Fourth Grade Slump* (see Appendix C), 2) *Thinking Aloud as an Instructional*

Technique (see Appendix D), and 3) *Professional Development in Reading Comprehension* (See Appendix E). In the following sections, I will briefly summarize each and explain how each informed my PD project.

The fourth grade slump. *The Fourth Grade Slump* (See Appendix C) literature review investigated the reasons for the fourth grade slump in reading comprehension. A survey of the literature showed that the reader's cognitive characteristics, motivation to read, word recognition and fluency, and metacognitive reading strategies are possible contributors to the slump. Additionally, the increase in the amount of informational texts at fourth grade often challenges readers because they include new text structures, unfamiliar concepts and language patterns, and unfamiliar academic vocabulary. Further, students are expected to acquire knowledge from informational texts, a task for which they may not be prepared if they read primarily for enjoyment in primary grades (Chall, Jacobs & Baldwin, 1990; Pressley, 2006).

Perhaps most pertinent to this PD project is that the slump in comprehension is often attributed to students' limited access to quality comprehension instruction, which in turn is often due to a lack of quality PD in reading comprehension for teachers. This is significant because as educational leaders we are responsible to provide students with instructional programs that will support their comprehension. For this reason, I decided to create a PD project that helped students fourth and fifth grade combat the slump in comprehension achievement.

Thinking aloud. After deciding to create a PD project on reading comprehension I began to research effective instructional techniques to improve reading comprehension to include in the PD. During classroom observations of teachers, I noticed that very

effective comprehension teachers were able to explain their thinking to students. After surveying the empirical literature on reading comprehension, I found commonalities between teacher explanations through thinking aloud during strategy instruction and improvement in students' reading comprehension. Think alouds, which are overt verbal expressions of covert metacognitive processes (Baumann, Seifert-Kessell & Jones, 1992), are often used as an instructional strategy to explicitly demonstrate to the listener the covert metacognitive processes used while reading. During think alouds, listeners have the opportunity to witness first hand how the reader is managing reading comprehension. Therefore, think alouds are a useful instructional technique to teach, model and assess metacognitive strategy use. Since strategy use is linked to improvement in students' *overall reading comprehension* (or ability to comprehend grade level texts on standardized measures of reading achievement), thinking aloud is often linked with improved reading comprehension.

The *Thinking Aloud as an Instructional Technique* (see Appendix D) literature review suggested that thinking aloud was most effective when it was part of an instructional protocol for teaching metacognitive reading comprehension strategies. Additionally, think alouds were most successful when they were collaborative in nature, allowing for the gradual release of responsibility from teacher to student. This review of the research on thinking aloud led me to create a PD training based on a collaborative think aloud protocol.

Professional development in reading comprehension. Once the focus of the PD was determined, I conducted an examination of the elements of PD models that improved teachers' reading comprehension instruction. I found that several elements of successful

PD were common among all effective PD programs: active learning for teachers, coherence with job-embedded work, teacher collaboration, sustained support for teachers, and improving theoretical and content knowledge (see Appendix E). All of the elements of effective PD were implemented into my PD project.

Professional Development Project

The professional development project was designed to improve teachers' comprehension knowledge and instructional techniques by learning a collaborative think aloud protocol for comprehension strategy instruction with fourth and fifth grade students. Collaborative think alouds include two parts: metacognitive modeling and responsive elaboration. Metacognitive modeling occurs when a teacher explains the strategy, models it, and then provides a series of practice with lessening support for students. Responsive elaboration is a process in which teachers assess students' metacognitive understanding and then help them to "fix up" misunderstandings. The project investigated whether professional development in this collaborative think aloud protocol would change teachers' understanding and use of metacognitive modeling and responsive elaboration techniques during comprehension instruction.

Participants and Context

Originally, the project was designed for classroom teachers. However, the project participants needed to be changed due to scheduling difficulties with classroom teachers. As a result, the targeted participants of this project were the BSD reading specialists. The rationale for including reading specialists as participants is that they primarily work with students who are struggling readers, and serve many students who score in the bottom quartile of BSD's population. Additionally, reading specialists tend to be more flexible

with their schedules than teachers with the multiple obligations of a homeroom of students. Finally, reading specialists often consult and work with classroom teachers. Therefore, it is important that reading specialists have the knowledge, skill, and ability to provide high-quality comprehension strategy instruction.

The district employs 11 reading specialists in nine schools and these reading specialists serve an average of 50 students from kindergarten to grade five. They teach reading in small intervention groups that range from three to eight students. In grades four and five, the majority of these groups focus on reading comprehension, usually with students who are in Tier 3 RTI groups.

All 11 reading specialists participated in the workshop portion of the PD project during our regularly scheduled PLC meetings. All 11 reading specialists were invited to participate in the full project through the informed consent process. Five of the eleven reading specialists consented to participate in the interview, classroom observation, and feedback portions of the PD project.

In an effort to link the project to comprehension strategies that were familiar to the reading specialists, the project focused on learning to implement the metacognitive modeling protocol for the four strategies taught in the *Soar to Success* (Cooper et al, 2001) comprehension intervention program: 1) summarize, 2) predict, 3) clarify, and 4) question. The strategies were chosen because of their familiarity to the reading specialists and because they were found to be effective for improving student strategy use and overall reading comprehension in the Reciprocal Teaching studies (Palincsar & Brown, 1984). Additionally, focusing on these strategies fostered coherence with teachers' job-embedded work. Reading specialists had the opportunity to enhance their

knowledge of metacognition and to work collaboratively in creating lesson plans. The project activities also provided reading specialists with one on one, in-classroom feedback and opportunities for on-going practice and reflection about their progress over an eight-week period.

Procedures

Two PD sessions took place during the six-week project. The *Session One: Metacognitive Modeling* PD took place during week one of the PD project. The session examined the causes of the fourth grade slump in reading comprehension followed by a brief review of metacognition, metacognitive strategy instruction, and think aloud research and procedures. Participants were then introduced to the structure of collaborative think alouds, which included instruction and practice in a think aloud protocol based on the Bauman & Schmitt (1986) and the Duffy (1988) protocols. The five step protocol included: 1) a description, definition or example of *what* the strategy is, 2) an explanation of *why* the strategy is important and how it improves reading ability, 3) an explanation of *when* the strategy should and should not be used, 4) an explicit verbal explanation of *how* to use the strategy, and 5) guided and independent practice for students. Reading specialists wrote their own metacognitive modeling protocol plans and practiced presenting them to one another. Detailed plans of the Session One PD are included in Appendix F.

Reading specialists were asked to practice the metacognitive modeling protocol during week two of the project. During weeks three and four, I observed each reading specialist during reading comprehension instruction. The observation focused on the implementation of elements of the metacognitive modeling protocol presented during

training. After the observations, I met with the specialists to provide feedback on metacognitive modeling techniques.

Session Two: Responsive Elaboration PD occurred during the fifth week of the project. The workshop focused on teaching responsive elaboration to teachers by first assessing students' cognitive understandings, and subsequently helping students fix up their cognitive misunderstandings. Reading specialists created a *comprehension construct* (Snow, 2003) in which they listed what students must be able to know and do in order to be good comprehenders. They then discussed how to assess students' metacognitive knowledge during comprehension instruction, and practiced strategies to respond to students' metacognitive misunderstandings by using "fix up" strategies (Dole, Duffy & Roehler, 1991). Detailed plans for the Session Two PD are included in Appendix F.

After *Session Two: Responsive Elaboration* PD, reading specialists were given a week to practice the newly learned strategies in their classrooms. During weeks seven and eight of the project, each reading specialist was observed again and was provided with follow-up verbal feedback about their use of metacognitive modeling and responsive elaboration techniques.

Project Data Collection

During the PD project I collected two different types of data: teacher interviews and classroom observations. The purpose of the interviews was to assess changes in reading specialists' understanding of how to use metacognitive modeling and responsive elaboration during comprehension instruction. The purpose of the observations was to assess the application of the taught approaches and to detect any change in metacognitive

modeling skills and responsive elaboration techniques during reading comprehension instruction.

Interviews. Two one-on-one reading specialist interviews assessed changes in reading specialists' understanding of how to teach reading comprehension using metacognitive modeling and responsive elaboration techniques pre- and post-project. The pre-project interview took place two weeks prior to the beginning of the project to assess participants' understanding and prior knowledge of metacognitive modeling and responsive elaboration. The post-project interview took place two weeks after the end of the project to examine any change in the reading specialists' understanding (see Appendix F)

Observations. Observational data were collected throughout the project across three observation periods: pre-project, mid-project, and post-project. The purpose of the pre-project observation was to observe the reading specialists' metacognitive modeling and responsive elaborations techniques prior to the PD workshops. The mid-project observation took place two to three weeks after *Session One: Metacognitive Modeling* PD. The purpose of the mid-project observation was to determine if there were any changes in reading specialists' practice, particularly in the metacognitive modeling. The post project observation took place after *Session Two: Responsive Elaboration* PD to assess any changes in reading specialists' practice, including responsive elaboration. Changes in metacognitive modeling and responsive elaboration techniques during reading comprehension instruction were assessed over the three observation periods

Each observation was analyzed for the presence of the elements of the collaborative thinking protocol - 1) metacognitive modeling, 2) assessment of

understanding, and 3) responsive elaboration instructional techniques. The 30-minute reading comprehension lesson was coded in its entirety. During the observation, specific evidence of the presence or absence of the collaborative protocol was documented. Additionally, specific instances of teachers' responses to students' misunderstandings were documented, listing each student with whom the teacher interacted to fix up a cognitive misunderstanding, the teacher's response to the student, and the number of follow-up responses per student.

Observation rubric. After each observation, the observed comprehension instruction was rated on a rubric adapted from those used in previously published and peer-reviewed studies (Anderson & Roit, 1993; Duffy et al., 1986; Duffy et al., 1988). The rubric consisted of eight items divided into three sections: 1) metacognitive modeling, 2) assessment of students' metacognitive understandings, and 3) response to students' misunderstandings (see Appendix E). Each item on the rubric directly corresponded to the elements of the collaborative think aloud protocol and was designed to assess changes in comprehension instruction. If teachers demonstrated more than one example of each item, the strongest example observed during the 30-minute observation period was coded.

The purpose for the inclusion of both observations and interviews was to analyze the similarities and differences between changes in teacher understanding and changes in classroom practice across the project. Further, analyzing data from both interviews and observations would help to further clarify if the PD project was successful as an improvement strategy and effectively changed comprehension instruction for students.

Additionally, it was important to collect these data to inform the activities that were most effective for the PD model.

Chapter 4

IMPROVEMENT STRATEGIES RESULTS

Data Summary

This chapter reviews the findings of the pilot PD project that was conducted with district reading specialists in the spring of 2015. The first section of this chapter summarizes the findings of the interviews, the second section summarizes the findings of the observations, and the final section identifies connections between the interview and observation results. A detailed analysis of all project data and findings is included in Appendix I of this document.

Interview Results

The interview data show some mixed results for changes in reading specialists' understanding of metacognitive modeling and responsive elaboration in reading comprehension instruction. There were some positive changes in teacher understanding and some areas where their understanding did not change. The changes and overall mixed results are reported in the next section.

Positive changes in understanding. Positive changes were noted in reading specialists' understanding of metacognition, comprehension strategy instruction, and how to provide comprehension strategy practice. Prior to the intervention, reading specialists' understanding of metacognition and its relevance to reading comprehension varied. After the project, all five reading specialists could correctly define metacognition and explain its relationship to self-monitoring.

Additionally, reading specialists' understanding of reading comprehension strategy instruction changed from the inclusion of isolated and unrelated instructional techniques to the use of a research-based instructional protocol that included metacognitive modeling by the teacher and was followed with student practice. Further, their discussion of practice shifted from the inclusion of unrelated instructional techniques to the implementation of an instructional protocol that promoted a gradual release of responsibility.

Reading specialists also changed their understanding of how to use think alouds to teach reading comprehension and how to assess reading comprehension strategy use. At the beginning of the project, reading specialists had a good idea about how think alouds could be used during reading comprehension instruction. However, at the end of the project, reading specialists discussed using think alouds as part of an instructional protocol, using them with authentic texts, and using them more frequently. Most reading specialists also mentioned the merits of integrating student think alouds into comprehension instruction as well.

With regard to understanding assessments, reading specialists shifted their responses slightly from only considering standardized assessments to utilizing formative, oral and written assessments of student learning. This change demonstrates that reading specialists were focused on assessing their students' metacognitive understanding during instruction as opposed to relying solely on a standardized measure of understanding. It might also signal that they were interested in the process of making sense of text and not just the product. These positive shifts in reading specialists' understanding of using think

alouds and authentic assessments of comprehension indicate a deeper level of understanding than prior to the project.

No changes in understanding. While reading specialists improved their understanding of the types of assessments used to assess comprehension, they did not improve in their understanding of how to assess comprehension strategy use. Specifically, it was clear that reading specialists did not differentiate between reading comprehension assessment and the assessment of students' strategy knowledge and use.

Also, they did not change much in their understanding of responsive elaboration techniques. Specifically, there were two areas of responsive elaboration that did not seem to change during the project. First, reading specialists did not change their understanding of how to monitor when a student is experiencing comprehension difficulty. Second, there were no changes in their understanding of the types of instructional techniques they used to help students fix up cognitive misunderstandings.

Observation Results

Based on the data, there were many positive shifts in reading specialists' comprehension instruction. However, there were also some areas that showed no change in classroom instruction after the project. This section will examine the positive shifts observed in classroom instruction as well as the areas of instruction where little or no change was observed.

Positive changes in comprehension instruction. There was a positive change in reading specialists' ability to use the metacognitive modeling protocol presented during the workshop when teaching comprehension strategies to students. Specifically, reading specialists generally improved in their ability to explain *what* the strategy is, *why* it is

useful for reading comprehension, *when* to use the strategy, and *how* to use the strategy. Reading specialists also improved their responsive elaboration techniques. Specifically, they improved in their assessment of student misunderstandings. Instead of simply focusing on eliciting the correct answer from students, reading specialists more often asked students to explain their thinking when they responded incorrectly. Additionally, reading specialists improved in their persistence through multiple exchanges with individual students who were experiencing misunderstandings.

No changes in fix-up techniques. Reading specialists did not change much in the specific instructional techniques they used to help fix up misunderstandings. They continued to rely primarily on questioning and prompting as a means to help students fix up misunderstandings. This is an interesting finding, as all five reading specialists improved in their ability to persist with students who were experiencing misunderstanding.

Further, there was little or no change in the type of guided practice they included. Instead of planning collaborative practice that gradually releases the responsibility from teacher to student, reading specialists provided guided practice activities that were unrelated to procedures necessary to complete the strategy or provided guided practice that focused on the correct answers rather than engaging in metacognitive thinking to correctly use the strategy.

Comparing Changes in Understanding to Changes in Instruction

At the end of the PD project, there were some similarities between the types of changes reading specialists made in understanding and instruction, and there were also some differences. The next sections analyze those findings.

Similarities. There were similarities in the positive changes reading specialists made after the PD project. They changed both their understanding and instruction of metacognitive modeling in positive ways. After the PD project, most reading specialists displayed an improved understanding of the elements of the metacognitive modeling protocol, and they used those elements in their instruction. Additionally, reading specialists increased their understanding of the importance of including authentic texts for independent strategy practice and integrated this method in their classrooms at the end of the project.

There were also similarities in the lack of change between understanding and practice. Reading specialists displayed no increase in their understanding of alternative types of responses to students' cognitive misunderstandings. Similarly, there was no increase in the diversity of responses teachers provided to students at the end of the PD project.

Differences. Reading specialists improved their understanding of how to provide guided practice that focused on a gradual release of responsibility during metacognitive modeling, but little evidence of a change was found in classroom instruction in this area. Additionally, they did not display improved understanding of how to elicit mental processing or how to persist with helping students fix up their misunderstandings. Yet their classroom instruction changed to include these same responsive elaboration techniques.

Overall, the project was generally successful at improving reading specialists' understanding and classroom practice in both metacognitive modeling and responsive elaboration. In general, reading specialists were able to understand and to implement the

structured metacognitive modeling protocol for teaching reading comprehension strategies. Reading specialists did not change the guided practice they provided for students, in spite of their increased understanding in that area. They also improved their existing responsive elaboration instructional techniques. However, they did not change in their understanding or practice of alternative instructional strategies to help students correct misunderstandings during responsive elaboration

Chapter 5

REFLECTION ON IMPROVEMENT EFFORT

Reflection on Improvement Goal

There were three goals that were the driving force for this ELP. In my capacity as a Literacy and Intervention Specialist I attempted to: 1) design a pilot PD project that would support understanding and implementation of reading comprehension instruction, 2) test the pilot PD project with district reading specialists, and 3) revise and redesign an improved PD module for classroom teachers based on the results. The next section explains how these goals were achieved.

Goal 1: Design a Research-Based Comprehension Pilot PD

The goal of this PD project was to improve comprehension instruction by applying a research-based collaborative think aloud technique. This technique was created based on evidence-based strategies of comprehension and reading strategy use (Anderson & Roit, 1993; Bauman & Schmitt, 1986; Duffy et al., 1986; Duffy et al., 1988; Snow, 2003) The learning activities included in the pilot PD have been shown to improve teacher knowledge and practice in studies of effective PD (Garet, Porter, Desimone, Birman & Yoon, 2001; Sailors, 2009; Yoon, Duncan, Lee Scarloss & Shapley, 2007).

Goal 2: Implementation of Pilot Project With District Reading Specialists

The project with district reading specialists took place from March 16 to June 9, 2015. All reading specialists participated in the workshop trainings, and five agreed to participate in the specific research activities (observation, feedback, and interviews). The

five reading specialists who participated fully in the project improved their understanding and classroom practices for reading comprehension.

Goal 3: Design an Improved PD Module for All District Teachers

A PD module for all classroom teachers was designed based on the results of the pilot project with reading specialists. The PD module is currently housed on district's Learning Management System (LMS) site called Schoology. The PD is designed for classroom teachers as they teach reading strategies using the district's core reading basal, *Journeys*. The Schoology PD module will be available for all teachers in grades 3-5 to use to meet their PD requirements (see Appendix J).

Lessons Learned

What Worked Well

Overall, all reading specialists improved their understanding of metacognition and its relationship to metacognitive strategy instruction. They found that the structured metacognitive modeling protocol was easily adapted to their instructional routine, and they were successful at its implementation. Actually, reading specialists who taught programs that included comprehension strategy instruction were more likely to include the strategies learned from the pilot project into their classroom interventions.

Informal feedback from the reading specialists collected during the post project interviews suggested that the combination of workshop trainings and follow-up in classroom support helped them learn to implement the new strategies. In fact, most teachers commented that the one-on-one feedback provided after the observations was the most beneficial activity to support their learning of the instructional practices presented in the workshops.

What Needs to Be Redesigned

All reading specialists understood the necessity of slowly releasing responsibility to students, but they did not do it very effectively in their classrooms. Perhaps the workshop training was not explicit enough for reading specialists to understand the specific types of guided practice that offer scaffolded support for students using comprehension strategies. Reading specialists may have benefited from explicit, step-by-step protocols for the gradual release of responsibility to students.

Reading specialists did not demonstrate an increased understanding of or use alternative instructional methods to fix-up student misunderstandings during responsive elaboration. Perhaps this is because student misunderstandings cannot be routinized, and require teachers to make a decision about which fix-up technique to use in the moment. Responding to students is inherently more difficult than implementing a routine, and it requires teachers to have cognitive empathy with the student. While reading specialists improved somewhat in their current assessment of student misunderstandings and fix-up strategies, they only received one in-classroom coaching session to support the application of these strategies in the classroom. Perhaps they needed more time for feedback from an observer about how and when to use the strategies in real classroom situations.

It was a challenge for some teachers to implement this instructional protocol into their scripted programs. One teacher in particular struggled with the implementation of the workshop methods into her instruction because she had difficulty understanding how the instructional practices aligned with her current interventions. At our observation follow-up sessions, she shared that her current instructional program was too scripted to

allow for metacognitive modeling and responsive elaboration. Her concerns had merit because the district had emphasized high fidelity for the implementation of the intervention, and including this protocol for comprehension would compromise that fidelity.

In the future, consideration should be given to teachers' current instructional routines and how that would affect the implementation of new knowledge. Additionally, as the Literacy and Intervention Specialist in the district, I need to be careful not to send teachers mixed messages about the expectations for classroom instruction.

The project is limited in its generalizability to other contexts because the participants were reading specialists who work with smaller numbers of children and may have more coursework in the teaching of reading than classroom teachers. Moreover, it was conducted with a small sample of reading specialists. Therefore, the effectiveness of the project for classroom teachers may be different than the results with reading specialists. Future PDs will need to focus on how these strategies can be implemented into core classroom reading instruction.

Factors Influencing Success

While the ELP was generally successful, there were a few changes in my position and the organization that influenced my success as I worked through implementing my improvement strategies. These factors are described in this section.

Changes in My Position

A factor influencing my success was the change in my position. When I began the work on my ELP, I worked as a Development Coach with the University of Delaware. In that position, I worked as a coach for principals across New Castle County with the goal

of improving their skills as teacher evaluators and instructional leaders. During my many observations in teachers' classrooms, I noticed that some teachers were much better at providing explanations and supporting students in thinking through complex tasks. As a result, I decided to study how teacher explanations influence reading comprehension and subsequently researched it. My research led me to create this PD module based on a collaborative think aloud protocol.

I joined BSD as the Literacy and Intervention Specialist in June of 2014. At that time, my perspective changed from an evaluator of effective comprehension instruction to a facilitator for teacher learning. Due to this shift, the goals of my ELP also shifted from changing teachers' reading comprehension instruction to focusing on the effects of comprehension instruction to improve students' reading comprehension achievement in BSD. As a result, my problem statement and improvement goals needed to be revised to reflect the change.

Changes in Project Participants

The pilot PD project was originally designed to include a sample of teachers in one of the district's low-achieving and more diverse schools (Maple Lane Elementary). This school was selected due to its low performance and because it was a school that the district targeted for improvement. The plan was to use the results from the pilot PD project to create a streamlined PD project for the rest of teachers in BSD.

Due to several delays related to attaining required permission to conduct research, the original Maple Lane project dates had to be rescheduled, leading to conflicts with other scheduled BSD initiatives. As a result, the participants of the project had to be changed, leading to a shift in focus from classroom teachers to BSD reading specialists.

SBAC Testing Schedule

The SBAC testing schedule impacted the number of reading specialists who were willing to sign the informed consent. Many reading specialists are the SBAC testing coordinators for their schools, which occupies a great deal of their time during the testing window. Due to the delay in the project, it ran at the same time as SBAC. As a result, many reading specialists who were also test coordinators were hesitant to sign up for "one more thing" leading to a smaller sample size than anticipated.

Recommendations

The pilot project resulted in much additional information about how teachers learn to teach reading comprehension. In this section, I will summarize my recommendations to other educational leaders who wish to provide future PD in reading comprehension instruction.

Provide Structured Instructional Routines

Structured instructional routines that may be easily adapted into classroom practice are easy for teachers to understand and implement. Future professional development in this model should include the same structured, metacognitive modeling protocol as well as many examples of how to adapt the protocol to instructional practice.

Support Teacher Learning of Unstructured Instructional Practices

It was more difficult for teachers to understand and implement less structured instructional practices that could not be routinized, such as responsive elaboration. Perhaps more guided practice in the application of the instructional techniques was needed. Additionally, more opportunities for in-classroom coaching support may allow teachers time to practice and reflect on new techniques. A longer professional

development period is necessary to effectively improve unstructured instructional practices such as responsive elaboration.

Support Classroom Implementation of the Gradual Release of Responsibility

Teachers need additional support in implementing a gradual release of responsibility during guided practice into classroom strategy instruction. Future PD should include specific practice activities designed to afford students more responsibility for the metacognitive processing involved in strategy use. Additionally, future professional development should allow time for teachers to create their own lesson plans based on a specific instructional routine for guided and independent practice.

Link Learning to Current Instructional Routines

Teachers must understand how new practices can be integrated with their current instructional routines. For the professional development to be more successful in the future, additional emphasis will need to be placed on how to integrate the methods into specific instructional programs used in teachers' classrooms. Teachers should write specific lesson plans during professional development that can be used in their classrooms.

Classroom Practitioners Implement New Strategies at Different Rates

During the professional development project, some reading specialists were able to immediately implement the new instructional strategies more effectively than others. Specifically, some reading specialists were able to take the information presented at the workshops and implement it immediately into classroom practice. However, other reading specialists did not implement the workshop strategies at all even though they

were teaching the same instructional interventions as part of their regular instructional routine.

The differences in the ability to implement the strategies as a result of the original workshop intervention signal a need to differentiate professional development for classroom practitioners. Some practitioners may simply need a workshop training and minimal classroom follow up in order to implement new instructional strategies. However, others may need more time for re-teaching, classroom modeling, and follow up support. A one size fits all design for professional development will not be effective at changing the classroom practice of all classroom practitioners.

Next Steps

In order to prepare students for the comprehension demands of the CCSS and to improve student performance and close the achievement gap on the SBAC, we will need to continue to improve comprehension instruction for students. The next steps in the process include 1) implementation of the revised PD project for all grade 3-5 teachers, 2) implementation of a sustained PD effort in comprehension, 3) hiring of school-based coaches and 4) monitoring of students' comprehension growth.

Implement the Revised PD Project in a Blended Format

The revised PD addresses some of the lessons learned and recommendations from the pilot project (see Appendix J). Because of its success at changing classroom instruction, the revised project includes the same activities for teaching the metacognitive modeling protocol as the pilot. To help clarify how to implement the gradual release of responsibility during guided practice, that section of the PD has been expanded to include more modeling and teacher practice opportunities during the workshop. Additionally, the

Metacognitive Modeling Lesson Plan sheet has been adapted to add a space for collaborative practice, guided practice, and independent practice. Additionally, teachers have access to a model Metacognitive Modeling Lesson Plan that demonstrates how to plan a *Journeys* (2013) lesson using a gradual release of responsibility. Teachers are also prompted to write lesson plans for their *Journeys* (2013) comprehension lessons using the Metacognitive Modeling Lesson Plan.

In order to address teachers' difficulties with varying their fix-up strategies during responsive elaboration, additional time is devoted to the learning responsive elaboration techniques. Teachers are prompted to list specific types of student understandings that each technique may be used to help fix-up and to plan out what they would say to the student using that techniques. Further, they plan how they would choose different responsive elaboration techniques to help students fix-up their cognitive misunderstandings (see Table 1).

Table 1: Crosswalk Between the Pilot and Revised Professional Development Project

Project Design	Pilot Project	Revised Project
Participants	Reading specialists	All grade 3-5 teachers
Instructional Resources	*Soar to Success* (2001) reading comprehension intervention	*Journeys* (2013) basal reading series
Strategy Focus	Clarify, question, predict, summarize	Summarize, analyze/evaluate, infer/predict, monitor/clarify, question, visualize
Workshop Format	Workshop, classroom observation & coaching	Online/blended format
Activities for Gradual Release of Responsibility (GRR)	Plan 2 types of practice – guided & independent Model the GRR Evaluate a lesson for GRR	Plan 3 types of practice – collaborative, guided, and independent More opportunity for modeling, practice, and reflection Sample journeys-specific lesson plans
Activities for Responsive Elaboration	Learn fix-up strategies by watching sample videos	Additional time for learning each fix-up strategy with more modeling and examples Learn when to use each fix-up strategy Create scripts for using fix-up strategies with students
Metacognitive Modeling Protocol	Learn and practice the metacognitive modeling protocol	

Implement a Sustained Comprehension PD Initiative

The pilot project demonstrated that change in comprehension instruction requires time. If instruction is to change, teachers need time for in-classroom practice, feedback and support. However, this is a challenging issue for BSD due to constraints in the number of hours for district required PD. Other district ELA PD initiatives as well as PD initiatives in other subject areas compete for PD time. Perhaps the solution to this problem would be the implementation of school-based coaching support. School-based coaches could provide in-service trainings in comprehension during PLCs and feedback and embedded support for teachers over time that would occur during the regular school day, alleviating the need for additional PD hours.

Hire School-Based Coaches

A specific recommendation I would make to the district is to hire school-based coaches to work with teachers in PLCs and observing teachers in classrooms. As a result, teachers may have the time and information necessary to improve the less scripted comprehension instructional practices, with a knowledgeable coach providing support and feedback to them during instruction in the context of their classrooms.

Classroom coaching is a challenge at this time as there is one coach (me) who is responsible for coaching nine schools and is also currently involved in coordinating the elementary ELA curriculum initiatives and programs for all nine schools. School-based coaches could offer the type of job-embedded support teachers need to effectively improve classroom instruction and raise student achievement.

Help Principals Learn to Improve Their Assessment of Comprehension Instruction

In order for lasting changes to occur in reading comprehension instruction, principals will need to improve their ability to assess what effective comprehension instruction looks like in classrooms. To this end, principals will need additional training in what should be included in an effective reading comprehension curriculum. Additionally, the district will need to create a clear and easily adaptable comprehension walkthrough checklist. Principals will need a training overview focused on how to use the checklist as well as time to perform tandem walkthroughs with a knowledgeable other from the ELA curriculum department.

Monitor Student Comprehension Growth

One drawback of the pilot study was that there was no measure of student comprehension growth. Future PD efforts should include an analysis of students' comprehension growth where the comprehension PD has been implemented with fidelity. Only then will we achieve the goal of improving students' reading comprehension achievement.

Chapter 6

REFLECTIONS ON LEADERSHIP DEVELOPMENT

Through my six years in the doctoral program I have grown in many ways as a scholar, problem solver, and partner. Perhaps most importantly, I have learned the importance of asking the right questions in order to find my desired answers. In this next section I will discuss how learning to ask the right questions helped me to grow as a scholar, problem solver, and partner.

Scholar

My scholarly studies throughout the Ed.D program have helped me to learn to search for and ask good questions as a writer, reader and researcher. I have learned to create questions that I am passionate about answering and that will help to support my specific point of view or argument. While composing a question, I have learned to think about the audience and the purpose of the question and to choose the genre of my writing piece based on that information. I have learned to compose in many different scholarly genres for university professors, administrators, teachers, and the general public.

In the area of reading, I have learned to identify the questions asked and answered in current research and scholarly writings on issues in literacy. I have learned how to critically examine and analyze the questions asked in research studies, the methods used to answers those questions, and the theoretical perspective of the author who asked the question. I have become a more critical and analytical reader, focused on evaluating the information that I read, instead of merely accepting the information as correct.

As a researcher, I have learned to center studies on clear and focused questions based on a survey of scholarly literature. I have learned to ask questions to solve a problem or to investigate new ideas. I have also learned to narrow the scope of questions so that they may be answered within a reasonable and achievable time frame.

In sum, focusing on creating good questions has allowed me to grow as a scholar. It has allowed me to center my writing, evaluate scholarly literature, and focus on relevant and achievable research studies and goals.

Problem Solver

Perhaps most important in my work as a literacy specialist is to ask questions about how to solve problems with literacy achievement across the elementary schools in the district. I have learned to ask focused questions about the root causes of literacy problems based on student data. Therefore, I have been able to evaluate the effectiveness of programs, materials and resources purchased by and implemented in the district based on the results of asking relevant questions about problems with student achievement.

I have also learned how to ask questions about the effectiveness of professional development in the district. Based on my knowledge of best practices in professional development, I have learned to ask questions about solving problems with professional development in the district. Answers to those questions will help me to find more effective methods of supporting administrators and teachers as they implement evidence-based literacy approaches in their classrooms. Asking questions about the best way to plan professional development for administrators and teachers implement improvement strategies in their classroom will help to improve classroom practices, and subsequently improve student achievement.

Partner

My position as a literacy specialist in the district requires me to work collaboratively with district personnel, building administration, teachers, reading specialists, librarians and tutors. I have witnessed the positive results that occur when educational professionals work together to answer questions about how to improve learning for students. In my role as a facilitator of learning for all of these groups, I have tried to ask myself good questions about what each group would need to achieve the goal of student literacy achievement. I have worked to share the knowledge I learned in the doctoral program by offering workshops and one-on-one coaching sessions. Additionally, as a result of asking questions about how to improve RTI in the district, reading specialists participated in trainings in evidence-based interventions, worked collaboratively in a professional learning community to build an effective system for reading intervention. Reading specialists are now taking responsibility for training others in their buildings and in the district as a whole.

In order to answer the question about how to improve teacher understanding of current best practices in literacy instruction, we have worked to create a partnership between my district and university professors and researchers to help train our teachers. We are working on implementing evidence-based approaches to the ELA block, RTI, and writing instruction in conjunction with the Universities of Delaware and North Carolina.

Most recently, we have begun asking questions about whether our current basal series, *Journeys* (2013) is aligned to the CCSS at each grade level. We have begun working together on creating an ELA curriculum and assessments that will provide

teachers with the structure and resources they need to help students achieve the requirements of the CCSS.

Final Thoughts

Through my doctoral program I have learned that asking good questions is essential for the implementation of change in educational organizations. Because educational institutions are at their core bureaucracies, decisions are often made without asking for input from all stakeholders or without investigating how decisions affect educators who work with students everyday. This causes disillusionment and an overall unwillingness to change.

The lack of desire to change is very strong among many in BSD. However, student achievement data suggest that change is necessary if we wish for *all* students in the district to achieve, including students who are at the bottom of our achievement gap. In order for change to occur, we will need to work together to ask questions that will help identify our areas of need, to identify the root causes of problems, and to help plan, implement and evaluate improvement strategies.

Finally, focusing on asking and answering relevant questions about specific problems in our district will help all stakeholders understand the need for change. Perhaps most importantly, asking important questions and finding effective answers about student learning and classroom practice will help us to focus on what really needs fixing in the district. As a result, we will be able to focus our efforts on helping *all* students to meet and exceed performance standards, and begin to close the achievement gap for our students who are most in need.

REFERENCES

Adams, J. M. (1990). *Beginning to read: Thinking and learning about print*. Cambridge, MA: The MIT Press.

Anderson, V., & Roit, M. (1993). Planning and implementing collaborative strategy instruction for delayed readers in grades 6-10. *The Elementary School Journal*, 121-137.

Baumann, J. F., & Schmitt, M. C. (1986). The what, why, how, and when of comprehension instruction. *The Reading Teacher*, 39(7), 640-646.

Biancarosa, G., & Snow, C. (2006). *Reading next - a vision for action and research in middle and high school literacy: A report to the Carnegie Corporation of New York* (Publication No. 2) Alliance for Excellent Education. Washington, D.C: Alliance for Excellent Education.

Chall, J. 5., Jacobs, VA, & Baldwin, LE (1990). *The reading crisis: Why poor children fall behind.* Cambridge: Harvard University Press.

Darling-Hammond, L., Wei, R. C., Andree, A., Richardson, N., & Orphanos, S. (2009). *Professional learning in the learning profession.* Washington, DC: National Staff Development Council.

Dole, J. A., Duffy, G. G., Roehler, L. R., & Pearson, P. D. (1991). Moving from the old to the new: Research on reading comprehension instruction. *Review of Educational Research*, 61(2), 239-264.

Duffy, G. G., Roehler, L. R., & Herrmann, B. A. (1988). Modeling mental processes helps poor

readers become strategic readers. *The Reading Teacher*, 41(8), 762-767.

Duffy, G. G., Roehler, L. R., Meloth, M. S., Vavrus, L. G., Book, C., Putnam, J., & Wesselman, R. (1986). The relationship between explicit verbal explanations during reading skill

instruction and student awareness and achievement: A study of reading teacher effects.

Reading Research Quarterly, 237-252.

Duffy, G. G., & Roehler, L. R. (1987). Improving reading instruction through the use of responsive elaboration. *The Reading Teacher*, 40(6), 514-520.

Duffy, G. G., Roehler, L. R., Sivan, E., Rackliffe, G., Book, C., Meloth, M. S., & Bassiri, D. (1987). Effects of explaining the reasoning associated with using reading strategies. *Reading Research Quarterly*, 347-368.

Garet, M., Porter, A., Desimone, L., Birman, B., & Yoon, K. S. (2001). What makes professional development effective? Results from a national sample of teachers. *American Education Research Journal*, *38*(4), 915–945.

Juel, C. (1988). Learning to read and write: A longitudinal study of 54 children from first through fourth grades. *Journal of Educational Psychology*, *90* (4), 437-447.

Learning Focused Strategies. (2015). Retrieved from: http://www.learning focused.com.

National Reading Panel, National Institute of Child Health, & Human Development, 2000. *Report of the national reading panel: Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction.* (Reports of the subgroups). Washington, DC: National Institute of Child Health, & Human Development.

McKenna, M.C., & Stahl, S.A. (2003). M.C. McKenna & S.A. Stahl, (2003).

Assessment for reading instruction. New York: Guilford.

Palincsar, A. S., & Brown, A. L. (1984). Reciprocal teaching of comprehension-fostering and comprehension-monitoring activities. *Cognition and Instruction*, 1(2), 117-175.

Paul, R., & Elder, L. (2008). *How to read a paragraph: The art of close reading*. Dillon Beach: Foundation for Critical Thinking Press.

Pressley, M. (2006). *Reading instruction that works: the case for balanced teaching* (3rd ed.). New York, NY: The Guilford Press.

RAND Reading Study Group. (2002). *Reading for understanding: Toward an R & D program in reading comprehension*. Santa Monica, CA: RAND

Sailors, M. (2009) Improving comprehension instruction through quality professional development. In S.E. Israel & Duffy, G.G., *Handbook of research on reading comprehension* (pg. 645-657). New York, NY: Routeldge.

Snow, C.E, & Sweet, A.P. (2003). Reading for comprehension. In A. P. Sweet, & C. E. Snow, *Rethinking reading comprehension* (pp. 1-11). New York: The Guilford Press.

Snow, C.E. (2003). Assessment of reading comprehension. In A. P. Sweet, & C. E. Snow, *Rethinking reading comprehension* (pp. 1-11). New York: The Guilford Press.

Stahl, K. A. D., & García, G. E. (2015). *Developing reading comprehension: Effective instruction for all students in pre k-2*. New York, NY: Guilford Publications.

State of Delaware, The Official Website of the First State (2015*). Brandywine School District School Profiles.* Retrieved from: http://profiles.doe.k12.de.us/SchoolProfiles/District/Default.aspx?checkSchool=0&districtCode=31&district=Brandywine

Yoon, K. S., Duncan, T., Lee, S. W.-Y., Scarloss, B., & Shapley, K. (2007). *Reviewing the evidence on how teacher professional development affects student achievement* (Issues & Answers Report, REL 2007 No. 033). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Southwest.

Appendix A

ELA WALKTHROUGH DATA ANALYSIS

This document will analyze the walkthrough data collected by elementary administrators in the Brandywine School District (BSD) from July 1, 2014 to July 1, 2015. The purpose of this document is to investigate how often administrators observed teachers in grades 3-5 integrate comprehension strategy instruction in their classrooms. The problem statement for my Executive Leadership Project (ELP) claims that teachers are not currently teaching comprehension. Data from classroom walkthroughs during ELA will provide a clearer picture of how much and what kind of comprehension instruction is occurring.

Through the district's Learning Focused Strategies (LFS) initiative, teachers were trained in the 2012- 2013 school year to include extended thinking strategies into their daily instruction. Extended thinking strategies, as defined by LFS, include comparing and contrasting, analyzing perspectives, inductive and deductive reasoning, abstracting, classifying/categorizing, error analysis, constructing support, and higher order thinking. Teachers were asked to include these strategies during the ELA block to improve and expand reading comprehension.

Building-level administrators were asked to monitor the implementation of extended thinking strategies during classroom walkthrough observations. Separate walkthrough forms were created for different grade level clusters and subject areas across the district by the curriculum office. This analysis will focus on data collected using the

grades three through five ELA walkthrough form (see BSD ELA Grades 3-5 Walkthrough Form, Appendix A). However, data collected for this analysis will only focus on question four of the walkthrough form, which monitors the presence of each individual extended thinking strategy observed while the administrator was in the classroom.

Walkthroughs were collected from all nine elementary schools in the district over the course of a one-year period - a total of 169 walkthroughs. However, schools did not contribute the same number of walkthroughs (see Table 2). One school submitted 76 walkthrough forms, and another submitted only one. This was initially confusing because the district has a policy requiring each building administrator to conduct five walkthroughs a week. After closer analysis, I have hypothesized two possible reasons for this phenomenon. The first possible reason is that some buildings were not able to comply with district walkthrough policy because other aspects of building management may have interfered with walkthrough completion. The second possible reason is that elementary building administrators observe all content areas during walkthroughs in all grade levels. Perhaps mathematics, science or social studies instruction or the K-2 grade level cluster was the focus of their building initiatives. As a result, more walkthroughs were conducted in those areas in some buildings, and fewer in the 3-5 ELA cluster.

However, this result is significant for the teaching of reading comprehension strategies in the grade level cluster (4-5) that is the focus of this ELP. It is significant because it may show a lack of focus on the teaching of ELA in grades 3-5 in some district elementary buildings. It is important to note that some building administrators conducted many fewer walkthroughs of ELA instruction than others. It is clear that the monitoring

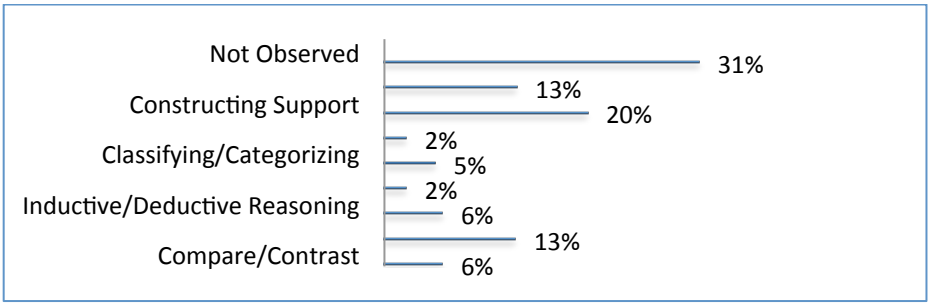
of ELA instruction (including extended thinking strategies) through documented walkthroughs occurred much more often in some buildings than others. That is a concern if our focus is to help students improve their reading comprehension.

Table 2: Number of ELA Walkthrough Forms Submitted for Grades 3-5 by Individual School

District Elementary Schools	A	B	C	D	E	F	G	H	I
Total 3-5 Walkthrough Forms	16	76	7	7	1	6	2	5	49

As for the teaching of extended thinking strategies, results of the walkthroughs conducted during the English Language Arts instructional block over a one-year period show that extended thinking activities were not observed in 31%, almost 1/3 of the walkthroughs conducted (Figure 2). Administrators observed the constructing support strategy the most, 20% of the time. Abstracting and error analysis were observed the least – in only 2% of the walkthroughs conducted. The data are further evidence that teachers in the district are not consistently implementing higher order thinking strategies necessary for comprehension on a consistent basis, despite specific training in extended thinking instructional strategies.

Figure 7: Percentage of Extended Thinking Activities Documented during 169 BSD Walkthroughs



Data Limitations

There are some limitations to the walkthrough data. First, various administrators in the district conducted the walkthroughs. While there was an overview training of how to use the walkthrough form for these administrators, it is not clear how much time was spent in calibrating expectations for what type of evidence from instruction is required for each item on the walkthrough form. As a result, all administrators may not have evaluated the lesson in the same manner, causing inconsistent expectations for each item on the walkthrough form across the district schools.

Additionally, because the data were inconsistent among the schools, they may not be generalizable to all schools in the district. Schools where there were a number of walkthroughs may have had a focus on extended thinking strategies, causing teachers to implement them at a higher rate than schools where they were not a focus. Schools where they were not a focus may have implemented the strategies less frequently into their lesson, but there were no observations to demonstrate it. As a result, the district-wide average for implementation of the extended thinking strategies may not be accurate across all schools in the district.

BSD ELA Grades 3-5 Walkthrough Form

Teacher: Anonymous
Observation Date: XX/XX/XXXX Grades: 3-5 Subject: ELA/Reading
LFS and Common Core

1. Essential Question:*
   - ☐ Essential Question clearly focuses on the important ideas of the lesson and is incorporated in the lesson with opportunities for student articulation.
   - ☐ Essential Question clearly focuses on the important ideas of the lesson.
   - ☐ Essential Question does not focus on the important ideas of the lesson.
   - ☐ N/A

2. Distributive Summarization:*
   - ☐ Distributive Summarization occurs frequently to check for understanding and is used to drive, modify, and adjust instruction.
   - ☐ Distributive Summarization occurs to check for understanding and engage students.
   - ☐ Distributive Summarization was not observed during the walkthrough.
   - ☐ N/A

3. Academic Vocabulary:*
   - ☐ Academic Vocabulary is used throughout the walkthrough by both teacher and students with visual accessibility for all.
   - ☐ Academic Vocabulary is used by teacher in context throughout the walkthrough.
   - ☐ Academic Vocabulary was not used or referenced during the walkthrough.
   - ☐ N/A

4. *Extended Thinking Strategy:**
   - ☐ *Comparing/Contrasting*
   - ☐ *Analyzing Perspectives*
   - ☐ *Inductive/Deductive Reasoning*
   - ☐ *Abstracting*
   - ☐ *Classifying/Categorizing*
   - ☐ *Error Analysis Constructing Support Higher Order Questioning*
   - ☐ *N/A*

5. Questions and tasks require students to use details from the text to demonstrate understanding and to support their ideas about the text.*

   - ☐ Questions and tasks require students to cite evidence from the text (verbal and/or written).
   - ☐ Questions and tasks can be answered without reference to evidence from the text.
   - ☐ N/A

6. Strategies and structures are used to keep all students engaged and persevering with challenging tasks (e.g., extending thinking strategies, use of graphic organizers):*

- ☐ All students are engaged and persevering with challenging tasks.
- ☐ Most of the students are engaged and persevering with challenging tasks.
- ☐ Few students are engaged and persevering with challenging tasks.
- ☐ Students are not engaged or persevering with challenging tasks.
- ☐ N/A

7. Instruction and materials are differentiated for learner differences (e.g., special education, ELL, enrichment) to ensure all students have access with ample time to practice newly acquired skills:*

- ☐ Instruction and materials provide ample opportunity to practice newly acquired skills for the range of learners in the classroom.
- ☐ Instruction and materials fail to provide sufficient opportunity for students of all abilities to practice newly acquired skills.
- ☐ N/A

8. The teacher acts on knowledge of students to promote progress toward increased independence and plans tasks which students talk about each other's thinking (reading, writing, speaking about text):*

- ☐ Students actively respond to teacher prompts and build on each other's observations or insights when discussing or collaborating.
- ☐ Students do not respond to teacher prompts or build on each other's observations or insights when discussing or collaborating.
- ☐ N/A

9. Comments:

Appendix B

EDUC 850 COMPREHENSION STUDY

Debunking the Fourth Grade Slump

Introduction

Background

Many literacy studies have documented a "fourth grade slump" in students' reading achievement that continues throughout the intermediate grades (Pressley, 2006). Educators often attribute the slip in reading achievement to an increased curricular demand on reading comprehension in grade four. Some studies have documented connections between such factors as language ability, motivation, and vocabulary knowledge and intermediate level reading comprehension (Paratore, Cassano & Schickendanz, 2010). The precise reason for the "slump" has not been a major focus in the reading research community. In fact, while there is a good deal of focus on the acquisition of reading skills in the early primary grades, there is much less research about reading comprehension in the intermediate grades (Pressley, 2006). However, the fact remains that a consistent percentage of students who were previously performing at grade level expectations begin to develop comprehension problems at grade four. Those issues may continue to plague many readers through the intermediate school years and perhaps through their academic careers.

Rationale

Comprehension is the ultimate goal of reading. Therefore, the "fourth grade slump" in comprehension should be cause for alarm. However, there is hope for students with comprehension difficulties. Research has shown that the explicit teaching, modeling, and practice of comprehension strategies are essential for students to improve comprehension in the intermediate grades (Paratore, Cassano & Schickendanz, 2010). Yet, studies have shown that the amount of reading comprehension instruction in the intermediate grades is inconsistent. In fact, teachers in high performing schools consistently integrate comprehension strategy instruction, and teachers in underperforming schools do not consistently integrate essential comprehension strategy instruction in their classrooms. Further, when those teachers participate in professional development about strategy instruction, many do not adapt their reading instruction to include the new information (Pressley, 2006).

Purpose

The purpose of this study is to understand why some intermediate grade elementary teachers integrate comprehension instruction consistently and why some teachers do not. To fully understand this, we must identify what facilitates teachers' integration of comprehension instruction and what impedes the integration of comprehension instruction.

Research Question

What are some facilitators and barriers to reading comprehension instruction in the intermediate grades?

Program/Setting for Research

For this assignment, observation and interview data were collected from a fourth grade teacher in a high performing New Castle County school. The school has received a "Superior" five star rating from the state for student growth on the DCAS. Therefore, the subject meets the sample criteria because she is a fourth grade teacher in a high performing school

Methodology

Design Overview

In order to collect information about facilitators and barriers for reading comprehension instruction, the planned study will collect data from two sources: interviews and observations (see Table 3). Two data collection methods were chosen in an effort to improve reliability of results.

Table 3: Data Collection Design Matrix

Information needed	Data collection method	Data source
Facilitators and barriers to reading comprehension	Interviews	Classroom Teacher
	Observation of actual reading comprehension practices during reading instruction	Classroom Teacher

Sampling Strategies

For this assignment, data were collected using two methods: a single classroom observation and a follow up interview. The same fourth grade teacher was the data source for both the observation and the interview. She is a second year teacher and a student in the master's program at the University of Delaware. She was chosen because she works at a high performing school in New Castle County, Delaware. The school received a

superior rating from the state due to performance on the reading and math sections of the DCAS. Therefore, she is part of the purposive sample designed for the study.

Data Collection Activities & Methods

Data were collected via one observation and a follow-up interview. The observation was conducted in a fourth grade classroom in a Delaware public school in New Castle County. The observation took place on October 25, 2011 for one hour and fifteen minutes (10:55-12:10) during reading block instruction. The observation focused on recording evidence of reading comprehension instruction during the entire reading block. The rationale for observing in this classroom is that in order to understand the barriers and facilitators to reading comprehension instruction in the intermediate grades, it is first important to find out what reading comprehension actually looks like in the intermediate grades.

The observation was conducted in a fourth grade classroom during the entire reading block in order to understand how reading comprehension instruction is taught in relation to the entire reading lesson. Handwritten notes were taken during the observation, using a pre-determined observation guide. When space ran out on the guide sheet, the notes were taken in a spiral notebook.

The follow-up interview took place from 4:35pm to 4:51pm on November 10, 2011 in the waiting area of an office suite in Willard Hall. The interview began with questions in a standardized interview format, but allowed for questions determined from the context to be asked at the end of the interview. The rationale was that consistent evidence may be collected from standardized questions, and that issues and ideas

specifically related to the individual may be collected through the context-related questions.

The teacher's responses were typed under each question of the interview guide. They were transcribed verbatim from a tape recording of the 15.56-minute interview. The interviewer also took notes in a notebook during the interview. These notes were used to help capture the main themes of the interview and provided extra insurance in case the tape recorder malfunctioned. However, they were not included in the data due to the thoroughness of the transcription from the tape recording.

Strengths & Weaknesses of Data Collection

A strength of the data collection was that the observation and follow-up interview occurred with the same teacher. Therefore, a clearer picture of reading comprehension instruction in her classroom was presented. The two data sources also help to cross check one another to improve the validity of both sources. Another strength of the data collection was that the teacher was a cooperative and knowledgeable subject, offering information and answering questions thoughtfully and fully.

A weakness of the data collection was that it only involved one subject, who was a second year teacher. Therefore, the data and analysis are only applicable to her. Further, the data may not be characteristic of all teachers because it was collected from a new teacher with a great deal of knowledge and a relatively short amount of experience. She is a current student in a master's program in reading. Therefore, her teaching strategies and answers reflect a strong knowledge of current best practice that teachers without the same experience do not share. Further, because she has just begun her second year of teaching,

the data may not be reflective of teachers with more experience. All of these factors make the data valid only for this subject, and they cannot yet be generalized to other teachers.

In addition, the teacher is studying at the same university as the evaluator, so their beliefs about reading instruction are very similar, which may influence the evaluator's interpretation of results, particularly for the observation. Further, their relationship through university study may have influenced the answers. For example, the teacher may have felt it necessary to present the lesson or to explain her ideas in ways that the evaluator would understand as a fellow graduate student or may even have felt pressured to include additional information related to their university study. Therefore, the evaluator needs to be aware of bias.

Addressing Quality Concerns

A quality concern is the fact that there are only two data sources and they cannot be generalized to other cases. Additionally, the observation was only conducted on one day, not over a period of time as planned for the final study. It is possible that the observer caught the teacher on a day that she specifically taught reading comprehension strategies. Other days that same week may not have included as much or similar comprehension instruction. The data collected on that day may not be representative of reading comprehension on a different day or may not be representative of the average amount of reading comprehension taught over an extended period of time. In the future (when there is more time) additional subjects will be included to substantiate data. Also, each teacher will be observed for a two-week period in order to get a clearer picture of comprehension instruction.

Data Analysis Procedures & Findings

Data Analysis Procedures

The observation and interview were first individually analyzed, and then synthesized to substantiate data. During the observation, the evaluator collected evidence of reading comprehension instruction, and subsequently grouped it into specific comprehension strategies observed. For the interview, the data were coded into identified facilitators and barriers during the interview. Finally, the observation data were used to substantiate or contradict the data collected during the interview. The detailed observation analysis, interview analysis, and integrated analysis follow in this section.

Observation Analysis

During the observation, direct comprehension instruction in using background knowledge, making inferences, and predicting took place for approximately one half hour of the reading "block." The lesson was a part of the Harcourt-Brace basal reading series used in the school. 44% of the reading block focused on the direct instruction of the comprehension strategies. The teacher demonstrated several instructional strategies to teach the comprehension lesson including: direct instruction, modeling, partner work, and independent practice. However, a few students did not understand how to use the strategies as evidenced by the negative comments noted by the observer. Further, the lesson was quick, and did not allow extended time for practice and discussion. The strategies taught during the lesson were not reinforced in small groups to ensure deeper understanding and learning for all students.

The observation also included evidence of instructional strategies that indirectly improve reading comprehension, although they do not directly teach them. During

"flexgroup" time, the teacher engaged in impromptu one-on-one reading comprehension instruction with students as needed. In addition, asking the students to engage in fluency practice such as reading a scene from a book with expression will increase students' comprehension of the text.

The teacher also used appropriate "technical" reading comprehension vocabulary. Statements such as "You have a lot of background knowledge" and questions such as "How would you summarize this part?" are evidence of the importance she places on teaching students the technical vocabulary for specific comprehension strategies.

Interview Analysis

During the interview, the teacher was able to elaborate facilitators and barriers to reading comprehension instruction. Her answers were coded to include: pedagogical strategies, reading skills & strategies, time, materials, student characteristics, assessment, and professional development.

Pedagogical Strategies

During the interview, the teacher identified several instructional strategies that she uses during reading comprehension instruction. She mentioned these pedagogical strategies as part of her daily reading routine: whole group teaching, collaborative work, including pairs, small group instruction, and graphic organizers. These are research-based pedagogical strategies that have been proven to facilitate learning. The teacher did not identify any pedagogical strategies that could be considered barriers to reading comprehension.

Reading Comprehension Skills and Strategies

The teacher also identified several reading strategies that she included in reading instruction. Strategies that she identified included the direct teaching of comprehension strategies and skills. The skills she mentioned were cause & effect, fact and opinion, making generalizations, drawing conclusions, characterization. Some strategies she mentioned included predicting, making inferences, summarizing and the teaching of text structures & genres. These are current, research-based strategies that have been proven to facilitate comprehension. She did not identify any reading comprehension skills or strategies that could be considered barriers to reading comprehension instruction. Additionally, she identified almost all of the important elements of reading comprehension instruction.

Time

The teacher identified the lack of time to teach reading comprehension, to write in response to literature, and for the discussion of critical and inferential responses as barriers to reading comprehension instruction. She reported that only 30 minutes of whole group time is devoted to reading comprehension. She did mention, however, that she does teach comprehension during small group time. Overall, she stated that lack of time was her biggest barrier to reading comprehension instruction.

Materials

The teacher identified a wide variety of instructional materials as her greatest facilitator for reading comprehension instruction. She has a new 2012 basal reading series purchased by the school, a number of novels sets that she has purchased, and access to other novels to use for listening comprehension and with small groups. However, she also discussed some barriers to comprehension instruction including the need for more novel

sets, and more importantly, she felt that her materials did not correspond to statewide or curriculum-based assessments. The incongruence of instruction and assessment was a theme that she repeated later in the interview.

Student Characteristics

The teacher identified that student characteristics including basic reading skills (such as decoding and fluency) and wide reading of different materials facilitate reading comprehension instruction. Additionally, she explained that when reading is valued at home students are more likely to have the background knowledge, experiences, motivation and vocabulary that facilitate reading comprehension instruction. Conversely, she identified limited vocabulary, prior knowledge, low fluency, decoding skills, and knowledge of text structure and genres as barriers to reading comprehension instruction. It was interesting to note that the teacher identified many more facilitators than barriers for students. However, she did identify students coming to her with "such low fluency" as a major barrier or facilitator to reading comprehension instruction.

Assessments

The "Assessment" code was added to the initial coding guide because the teacher mentioned assessing reading comprehension as a barrier repeatedly during the interview. Specifically, she mentioned no facilitators for comprehension, only barriers. She felt that it is difficult to measure student growth in reading comprehension because assessments don't correspond to instruction, many assessments include texts that do not correspond with students' prior knowledge, and students' growth seems to fluctuate in reading comprehension. The identification of assessment as a barrier was a theme throughout the interview.

Professional Development

The teacher identified her master's coursework as the only additional training she had specifically in reading comprehension instruction. She identified some Learning Focused professional development strategies (graphic organizers, collaborative pairs, and summarization) that could also be applied to reading comprehension instruction. However, the lack of professional development in comprehension instruction that specifically corresponds to state and curriculum assessments; the lack of discussion about effective reading comprehension instruction in Professional Learning Communities (PLCs), and the lack of in-service training about expectations for reading comprehension in the Common Core were definite barriers to reading comprehension instruction.

Integrated Analysis

An integrated look at both data sources was the final step in data analysis. For this project, data collected during the observation was used to further substantiate the interview data. This was done by cross checking the interview codes with the data from the observation. Facilitators that were substantiated by both data sources included: pedagogical strategies, reading skills and strategies, materials, student characteristics, and professional development. Barriers that were substantiated by both data sources included: time and assessment. Table X identifies the specific data for each code that were substantiated by both data sources. A more detailed description of analysis for each code follows.

Table 4: Interview Data Substantiated by the Observation

	Coding	Substantiated Data
Facilitators	*Pedagogical Strategies*	• Whole group teaching • Collaborative work • Graphic organizers

	Reading Skills & Strategies	• Strategies
		  • Predicting
		  • Making inferences
		  • Summarizing
		  • Teaching text structure & genre

	Materials	• A lot of 2012 anthology-based materials
		  • Textbook
		• Additional supplementary materials
		  • Class sets of novels purchased by the teacher

	Student Characteristics	• Basic skills like fluency • Background knowledge & experiences • High vocabulary

	Professional Development	• Learning focused
		  • Graphic organizers
		  • Collaborative pairs
		  • Summarization

Barriers	*Time*	• ½ hour to teach reading comprehension during whole group instruction
		• More time
		  • To teach it
		  • To write in response
		  • For critical & inferential things

	Assessment	• Hard to measure student growth

Substantiated Facilitators

Pedagogical Strategies

During the interview the teacher mentioned that her daily routine included whole group teaching, collaborative work, small group instruction and graphic organizers. One half hour of whole group instruction, pair and group work, as well as the use of graphic organizers were noted during the observation as well. However, small group instruction was not observed on that day and therefore could not be substantiated by the observation.

Reading Comprehension Skills and Strategies

The teacher also mentioned many skills and strategies she included in reading comprehension instruction. Those noted during the observation included predicting, making inferences, summarizing, and teaching text structure & genre. It is important to note that all of those were included in the one half hour of whole group instruction.

Materials

The use of the 2012 Harcourt-Brace anthology textbook and the children's book *Bunnicula* (Howe & Howe, 1996) were noted during the observation. The teacher also mentioned them as facilitators to reading instruction in the interview. The teacher also mentioned comprehension workstations, which were present in the classroom during the observation, but were not observed in use on the day of the observation.

Student Characteristics

The teacher named some specific student characteristics that facilitate reading comprehension including reading fluency, background knowledge, and high vocabulary. During the observation it was noted that she included activities that may develop those characteristics. During small group or "flexgroup" time, she asked students to engage in a reader's theater activity to practice reading fluency. During whole group instruction, she reminded the students to build on their background knowledge to make inferences and predictions. Additionally, the first ten minutes of the reading block involved a vocabulary building activity.

Professional Development

The teacher stated that some Learning Focused Strategies (LFS) were included as professional development in her district. She felt that some LFS strategies facilitate reading comprehension instruction. Those observed during the whole group part of the

reading block were the use of graphic organizers, collaborative pairs, and summarization (specifically, distributed summarization). The inclusion of these strategies into the lesson substantiate that they are part of classroom instruction (at least on the day of the observation).

Substantiated Barriers

Time

During the interview, the teacher named lack of time as one of the greatest barriers to reading comprehension instruction. She stated that she only had one half hour to teach it, which was corroborated during the observation. In the interview she also stated that she wished she had more time to teach reading comprehension so that students could spend more time on writing and on critical and inferential activities. The absence of time for writing and critical and inferential activities was also noted in the observation. Students were taught a whole group lesson for forty minutes, including one half hour of comprehension instruction. During that half hour they were expected to use four strategies: use background knowledge, infer, predict, and look for the elements of the folktale genre. Then some students left to go to another classroom, and some new students came into the classroom. The instruction at that time was not related to the whole group lesson. Therefore, there was no time for independent practice or extension of the reading comprehension lesson, an important factor as the lesson was quick and some students were expressing that they did not understand the lesson.

Assessment

The teacher also identified difficulty in assessment as an important barrier to reading comprehension instruction. She stated that it was difficult to see consistent

growth in students' comprehension skills. During the observation it was noted that some students were struggling with new concepts, based on their responses, which may show that they were not growing in their knowledge. However, what the specific issues were for those students were not identified through an observed assessment. Further, student specific issues were not addressed in the instruction.

Preliminary Results

The teacher's knowledge and implementation of best pedagogical and reading comprehension strategies may facilitate her teaching of reading comprehension. Evidence of this includes the presence of best pedagogical and content-area practices in her instruction. Additionally, the teacher identified student characteristics that facilitate reading comprehension, and included activities to develop those characteristics in her reading comprehension instruction. Therefore, it is possible to deduce that a high level of current teacher knowledge about reading comprehension instruction may be a facilitator to teaching it.

On the other hand, it is important to note that even though the teacher possessed a great deal of knowledge and a number of useful materials for reading comprehension instruction, she stated during the interview that she still did not "see consistent growth in her students'' reading comprehension. The teacher also questioned if the lack of growth in reading comprehension could be attributed to inappropriate or incongruous assessments. True reading comprehension is difficult to measure because it is a complex process, with many uncontrolled variables. Perhaps the complexity of assessment is a barrier to reading comprehension instruction.

Additionally, during the observation, some students expressed difficulty understanding the comprehension concepts taught. Perhaps that difficulty in understanding was due to the inability to differentiate reading comprehension instruction for some students because assessments do not provide the teacher sufficient information about specific areas of strengths and weaknesses. Therefore, she may not be able to effectively differentiate reading comprehension skills and strategies for all students.

However, during the observation the largest barrier appeared to be time. In one half hour the teacher asked the students to work with four separate comprehension strategies. While there was some time for cooperative pair work, there did not appear to be sufficient time for practice for students. Further, the comprehension strategies were not reinforced during small group or "flexgroup" time. There was no evidence of reinforcement or expansion of those strategies throughout the block. Further, the teacher identified lack of time as a major barrier to reading comprehension during the interview. Perhaps the lack of instructional time is a barrier to reading comprehension instruction. However, the reason for the lack of time is not clear. For example, it could be due to teacher planning, the number of strategies the basal materials require teachers to include, the school schedule, or another unknown variable.

Issues in Data Analysis

The largest issues in the data analysis are that the sample comprises only one teacher, and the observation data are limited to one day of instruction. Therefore, results cannot be generalized to other cases and the observation data cannot be substantiated over a period of time. For example, the teacher may have spent more time reinforcing reading comprehension in "flex groups" on a different day, or may not have included best

pedagogical and content-related practices in instruction on another day. There is not enough data to truly draw valid conclusions from the observation.

Conclusions & Reflections

In general, I believe that the data collection methods for this study are appropriate for answering the question: What are some facilitators and barriers to reading comprehension instruction in the intermediate grades? The interview particularly provided specific information from the teacher about the facilitators and barriers to reading comprehension instruction. The observation also provided background knowledge and validation of the information collected in the interview. However, the information from the observation is influenced more by evaluator bias because the evaluator must determine whether data are representative of facilitators or barriers, while the interview relies on the teacher's beliefs and biases about reading comprehension instruction. To improve the validity of the observation data and to provide triangulation, it may be advisable to have two experts in the field in addition to the evaluator cross check the coding results.

Further, in order for the results of the study to be valid the sample must be expanded, and observations must occur over an expanded period of time. In addition, surveys should be conducted to provide additional data sources and triangulation of methods. Perhaps then the results may shed some light on the teaching of reading comprehension in fourth and fifth grade. Hopefully, the results will also shed some light on the causes of the comprehension issues that some students begin to develop in the intermediate grades, and perhaps in some small way, help to debunk the fourth grade slump.

References

Paratore, J., Cassano, C., & Schickedanz, J. (2011). Supporting early (and later) literacy development at home and at school. In M. Kamil, P. D. Pearson, E. B. Moje, & P. P. Afflerbach, *Handbook of reading research, volume iv* (pp. 108-135). New York, NY: Routledge.

Pressley, M. (2006). *Reading instruciton that works, third edition: The case for balanced teaching.* New York, NY: The Guilford Press.

Appendix C

LITERATURE REVIEW OF THE FOURTH GRADE SLUMP IN READING COMPREHENSION

Part 1: The Problem – The Fourth-Grade Slump

Improving the reading level of our nation's children has been a hot political topic in education reform over the past two decades. However, recent national and state testing data confirm a continuing problem with reading achievement for many fourth-grade readers. On the 2011 NAEP, 34% of fourth-grade students scored at the below basic level and 34% scored at the basic level. Therefore, 68% of fourth-grade students scored below the proficient level in reading. (National Center for Education Statistics, 2011). According to NAEP data, the average reading score for fourth-grade students has increased four points since 1992. However, those scores have remained unchanged since 2007, indicating a lack of improvement in the last four years. In Delaware, 40% of fourth-grade students scored below the standard for reading on the Spring 2013 Delaware Comprehensive Assessment System (DCAS), (Delaware Department of Instruction, 2013). The NAEP and DCAS data show that a significant percentage of students in fourth grade score below national and state expectations for proficient performance.

Perhaps one factor that contributes to this issue is that, for the most part, reading interventions in the past two decades have focused on improving word recognition in the primary grades (Biancarosa & Snow, 2006). The acquisition of word recognition skills in the primary grades is essential to students' learning to read (Adams, 1990; Juel, 1988;

Pressley, 2006). However, these interventions do not address the consistent percentage of students who were previously performing at grade-level expectation and begin to develop reading problems in fourth grade. The evidence has shown that while some students with "late emerging" reading difficulties experience word-level decoding issues, the strong relationship between decoding ability and comprehension begins to weaken beginning in fourth-grade (Kucan & Palincsar, 2011). Further, students emerge who have proficient decoding and spelling skills and read fluently, but struggle solely with comprehension of text (Kucan & Palincsar, 2011). For decades, literacy studies have identified this late-emerging reading problem as a "fourth-grade slump" (Chall, Jacobs, and Baldwin, 1990; Pressley, 2006).

Part 2: The Reasons for the Fourth-grade Slump

To understand why reading comprehension becomes a more noticeable problem at fourth grade, it is first necessary to define reading comprehension and to examine the different elements of the comprehension process. In a report prepared for the office of Education Research and Improvement, the RAND Reading Study Group (2002) defined reading comprehension as the simultaneous practice of extracting information from text and constructing meaning. The report suggested that three elements define reading comprehension: the *reader*, the *text*, and the *activity* or purpose for reading. The *reader* refers to the person doing the comprehending, while the *text* refers to what is being read. The *activity* refers to the purpose for reading, the mental processes they engage in while reading, and the consequences or results of reading. The three elements are interrelated and may change over time. Further, all of these elements exist in a sociocultural context that also influences reading comprehension (Snow & Sweet, 2003). In the next section of

this review, I examine how the characteristics of the reader, text, activity and socio-cultural context of intermediate schools contribute to the phenomenon of the "fourth-grade slump" in reading comprehension.

Characteristics of the Reader and the Slump

At the fourth-grade level, there are specific characteristics of the reader that may influence comprehension. First and foremost, the reader must be able to read print fluently at this level. Vellutino (2003) explains that differences in the acquisition of fluent word recognition skills are a problem that impacts reading comprehension in elementary students. Types of knowledge that influence word recognition ability at the fourth-grade level include spelling ability and whole word identification. Other cognitive abilities may influence the reader's word recognition skills including phonological awareness, orthographic awareness, vocabulary knowledge, basic cognitive abilities (phonological & visual memory and visual-verbal learning ability) language-based abilities, and fluency in word recognition (Velluntino, 2003). Deficits in any of these word recognition abilities could cause reading problems for some fourth-grade readers.

However, for fourth-grade readers word recognition is necessary, but not sufficient for comprehension to occur. In a longitudinal study of children from preschool to fourth grade, Storch & Whitehurst (2002) found that code-related skills predicted reading comprehension in preschool through third grade. By third and fourth grade, code-related skills predicted reading accuracy. However, the reader's prior and current reading accuracy, along with knowledge of oral language, predicted reading comprehension (Storch & Whitehurst, 2002). The results of this study support the hypothesis that there is a stronger link between the reader's language knowledge and comprehension at the

fourth-grade level (Foorman & Connor, 2011).

Duke & Carlisle (2011) confirm the increasingly strong link between oral language and reading comprehension at the fourth-grade level. They explain that the connection may occur because there is less variance in the decoding skills of students that could be related to variation in reading comprehension outcomes. Additionally, they explain that texts at that level are more complex and include more sophisticated language, placing a greater demand on the reader's knowledge of oral language and vocabulary (Duke & Carlisle, 2011). Readers with large vocabularies and wide concept knowledge are more likely to be able to connect reading to their prior knowledge (Paratore, Cassano, & Schickedanz, 2011).

In addition to knowledge of language, certain cognitive abilities may play a greater role in fourth grade once sufficient oral reading fluency has been achieved. With the increased focus on comprehension and on the complexity of text in fourth grade reading curricula (Pressley, 2006), cognitive characteristics of the reader such as attention, memory, and critical analytical ability (Snow & Sweet, 2003) may play a larger role in reading comprehension than in previous grade levels.

As evidence of the importance of readers' cognitive characteristics, Catts et al., (2012) found a link between late-emerging reading comprehension problems and a history of non-verbal cognitive deficits. More surprisingly, they found a higher proportion of students with late-emerging reading problems had nonverbal cognitive deficits than had language impairments. They found that children with these deficits have trouble with strategic planning and organization. Therefore, the non-verbal cognitive ability of the reader may be a contributing factor to the fourth-grade slump.

Due to the increased demands for comprehension in fourth-grade and the increasing difficulty of the text, the reader's knowledge of comprehension strategies and his/her ability to apply those strategies also has a strong influence on comprehension. Specifically, Paratore, Cassano & Schickedanz (2011) suggest that the reader's awareness of comprehension strategies such as making predictions, determining the importance of information, categorizing, and self-monitoring help to improve the reader's reasoning and overall comprehension. Other strategic knowledge such as making inferences and visualizing text also help to improve comprehension (Snow & Sweet, 2003).

Another important reader characteristic that influences comprehension is motivation to read. Motivation has been found to decrease for many students between fifth and eighth grades (Guthrie & Davis, 2003). Pressley (2006) explains that students in these grades are more socially aware. Subsequently, they move away from attributing school success to effort, and move toward attributing success to ability. This shift in beliefs may cause lower perceptions of reading self-efficacy. Reading self-efficacy refers to the reader's belief that he/she is capable of reading well. If the reader believes that he/she lacks the ability to read well, self-efficacy will decrease. Subsequently, motivation to read may decrease as well (Pressley, 2006).

In addition, Guthrie & Davis (2003) explain that instructional factors of schools such as a focus on performance goals that value grades and competition versus a focus on task goals that place value on learning may decrease students' intrinsic motivation. This decrease in motivation may cause a decrease in student engagement in learning and independent reading, causing students to read less (Pressley, 2006).

Characteristics of the Text and the Slump

Characteristics of the texts used in fourth grade may also contribute to difficulties in reading comprehension. According to Paratore, Cassano & Schickedanz (2011), comprehension of texts for beginning readers is a simple task because vocabulary and syntax are simplified for easier access. However, texts in fourth grade contain vocabulary, grammatical structure and topics that are less familiar and more complex. Therefore, comprehension may be more difficult.

Text at the fourth-grade level also begins to shift in genre. In the primary grades, students are primarily exposed to narrative text, but text in the upper elementary grades consists mostly of expository text (Kucan & Palincsar, 2011). In general, narrative text structures present often-familiar events in a linear progression, while expository texts are structured around often-unfamiliar topics through often-unfamiliar text structures (cause and effect, compare and contrast, argumentation, etc.). Students' familiarity with expository text structure has been shown to be important for the comprehension of unfamiliar concepts (Roller, 1990). Therefore, a lack of familiarity with expository text may contribute to the fourth grade slump.

Additionally, linguistic differences in informational texts may play a role in comprehension difficulties. Specifically, difficulties comprehending *academic language* may adversely influence comprehension (Snow, 2010). Some unique characteristics of academic language include: conciseness in presenting information, a high concentration of information-rich vocabulary, and distinct grammatical structures that convey complex ideas in a few words. In addition, the authoritative, impersonal tone of academic language may be foreign to students exposed to predominately narrative texts in the primary grades

(Snow, 2010). Therefore, an increased exposure to academic language contained in content area text may contribute to comprehension difficulties beginning in the intermediate grades.

Moreover, academic vocabulary, which is specific to each content area, increases in fourth-grade content area texts. Academic vocabulary poses problems for readers because its dispersion (frequency encountered) across texts is limited due to the fact that it is content specific (Nagy & Hiebert, 2011). Academic vocabulary is also not typically part of the reader's oral language. Readers who lack prior knowledge about topics in informational text may have difficulty making the connections necessary to make inferences from informational text (Kucan & Palincsar, 2011). Therefore, the increase in academic vocabulary in informational text compared to early elementary texts may also contribute to the fourth-grade slump.

Characteristics of the Activity and the Slump

Snow and Sweet (2003) explain that the characteristics of the activity that influence comprehension include the purpose or reason for reading and the consequences of reading. The consequence or outcome of reading text includes knowledge, application or engagement. The consequence of knowledge refers to gaining new knowledge from reading and generally includes content area texts such as history and science. Application refers to learning how to do something as a result of reading and includes reading a recipe or directions for fixing a bicycle. Reading purely for engagement is typically a consequence associated with narrative texts such as novels and storybooks (Snow & Sweet, 2003). Students in the primary grades are exposed to predominantly narrative texts, and therefore experience engagement as the primary consequence of reading.

However, beginning at the fourth-grade level, students read an increasing number of content area texts. In many tasks, the consequence of reading begins to shift away from reading purely for engagement, and to move toward reading for the acquisition of knowledge. Therefore, reading activities differ in fourth grade from primary grades, and readers who do not adjust may experience difficulty with comprehension.

Socio-Cultural Context and the Slump

The socio-cultural context also influences reading comprehension because it reflects the culture of the classroom and the neighborhood where reading takes place. Differences in classroom resources, issues related to students' socio-economic status and ethnicity, as well as the quality of instruction influence the development of comprehension abilities (Snow & Sweet, 2003; Gaskins, 2003).

Variability in the instructional environment may also influence comprehension in fourth grade. In a study of fourth- and fifth-grade reading classrooms Pressley (2006) found that instruction varied greatly between classrooms in terms of its core emphasis. Most notably, Pressley found that the teaching of self-regulation was present in only a few classrooms, and there was a general lack of comprehension strategy instruction across the classrooms. This is cause for concern because instruction in self-regulation and the teaching of comprehension strategies are widely considered to be essential elements of comprehension instruction in the upper elementary grades (Pressley, 2006). Consequently, the variability in the teaching of essential comprehension elements may contribute to the fourth-grade slump.

Further, issues in professional development for teachers may influence the level of classroom reading instruction. Ineffective professional development for teachers may

contribute to teachers who are ill prepared for addressing students' reading comprehension needs. Dole (2003) states that a teacher's years of experience and past involvement in professional development do not necessarily improve comprehension instruction in the classroom. Further, professional development has been ineffective in improving instruction for a number of reasons: it was fragmented and piecemeal, teachers do not learn how to apply knowledge, teachers do not examine their own classroom practice, teachers play a passive role in deciding the content and form of what they learn, and there is little financial support (Dole, 2003). The ineffectiveness of professional development in the context of each fourth-grade classroom may contribute to the level of teacher knowledge about how to prepare for and avoid the fourth-grade slump.

Summary

The fourth-grade slump in reading comprehension is a complex and multi-faceted issue. Innate language and cognitive characteristics of the reader, as well as motivation and knowledge of word recognition and metacognitive strategies may have a stronger influence on reading comprehension at the fourth-grade level than they do in the primary grades. Additionally, the increased use of expository text in fourth grade challenges readers because it requires them to understand new text structures, unfamiliar concepts and language patterns, and unfamiliar academic vocabulary. Furthermore, the task demands in fourth grade change because fourth grade students are expected to begin to acquire knowledge from content area texts, a task for which reading primarily for enjoyment may not have adequately prepared them.

Further, the socio-cultural context also contributes to a "slump" in comprehension abilities for a significant number of fourth-grade students. Issues of poverty and ethnicity

as well as access to resources influence students' comprehension abilities. Additionally, limited access to quality comprehension instruction may be limited due to a lack of quality professional development for teachers and ineffective school reform programs.

The fourth grade slump has many contributing factors. Unfortunately, factors such as innate cognitive and language ability, poverty, and home environment may be out of the scope of educators' influence. Fortunately, there are many factors that contribute to the problem that educators can influence and improve. Educators can improve students' motivation by allowing for choice and ownership in a social learning context. Educators can provide students with well-constructed texts, and teach them the language, concepts and text structures of content area readings. Students can learn that there are different purposes for reading, and explain how and why expository texts are used. Most importantly, schools can and should provide students with equal access to quality comprehension instruction presented by a well-educated and competent teacher.

Focusing instructional programs and interventions on challenges that fourth grade students face in reading comprehension has the potential to help combat the fourth-grade slump. Recent history shows that focused attention on improving instructional practices for early reading has improved students' reading level. Perhaps an increased focus on improving reading comprehension instruction focused on children in the middle grades would merit similar results. Perhaps, then, will we be able to remedy the fourth-grade slump

References

Adams, J. M. (1990). *Beginning to read: Thinking and learning about print*. Cambridge: The MIT Press.

Biancarosa, G., & Snow, C. (2006). *Reading next - a vision for action and research in middle and high school literacy: A report to the Carnegie Corporation of New York* (Publication No. 2) Alliance for Excellent Education. Washington, D.C: Alliance for Excellent Education.

Catts, H. W., Compton, D., Tomblin, J. B., & Bridges, M. S. (2012). Prevalence and nature of late-emerging poor readers. Journal of Educational Psychology, 104(1), 166–181. doi:10.1037/a0025323

Chall, J. 5., Jacobs, VA, & Baldwin, LE (1990). *The reading crisis: Why poor children fall behind*. Delaware Department of Instruction. (2013, September 21). *DCAS-OR Delaware Comprehensive Assessment System On-line Reports* (v1.0). Retrieved January 28, 2012, from State of Delaware: The Official Website of the First State: http://dstp.doe.k12.de.us/DCASOR/summary1.aspx?a=Reading

Dole, J.A. (2003). Professional development in reading comprehension instruction. In A. P. Sweet, & C. E. Snow, *Rethinking reading comprehension* (pp. 141-165). New York: The Guilford Press.

Duke, N. K., & Carlisle, J. (2011). The development of comprehension. In M. L. Kamil, P. D. Pearson, E. B. Moje, & P. P. Afflerbach, *The handbook of reading research* (Vol. IV, pp. 199-228). New York: Routledge.

Foorman, B. R., & Connor, C. M. (2011). Primary grade reading. In M. L. Kamil, P. D. Pearson, E. B. Moje, & P. P. Afflerback, *Handbook of reading research* (pp.136-

156). New York : Routledge.

Gaskins, I. W. (2003). Taking charge of reader, text, activity, and context variables. In A. P. Sweet, & C. E. Snow, *Rethinking reading comprehension* (pp. 141-165). New York: The Guilford Press.

Guthrie, J. T., & Davis, M. H. (2003). Motivating struggling readers in middle school through an engagement model of classroom practice. *Reading & Writing Quarterly, 19* (1), 59-85.

Juel, C. (1988). Learning to read and write: A longitudinal study of 54 children from first through sixth grade. *Journal of Educational Psychology*, *90* (4), 437-447.

Kucan, L., & Palincsar, A. S. (2011). Locating struggling readers in a reconfigured landscape. In Kamil, P. D. Pearson, E. B. Moje, & P. P. Afflerbach, *Handbook of reading research* (Vol. IV, pp. 341-358). New York.

National Center for Education Statistics (2011). *The nation's report card: Reading 2011*. (NCES Publication No. 2012-457). U.S. Department of Education. Washington: Institute of Educational Sciences.

Nagy, W. E., & Hiebert, E. H. (2011). Toward a theory of word selection. In M. L. Kamil, P. D. Pearson, E. B. Moje, & P. P. Afflerbach, *Handbook of reading research* (Vol. IV, pp. 388-404). New York: Routledge.

Paratore, J. R., Cassano, C. M., & Schickedanz, J. A. (2011). Supporting early (and later) literacy development at home and school: the long view. In M. L. Kamil, P. D. Pearson, E. B. Moje, & P. P. Afflerbach, *Handbook of reading research* (Vol. IV, pp. 107-135). New York: Routledge.

Pressley, M. (2006). *Reading instruction that works: the case for balanced teaching*

(3rd ed.). New York, NY: The Guilford Press.

RAND Reading Study Group. (2002). *Reading for understanding: Toward an R & D program in reading comprehension*. Santa Monica, CA: RAND.

Roller, C. M. (1990). The interaction between knowledge and structure variables in the processing of expository prose. *Reading Research Quarterly*, 25, 79–89.

Snow, A. P., & Sweet, C. E. (2003). Reading for comprehension. In A. P. Sweet, & C. E. Snow, *Rethinking reading comprehension* (pp. 1-11). New York: The Guilford Press.

Snow, C. E. (2010) Academic language and the challenge of reading for learning about science. *Science, 328,* (450-2).

Storch, S. A., & Whitehurst, G. J. (2002). Oral language and code-related precursors to reading: evidence from a longitudinal structural model. *Developmental Psychology, 38* (6), 934-947.

Velluntino, F. R. (2003). Individual differences as a source of variability in reading comprehension in elementary school children. In A. P. Sweet, & C. E. Snow, *Rethinking reading comprehension* (pp. 51-81). New York: The Guilford Press.

Appendix D

THINK ALOUD LITERATURE REVIEW

Introduction

The ultimate goal of reading is comprehension. It is the process of *extracting* information from written symbols that represent spoken language, while simultaneously *constructing* a cognitive representation of the information presented. *Constructing* meaning requires building new knowledge and subsequently integrating that new knowledge into prior knowledge about the subject. Therefore, in order for comprehension to occur, readers must be able to efficiently extract meaning from text through word recognition strategies and then efficiently organize and integrate that information into their current knowledge to create new knowledge. Both *extracting* and *constructing* information are essential for students to comprehend text (RAND Study Group, 2002; Sweet & Snow, 2003).

However, reading interventions in the past two decades have focused mainly on *extracting* information from text by improving word recognition in the primary grades (Biancarosa & Snow, 2006). While the evidence is clear that the acquisition of word recognition skills in the primary grades is essential to students' learning to read (Juel, 1988; Adams, 1990; Pressley, 2006), these interventions do not address the consistent percentage of students who begin to develop reading comprehension problems in fourth grade. Studies of these "late-emerging" difficulties have found that while some students experience word-level decoding issues, the relationship between decoding ability and

comprehension begins to diminish beginning in fourth grade. Further, students emerge who have proficient decoding and spelling skills and read fluently, but struggle solely with *constructing* meaning from text (Kucan & Palincsar, 2011). For decades, literacy studies have identified this late-emerging reading problem as the "fourth-grade slump" (Chall et al, 1990; Pressley, 2006).

The "fourth-grade slump" in reading comprehension is a complex phenomenon that has many contributing factors. One contributing factor is that as demands for comprehension in fourth grade become more difficult, readers' knowledge of *metacognitive* comprehension strategies and their ability to apply those strategies during reading becomes much more important. *Metacognition* is "knowledge or cognitive activity that takes as its object, or regulates any aspect of any cognitive activity" (Flavell, 1979, pg. 275). Simply stated--metacognition is thinking about thinking. Younger readers employ less productive metacognitive strategies than older readers, and poor readers use fewer metacognitive strategies than good readers while reading (Garner & Reis, 1981; Phillips, 1988).

Further, the reader's awareness of metacognitive comprehension strategies such as making predictions, determining the importance of information, categorizing, and self-monitoring help to improve the reader's reasoning and overall comprehension (Paratore, Cassano & Schickedanz, 2011). Other metacognitive knowledge such as making inferences and visualizing text also helps to improve comprehension (Snow & Sweet, 2003). In fact, multiple studies have shown that effective metacognitive reading strategy use is positively correlated to reading comprehension (August, 1984; Paris & Myers, 1981; Paris & Jacobs, 1984; Palincsar & Brown, 1981).

Think alouds, which are overt verbal expressions of covert metacognitive processes (Baumann, Seifert-Kessell & Jones, 1992), are often used as an instructional strategy to explicitly demonstrate to the listener the covert metacognitive processes used while reading. During think alouds, listeners have the opportunity to witness first hand how the reader is managing reading comprehension. Therefore, think alouds are a useful instructional technique to teach, model and assess metacognitive strategy use. Since strategy use is linked to improvement in students' *overall reading comprehension* (or ability to comprehend grade level texts on standardized measures of reading achievement), thinking aloud is often linked with improved reading comprehension.

This review will examine the research literature relative to think alouds as an instructional technique to improve reading strategy instruction and the resulting effect on students' reading comprehension. Specifically, the review seeks to answer the question – *Do think alouds improve fourth- through eighth-grade students' use of reading strategies and overall reading comprehension?* Studies with students from fourth through eighth grade were chosen because of the consistent percentage of students who were previously performing at grade-level expectations and begin to develop reading comprehension problems in fourth grade that follow them throughout their schooling (Kucan & Palincsar, 2011). Therefore, it is essential to examine whether instructional techniques, such as think alouds, are effective for improving reading comprehension for students as they begin to struggle in mid and late elementary school.

Three categories of think alouds will be examined in this review: *student*, *teacher,* and *collaborative*. *Student* think alouds involve students modeling their own cognitive and/or metacognitive processes during reading. Asking students to think aloud during

reading is used as an instructional technique to improve student comprehension through self-explanation. In addition, think alouds function as a method to teach self regulation during reading (Brown, Campione & Day, 1981), and as an assessment technique to monitor students' internal cognitive and metacognitive processes.

Teacher think alouds are an instructional method focused on the teacher modeling the metacognitive processing of proficient readers to facilitate the processing of novice readers (Kucan & Beck, 1997). Whereas both teacher and student think alouds involve the individual reader thinking aloud, *collaborative* think alouds occur when the reader engages in thinking aloud with at least one other person. They refer to the verbal exchanges between the teacher and student or between peers. Collaborative think alouds involve scaffolded assistance and cognitive development in a *social* environment.

In the next sections of this review, I will examine the research literature pertaining to student and teacher think alouds. I will then examine the literature pertaining to collaborative think alouds between teachers and students and its implications for instruction.

Students Thinking Aloud

Researchers have studied students' think alouds to assess metacognitive processes and to determine their effectiveness in improving reading comprehension. Miller (1985) studied the effect of self-instruction (using verbalizations) on elementary students' comprehension monitoring during reading. Participants (40 fourth grade students) engaged in three 45-minute training sessions over a three-week period. The study included four groups: *general* self-instruction, *task specific* self-instruction, task specific *didactic instruction* (without teaching self-instruction) and a *control* condition that

received no instruction. Students in the first three groups were taught to monitor comprehension by analyzing errors in the text. Students in the general self-instruction condition were taught general self statements to provide a clear rationale for each task in the self-verbalization routine. Students in the task-specific self-instruction group were taught only the self-verbalization routine. The didactic instruction group was taught the same task-specific content, without the self-verbalization training.

Immediately after training, students in both self-instruction groups (which included teacher modeling during reading and student verbalizations) showed growth in identifying sentence inconsistencies (pairs of sentences designed to be conceptually inconsistent) in contrived error passages. Students in the general self-instruction group outperformed students in the control group in analyzing sentence inconsistencies in error passages. Additionally, the general self instruction applied the error-identification strategy to other concepts and reading situations. Students in both self-instruction groups outperformed students in the control group in identifying sentence inconsistencies after three weeks of instruction. The authors argued that using self verbalizations helped students to use and to retain strategy knowledge.

While this study showed student growth in strategy use, there are a few limitations. For example, the assessments used in the study focused specifically on error analysis of contrived texts. Students' strategy use was not assessed in a real reading situation. However, an important finding of this study is that the more general self-instruction was more effective over time and helped students to apply their knowledge to different concepts and situations. Perhaps the most important finding of this study for this review is that students in both self-verbalization groups outperformed students in the

group that were taught strategies, but did not include verbalizations. Thinking aloud therefore helped to improve students' strategy use as measured in this study.

Chi et al. (1994) studied the effect of self explaining while reading expository text on eighth grade students' learning of declarative knowledge and comprehension of expository text. Self explanations were defined as inferences that went beyond the text, excluding simple paraphrasing. Students in the intervention group were prompted to self explain after reading small sections of the text. Students in the control group were not asked to self explain, but were afforded the opportunity to read the text twice.

Outcomes of the study showed gains for both groups of students in acquisition of declarative knowledge from an expository text. However, students in the self-explanation group made significantly greater gains than the control group, particularly in the more complex comprehension questions. Further, students who were high explainers (generated more ideas about their reading), scored higher on the posttest than students who were low explainers.

Additionally, the authors analyzed students' mental models based on their responses to complex comprehension questions and explanations. Students who were high explainers generated better mental models of their self-explanations than low explainers or the unprompted control group. The authors argued that students' explanations may be affected by general world knowledge and their ability to integrate information with previously read information across topics. Thinking aloud was thought to help students integrate knowledge into their existing knowledge. Therefore, asking students to think aloud improved reading comprehension of expository text.

This study showed clear evidence that explaining or thinking out loud about text during reading helps to improve students' comprehension of expository texts. However, it should be noted that the simple act of verbalizing their thought processes after reading was the reason for students' improvement. Students were not asked to think aloud using a specific strategy; they were asked to talk about what they had read.

Further, there are limitations to the results of the study as the "control group" received a different treatment – reading the text two times. The introduction of this additional variable may have positively or negatively impacted the results for the control group. Therefore, the results must be interpreted as thinking out loud during reading helps improve reading comprehension better than reading the same text twice. While this is a limitation about the study's generalizability, it was clear that verbalizing or thinking aloud about texts helped improve students' comprehension of expository text in this study.

Perhaps most importantly, through the analysis of student think alouds, Chi et al. (1994) were able to illuminate the thought processes of more and less competent readers. Students who could explain their metacognitive processes and make connections to prior knowledge demonstrated superior comprehension to those who had not. Therefore, the findings have potential implications for the teaching of comprehension, as educators have the opportunity to identify and subsequently integrate metacognitive strategies that result in successful comprehension into reading instruction.

Kucan & Beck (1996) studied four fourth grade students' thinking aloud while reading narrative and expository text five times over a year. The authors identified five strategies students used while thinking aloud: paraphrasing, questioning, elaborating,

hypothesizing and monitoring. They compared students' think alouds while reading narrative texts to think alouds while reading expository texts.

The results showed that while reading narrative texts, students spent a greater percentage of time hypothesizing, and made more inferences, predictions and interpretations based on synthesizing and integrating text information. Students' think alouds during the reading of expository texts focused on relating their personal experiences to the information gleaned from texts. Students' summaries also differed by genres. Summaries of narrative texts contained more important ideas, while summaries of expository texts focused more on details from the text. The authors concluded that students' strategy use varied based on text genre. Further, text genre also influenced students' comprehension. The authors concluded that reading strategy instruction needs to be text specific, and that listening to students thinking aloud helps to inform instructional approaches to reading.

While the Kucan and Beck study was not designed to test whether student think alouds improved comprehension, it did show that student think alouds can be used to assess the metacognitive processes that students use to comprehend text. Additionally, students' think alouds showed that they use different metacognitive processes to expository text than narrative text, an important revelation that helps to inform comprehension instruction.

Section Summary

The studies presented in this section utilized student think alouds to study metacognitive strategy use and reading comprehension. Both the Kucan & Beck (1996) and Chi et al. (1994) studies provide educators with clear analysis of metacognitive

processes that occur during reading. They provide the listener a window into the metacognitive processes of the reader and inform comprehension instruction based on models of successful cognition.

Additionally, there is some evidence that student think alouds are beneficial in improving metacognitive strategy use, as the Miller (1985) study showed that students thinking aloud improved strategy use. The Chi et al. (1994) study showed that reading comprehension improved as a result of thinking aloud about texts. However, it is important to note that there was some evidence that when students were asked to verbally elaborate on their reading, without focusing on specific metacognitive reading strategies, improved comprehension still occurred, perhaps because simple act of self-verbalizing improves comprehension.

Teachers Thinking Aloud

In contrast to students thinking aloud for themselves, teacher think alouds rely heavily on vicarious learning through students' observation of an expert model – the teacher. While some research literature has examined teacher think alouds as an instructional technique in isolation, the majority of research literature examines teacher think alouds as an added benefit to metacognitive strategy instruction. This section will examine both the limited research literature on teacher think alouds in isolation, and the ample studies of teachers thinking aloud as part of an instructional protocol used during reading strategy instruction.

Instructional protocols for how to present a teacher think aloud have focused on both the content of think alouds and the process for presenting a clear and effective teacher model. Davey (1983) created a specific protocol for the content of teachers' think

alouds. The author suggested five think-aloud techniques for teachers to use while reading aloud: 1) make predictions during reading; 2) describe mental images that the text creates in your head; 3) share analogies to real-life situations; 4) verbally demonstrate comprehension monitoring; 5) demonstrate strategies to fix up comprehension.

While the Davey (1983) protocol focused on the content of think alouds, Bauman & Schmitt (1986) proposed an instructional process for teaching any reading strategy. The process included fours steps: 1) a description, definition or example explaining *what* the strategy is, 2) an explanation of *why* the strategy is important to help improve reading ability, 3) an explicit verbal explanation of *how* to use the strategy followed by teacher modeling, and both guided and independent practice for students, and 4) an explanation of *when* the strategy should and should not be used during real reading situations.

Duffy (1988) also sought to provide a process-based protocol for effective teacher think alouds. The author argued that, to be effective, think alouds must 1) be used in the context of connected text, 2) describe the mental process that expert readers use, 3) provide students examples and non-examples of when to use the strategy, and 4) be interspersed with student opportunities to share their reasoning during instruction. Duffy's (1988) model focuses on a process for teacher think alouds that occurs during real reading situations.

Several empirical studies tested the effectiveness of content-focused and process-based think aloud protocols. Bereiter and Bird (1985) conducted a two-part empirical study that first examined the content of expert readers' think alouds, and then used that information to design comprehension strategy instruction for seventh- and eighth-grade

students. The first study examined the think alouds of adult, expert readers to identify the strategies they used while reading. Four adult strategies were identified: 1) *restating* - rephrasing text in more familiar terms, 2) *backtracking* - looking back and resuming reading when losing comprehension or concentration, 3) *demanding relationships* – response to missing information that the reader anticipated would be supplied later in the text because they understand a basic structure of how texts work, 4) *problem formation* – the ability to recognize a problem in order to later fix it up.

For the second part of the study, researchers used the identified strategies to plan strategy instruction for eighty-six seventh-grade students in rural Ontario schools. Students were assigned to one of four instructional conditions: 1) *modeling plus instruction* - strategies were identified, modeled, taught, and reinforced when students used them in their oral practice, 2) *modeling only* - strategies were not explicitly identified, only modeled with the oral reading of a longer text, 3) *exercise condition* – students completed oral exercises relative to strategy definitions without teachers explaining or modeling strategies, with teachers only calling on students to make the kind of responses associated with the strategies, then students completed written exercises that mirrored the expert strategies, 4) *control group* – students attended their regular reading instruction.

Results showed that students in the modeling only, exercise condition, and control groups made no significant gains in strategy use or reading comprehension. However, students in the modeling plus instruction group made significant gains in both strategy use and overall reading comprehension. The authors concluded that thinking aloud is a valuable method for demonstrating, practicing, using, and assessing reading strategies.

However, vicarious learning of reading strategies did not occur as a result of teachers thinking aloud alone. *Both* thinking aloud and explicit strategy instruction was necessary to improve strategy use and overall reading comprehension.

Other studies focused on instructional models that included explicit strategy instruction and teacher think alouds to teach students reading strategies. Baumann, Seifert-Kessell and Jones (1992) examined the effectiveness of explicit Think Aloud (TA) instruction in promoting comprehension-monitoring abilities for fourth-grade readers compared to the Directed Reading-Thinking Activity (DRTA) instruction (Stauffer, 1969, 1976) and a control group with conventional Directed Reading Activity (DRA) instruction. Students in the TA condition were taught to use various comprehension monitoring strategies through an explicit instruction model, which included teacher think alouds. Additionally, students were asked to think aloud as they were using strategies. Students in the DRTA condition were taught to make predictions at the beginning and to stop at strategic points during the story to check for the accuracy of their predictions and to revise as necessary. Conversely, students in the DRA control group experienced a traditional didactic approach in which the teacher introduced vocabulary, built background knowledge, directed guided reading, and asked students to respond to comprehension questions about the story.

The results showed that the TA and DRTA interventions were superior to DRA in improving students' comprehension monitoring abilities. Further, the authors concluded that teacher led strategy instruction (such as TA & DRTA), which encourages students to become responsible for their reading comprehension are superior to didactic non-interactive instruction (such as DRA). Additionally, TA students had greater awareness

of comprehension monitoring strategy use than DRTA as determined by one-on-one post-intervention interviews. However, DRTA students outperformed TA students on some whole group measures of error detection when reading texts, suggesting a greater ability to monitor comprehension during reading.

The authors suggested three possible explanations for the equivocal findings. First, they thought it was possible that instruction in prediction may be a powerful method for fostering reading comprehension than learning multiple strategies, as DRTA students were able to detect errors independently while reading text, in a whole group-testing situation. Second, the authors thought that possibly the short duration (10 sessions) of the TA treatment in which the students were taught seven strategies might have negatively influenced students' ability to learn and apply the strategies, as students in the DRTA treatment only had to learn and practice one strategy, predicting, in the same amount of time. Perhaps the ability to deeply learn and have multiple opportunities to practice one strategy was more effective than learning and practicing 10 strategies at the surface level. Third, the authors hypothesized that the difficulty of measuring the covert processes of metacognition may account for the differences in the results on their chosen assessments. The differences in scores may have simply been errors in accurately measuring reading comprehension.

Whatever the reason, the authors concluded that both DRTA and TA were more effective methods than DRA for teaching reading comprehension. They concluded that the treatments were more effective because teachers *interactively engaged* students in reading in order to improve comprehension monitoring. Both DRTA and TA required active student engagement in reading and discussions, but DRA did not.

The Baumann, Seifert-Kessell and Jones (1992) study showed that the use of teacher think alouds improved students' strategy use and reading comprehension. However, they also found that instructional approaches that required students' active engagement in reading and discussion were more related to improving students' overall reading comprehension. Therefore, while incorporating teacher think alouds is an effective means of improving students' metacognitive strategy use to manage text, engaging students in discussions about what they have read may help them integrate new knowledge into their prior knowledge and subsequently, improve their overall comprehension.

Section Summary

Teacher think alouds may be considered an effective instructional technique for improving students' reading comprehension when they are included as part of a larger instructional protocol. However, the simple act of the teacher thinking aloud did not help to improve students' strategy use or overall reading comprehension. Teacher think alouds improve metacognitive strategy awareness and overall reading comprehension most consistently when they were integrated with the explicit teaching of strategies, modeled in real reading situations, and allowed for subsequent student practice of the strategies in real reading situations.

Collaborative Think Alouds

Collaborative think alouds involve thinking aloud in a social environment. Unlike teacher or student think alouds, which are isolated to the person thinking aloud, collaborative think alouds occur when two or more people are thinking aloud together. During collaborative think alouds between teachers and students, the goal is to transfer

the responsibility for learning from the teacher to the student through waning levels of scaffolded support.

This transfer of responsibility for implementing metacognitive strategies from the teacher's instructional model to the student's independent reading may be the most important step in strategy instruction. If students do not understand how to use strategies to help them solve problems while they are reading, there is little hope that metacognitive strategy instruction will improve comprehension. Therefore, students must learn to use metacognitive strategies independently. Collaborative think alouds between teachers and students provide scaffolded support for students as they learn to apply metacognitive strategies in real reading situations.

Duffy et al. (1986) studied how teachers' language during instruction influenced students' strategy use. Nine teachers received the same training and taught the same comprehension lessons to groups of students who were controlled for reading ability. To assess strategy awareness, students participated in strategy awareness interviews after lessons. Students received a rating of high strategy awareness if they could state what they were supposed to have learned, where and how it should be used, and what to do if the strategy did not work. The authors sought to explore why students in some teachers' groups consistently outperformed students in other teachers' groups on measures of strategy awareness. Segments of lesson conversations were analyzed and examined for patterns or themes in each teacher's discussion with students. The authors found differences in the types of statements and the types of verbal assistance that more and less effective teachers used during lessons. Specifically, teachers whose students scored lower in strategy awareness focused on the terminology of the strategy during lesson

discussions, emphasized learning rigid steps for using the strategy without making connections between them or how to use them in reading, and provided verbal explanations and practice using artificial reading situations such as worksheets and isolated examples. In contrast, teachers whose students scored higher in strategy awareness used terminology as a backdrop for explaining strategy use, talked about their thoughts and their mental processes when using the strategy, and provided examples for students in real reading situations across content areas and in real world situations.

In addition, the authors found that teachers in various groups provided different types of verbal assistance to students through collaborative think alouds. Specifically, teachers whose students had lower levels of strategy awareness did not provide an explicit description of how to use the strategy at the beginning of the lesson. Instead, they focused on eliciting a correct response during practice without explaining strategy use or mental reasoning, and seldom elaborated on or expanded students' answers. In contrast, teachers of students with higher awareness began lessons with a step by step description of the strategy process, asked students to think about the strategy implementation in terms of their own prior experiences, modeled her own mental processes, and built on and expanded student responses to expand mental reasoning through collaborative think alouds. Students in the lower-awareness groups reported learning the strategy, while students in the high-awareness groups reported learning how to use the strategy to solve reading problems.

Duffy et al. (1986) concluded that students' strategy use and reading comprehension improves when reading strategies are presented in the context of their application in real text, and when effective reading teachers use collaborative think

alouds with students. Further, the authors argued that differences in what teachers say during interactions with students profoundly affect student understanding.

In subsequent articles about collaborative think alouds, Duffy, along with other researchers in the field, have provided instructional protocols that focus on the transfer of responsibility from teacher to student through collaborative think alouds (Duffy et al, 1988; Dole, Duffy & Roehler, 1991, Baumann, Jones & Seifert-Kessell, 1993). In general, collaborative models focus on the transference of metacognitive control to the student. They focus on three steps: 1) provide an explicit explanation of the strategy and specific examples of why it is important (Dole, Duffy & Roehler, 1991; Baumann, Jones & Seifert-Kessell, 1993), 2) present an explicit, mental model that provides information about how to effectively engage students in the mental processes in reading, thus decreasing ambiguity about instructional objectives and possible misinterpretations by some students (Duffy et al, 1988; Dole, Duffy & Roehler, 1991), 3) provide guided practice in real reading situations with scaffolded support. During guided practice, teachers must assess students' understanding of how to use they strategy by asking them to think aloud and engage in discussions. They must provide scaffolded assistance until students are prepared to use the strategies in other contexts (Book et al., 1985; Duffy et al., 1988; Dole, Duffy & Roehler, 1991; Baumann, Jones & Seifert-Kessell, 1993).

Reciprocal Teaching (Palincsar & Brown, 1984) is a collaborative reading intervention designed for seventh-grade students struggling with comprehension. The intervention includes the learning of four metacognitive strategies: predicting, clarifying, summarizing, and questioning through collaborative think alouds. The intervention includes the explicit teaching of the strategies, teacher modeling of the strategies and

opportunities for student ownership and practice of the strategies with decreasing levels of scaffolded support during the learning process. The focus of responsibility for presenting and implementing the strategies is transferred to the students over time. The teacher assesses students' metacognitive misunderstandings throughout the process and assists as needed.

The authors conducted the same intervention in two studies, with the researcher implementing the intervention in Study 1, and classroom/resource room teachers implementing the intervention in Study 2. Study 1 included four groups of seventh grade students, with six students in each group. Two control groups were included in the study – *test only* (TO) and *control* (C). The TO group participated in the same assessments as the treatment groups throughout the intervention, but received no instruction. The C group received no intervention and took only the pre- and posttests. Two treatment groups were also included in the study – *locating information* (LI) and *reciprocal teaching* (RT).

The LI treatment included instruction by the teacher on how to look back in the text to answer explicit and implicit comprehension questions. In addition, students were taught to combine their prior knowledge with text information to answer script implicit questions. Students in the LI treatment used the same text materials and assessments as students in the RT groups.

The RT treatment included the teaching of four comprehension strategies: predicting, questioning, clarifying and summarizing. Initially, the teacher thinks aloud alone in order to demonstrate how to use each of the four strategies in real reading situations. The think alouds become more collaborative as students are encouraged to

participate in using the strategies at their level of competence. Through a type of responsive elaboration, the teacher provides feedback based on the students' understanding of the strategy, and continues to provide scaffolded until the student has learned to use the strategy on his/her own.

Additionally, each RT reading session followed a basic progression. First, students would be asked to read a segment of a passage and would be told whose turn it would be to be the teacher (adult or students). After both the adult and students read the passage silently, the teacher for the segment of text would ask a question, summarize the text, clarify any difficulties, and predict what may happen next. The process occurred as a natural collaborative think aloud between the adult and students. Over time, the adult provided less support, with the students taking responsibility for thinking aloud through each of the strategies after each segment of texts.

Study 2 consisted of four RT groups of seventh- and eighth-grade students with 5-7 students in each group. All students in the groups were considered to be poor comprehenders by their teachers, but were not identified as students requiring special education services. Study 2 did not include any control groups or alternate interventions. Researchers trained teachers to implement the RT intervention.

Analyses of the RT group's dialogues showed a significant increase in the quality of main idea summaries (Study 1 $p < .002$; Study 2 $p < .01$). In addition there was a shift in questioning and summarizing behavior so that students took more responsibility. Over time student language focused less on selections directly from text and more on inventions stated in their own words based on the gist of the text. In Study 2, the

researchers noted that students began to model and give feedback to one another during instruction, with teachers eventually turning over control to students for running groups.

Additionally, comprehension assessments for Study 1showed that students in the RT group improved to the level of average comprehenders, while students in the LI, TO, and C did not. An analysis of variance for the three groups who took daily comprehension assessments (RT, LI, TO) showed a significant main effect size for the RT intervention ($p < .03$). Further analysis of variance at different phases of the intervention showed that as the invention progressed, the effect size grew larger. Students' in Study 2 also significantly improved on comprehension assessments ($p < .001$). Perhaps most encouragingly, students in both studies showed no significant drop off in level of performance for up to eight weeks after the intervention.

Additionally, transfer tests for Study 1 showed that RT groups significantly outperformed C groups in summarizing ($p < .05$). In both studies, RT students improved their ability to predict and detect incongruities in texts, although there was more variability in the scores. Students in the RT group for Study 1 also showed an average gain of 15 months in their comprehension scores on the Gates-MacGinitie Standardized reading test.

Based on the data, the authors concluded that the RT intervention improved students' dialogues, improved all but one students' level to the level of good comprehenders, showed a durable effect size, was generalized to the classroom setting, improved students' ability to summarize, predict, and recognize text errors, and was successful whether conducted by the experimenter or classroom teacher. However, the results have some limitations. Primarily, because the intervention included so many

variables, it is not clear exactly which variable or combination of variables was most influential in the results. It is possible that strategy instruction was the main reason for improvement or that the method of teaching the strategy, involving thinking aloud in a collaborative manner is the reason for the improvement. Because these variables were not controlled, it is difficult to determine any sort of causation.

Additionally, the daily comprehension assessments used to determine growth in reading comprehension were created by the experimenters and were not standardized for validity and reliability, which may call into question the generalizability of the students' performance to other standardized measures of reading comprehension. In fact, the only standardized test used in the study, the Gates MacGinitie Reading Achievement Test, was not used with a control group and reported significant growth for only four students.

However, the results show that the intervention improved both students' strategy use and reading comprehension on the measures used for the study. Additionally, the qualitative discourse analysis showed that when teachers and students used thinking aloud in an interactive and collaborative manner, students improved their ability to use strategies effectively. The discourse analysis also allowed for the experimenters to draw conclusions about how teachers' language and interactions with students influenced the effectiveness of their intervention.

Palincsar & Brown (1984) concluded that the effectiveness of their intervention relied heavily on the teacher's "online diagnosis" (Palincsar & Brown, 1984, pg.169) of students' cognitive understandings. While teachers began by thinking aloud about their mental processes, they turned over the responsibility for thinking aloud to students based on their assessment of whether the students were ready to handle the cognitive

responsibility. Therefore, it follows that in order to provide effective comprehension instruction, teachers need to know more than how to present information clearly.

Book et al. (1985) designed an explicit explanation model that focused on the clarity of verbal instruction and the active engagement of students during strategy instruction. To this end, the researchers trained twenty-two fifth-grade teachers to implement an explanation model in their reading instruction. The explanation model included: 1) an introduction to what skill was being taught, how it was to be used, and why you may need to use it, 2) a teacher think aloud that demonstrated how the skill was used, 3) teacher interaction with the students in which students demonstrate their understanding through think alouds and teachers correct any misunderstandings, 4) student independent practice of the skill on a worksheet, 6) student practice of the skill in real books. The researchers hypothesized that the students of teachers who were provided more explicit explanations (including teacher think alouds) during presentation of the skill will have more metacognitive awareness than students of teachers who did not. Further, they hypothesized that they would find a positive relationship between explicit explanation and general metacognitive awareness.

The researchers trained the treatment group in the explanation model, and assisted them in writing direct explanation lessons based on the skills presented in their basal readers. Additionally, teachers were provided training on how to restructure students' responses and misunderstandings. The control group did not receive training in the explanation model. Researchers observed both groups five times during the intervention. Transcripts of the observations were rated according to eleven criteria of explicit

instruction. An analysis of variance (ANOVA) showed that teachers in the treatment group became better explainers than the teachers in the control group over time.

Students' metacognitive awareness for the control and treatment groups was determined by rating their responses during interviews after the second through fifth lessons. Responses were scored based on students' awareness of *what* was taught, *why* it was taught, and *how* the task was accomplished. A comparison of the fifth observation showed a significant effect of the treatment on student metacognitive awareness. Additionally, a positive relationship between the explicit explanation instruction and students' metacognitive awareness was found. Additionally, students in treatment groups were significantly more cognitively aware than students in reading control groups.

The Book et al. (1985) study showed that training in the explicit explanation protocol improved students' metacognitive strategy awareness. A major component of explicit explanation is thinking aloud. First, through the teacher's model, and next through the collaborative process of assessing students' misunderstandings and helping them fix them up. However, like other studies, it was not clear that thinking aloud alone was responsible for the improvement in students' strategy use, as explicit explanation also included other variables such as the explicit teaching of strategies and independent practice. Therefore, the results show that thinking aloud as part of the explicit explanation model improves students' strategy use.

However, the Book et al. (1985) study showed that in order for the transfer of responsibility for implementing metacognitive strategies from teacher to student to occur, teachers must understand the metacognitive processes students use while reading and know how to explain and model effective metacognitive processing. They must also

know how to spontaneously respond to students' metacognitive misunderstandings and how to reshape or elaborate on them in a collaborative manner. Subsequently, teachers must also explain to students how to restructure their metacognitive processes in a more effective manner.

Restructuring of knowledge occurs when teachers engage in *responsive elaboration* (Duffy et al., 1988) with their students. Two events take place during responsive elaboration: 1) Teachers assess students' difficulties through observation of their understandings of metacognitive strategies and through mental probing about metacognitive processing of strategies; 2) If a misunderstanding is identified, the teacher must provide more explanation in order to help students reconstruct their understandings. Teachers may use scaffolding strategies such as cuing, prompting, using analogies, metaphors, questioning, elaborations, and remodeling to help students fix up their misunderstandings (Dole, Duffy & Roehler, 1991). Responsive elaboration is collaborative in nature because both the teacher and students must mediate each other's responses. The teacher decides what to say next, and students decide how they will modify their understanding. Responsive elaboration also provides students with an active learning opportunity in a real reading situation.

Anderson & Roit (1993) studied the result of fostering similar active reading opportunities for sixth- through tenth-grade special education students' reading achievement. To this end, teachers were trained in transactional strategy instruction, which focused on teachers understanding the immediate reading problems their students encounter. To facilitate students' understanding, teachers were taught to model encountering problems in real reading situations and subsequently model fixing the

problems. Teachers in the study were encouraged to display *cognitive empathy* for students. *Cognitive empathy* is similar to *responsive elaboration* as it occurred during reading instruction and involved teachers recognizing signs that students were experiencing reading difficulty and encouraged them to make their thinking public at that time. Teachers then offered scaffolded support to students to help them improve their understanding.

Experimental group teachers experienced three professional development sessions that were interspersed throughout the intervention. In addition, they received on-going support from a peer who was knowledgeable about the process. The teachers were videotaped three times (pre, mid and post intervention) and subsequently rated. They were given advice based on videotapes on how to help students begin to discuss reading problems; how to stimulate thinking before, during, and after reading; how to improve questioning, and how to convey and access strategies based on initial videotaped assessments. The final videotapes showed that teachers gained in keeping students informed, goal setting prior to reading, during reading problem solving, summarizing to check for comprehension, after reading goal reflection, and learning from new text discussions. The control group showed no gains in teacher performance.

During the classroom intervention, students in the experimental group were taught to use transactional strategies to facilitate the comprehension of expository texts. Each reading session included seven activities centered around a clear instructional goal: 1) select text and discuss what they already know about the topic, 2) skim the text to look for potential problems, 3) decide which problems to discuss before reading and which to discuss during reading, 4) read the text orally to identify problems, 5) reexamine the

before-reading problems to understand and re-evaluate them in light of the information they gathered while reading, 6) discuss new learning based on content, and 7) use think alouds to identify problems encountered during reading and the strategies they tried to fix them.

Students in the intervention group made strong gains in shifting toward more active learning and exhibited improved reading strategy use. The control group students made no gains. Further, 80% of students in the experimental group showed gains on standardized reading comprehension assessments, while 50% of the control group showed gains. However, no tests of statistical significance were reported in the study. The results suggested that carefully managed group discussions, which included collaborative think alouds, helped improve students' strategy use. The study further suggests that the intervention had some influence on improving overall reading comprehension, although no statistically significant findings were reported.

While the results of this study indicated that students improved strategy use as a result of the intervention, it is unclear whether collaborative think alouds were the reason for the improvement because so many variables were part of the intervention. The intervention included teacher training and ongoing professional development in transactional strategy instruction, which included collaborative think alouds. However, it also included a student intervention in transactional strategy instruction, which included both self-regulation training and collaborative think alouds. Therefore, it is not clear exactly which variable was responsible for student growth. We can only conclude that thinking aloud during the transactional strategy intervention was associated with improving students' strategy use.

Further, it is worth noting that the intervention provided ongoing, one-on-one support for teachers, which is not typical of professional development in schools. Unfortunately, professional development for teachers often lacks financial support. In addition, it often lacks long term administrative and/or teacher support. As a result, teachers often do not learn how to apply knowledge and examine their own classroom practice (Dole, 2003). Therefore, the type of professional development provided to teachers may have influenced the result of the study.

The type of professional development provided is an important consideration because some teachers struggle with applying the type of instruction that requires cognitive empathy or responsive elaboration in real classroom situations. Specifically, they struggle with inferring students' metacognitive acts from students' responses during instruction and often have difficulty providing students with spontaneous elaborations (or "fix-up strategies') based on the their misconceptions. This type of instruction is difficult for some teachers because it cannot be prescribed or scripted as it depends solely on students' responses and is inherently unpredictable in nature (Duffy et al., 1987). Therefore, ongoing professional development and support would be essential for those teachers.

Section Summary

The studies reported in this section demonstrate that think alouds are most effective for improving strategy use when responsibility is transferred from the teacher to the student in a collaborative manner. Further, the studies demonstrate that the type of scaffolded assistance provided as well as the language teachers use during collaborative think alouds influences students' strategy use.

However, aside from the Palincsar and Brown (1984) study, the studies in this section did not report any statistically significant findings that collaborative think alouds improve reading comprehension. Perhaps the reason for the absence is that the studies were not designed to show that collaborative think alouds improve overall reading comprehension, they were instructional protocols designed to improve strategy use. Since it has been established that improved metacognitive strategy use is linked to improved reading comprehension, perhaps it may not be necessary to test for improved reading comprehension.

Discussion

The studies reviewed above signal that student, teacher and collaborative think alouds are effective instructional techniques for improving students' strategy use and overall comprehension. Student think alouds are effective at improving overall comprehension, as self-verbalization of metacognition may improve the construction of meaning. While teacher think alouds help to demonstrate expert readers' metacognitive processes during reading, they are most effective when included in a larger instructional protocol that includes the explicit teaching of strategies and provides scaffolded assistance for students using strategies in real reading situations. In fact, simply including teacher think alouds without the explicit teaching of strategies did not improve strategy use or reading comprehension.

Further, the above studies showed that the explicit teaching and modeling of strategies were not enough to improve students' strategy use and overall reading comprehension. Instructional protocols that focused on the transfer of responsibility for thinking aloud from teacher to student in a collaborative manner were most effective. To

this end, collaborative think alouds are effective because they require both teachers and students to construct meaning in an interactive manner. Teachers model their expert thinking and ask students to make their thinking public in real reading situations. Subsequently, teachers must assess possible misconceptions in students' thinking and provide appropriate guidance to help restructure understanding. Through this type of responsive elaboration, students learn to improve their metacognitive strategy use and overall reading comprehension.

While the studies above showed that thinking aloud is a promising instructional technique, it should be noted that the research on the strategy is tied to the teaching of strategy use. Therefore, it is difficult to discern whether the act of thinking aloud is the determining factor for improvement. However, it seems likely that thinking aloud is an essential component for teaching metacognitive strategies to students in a natural manner. It is an effective way to demonstrate the covert mental processes that govern reading comprehension. Students gain a front row seat to the metacognitive processes of experts, and teachers are granted access to a window into the metacognitive processes that their students use. This window allows teachers to assess students' misconceptions, and to help students use reading strategies more effectively to improve their reading comprehension.

Instructional Implications

In order for think alouds to be an effective technique for improving strategy instruction and student comprehension, it is necessary to think about how they can be effectively implemented into classroom instruction. In order for the research findings of this review to have any effect on improving student learning, they need to be transferred

to real learning situations. The next section of this review will examine the instructional implications of the research presented in this study.

Teachers are essential to the effectiveness of think alouds

Like many other instructional techniques, the teachers' implementation during daily instruction is essential for the effectiveness of think alouds to improve strategy use and reading comprehension. However, there are certain characteristics of the teacher that will improve the effectiveness of think alouds.

Teachers must understand their own metacognitive processes. In order to explicitly teach and model effective reading strategies during authentic reading situations, teachers need to be distinctly aware of their metacognitive methods for solving reading problems. This may be initially difficult for some teachers, as their metacognitive processes may be so efficient that they do not need to think about them. Additionally, the process of verbalizing their mental processes may be foreign to them. Therefore, clearly verbalizing those processes may provide a challenge for some teachers. In order to provide effective teacher think alouds, teachers will need to learn how to talk about their own metacognitive processes so that they are able to explain them to their students in a cogent manner.

Teachers must learn to assess students' misunderstandings. During reading instruction, teachers need to listen to student think alouds in order to assess their metacognitive understandings. Accurate assessment of students' misunderstandings is essential for identification of students' underlying misconceptions.

Teachers must learn to quickly and efficiently respond to students' cognitive misconceptions. Responding to students' metacognitive misconceptions cannot be

scripted in a teacher's manual. Teachers need to respond to misconceptions when they occur during real reading situations. Effective instruction occurs when teachers help students think through their metacognitive problems and as a result students reshape their understanding.

Teachers must know when to let go. The goal of reading strategy instruction is to provide students' with a tool to solve metacognitive problems during reading. Therefore, teachers must focus on transferring their verbal model to students' use in real reading situations. Think alouds are most effective when teachers provide scaffolded assistance, with the goal of students using strategies independently in real reading situations.

Teachers also need to know when to let go during collaborative think alouds among students in small group situations. While teachers need to provide initial teaching and modeling of group procedures and content, they need to gradually assume a more facilitative approach by transferring responsibility for self-monitoring and discussion to students. While "letting go" or transferring responsibility for management and learning to students may be scary for some teachers, it is necessary for learning to occur. Groups are most effective when students engage in coherent collaborations with one another to solve

References

Adams, J. M. (1990). *Beginning to read: Thinking and learning about print*. Cambridge: The MIT Press.

Anderson, V., & Roit, M. (1993). Planning and implementing collaborative strategy instruction for delayed readers in grades 6-10. *The Elementary School Journal*, 121-137.

Baumann, J. F., Jones, L. A., & Seifert-Kessell, N. (1993). Using think alouds to enhance children's comprehension monitoring abilities. *The Reading Teacher*, 47(3), 184-193.

Baumann, J. F., Seifert-Kessell, N., & Jones, L. And, O.(1992). Effect of think-aloud instruction on elementary students' comprehension monitoring abilities. *Journal of Reading Behavior*, 24(2), 143-172.

Baumann, J. F., & Schmitt, M. C. (1986). The what, why, how, and when of comprehension instruction. *The Reading Teacher*, 39(7), 640-646.

Bereiter, C., & Bird, M. (1985). Use of thinking aloud in identification and teaching of reading comprehension strategies. *Cognition and instruction*, 2(2), 131-156.

Biancarosa, G., & Snow, C. (2006). *Reading next - a vision for action and research in middle and high school literacy: A report to the Carnegie Corporation of New York* (Publication No. 2) Alliance for Excellent Education. Washington, D.C: Alliance for Excellent Education.

Book, C. L., Duffy, G. G., Roehler, L. R., Meloth, M. S., & Vavrus, L. G. (1985). A study of the relationship between teacher explanation and student metacognitive awareness during reading instruction. *Communication Education*, 34(1), 29-36.

Brown, A. L., Campione, J. C., & Day, J. D. (1981). Learning to learn: On training students to learn from texts. *Educational researcher*, 10(2), 14-21.

Dole, J.A. (2003). Professional development in reading comprehension instruction. In A. P. Sweet, & C. E. Snow, *Rethinking reading comprehension* (pp. 141-165). New York: The Guilford Press.

Dole, J. A., Duffy, G. G., Roehler, L. R., & Pearson, P. D. (1991). Moving from the old to the new: Research on reading comprehension instruction. *Review of Educational Research*, 61(2), 239-264.

Duffy, G. G., Roehler, L. R., & Herrmann, B. A. (1988). Modeling mental processes helps poor readers become strategic readers. *The Reading Teacher*, 41(8), 762-767.

Duffy, G. G., Roehler, L. R., Meloth, M. S., Vavrus, L. G., Book, C., Putnam, J., & Wesselman, R. (1986). The relationship between explicit verbal explanations during reading skill instruction and student awareness and achievement: A study of reading teacher effects. *Reading Research Quarterly*, 237-252.

Duffy, G. G., & Roehler, L. R. (1987). Improving reading instruction through the use of responsive elaboration. *The Reading Teacher*, 40(6), 514-520.

Duffy, G. G., Roehler, L. R., Sivan, E., Rackliffe, G., Book, C., Meloth, M. S., & Bassiri, D. (1987). Effects of explaining the reasoning associated with using reading strategies. *Reading Research Quarterly*, 347-368.

Flavell, J. H. (1979). Metacognition and cognitive monitoring: A new area of cognitive-developmental inquiry. *American psychologist*, 34(10), 906.

Garner, R., & Reis, R. (1981). Monitoring and resolving comprehension obstacles: An

investigation of spontaneous text lookbacks among upper-grade good and poor comprehenders. *Reading Research Quarterly*, 569-582.

Juel, C. (1988). Learning to read and write: A longitudinal study of 54 children from first through sixth grade. *Journal of Educational Psychology*, *90* (4), 437-447.

Kucan, L., & Palincsar, A. S. (2011). Locating struggling readers in a reconfigured landscape. In M. Kamil, P. D. Pearson, E. B. Moje, & P. P. Afflerbach, *Handbook of reading research* (Vol. IV, pp. 341-358). New York.

Paratore, J. R., Cassano, C. M., & Schickedanz, J. A. (2011). Supporting early (and Later) literacy development at home and school: the long view. In M. L. Kamil, P. D. Pearson, E. B. Moje, & P. P. Afflerbach, *Handbook of reading research* (Vol. IV, pp. 107-135). New York: Routledge.

Palinscar, A. S., & Brown, A. L. (1984). Reciprocal teaching of comprehension-fostering and comprehension-monitoring activities. *Cognition and Instruction*, 1(2), 117-175.

Paris, S. G., & Myers, M. (1981). Comprehension monitoring, memory, and study strategies of good and poor readers. *Journal of Literacy Research*, 13(1), 5-22.

Paris, S. G., & Jacobs, J. E. (1984). The benefits of informed instruction for children's reading awareness and comprehension skills. *Child Development*, 2083-2093.

Phillips, L. M. (1988). Young readers' inference strategies in reading comprehension. *Cognition and Instruction,* 5(3), 193-222.

Pressley, M. (2006). *Reading instruction that works: the case for balanced teaching* (3rd ed.). New York, NY: The Guilford Press.

RAND Reading Study Group. (2002). *Reading for understanding: Toward an R & D*

program in reading comprehension. Santa Monica, CA: RAND.

Snow, C.E. (2003). Assessment of reading comprehension. In A. P. Sweet, & C. E. Snow, *Rethinking reading comprehension* (pp. 1-11). New York: The Guilford Press.

Snow, C.E, & Sweet, A.P. (2003). Reading for comprehension. In A. P. Sweet, & C. E. Snow, *Rethinking reading comprehension* (pp. 1-11). New York: The Guilford Press.

Storch, S. A., & Whitehurst, G. J. (2002). Oral language and code-related precursors to reading: evidence from a longitudinal structural model. *Developmental Psychology, 38* (6), 934-947.

Vygotsky, L. L. S. (1978*). Mind in society: The development of higher psychological processes.* Harvard university press.

Appendix E

PROFESSIONAL DEVELOPMENT LITERATURE REVIEW AND POWER POINT PRESENTATION FOR DISTRICT ADMINISTRATORS

Introduction

Effective professional development activities are essential if teachers are expected to improve classroom instruction and student learning (Darling-Hammond & Sykes, 1999; Wei, Darling-Hammond, Andree, Richardson, & Orphanos, 2009; Yoon, Duncan, Scarloss, & Shapley, 2007). In order to meet the increasing instructional demands of Common Core State Standards (CCSS) and growing expectations for student performance, teachers will need to acquire the necessary instructional skills that help students learn and function at a higher level. Additionally, teachers will need to possess an underlying knowledge of how students learn, and the complexities of their core content area(s). It is the responsibility of school leadership to make sure that professional development is an ongoing and planned activity that engages all teachers and benefits the learning of all students (Wei et al., 2009).

Further, providing high-quality professional development to teachers is arguably the most important responsibility of school leaders because of the effect of classroom instruction on student achievement. The professional development of teachers influences student achievement in three steps: 1) professional development activities enhance teacher knowledge and skills, 2) improved knowledge and skills makes classroom

teaching better, and 3) better teaching raises student achievement (Yoon et al., 2007). Each of the three steps is essential in order for student learning to be increased.

However, it is not as simple to work through each step as it may seem. In step one of the process the professional development activities must be of high quality if they are going to affect teacher knowledge. In step two, teachers must have the motivation, beliefs, and skills to apply new knowledge in the classroom as well as the support and resources to implement their new learning in the classrooms. Steps one and two must be successfully implemented to lead to step three -- improved classroom instruction. If improved classroom instruction is consistent and sustained over time, it may result in improved student achievement. The three-step link between professional development and student learning should make providing quality, effective professional development for teachers a top priority for educational leaders interested in improving classroom instruction.

For that reason, this review focuses on studies of professional development activities that lead to changes in teachers' reading comprehension instruction. Specifically, this review will examine the professional development activities that enhance teachers' knowledge of reading comprehension strategies and how that enhanced knowledge results in a change in classroom comprehension instruction. Although the ultimate goal of professional development activities in reading comprehension is to improve student achievement, this review will not focus on how improved classroom instruction influences student achievement in reading comprehension. It will focus specifically on the professional learning activities that result in changes in classroom comprehension instruction.

The rationale for focusing specifically on teacher learning activities that result in change in classroom practice instead of student achievement is threefold. First, the scope of the study needed to be narrowed to identify effective learning practices for teachers of reading comprehension, not the essential content that improves students' achievement in reading comprehension. Effective instructional strategies that improve reading comprehension are the subject of a previous chapter in this executive leadership paper (ELP). Second, the National Reading Panel (2000) reported that effective professional development programs can improve teachers' comprehension practice and that improved teaching in reading comprehension often results in improved student achievement. Third, the *quality* of the specific professional development activities included in the program is an essential element for changing teacher knowledge, beliefs, instructional practices, and student achievement (Darling-Hammond, Wei, Andree, Richardson, & Orphanos, 2009), particularly in the area of comprehension instruction (Sailors, 2009). As a result, any change that occurs in classroom comprehension instruction relies heavily on the *quality* of the professional development activities in which the teachers engage. Therefore, the goal of this review is to identify the professional development activities that result in changes in teachers' classroom comprehension instruction.

The quality of learning activities for teachers may be particularly vital for reading comprehension instruction (Dole, 2003; National Reading Panel, 2000; Sailors, 2009). Reading comprehension is a complex undertaking involving a multifaceted process with many mitigating factors (National Reading Panel, 2000). In order to be good teachers of reading comprehension, teachers need to have an underlying understanding of how comprehension works (Dole, 2003). They need to understand how characteristics of the

reader, text, reading activity, and socio-cultural environment influence their students' reading comprehension (RAND Study Group, 2002). They will need to understand the covert mental processes that govern students' mental processes – metacognition (Baumann, Jones & Seifert-Kessell, 1993; Dole, 2003; Duffy et al, 1987; Dole, Duffy & Roehler, 1991; National Reading Panel, 2000; Sailors, 2009).

In order to effectively teach students the metacognitive processes that lead to improved reading comprehension, teachers need to understand how to design and implement instruction that helps students become more strategic in regulating the many factors that influence reading comprehension (Baumann, Jones & Seifert-Kessell, 1993; Dole, 2003; Duffy et al, 1987; Dole, Duffy & Roehler, 1991). Comprehension strategy instruction is an interactive process between the teachers and students that cannot be packaged into an easy-to-follow program (NRP, 2000). The complexity of strategy instruction may be the reason why many teachers spend little to no time teaching it (Pressley, 2006), notwithstanding its inclusion in almost every current reading series. Therefore, the teaching of reading comprehension strategies requires an elevated level of effective and intensive professional development if teachers are going to be able to become proficient and flexible enough to support students in becoming more strategic readers (NRP, 2000; Dole, 2003; Sailors, 2009).

After performing a search of academic journals and other scholarly publications on how in-service teachers best learn to teach reading comprehension strategies; I found only four empirical studies on the topic, which are included in this review. In order to gather additional information about the type of professional development activities that change teacher practice, the scope of this review was expanded to include a survey of

professional development research that is not specifically related to reading comprehension. Focusing on general professional development research studies can inform professional development for reading comprehension teachers as it makes it possible to study generic trends in the types of activities that improve teacher learning across content areas and subsequently change classroom instruction. Further, examining similarities in the findings of both general professional development studies and the studies focused on professional development in comprehension instruction will provide additional evidence that certain professional activities improve teaching learning across curricular areas. For this reason, the review was guided by the question:

> *What are the elements of professional development models that have been shown to change teachers' instructional practice, particularly in the area of reading comprehension strategy instruction?*

This review will begin by examining studies of professional development activities across curricular areas that change classroom instruction. It will then move its focus to studies of professional development in reading comprehension that change classroom reading instruction. The final section of this review will attempt to synthesize the specific professional development activities that change teacher instruction from studies of professional development across content areas and those specific to reading comprehension.

Professional Development that Changes Instruction

In an effort to examine the research-based elements of effective professional development models that lead to changes in teacher practice, this section will include a survey of the literature on current best practices for professional development. The

section will begin with a summary of the landmark Garet, Porter, Desimone, Birman, & Yoon (2001) study, and will conclude with examining the common elements of three literature reviews of professional development literature.

Garet et al. (2001)

Garet et al. (2001) studied the features of professional development programs, and their relationship to changes in teachers' knowledge, skills, & instructional practices. To this end, the authors surveyed a national sample of 1027 teachers who had attended mathematics and science professional development activities the previous year through federal Eisenhower funding. The authors studied "structural features" focused on the design of professional development as well as its "core features," focused on the substance of the professional development event. Three structural features were studied: 1) the form of the activity, 2) the duration of the activity in total number of contact hours as well as in its duration or span over time, and 3) the collective participation of teachers from the same schools, departments, and districts. Three core features of professional development were also studied: 1) the degree of content focus on mathematics or science, 2) the presence of active learning for teachers, specifically focusing on teachers observing and being observed, planning classroom presentation, reviewing student work, and presenting, leading and writing, and 3) the degree of coherence of the professional development program with teachers' goals, state standards & assessments, and with communication with others.

The authors studied the effects of the structural and core features of professional development programs on teachers' knowledge and skills and on change in classroom teaching practice. Teachers were asked to self-report the extent to which their knowledge

and skills had been improved in: 1) curriculum, 2) instructional methods, 3) assessing students, 4) using technology, 5) strategies for differentiation based on student populations, and 6) deepening of content knowledge. Additionally, teachers reported on the extent to which they changed their classroom practice as a result of professional development activities in six areas: 1) math curriculum content, 2) cognitive challenge of mathematics classroom activities, 3) instructional methods utilized, 4) assessment types used for evaluation, 5) the integration of technology, and 6) approaches to student diversity.

Results of the study showed that structural features of professional development such as the activity type (reform vs. traditional workshop) had an influence on the span and number of contact hours of professional development activities. Reform activities included teacher participation in networks, internships, mentoring, resource centers, committees/task forces, and study groups. Traditional activities included teacher participation in district workshops, college coursework, out of district workshops and conferences. Reform activities tended to span over a longer timeframe and involve more contact hours. Longer reform programs had a modest positive relationship to teacher knowledge and learning when all other elements of quality professional development were controlled.

Other results of the study showed that both span and contact hours of professional development had a substantial positive influence on active learning and coherence. Longer activities tended to include active learning opportunities such as opportunities for teachers to observe and to be observed, review student work, and to give presentations. Longer activities also had a positive influence on coherence evidenced by a connection to

teachers' goals and experiences, alignment to standards, and communication among teachers. Additionally, both span and contact hours had a moderately positive relationship with reported content learning.

With regard to core features of professional development activities, content focus and coherence both had a substantial influence on enhanced teacher knowledge and skills, indicating that teachers report that providing professional development activities in their content area and activities related to other school, district, and state initiatives have a positive effect on teacher learning. However, content-focused activities that did not increase teachers' knowledge and skills had a negative relationship with teacher practice. Professional development that included active learning activities had a moderate influence on teachers' knowledge and skills.

Perhaps the study's most important results show that professional development that enhances teachers' knowledge and skills, and is related to teachers' professional goals and school initiatives can influence classroom instruction. Enhanced teacher knowledge and skills had a substantial positive relationship with change in teacher practice. This result indicates that professional development which enhances teachers' knowledge and skills, may have the capacity to change classroom practice. The coherence of the professional development activities also had a positive relationship with teacher practice, indicating that professional development which is related to teachers' goals, district standards, and promotes professional collaboration, can also change classroom instruction. This is an important finding because the ultimate goal of professional development is to change classroom practice to improve student learning.

The authors concluded that the study shed light on best practice for the professional development of teachers. First, they concluded that sustained and intensive professional development of teachers may have an impact on teacher learning. Next, professional development that includes a focus on core features such as content, active learning for teachers, and is connected to the initiatives of the teacher and school is more likely to influence teacher knowledge. Finally, the authors concluded that professional development that includes the aforementioned core features, duration, and collective participation of teachers is more important than the type of professional development (reform vs. traditional).

However, there are some limitations in the Garet et al. (2001) studies' results. First, the study relied on self-reported teacher data, and not on the direct observation of changes in classroom behavior. Further, the authors report that teachers were asked to give an account of their behavior on survey questions, not to make judgments about professional development. As a result, all data gathered will be from the teachers' perspective. Therefore, the data show how teachers report that professional development changes their behavior. It should be noted that each teacher possesses his or her own knowledge and attitudes about professional development and classroom activities that may bias how he/she answers survey questions.

Another limitation is that this study surveyed only teachers involved in math and science professional development programs; it did not survey teachers involved in reading comprehension professional development programs. While this study offers a great deal of information about how teachers learn, it is feasible that reading comprehension may require additional or different activities or a varying level of support.

Therefore, its relevance to the research questions of this literature review must be tempered by the fact that teachers in the sample answered survey questions about professional development in math and science, not professional development in reading comprehension.

However, this study is pertinent to this review because it identified elements of effective professional development models from the survey responses of a very large sample of teachers. The large sample size supports the generalizability of the findings. The key elements identified by Garet et al. (2001) - the active learning of teachers, coherence with job-embedded work, teacher collaboration, ongoing support for teachers over a span of time, and improving theoretical and content knowledge – are strong indicators of professional development activities that impact teacher learning. For this reason, Garet et al.'s key elements will be used to frame the discussion of common themes in research on professional development in the next section of this review.

Changing Teacher Practice

This section synthesizes the common themes from three literature reviews of professional development: 1) Hawley & Valli's (1999) review of professional development research literature, 2) Anders, Hoffman & Duffy's (2000) review of research on professional development in reading education, and 3) the Wei et al. (2009) National Staff Development Council report of professional development research literature in the new millennium. In the first part of this section, there is a brief explanation of each literature review. Then there is an analysis of the reviews framed by the key elements identified in Garet et al. (2001).

Hawley & Vallli (1999). In a chapter in the Darling Hammond and Sykes (1999) *Teach as the- Learning Profession: Handbook of Policy and Practice*, Hawley & Valli (1999) examined the research studies and reviews of professional development up to the end of the 20th century to determine common design features of professional development programs that led to improved student achievement. To this end, they created a "New Consensus Model" of professional development based on the contemporary research on professional development. All of the studies included in their review either focused specifically on professional development or were prior syntheses of studies of professional development.

Anders et al. (2000). In a chapter written for the *Handbook of Reading Research* (2000) Anders et al. (2000) reviewed 140 studies of reading from 1965-1995 that focused on changing teachers' reading instruction. In their analysis of the studies, they determined common characteristics of successful professional development in reading. It is important to note that Anders et al. (2000) included studies that were designed for many different purposes. As a result, many of the studies were not specifically designed to measure effective professional development activities. Instead, the authors included any study that focused on changing classroom instruction in the long term.

Wei et al. (2009). The authors of the review, members of the National Staff Development Council (NSDC), compiled a technical report of professional development in the United States and abroad. The report was commissioned to first review the current research on professional development and to subsequently examine the data relative to teachers' access to different types of professional development programs. The report expanded on the NSDC (2001) standards for professional development by reviewing the

professional development research literature since the new millennium. Specific recommendations based on the analysis of the current research for professional development activities were included in the report.

The three reviews will be framed and discussed based on how they support and extend Garet et al.'s (2001) identified elements of professional development that may promote change in teachers' classroom practice: the active learning of teachers, coherence with job-embedded work, teacher collaboration, ongoing support for teachers over a span of time, and improving theoretical and content knowledge.

Active learning of teachers. Active learning for teachers includes professional development activities such as teachers observing & being observed, planning classroom presentation, reviewing student work, and presenting, leading and writing (Garet et al., 2001). The active learning of teachers was essential for learning new classroom procedures and techniques, as teachers need the opportunity to watch new techniques modeled in action and to subsequently practice and reflect on those techniques in a systematic fashion (Hawley & Valli, 1999; Anders et al., 2000). When teachers have the opportunity to learn and practice new techniques, and to understand how they are linked to curriculum and student learning, they have greater self-efficacy about those techniques. Improved self-efficacy with new techniques translates to a better chance that they will be used in the classroom (Wei et al., 2009).

Coherence with job embedded work. Coherence refers to how well a professional development program is aligned with teachers' goals, state standards & assessments (Garet et al., 2001). It is important that professional development be linked to the context in which it occurs. It should be job embedded (Hawley & Valli, 1999), and

seamlessly linked to school curricula, assessments, and standards in order for it to be effective at providing change in the classroom (Garet et al., 2001; NCSD, 2009). For a professional development initiative to be effective, teachers need to understand how it is linked to other initiatives. Too many conflicting or unrelated initiatives leave teachers confused about their implementation in the classroom.

There is evidence that professional development that is embedded in reform activities has a positive influence on classroom practice (Garet et al., 2001; Hawley & Valli, 1999; Wei et al., 2009). However, the results of the Garet et al. (2001) study showed the presence of effective professional development practices and the duration of the professional development activity were more important than whether professional development occurred as part of a reform or traditional professional development. Therefore, it is possible that reform models of professional development are more effective because of their coherence to school initiatives and their longer duration than traditional professional development programs.

Teacher collaboration. Professional development that promotes professional collaboration among teachers can change classroom instruction (Anders et al., 2000; Garet et al., 2001; Hawley & Valli, 1999; Wei et al., 2009). The Anders et al. (2000) review supports that teachers need opportunities for discussion and conversation with one another throughout the change process. Additionally, teachers need opportunities for collaboration between different role groups such as researchers, administrators & teachers. Further, Wei et al. (2009) reported that professional development that allowed for collaboration in and among teachers in schools was most effective for changing classroom practice across content areas. When teachers work collaboratively in a secure

environment, they have time for inquiry, reflection, and for solving instructional problems. It is clear that collaboration with other educators is an essential element of effective professional development.

Ongoing support sustained over time. The duration and intensity of professional development activities are essential for changing classroom practice (Anders et al., 2000; Garet et al., 2001; Hawley & Valli, 1999; Wei et al., 2009). Both the span and the number of contact hours of professional development program influence student learning. Additionally, longer professional development models tended to include more active learning activities to support classroom instruction. Professional development that is intense and sustained over time has a greater chance of influencing teacher practice and learning because it allows the necessary time for teachers to grow in their learning of complex instructional tasks over time (Wei et al., 2009).

Improving theoretical and content knowledge. Content knowledge includes a theoretical and conceptual understanding of a specific instructional content. Professional development studies confirm that instructional activities focusing on content and theory can have a substantial influence on improving teacher knowledge and instructional skills, which indicates that providing professional development activities in their content area may be related to teacher learning. Providing professional development that improves teachers' understanding of learning theories in their content areas helps them understand how students think and learn and ultimately improves their ability to plan instruction based on students' needs (Wei et al., 2009).

However, it is perhaps more important for teachers to learn how theoretical and content-area knowledge applies to classroom instruction than to learn the theories in

isolation (Hawley & Valli, 1999). Garet et al. (2001) found that content area learning that did not improve teachers' pedagogical knowledge and skills had a negative effect on teacher learning. The teaching of theory and content area knowledge during professional development activities must go beyond simply learning the information. It must focus on how to apply the newly-learned knowledge into classroom practice to improve student learning.

With regard to the content of professional development activities, they are most effective when they focus on how to teach specific pedagogical strategies in the teacher's content area. Further, professional development needs to focus on student learning – specifically the conceptual understandings that students would need to have and the skills students would need to demonstrate. Further, the researchers found that the content focus needed to be sustained over time, allowing for continued support and for teachers as they practice skills/strategies in the classroom (Hawley & Valli, 1999).

Changes in paradigms

In their review of the research literature on professional development Wei et al. (2009) identified a "new paradigm" for professional development that emerged since the turn of the century. They found that professional development models were moving away from traditional, fragmented, one-shot workshops and were moving toward job-embedded professional learning in which teachers learn from teachers. The authors argued that the new paradigm in professional development includes a focus on professional learning through teacher collaboration in learning communities and through one-on-one coaching from a knowledgeable colleague.

Activities such as Professional Learning Communities (PLCs), peer observations, collaborative analysis of student learning and data, developing study groups, and participating in collaborative activities outside the school provide opportunities for peer support for learning and problem solving, reflection on instructional practice, and the adoption of new practices that improve student learning. However, it is important to note that truly collaborative communities do not develop automatically. They require leadership to help teachers understand the advantages of making their classroom practice public, and to create collaborative structures that make sharing and evaluating their practice desirable (Wei et al., 2009).

In addition to collaborative learning, Wei et al. (2009) also noticed an increased focus on use of school-based coaches in schools, specifically in the area of literacy instruction. School-based coaches provide classroom support that teachers need to incorporate newly learned skills and strategies into their practice. Coaches are usually experts in the subject area they coach. They often work collaboratively with small numbers of teachers to improve classroom practice and subsequently, student achievement.

Despite an increase in the use of coaches, Wei et al. (2009) report mixed results for effectiveness of coaching at changing classroom instruction. While some studies show that teachers who receive coaching are more likely to change their practice than those who receive more traditional forms of professional development, other studies show inconsistent results for teacher change. Perhaps the inconsistency of results on coaching's effectiveness is due to the number of uncontrolled variables influencing the coaching activity in the context of schools. The specific activities in which the coaches engage

vary from coach to coach, school to school, and district to district, making generalized statements of its effectiveness difficult. In addition, coaches are afforded varying levels of support from building principals (Walpole, McKenna, Uribe-Zarain, & Lamitina, 2010), perhaps influencing coaches' access to teachers and the quality of their PD interventions.

Other reasons for the mixed results on coaching may be linked to issues with the research design. Some critics claim that coaching has been studied as a part of school-wide literacy interventions, therefore muddying the results of its inherent effectiveness for improving teacher practice and student achievement. As a result, most studies have not employed a comparison group method with sufficient controls of variables or a causal link between coaching and student achievement (Wei et al., 2009). These issues with the research literature pose significant questions, as a good deal of money and resources are spent on coaching for teachers each year.

Studies of professional development over the past two decades have shed light on the professional development models that have been shown to change teachers' instructional practice. It appears the active learning of teachers, coherence with job-embedded work, teacher collaboration, ongoing support for teachers over a span of time, and improved theoretical and content knowledge change instructional practice (Anders et al., 2000; Garet et al., 2001; Hawley & Valli, 1999; Wei et al., 2009). Additionally, a new focus on building structured, collaborative learning communities for teachers has shown a positive influence on teachers' practice. Further, sustained support for teachers in the form of school-based coaching has shown mixed results in changing teachers'

instructional practice (Wei et al., 2009). These are the current essential elements of professional development that have been shown to change teacher practice.

Professional Development in Reading Comprehension

As described in the introduction of this review, the teaching of reading comprehension strategies requires a deep level of teacher knowledge and skills. For this reason, this review now turns its focus to the elements of professional development models that have been shown to change teachers' instructional practice specific to the teaching of reading comprehension strategy instruction. The following section of the review examines four studies of professional development specific to teaching reading comprehension through strategy instruction: (Anderson, 1992; Duffy, Roehler, Meloth, Vavrus, Book, Putnam, & Wesselman, 1986; Duffy, Roehler, Sivan, Rackliffe, Book, Meloth, Vavrus, Wesselmean, Putnam & Bassiri, 1987; Sailors & Price, 2010). These studies of professional development in the teaching of comprehension strategy instruction are significant to my ELP, as it focuses on changing classroom instruction through a collaborative think aloud protocol to teach reading comprehension strategies. They will each be summarized and analyzed in detail based on the elements of the specific professional development models that changed teachers' comprehension instruction.

Duffy et al., 1986

Duffy et al. (1986) studied whether teachers trained to be more explicit during reading comprehension instruction became more explicit than teachers who were not trained. Participants in the study included twenty-two teachers of fifth-grade students in low reading groups in a mid-western urban environment. Eleven teachers were randomly assigned to the treatment group, and eleven teachers were randomly assigned to the

control group. Treatment group teachers were trained in direct explanation for the teaching of reading strategies. Direct explanation involves the explicit explanation of the strategy, modeling, and scaffolded guided and independent practice.

The intervention consisted of an initial training workshop at the beginning of the school year for both the experimental and control groups. However, the subjects of the trainings were different, as the control group received training in classroom management strategies, and the experimental group received their first training in direct explanation. Subsequent to the initial training, the experimental group received ten hours of training spaced throughout the school year.

During the trainings, the teachers were taught how to recast basal reading skills as meaningful reading strategies, how to define the strategy, and to explain when, why and how it is used, and how to plan for instruction that incorporates explicit explanation. Each training session followed a four step process: 1) provide teachers with information about strategy instruction, how it is linked to teachers' past experiences, basal expectations, and expected student responses; 2) model direct explanation of the strategy followed by helping teachers preparing their plans for instruction; 3) ask teachers to read the transcripts of their reading lessons and student interviews; and 4) provide feedback to teachers on their most current classroom observation.

To evaluate any differences in instructional practice before, during and after the intervention, both the treatment and control groups were observed four times while instructing their lowest reading group. Observations occurred at approximately one-month intervals; beginning in the fall and ending in April. All observations were

audiotaped and the transcripts analyzed and teacher instruction was rated for explicitness in implementing the elements of the direct explanation model.

Results showed teachers in the treatment group provided significantly more explanations of the strategy over the observation period when compared to the control group. Additionally, explanations of teachers in the treatment group were rated significantly better than those of the control group. However, while the treatment teachers' explanations increased significantly after the first training and remained higher than the control teachers' throughout the intervention, their explanations did not continue to increase after the first intervention.

Teacher interviews at the end of the study revealed that some teachers did not consistently implement the direct explanation routine. These teachers had difficulty with teaching skills as strategies, planning how to describe the thinking associated with the strategy, and changing the exercises and workbook activities provided in the basal reader. Further, some teachers showed difficulty in communicating subtle aspects of strategy instruction focusing on memorizing strategies and procedures and not on how to think through the process of using the skill in context.

Duffy et al. (1986) concluded that teachers are able to learn to be more explicit in their reading comprehension instruction. However, the authors called for future research interventions that focus on helping teachers sustain and implement their learning in real classroom situations, as some treatment teachers were inconsistently implementing their learning.

The results of this study showed that providing active learning strategies for teachers such as teaching and modeling new instructional strategies, along with helping

teachers plan instruction, and providing time for reflection and feedback can change teacher instruction when sustained over the course of a school year.

However, this study illustrates the difficulties with professional development in reading comprehension. While the teachers changed their practice, some teachers did not develop a deeper knowledge of how to implement comprehension strategy instruction, as evidence by the rote teaching of strategies in some classrooms as well as a general lack of improvement in teachers' direct explanations over time. Perhaps the professional development activities helped teachers learn the procedure for presenting strategies, but did not help them learn how they could use those strategies to help students fix up metacognitive misunderstandings in real reading situations. Including professional development activities that helped teachers learn the underlying principals of metacognition may have helped teachers become more aware of their own metacognition and subsequently, those of their students. Learning and experiencing the underlying theoretical elements of how comprehension works may have helped teachers understand how to react to students' misconceptions.

Duffy et al., 1987

In a follow up to their previous study, Duffy et al. (1987) again studied whether teachers can learn to explicitly explain their mental processes when applying reading strategies in a consistent way over a period of time. For this reason, the researchers specifically measured whether teachers could learn to be more explicit in presenting basal skills as strategies to low-achieving students. The study compared the explicit explanations of ten *treatment* teachers to the explanations ten *treated-control* group teachers. Of the twenty teachers in the project, nineteen teachers worked in urban

schools, and one worked in a suburban school. A total of seventeen schools were included in the project.

Teachers in the treatment group were taught the mental processes that expert readers use when reading text in a naturalistic situation, focusing on the strategic use of the strategy and not on skill and drill. Teachers were taught to analyze cognitive and metacognitive components of the basal skill and to supplement the teaching of these skills by modeling the cognitive and metacognitive acts associated with the strategy to solve problems when reading. Because strategies must be applied flexibly during reading, no lesson scripts were provided for teachers; they used information from intervention sessions to develop their own direct explanations.

The *treatment* group received six two-hour trainings spanning the course of the academic year. The training workshops included one-on-one coaching, collaborative sharing, specific feedback, and videotaped models of lessons. In addition, *treatment* teachers received one-on-one coaching in the classrooms following classroom observations. On the contrary, the *treated control* group received only three two-hour training sessions with regard to classroom management and no in-classroom coaching. Both groups used the reading basal materials, but the treatment groups was taught how to modify the basal skills and to model the processing involved in using them as reading strategies. In addition, both groups received instruction in Uninterrupted Sustained Silent Reading (USSR) and information about how to prepare students for standardized tests.

Data were collected through six observations of every teacher in the study. The observations were evenly dispersed throughout the academic year. *Treatment* group teachers received five additional observations. However, the observations were for

coaching and feedback purposes only, and no data were collected during the additional observations. Observations for data collection from both groups in the study were audiotaped, and transcripts of teachers' explanations were rated using a rubric to determine their degree of explicitness on a scale of 0-4.

The explanation ratings of treatment group teachers were significantly higher than the treated-control group for Observations 2-6. Further, a significantly positive treatment effect was found across the academic year, with the effect being the largest between Observations 1 and 2. In general, treatment teachers were found to be more explicit in their modeling of the mental processes of reading strategies than the treated-control teachers.

Duffy et al. (1987) concluded that teachers could learn to effectively teach students the reasoning associated with learning to be strategic reading, could make decisions during planning and implementation to support student learning, and could do this in the naturalistic environment of a classroom. Additionally, post-intervention interviews revealed that teachers vary widely in their ability to understand reading as a strategic process, that teachers' underlying beliefs about how much reading can be explained is influenced by their background experiences, and that being an expert reader does not necessarily translate into being an expert reading teacher. Finally, the teachers who were the best explainers generated spontaneous explanations in response to students' misconceptions throughout the lesson. The authors called for a more naturalistic approach to instruction in which it is seen as "a fluid, collaborative, and complex longitudinal interaction between the minds of teachers and the minds of students" (Duffy et al., 1987, pg. 365).

This study showed that providing 1) sustained support for teachers through ongoing workshops over a nine-month period, 2) opportunities for teachers to collaborate and make decisions about instruction, and to reflect on practice, and 3) in-classroom one-on-one coaching, can change teachers' comprehension strategy instruction. It is important to note that this study was successful at implementing direct explanation more consistently across classrooms than the Duffy (1986) study. Perhaps the addition of intensive, ongoing feedback through additional classroom observations, feedback and collaboration through one-on-one coaching may have been a factor in generating the improved results.

Anderson, 1992

Anderson (1992) also studied professional development in reading comprehension strategy instruction. Specifically, she studied the effect of a professional development model on fostering more active reading opportunities for sixth through tenth grade students' reading achievement. To this end, nine in-service teachers were trained in transactional strategy teaching, which focused on teachers understanding the immediate reading problems their students encounter, and how to help students learn the strategies that good readers use to facilitate comprehension. To facilitate students' understanding, teachers were taught to model encountering problems in real reading situations and subsequently model fixing the problems. Further, teachers were encouraged to display *cognitive empathy* for students. *Cognitive empathy* during reading instruction involved teachers recognizing signs that students were experiencing reading difficulty, and encouraged them to make their thinking public at that time.

During the intervention, experimental group teachers experienced three monthly three-hour professional development workshops that were interspersed throughout the intervention. They were explicitly taught to change their instruction by focusing on a list of twenty, specific instructional shifts designed to help teachers move their students toward active reading strategies and intentional learning. In an effort to include teachers in the development of the project, plans for workshops, instruction, data collection and analysis were shared and discussed at each workshop with teachers. During the intervention, the teachers were videotaped three times during comprehension instruction (pre, mid and post intervention). Teachers were shown positive excerpts from the videotapes during workshop sessions and evaluated their instruction based on the list of twenty instructional shifts. Subsequently, teachers engaged in problem solving discussions about the necessary instruction shifts during workshops.

In addition to the workshops, each teacher was assigned a support peer who was knowledgeable about the process. This peer attended workshops with the teachers and was available as needed. A control group of seven teachers used the same instructional materials and saw students on the same schedule as the experimental group, but received no professional development or peer support.

To evaluate the effectiveness of their study, researchers analyzed transcripts of pre and post intervention videotapes. The post-intervention videotapes showed that teachers gained in keeping students informed, goal setting prior to reading, during-reading problem solving, summarizing to check for comprehension, after-reading goal reflection, and learning from new text discussions. The control group showed no gains in teacher performance.

The Anderson (1992) study showed that including evenly spaced workshops throughout the school year, along with collaboration through teacher input, discussion and reflection, peer support from a knowledgeable other, and a focus on job-embedded, classroom instruction through specific, tangible instructional shifts can improve teachers' transactional strategy instruction for reading comprehension. A major innovation of the Anderson (1992) training was the inclusion of specific instructional shifts for teachers as well as specific shifts in the types of activities students engaged in during reading comprehension instruction.

Sailors & Price, 2010

In a recent quasi-experimental study, Sailors & Price (2010) tested two models of professional development aimed at improving classroom comprehension instruction and student achievement. Teachers in the *partial intervention* model of professional development attended a traditional two-day workshop about using comprehension strategy instruction, and teachers in the *full intervention* model attended the same two-day workshop, but were also afforded a classroom based instructional coach. The researchers set out to determine if the full intervention model, including intensive coaching support, led to the integration of more comprehension instruction in the classroom.

Participants in the study were 44 teachers from grades two to eight who taught various subjects in low-income schools in Texas. There were no statistically significant differences between the partial and full intervention groups in terms of grades taught, subject areas, years of experience or levels of education.

The content of the two-day professional development for both groups was how to present intentional comprehension instruction. Intentional comprehension instruction involves 1) providing students with opportunities to practice and apply cognitive reading strategies, and 2) determining the metacognitive processes for applying those strategies through collaborations between teachers and students. Because teachers need to be able to spontaneously respond to students' metacognitive misconceptions during comprehension instruction, teachers were asked to focus on their metacognition and to develop their own explanations to share with students.

The two-day summer workshops included all 44 participating teachers. Teachers engaged in learning one cognitive strategy, inferencing, and how it could be explicitly presented as intentional comprehension instruction. The workshops were held prior to the first data collection time period.

After the workshops, teachers in the full intervention group received coaching support from highly qualified university personnel involved in the study. Coaching activities included co-teaching, reflective feedback based on observation, and conversations about cognitive reading strategies. Coaching activities were individualized to teachers based on their self-identified needs.

Coaches were monitored based on fidelity to the instructional model, the number of visits to teachers, allowing teachers to select the focus cognitive reading strategy, providing a diversity of activities (demonstration lessons, co-teaching, and guided conversations), and encouraging teachers to be more independent through reflective feedback. Coaches saw teachers an average of 329 minutes over the course of the year.

The majority of their time was spent working with teachers in classrooms on the presentation of cognitive reading strategies.

To measure changes in classroom instruction, the authors used an electronic observation system called the Comprehension Instruction Observation Protocol System (CIOPS). CIOPS is designed to assess what happens during the teaching of reading strategies during text-based lessons across content areas. During 45-minute classroom observations, observers took continuous narrative notes focused on the classroom context, materials used, text or strategy-based comprehension instruction, and the instructional strategies teachers used. The notes were entered into the CIOPS system, and the smallest possible utterances were coded based on 1) the number of opportunities teachers provided for students to engage in cognitive reading strategy discussions and 2) the types of instructional interactions between the teacher and student during strategy instruction.

Pre-implementation observation data were first collected in September, immediately following the summer workshops and prior to the beginning of coaching visits. Post-implementation data were collected during late May. Pre-implementation data showed no statistically significant differences between groups for number of opportunities to engage in intentional comprehension instruction or the teachers' constructed explanations. Post-implementation results showed that full intervention group teachers provided more opportunities for students to engage in cognitive reading strategies (Cohen's d = .78) than partial intervention group teachers. Additionally, the full intervention group offered more constructed explanations of the strategies (Cohen's d = .63).

Based on the results, the authors concluded that one-on-one coaching over the course of the school year could support the implementation of cognitive reading strategies. However, it is important to note that the authors reported that both groups showed evidence of implementing the content of the original workshop, (to varying degrees) indicating that the content of the workshop may have been successful at changing teacher practice as well. The authors hypothesized that workshops may be as effective as their content. Some limitations include that coaches were from the university and outside of the school. Additionally, the sample size was small and the data were limited to two observations per teacher.

The study is significant to understanding professional development in reading comprehension because it demonstrated the added value of sustained support through one-on-one coaching over the course of a school year. More specifically, coaching models that encourage fidelity to the instructional model occur frequently, allow teachers to choose the strategy on which to focus, provide a diversity of activities (demonstration lessons, co-teaching, and guided conversations), and encourage teachers to be more independent through reflective feedback are successful at changing teachers' comprehension practice. The inclusion of these activities helps to shed light on coaching models that change comprehension practice.

Another significant finding of the study was that the often-maligned one-shot workshops influenced teachers' classroom practice. The question is why the two-day workshop in this study was able to influence classroom instruction while other studies of one-shot workshops demonstrated their ineffectiveness at influencing teacher practice (Wei et al., 2009). It should be noted that the workshop included in this study included

characteristics of effective professional development such as opportunities for active learning and coherence with job-embedded work. Further study of one-shot workshops should be conducted to examine whether the activities included in one-shot workshops determine their effectiveness in changing teacher practice.

Discussion

The studies outlined above included several common activities in their professional development model. In the following section, five common features will be analyzed and discussed.

Active Learning

All four studies of professional development in reading comprehension included some form of active learning for teachers. Active learning activities included teachers observing other teachers (Sailors & Price, 2010), co-teaching (Sailors & Price, 2010), being observed (Duffy et al, 1986; Duffy et al, 1987; Anderson, 1992; Sailors & Price, 2010), planning classroom presentation (Duffy 1986 et al; Duffy et al, 1987; Anderson, 1992, Sailors & Price, 2010), and reflecting on instruction (Duffy et al, 1986; Duffy et al, 1987; Anderson, 1992; Sailors & Price, 2010).

It is important to note that all of the studies integrated active learning activities into professional development workshops (Anderson, 1992; Duffy, 1987; Sailors & Price, 2010). The focus on active learning during workshops was a common element of successful professional development in reading comprehension.

However, there were some differences in how active learning activities were integrated into the professional development model. Sailors and Price (2010) and Duffy et al., (1987) integrated active learning activities into coaching sessions. Anderson (1992)

also integrated a form of coaching into their professional development model, but the specific activities were not listed. The Duffy (1986) study did not include coaching. All four studies were successful at changing teacher practice. Therefore, it is not clear if active learning through coaching is an essential element of professional development in reading comprehension.

Job-Embedded Work

All four professional development studies focused on the job-embedded work of teaching reading comprehension in their school, but in slightly different ways. Duffy et al. (1986) and Duffy et al. (1987) focused on helping teachers reframe their current basal reader program as cognitive strategies to be learned instead of skills to be mastered. Using the required basal materials linked the new learning to the teachers' everyday planning work. However, it is important to consider that differences between the skills-based basal reading program and strategy instruction in the Duffy et al. (1986) may have led to some of the confusion that teachers faced in planning independently and the inconsistent implementation of new practices. Perhaps some teachers had a difficult time relating the competing messages about how to teach reading comprehension between the researchers and the basal readers.

Anderson (1992) linked new learning to job-embedded work of instruction in a very concrete manner. She identified the necessary shifts in classroom learning and students' learning activities associated with teachers' current practice to those necessary to effectively teach transactional strategy instruction. Perhaps the specificity of how to implement the strategies into the work of teaching reading comprehension improved classroom implementation.

Sailors and Price (2010) explicitly taught teachers how to plan and present instructional strategies during classroom reading comprehension instruction. Teachers focused on learning one strategy, inferencing, during comprehension workshops and focused on all the aspects of teaching and assessing the strategy in the classroom. Teachers made plans to integrate their new learning into comprehension instruction.

All four of the studies linked the new learning of comprehension instruction to the job-embedded work of teaching reading comprehension in classrooms. Therefore, linking professional learning with the job-embedded work of teachers is a common element of a professional development models for teaching reading comprehension.

Collaboration

Collaboration was an element of each of the studies, but in different ways. Perhaps due to the era in which it was conducted, fostering a collaborative environment among teachers in the treatment group was not a goal of the Duffy et al. (1986) study. Although teachers discussed the transcripts of their lessons with outside researchers at workshops, there was no stated initiative to foster collaborative discussions among teachers.

On the contrary, teachers in the Duffy et al. (1987) and the Sailors & Price (2009) study collaborated to plan the strategy-based they would use during classroom instruction. Additionally, teachers in both studies collaborated with an outside coach during instruction, planning and reflection. Perhaps the added focus on a collaborative culture led to the sustainability of the interventions.

Anderson (1992) fostered collaboration among teachers and researchers by involving teachers in all aspects of the study plans for workshops, instruction, data

collection and analysis throughout the study. In addition, the study assigned each teacher a knowledgeable peer who attended workshops and was available for in-classroom or discussion.

The studies included in the review demonstrate that collaboration is an important element of professional development in reading. The ability to ask questions, to commiserate, and to solve instructional problems with others is an important element of professional development for the teaching of reading comprehension. Because comprehension instruction cannot be scripted, teachers are bound to encounter new problems and situations in their daily practice. The support of community learners is essential for helping teachers solve the challenging instructional problems associated with reading comprehension.

Duration

The duration of all four studies was the same – from the beginning to the end of the school year. However, the number of contact hours with teachers differed by study. Duffy et al. (1986) provided teachers with twelve hours of workshop training, while Duffy et al. (1987) provided teachers with twelve hours of workshop training plus additional hours of in-classroom coaching. Anderson (1992) included nine hours of workshop training plus in-classroom help from a support peer. The Sailors & Price (2009) professional development model provided teachers with two days of training plus an additional 329 average number of minutes for individual teachers. These results demonstrate that professional development models that span the school year and involve a significant number of contact hours are successful at changing teachers reading comprehension practice. However, it is important to note that the results of the studies

cannot be compared to target an optimal number of hours for professional development in reading comprehension.

In-Classroom Support

In addition to duration and the number of contact hours, the studies offered varying levels of sustained, in-classroom support. Duffy et al. (1986) reported no in-classroom support for teachers. Anderson (1992) provided a bit more in-classroom support through the availability of a knowledgeable peer and by fostering a collaborative culture for learning. Duffy et al. (1987) and Sailors & Price (2009) provided sustained, in-classroom support through one-on-one coaching throughout the intervention. It is important to note that all four of the studies were effective at changing teachers' classroom practice. However, the teachers in the Duffy et al. (1986) study, which offered no in-classroom support, struggled with implementing new learning in their classrooms. Similarly, Sailors & Price (2009) found that teachers who received intensive, sustained in-classroom support through coaching demonstrated higher levels of implementation in their classroom instruction. However, it is not clear how much support is needed for teachers to change their practice. While it appears some in-classroom support may be helpful, the reviewed studies do not conclusively support how much support is necessary for teachers.

Developing Theoretical Knowledge

All four studies involved deepening teachers' theoretical knowledge of reading comprehension. However, the studies varied in the amount of theoretical knowledge presented to teachers. Two studies (Duffy et al., 1987; Sailors & Price, 2009) provided teachers with in-depth training in metacognitive theory and were successful at

consistently changing student practice. Anderson (1992) successfully taught teachers the theoretical changes necessary for transactional reading instruction.

Duffy et al. (1986) did not focus on building a theoretical basis for teaching direct explanation, which perhaps negatively impacted classroom implementation. Missing the underlying theoretical knowledge to guide them, teachers struggled with implementing comprehension strategy instruction consistently. On the contrary, it should be noted that even teachers who did not receive in-classroom support changed their classroom practice in the Sailors & Price (2009) study, which focused on building teachers' knowledge of metacognition. Perhaps the teachers who did not receive coaching support were able to integrate what they had learned into their classroom practice because of the workshop's strong focus on gaining a theoretical understanding of metacognition.

Conclusions

This study sought to answer the question: *What are the elements of professional development models that have been shown to change teachers' instructional practice, particularly in the area of reading comprehension strategy instruction?* To answer this question, studies of professional development in reading comprehension were compared with studies of professional development across the content areas. Active learning for teachers, coherence with job-embedded work, teacher collaboration, ongoing support for teachers over a span of time, and improving theoretical and content knowledge are essential elements of professional development programs that change classroom practice across the content areas as well as in reading comprehension strategy instruction. The inclusion of these six elements has been found to help teachers learn and integrate new instructional techniques in their classrooms across all content areas.

Finally, while this review identified six essential elements of professional development models that change teachers' reading comprehension practice, it is important to note that most of the studies of professional development models in reading comprehension have not tested the effectiveness of each element of the model in isolation. As a result, it is not clear if any one element of professional development model is more essential than the others for the teaching of reading comprehension. Future research on professional development in reading comprehension should strive to find the best combination of activities that lead teacher learning and improved classroom practice.

References

Anders, P.L., Hoffman, J.V., & Duffy, G.G. (2000). Teaching teachers to teach reading: Paradigm shifts, persistent problems, and challenges. *Handbook of reading research, Vol 3*, 403-422: Mahwah, NJ: Erlbaum.

Anderson, V. (1992). A teacher development project in transactional strategy instruction for teachers of severely reading-disabled adolescents. *Teaching and Teacher Education, 8(4)* 391-403.

Cooper, J. D., Boschken, I., & Pistochini, L. (2001). *Soar to success*. Boston: Houghton Mifflin Harcourt.

Darling-Hammond, L., & Sykes, G. (1999) eds. *Teaching as the learning profession: Handbook of policy and practice.* San Francisco, CA: Jossey-Bass Inc. Darling-Hammond, L., Wei, R. C., Andree, A., Richardson, N., & Orphanos, S. (2009). *Professional learning in the learning profession.* Washington, DC: National Staff Development Council.

Dole, J.A. (2003). Professional development in reading comprehension instruction. In A. P. Sweet, & C. E. Snow, *Rethinking reading comprehension* (pp. 141-165). New York: The Guilford Press.

Dole, J. A., Duffy, G. G., Roehler, L. R., & Pearson, P. D. (1991). Moving from the old to the new: Research on reading comprehension instruction. *Review of Educational Research*, 61(2), 239-264.

Duffy, G. G., & Roehler, L. R. (1987). Improving reading instruction through the use of responsive elaboration. *The Reading Teacher*, 40(6), 514-520.

Duffy, G. G., Roehler, L. R., Meloth, M. S., Vavrus, L. G., Book, C., Putnam, J, &

Wesselman, R. (1986). The relationship between explicit verbal explanations during reading skill instruction and student awareness and achievement: A study of reading teacher effects. *Reading Research Quarterly, 21(3)*, 237-252.

Duffy, G. G., Roehler, L. R., Sivan, E., Rackliffe, G., Book, C., Meloth, M. S., & Bassiri, D. (1987). Effects of explaining the reasoning associated with using reading strategies. *Reading Research Quarterly,* 347-368.

Duffy, G. G., Roehler, L. R., Sivan, E., Rackliffe, G., Book, C., Meloth, M.S., Vavrus, L. G., Wesselman, R., Putname, J. & Bassiri, D. (1987). Effects of explaining the reasoning associated with using reading strategies. *Reading Research Quarterly, 22(3)*, 347-368

Garet, M., Porter, A., Desimone, L., Birman, B., & Yoon, K. S. (2001). What makes professional development effective? Results from a national sample of teachers. *American Education Research Journal*, *38*(4), 915–945.

Hawley, W., & L. Valli. The essentials of effective professional development: A new consensus. In Darling-Hammond, L., & Sykes, G. (1999) eds. *Teaching as the learning profession: Handbook of policy and practice.* San Francisco, CA: Jossey-Bass Inc.

National Reading Panel, National Institute of Child Health, & Human Development, 2000. *Report of the national reading panel: Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction.* (Reports of the subgroups). Washington, DC: National Institute of Child Health, & Human Development.

Pressley, M. (2006). *Reading instruction that works: the case for balanced teaching*

(3rd ed.). New York, NY: The Guilford Press.

RAND Reading Study Group. (2002). *Reading for understanding: Toward an R & D program in reading comprehension*. Santa Monica, CA: RAND.

Sailors, M. (2009) Improving comprehension instruction through quality professional development. In S.E. Israel & Duffy, G.G., *Handbook of research on reading comprehension* (pg. 645-657). New York, NY: Routeldge.

Walpole, S., McKenna, M. C., Uribe-Zarain, X., & Lamitina, D. (2010). The relationships between coaching and instruction in the primary grades: Evidence from high-poverty schools. *The Elementary School Journal, 111*(1), 115-140.

Wei, R. C., Darling-Hammond, L., Andree, A., Richardson, N., Orphanos, S. (2009). *Professional learning in the learning profession: A status report on teacher development in the United States and abroad.* Dallas, TX. National Staff Development Council.

Yoon, K. S., Duncan, T., Lee, S. W.-Y., Scarloss, B., & Shapley, K. (2007). *Reviewing the evidence on how teacher professional development affects student achievement* (Issues & Answers Report, REL 2007–No. 033). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional

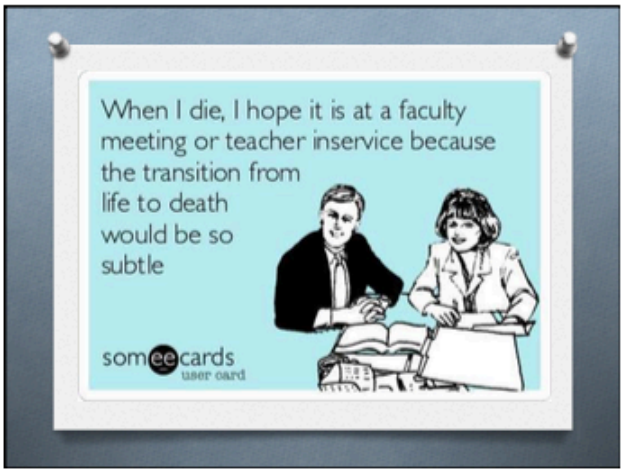
Assistance, Regional Educational Laboratory Southwest.

Power Point for District Office Administrators

Effective Professional Development for Teachers

Research-based practices for educational leaders

Linda Grace
University of Delaware

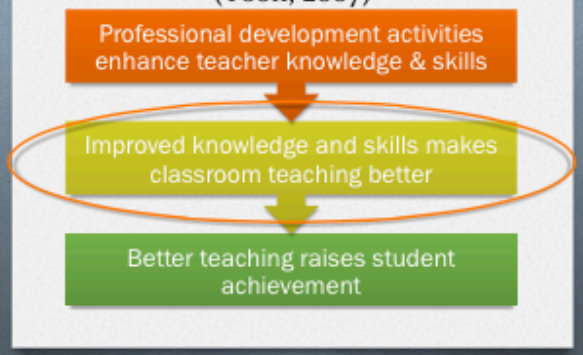


Why is professional development important?

- Teachers need to have an underlying knowledge of how students learn and the complexities of their content area.
- Teachers need to learn to tailor instruction to demands of the CCSS.
- It can improve classroom instruction & student learning.

It is the responsibility of school leadership to make sure that professional development is an ongoing and planned activity that engages all teachers and benefits the learning of all students (Wei et al., 2009).

A Three Step Process
(Yoon, 2007)



Any change that occurs in classroom instruction relies heavily on the *quality* of the professional development activities in which the teachers engage.

What are the elements of professional development models that have been shown to change teachers' instructional practice?

Elements of Quality PD
(Garet et al,.2001)

- Active learning for teachers
- Coherence with job-embedded work
- Teacher collaboration
- Ongoing support over time
- Improving theoretical & content knowledge

Active Learning of Teachers

- Active Learning Activities
  - Teachers observing models
  - Teachers being observed
  - Planning classroom presentations
  - Reviewing student work
  - Presenting, leading and writing
- Teachers need to watch techniques, practice, and reflect in a systematic fashion.
- Teachers need to understand how new techniques are linked to the curriculum and student learning.
- Improved teacher self-efficacy = better chance of classroom implementation

Coherence with job embedded work

- Aligned with teachers' goals, state standards & assessments.
- Linked to the context in which it occurs.
- Teachers need to understand how it is linked to other initiatives.
- Too many conflicting or unrelated initiatives leave teachers confused about their implementation in the classroom.

Teacher collaboration…

- provides opportunities for discussion and conversation with one another throughout the change process,
- should include different role groups such as researchers, administrators & teachers.
- in and among teachers in schools is most effective for changing classroom practice across content areas.
- should allow time for inquiry, reflection, and for solving instructional problems.

Ongoing support sustained over time

- *Duration over time & number of activates* affects teacher learning.
- Longer PDs that included more active learning activities for teachers are more effective.
- Allows teachers time to grow with continued support over time.

Improving theoretical and content knowledge

- Improves teacher knowledge and skills.
- Helps teachers understand how students learn & improves their ability to plan needs-based instruction.
- MUST be linked to its application in classroom instruction and to its impact on student learning.
- When taught in isolation, may have a NEGATIVE effect on teacher and student learning.

Changing Paradigms

Collaborative Activities

- PLCs
- Peer observations
- Analyzing student work
- Study groups
- Peer support for learning, problem solving, reflecting on practice & adopting new practices

Collaborative communities require strong leadership to help teachers understand the advantages of making their classroom practice public, and to create collaborative structures that make sharing and evaluating their practice desirable. Otherwise they are ineffective.

Instructional Coaching

- In-classroom support for individual teachers or small groups of teachers to improve instruction
- Incorporate new skills and strategies into practice in the context of the classroom
- Usually experts in their subject areas

Research on Instructional Coaching

- Inconsistent results in changing teacher practice.
- Variability in the types of activities in different schools & situations.
- Effective coaching is linked to larger, focused initiatives – difficult to measure its specific effectiveness.

Six Elements of Effective Professional Development

- Active learning for teachers
- Coherence with job-embedded work
- Teacher collaboration
- Ongoing support for teachers over a span of time
- Improving theoretical and content knowledge

Appendix F

PILOT PROFESSIONAL DEVELOPMENT PROJECT

Purpose

This professional development project will focus on combatting the fourth-grade slump in reading comprehension by strengthening instruction. It involves a professional development program designed to help fourth- and fifth-grade teachers improve their comprehension knowledge and instructional techniques through professional development in a collaborative think aloud protocol. Collaborative think alouds, as defined in this study, include the teacher presenting reading comprehension strategies through metacognitive modeling and teachers and students engaging in responsive elaboration as students begin to use metacognitive strategies in real reading situations.

During the planned project, participating teachers will experience professional development sessions and be provided with opportunities for classroom practice and one-on-one feedback from the evaluator. The focus on active learning activities is designed to help teachers learn the collaborative think aloud protocol with practice and ongoing support in their own classrooms. To this end, the project will seek to answer the following questions:

How does professional development in a collaborative think aloud protocol change the following:

1. teachers' understanding of how to teach reading comprehension using metacognitive modeling and responsive elaboration techniques?

2. teachers' metacognitive modeling and responsive elaboration techniques during reading comprehension instruction?

Methods

Organizational Role

The author/researcher is currently the Elementary Literacy & Intervention Specialist for the school district of the project school. The underlying purpose of her role is to facilitate the elementary English Language Arts instruction and curriculum for the district. Additionally, she facilitates the implementation of Response to Intervention (RtI) in the elementary schools. Her daily activities include facilitating the work of the elementary reading specialists, supporting and conducting training for teachers, conducting classroom walkthroughs and offering feedback, and managing curriculum materials. The position is not a supervisory role, and the author/researcher functions more as a consultant/coach than an evaluator.

Participants

Originally, the project was designed for classroom teachers. However, the project participants were changed due to scheduling difficulties with classroom teachers. As a result, the targeted participants of this project were the BSD reading specialists. The rationale for including reading specialists as participants is that they primarily work with students who are struggling readers, and serve many students who score in the bottom quartile of BSD's population. Additionally, reading specialists tend to be more flexible with their schedules than teachers with the multiple obligations of a homeroom of students. Finally, reading specialists often consult and work with classroom teachers.

Therefore, it is important that reading specialists have the knowledge, skill, and ability to provide high-quality comprehension strategy instruction.

The district employs 11 reading specialists in nine schools and these reading specialists serve an average of 50 students from kindergarten to grade five. They teach reading in small intervention groups that range from three to eight students. In grades four and five, the majority of these groups focus on reading comprehension, usually with students who are in Tier 3 RTI groups.

All 11 reading specialists participated in the workshop portion of the PD project during our regularly scheduled PLC meetings. All 11 reading specialists were invited to participate in the full project through the informed consent process. Five of the eleven reading specialists consented to participate in the interview, classroom observation, and feedback portions of the PD project.

In an effort to link the project to comprehension strategies that were familiar to the reading specialists, the project focused on learning to implement the metacognitive modeling protocol for the four strategies taught in the *Soar to Success* (Cooper et al, 2001) comprehension intervention program: 1) summarize, 2) predict, 3) clarify, and 4) question. The strategies were chosen because of their familiarity to the reading specialists and because they were found to be effective for improving student strategy use and overall reading comprehension in the Reciprocal Teaching studies (Palinscar & Brown, 1984). Additionally, focusing on these strategies will foster coherence with teachers' job-embedded work. Reading specialists had the opportunity to enhance their knowledge of metacognition and to work collaboratively in creating lesson plans. The project activities also provided reading specialists with one on one, in-classroom

feedback and opportunities for on-going practice and reflection about their progress over an eight-week period.

Professional Development

The planned project is divided into three professional development (PD) periods: pre-PD, PD, and post-PD (see Table 5). The pre and post PD periods are designed to collect data. During the pre-PD period, data will be collected to investigate teachers' knowledge and instructional practice related to metacognitive modeling and responsive elaboration. The post-PD period will focus on gathering data to assess changes in teachers' knowledge and classroom practice after the PD is completed. The professional development included in the project is designed to help teachers learn and practice a collaborative think aloud protocol to improve their knowledge and implementation of metacognitive modeling and responsive elaboration techniques. Specific characteristics of the professional development are discussed in this section.

Table 5: Project Schedule

Period	Weeks	Activity
Pre-PD	2 prior	Observation One & Interview One
PD	1	Session One PD
	2	No data collection
	3/4	Observation Two
	5	Session Two PD
	6	No data collection
	7/8	Observation Three
Post PD	2 post	Observation Four & Interview Two

In the previous literature review on professional development included in this ELP, I identified six elements of successful professional development programs - active learning for teachers, coherence with job-embedded work, teacher collaboration, ongoing support for teachers over a span of time, and improving theoretical and content knowledge. These elements were characteristic of professional development across content areas as well as in reading comprehension strategy instruction.

The proposed professional development project integrates all of the six of the essential elements of professional development that changes teachers' practice. Active learning opportunities for teachers in the project include creating lesson plans, presenting and practicing metacognitive modeling, and opportunities to practice new learning in their classrooms. The professional development sessions are designed to support the teaching of the comprehension strategies included in the current reading Journeys reading series, fostering coherence with teachers' job-embedded work. Teachers will also have the opportunity to work collaboratively in creating lesson plans and in developing a comprehension construct. The planned PD activities also provide teachers with one on one, in-classroom feedback and opportunities for on-going practice and reflection about their progress over an eight-week period.

Two professional development (PD) sessions will take place during the eight-week project (see Table 6). The *Session One Metacognitive Modeling* PD will be three hours in length and focuses on understanding the research and theoretical basis for integrating collaborative think alouds, and on learning a metacognitive modeling protocol for presenting reading strategies. The theoretical basis portion of the *Session One Metacognitive Modeling* PD will examine the causes of the fourth grade slump in reading

comprehension followed by a brief review of metacognition, metacognitive strategy instruction, and think aloud research. The teachers will then be introduced to the three-part structure of collaborative think alouds: 1) Teach, model, practice (metacognitive modeling); 2) Assess students' metacognitive understanding; 3) Help students "fix up" misunderstandings. The metacognitive modeling portion of the *Session One Metacognitive Modeling* PD will include instruction and practice in a think aloud protocol based on the Bauman & Schmitt (1986) instructional and the Duffy (1988) protocols. The five steps protocol includes: 1) a description, definition or example of *what* the strategy is, 2) an explanation of *why* the strategy is important and how it improves reading ability, 3) an explanation of *when* the strategy should and should not be used, 4) an explicit verbal explanation of *how* to use the strategy, and 5) guided and independent practice for students.

Table 6: Planned Project Schedule

Weeks	Activity	Purpose
1	Session One Metacognitive Modeling PD	Increase teacher knowledge about think aloud research and practice metacognitive modeling instructional procedure.
2	Teacher Practice	Allow teachers time to practice metacognitive modeling in the classroom.
3/4	Observation and Feedback	The researcher observes in each classroom and briefly meets with teacher to answer questions and to provide feedback based on their implementation of metacognitive modeling.
4	Teacher Practice	Teachers continue practicing metacognitive modeling in the classroom in an effort to improve implementation.
5	Session Two Responsive Elaboration PD	Increase teacher knowledge about responsive elaboration, including assessing and responding to cognitive misunderstandings.
6	Teacher Practice	Allow teachers time to practice responsive elaboration instruction in the classroom.
7/8	Observation and Feedback	The researcher observes in each classroom and briefly meets with teacher to answer questions and to provide feedback based on their implementation of responsive elaboration techniques.
8	Teacher practice	Teachers continue practicing responsive elaboration in the classroom in an effort to improve implementation.

In an effort to link the project to other district initiatives, the project will help teachers create metacognitive models for the four *strategies* in their *Soar to Success* (Cooper et al, 2001) program. The four strategies are: 1) summarize, 2) predict, 3) clarify and 5) question (see Appendix I). During the *Session One Metacognitive Modeling* PD session, the summarizing strategy will be modeled, and each teacher will be assigned a strategy for which to create a scripted metacognitive model as guided and independent practice. Later in the PD session, teachers will practice presenting their metacognitive models to partners who will give feedback to them using a coaching checklist. Subsequently, each teacher will present her metacognitive model to the group. The final activity in the *Session One Metacognitive Modeling* PD asks teachers to think about how they will use metacognitive modeling in their classrooms. Detailed plans of the Session One PD are included in Appendix A.

After the *Session One Metacognitive Modeling* PD, teachers will receive a copy of the *Metacognitive Modeling Planning Sheet* (see Appendix B) for each strategy created by teachers during the PD session and a blank metacognitive modeling planning sheet for future use. Teachers will be instructed to practice using the metacognitive modeling strategy at least one time per week with their students, using the *Metacognitive Modeling Planning Sheet* as their guide. Teachers will be asked to briefly reflect on sheets and to note any successes or questions they may have had during the lesson. During weeks three and four of the project, the researcher will observe each teacher during reading comprehension instruction, focusing on metacognitive modeling techniques, completing the *Observation Rubric* (see Appendix G).

After the observations, the researcher will meet with individual teachers to provide oral feedback on metacognitive modeling techniques based on the rubric results and to answer any questions the teacher may have about metacognitive modeling. Additionally, the teacher may choose to share any responses or questions from the *Metacognitive Modeling Planning and Reflection Sheet* distributed at training. However, in an effort for the sessions to be viewed as support for the teacher and not an evaluation of classroom performance, the actual *Observation Rubric* will not be shared with the teacher. Feedback will be given in oral form, including the researcher's assessment of the teacher's current metacognitive modeling techniques and some recommendations for next steps in metacognitive modeling techniques. Additionally, the researcher will ask the teacher if she has any questions about the use of metacognitive modeling in the classroom.

Next, the *Session Two Responsive Elaboration* PD will occur during the fifth week of the project. It will be an hour and a half in length and will focus on teaching responsive elaboration to teachers in two parts – assessment of students' cognitive understandings, and helping students fix up cognitive misunderstandings. The researcher will begin the session by asking teachers to share their experiences with metacognitive modeling during classroom practice. The group will share successes and discuss solutions to problems encountered with implementation.

Teachers will then create a *comprehension construct* (Snow, 2003) in which they list what students must be able to know and do in order to be good comprehenders. Creating a comprehension construct will help focus teachers on the metacognitive processes of their students. Teachers will generate ideas about how to assess students'

metacognitive knowledge during comprehension instruction. Additionally, teachers will learn and practice strategies to respond to students' metacognitive misunderstandings using "fix up" strategies recommended by Dole, Duffy & Roehler (1991). Those strategies will include: prompting, analogies, questioning, elaborations, and remodeling. Teachers will practice assessing and responding to students' misconceptions by participating in pre-planned simulated classroom situations. Teachers will be given a *Responsive Elaboration Planning & Reflection Sheet* (see Appendix D) that lists the main elements of the responsive elaboration protocol and the strategies teachers may use to help students fix up cognitive misunderstandings. Teachers will be encouraged to write down any questions or reflections on the *Responsive Elaboration Planning & Reflection Sheet*. Those questions and reflections may be used during the feedback sessions with the researcher if the teacher chooses. Detailed plans for the Session Two PD are included in Appendix C.

After the *Session Two Responsive Elaboration* PD, teachers will be given a week to practice the newly learned strategies in their classrooms, using the *Responsive Elaboration Planning Sheet* (see Appendix D) as a guide. During weeks seven and eight of the project, the researcher will observe each teacher again in the classroom and provide follow-up oral feedback about the teacher's metacognitive modeling and responsive elaboration techniques based on the *Observation Rubric* (see Appendix G) following the same procedure as the previous feedback session. However, the second feedback session will also include information gathered on the *Response Recording Sheet* (see Appendix F), focusing on the children to whom the teacher responded, the types of

responses attempted, and the teacher's persistence and successfulness in fixing up that students' metacognitive misunderstanding.

As was the case in the first feedback session, feedback will only be given in oral form. The *Observation Rubric* and *Response Recording* sheets will not be shared with the teachers in an effort for the sessions to be viewed as support for the teacher and not an evaluation of classroom performance. The observation will focus on feedback relative to the teacher's current implementation of the collaborative think aloud protocol and recommendations for next steps to improve classroom implementation. Additionally, the teacher may choose to share any responses or questions from the *Responsive Elaboration Planning Sheet* distributed at training.

The project period will end after the eighth week of implementation. Two weeks post-project, the teachers will be observed again during comprehension instruction. However, no feedback session will be scheduled, as post-project interviews will provide the teachers with the opportunity to ask questions and receive feedback from the researcher.

Data Collection

The planned project will employ two different approaches: teacher interviews and teacher observations. The purpose of the teacher interviews will be to assess change in teachers' understanding of how to use metacognitive modeling and responsive elaboration during comprehension instruction. The purpose of the teacher observations will be to assess any change in metacognitive modeling skills and responsive elaboration techniques during reading comprehension instruction.

Interviews. One-on-one interviews will assess changes in teachers' understanding of how to teach reading comprehension using metacognitive modeling and responsive elaboration techniques. Two interviews will take place during and after the planned PD sessions in order to investigate any change in teachers' understanding of how to teach reading comprehension using metacognitive modeling and responsive elaboration techniques. The first teacher interviews will take place two weeks prior to the project to establish the teacher's level of understanding and prior knowledge of metacognitive modeling and responsive elaboration. The second interview will take place two weeks post project to examine any change in the teachers' understanding. Interviews will be conducted by the researcher in the teacher's classroom and will be audiotaped to ensure the accurate notation of responses. The interviewer will use the interview guide approach (Patton, 2002), focusing on a list of eight pre-planned questions to elicit responses (see Appendix H). Using an interview guide focuses the conversation on topics that the interviewer deems important, and helps to keep the interviewee on topic by carefully designing questions to elicit necessary information. The interview guide approach was chosen for this project to ensure the gathering of information about the teacher's knowledge of metacognitive modeling and responsive elaboration.

The *Interview Guide* (see Appendix H) provides a plan for the interview and structures the interview into three sections: *Introduction, Questions, and Conclusions.* The interview begins with the *Introduction* section, which prompts the interviewer to state the purpose of the interview, explain how the data will be used and to ensure the interviewee of the confidentiality of his/her responses. The *Question* section includes eight questions designed to measure the teacher's knowledge and understanding of

metacognitive modeling and responsive elaboration theory and techniques. The eight questions for this interview were designed to assess the teacher's understanding of eight corresponding topics: 1) reading comprehension, 2) metacognition, 3) reading comprehension strategies, 4) think alouds, 5) guided practice during comprehension instruction 6) independent reading comprehension practice, 7) assessment of students' strategy use, and 8) responses to students' metacognitive misunderstandings. The *Conclusion* section of the guide provides prompts to the interviewer to thank the interviewee, reassure him/her of the confidentiality of responses, restate the purpose of the interview, and asks if the interviewee has any further questions.

Teacher Observations. Observational data will be collected throughout the project during four observation periods: pre-project, weeks three & four, weeks seven & eight, and post project (see Table 1). Observation One will occur two weeks before the project to observe the teacher's metacognitive modeling and responsive elaborations techniques before the project. Observation Two will take place two to three weeks after the *Session One Metacognitive Modeling* PD to determine if there was any change in teacher practice, particularly in the metacognitive modeling. Similarly, Observation Three will take place two to three weeks after the *Session Two Responsive Elaboration* PD to assess any change in teacher practice, particularly in responsive elaboration. A fourth observation will take place two weeks post project to determine any change in teacher practice after the project was completed. Changes in metacognitive modeling and responsive elaboration techniques during reading comprehension instruction will be assessed during the four observation periods.

Each teacher will be observed four times throughout the project (see table 1) to assess changes in metacognitive modeling and responsive elaboration during comprehension instruction. All observations will occur during the 30-minute intervention block in length. Teachers will be informed in advance when the researcher will be coming to the classroom in an effort to ensure the observation of instruction in the *Soar to Success* curriculum.

During the observations, every effort will be made to see the entire reading comprehension lesson from beginning to end. The point of entrance into the lesson is significant, as the elements of the collaborative think aloud protocol are typically observed during specific points of the lesson (i.e. metacognitive modeling would typically be seen at the beginning, independent practice at the end). However, the researcher will note the time and whether she has entered at the beginning, middle, or end of the lesson when beginning the observation. The researcher will record information by writing or typing using a laptop computer.

Since the goal of this project is to examine changes in teachers' metacognitive modeling and responsive elaboration techniques during reading comprehension instruction after professional development, only interactions between student(s) and the teacher related to reading comprehension strategy instruction will be documented during the 30-minute observation period. Reading comprehension strategy instruction will include, but will not be limited to, instruction and interactions in the four *Soar to Success* (Cooper et al, 2001) strategies 1) summarize, 2) predict, 3) clarify, and 4) question (see Appendix I). Additionally, the researcher will document other reading comprehension strategies presented by the teacher, but not included on the list. Instruction in other

aspects of reading such as word recognition, fluency, vocabulary, and writing will not be documented for this project. Additionally, interactions or discussion about the text not related to the teaching of specific reading comprehension strategies will not be included in this project.

Including both interviews and observations is essential for answering the research questions as the interviews will provide data about changes in teachers' understanding pre and post project and observations will provide data about actual changes in teachers' practice at different points during the observation. Studies of professional development suggest that teachers' enhanced knowledge and understanding had a positive influence on use in classroom practice (Garet, 2001; Yoon, 2007). This project includes a measure for both teacher knowledge and understanding, and hopes to provide further evidence that enhancing teacher knowledge of metacognitive modeling and responsive elaboration techniques improves classroom practice.

Methods of Data Analysis

Interviews. After each interview, individual teacher responses will be sorted by question number and examined for their relationship to the intended question topic. Responses that are related to the question topic will be coded according to pre-determined criteria (see Table 7). Responses that are unrelated to the pre-determined question topics will be processed in one of three ways: 1) They will be coded with the responses of another question with same topic as the respondent's answer; 2) If the response helps to answer the research question but was unrelated to any of the projected topics, a new topic will be created, and the response will be coded under the new topic; 3)

If the response is completely unrelated to the research questions in this project, it will be coded as "unrelated.

Table 7: Coding of Interview Questions

Question	Topic	Coding
1	Reading Comprehension	• Types of comprehension activities teachers include • Statements relative to specific comprehension theory
2	Metacognition	• Elements of metacognitive theory named • Statements about how metacognition relates to classroom practice
3	Comprehension Strategies	• Types of instructional activities teachers include • Specific comprehension strategies named
4	Think Alouds	• Types of instructional activities teachers include • Specific elements of thinking aloud named by the teacher
5	Guided & Independent Practice	• Types of guided practice teachers include • Statements focusing on transferring responsibility for learning/scaffolded support • Types of independent practice named by the teacher • Statements about the use of independent practice
6	Cognitive Empathy	• Statements relative to verbal cues to student misunderstanding • Statements relative to non-verbal cues of student misunderstanding • Statements relative to written cues of student misunderstanding
7	Assessment	• Types of assessment named by the teacher • Statements about how assessment is used
8	Response to misunderstanding	• Types of responses named by the teacher • Statements about when to respond

After each topic is coded for each teacher, the researcher will note patterns in the number of teachers with similar responses. The number of teachers with same response will be recorded for each topic. Responses for each topic will be ordered from most to least common for each interview period (pre-project and post project). Most common responses for each topic will be compared between the two interview periods for individual teachers. Results for all teachers will be summarized as a whole.

Observations. The entire teacher observations will be analyzed for the presence of the elements of the collaborative thinking protocol - 1) metacognitive modeling, 2) assessment of understanding, and 3) responsive elaboration instructional techniques - during the 30 minute observation period. As a result, the unit of analysis for coding the observations is the 30-minute reading comprehension lesson. Evidence of the presence or absence of the collaborative protocol will be documented using the *Observation Guide* (see Appendix E) and the *Response Recording Sheet* (see Appendix F). The *Observation Guide* (see Appendix E) will focus on the collection of specific evidence of metacognitive modeling and the assessment of student understanding. Additionally, the observer will document specific instances of teachers' responses to students' misunderstandings using the *Response Recording Sheet* (see Appendix F), listing each student with whom the teacher interacted to fix up a cognitive misunderstanding, the teacher 's response to the student, and the number of follow up responses per student. The specific procedure for analyzing the observations is described below.

Immediately following each observation, the researcher will re-read her notes from the *Observation Guide* and *Response Recording Sheet* and use the evidence collected to rate metacognitive modeling and responsive elaboration on the *Observation Rubric* (see Appendix G).

Observation Rubric. The *Observation Rubric* includes eight items adapted from rubrics used in previously published and peer-reviewed studies (Duffy et al., 1986; Duffy et al., 1988; Anderson & Roit, 1993) that are divided into three sections: 1) metacognitive modeling, 2) assessment of students' metacognitive understandings, and 3) response to students' misunderstandings. Each numbered item (1-7) on the *Observation Rubric*

directly corresponds to the same numbered item on the *Observation Guide*. The researcher will analyze the evidence collected for each item of the *Observation Guide* to rate the quality of the corresponding item of the *Observation Rubric*. Similarly, the evidence collected in the *Response Recording Sheet* will be used to rate the quality of item eight on the *Observation Rubric*. A detailed description of the three sections of the rubric and how they will be used to measure change in teachers' metacognitive modeling and responsive elaborations techniques is included in the following section.

Section One - *Metacognitive Modeling* will be assessed using individual rubrics to measure change in each of six subsections: 1) what – how explicit the teacher is in informing students *what* the task is to be learned, 2) why - how explicit the teacher is in informing students *why* the strategy is useful as they read, 3) when - how explicit the teacher is in telling students *when* to use strategy to select for use when encountering a problem in reading, 4) how - how explicit the teacher is in telling student *how* to perform the strategy to solve the problem when reading real text, 5) guided practice - how well the teacher shifts the instructional interaction from teacher regulation of the strategy to student control of the strategy, 6) independent student practice - how well the teacher provides students with independent practice in using the mental processing.

Section Two - *Assessment of Students' Metacognitive Understanding* will be assessed based on how well the teacher elicits responses that require students to verbalize how they arrived at an answer using the rubric.

Section Three - *Response to Students' Misunderstanding* will be assessed based on how well the teacher helps students to fix up their metacognitive misunderstandings in connected text.

Rubric ratings for each item in the rubric will be reported from most to least common for each observation and compared for each observation period. Changes in the most and least common ratings will be compared and analyzed across observation periods.

Response Recording Sheet. In an effort to further analyze changes in the types and differentiation of responses teachers are supplying to help students fix up their metacognitive misunderstanding, a *Response Recording Sheet* will also be used during the observation. On the recording sheet, the researcher will 1) list specific *students* with whom the teacher interacts, 2) the teacher's specific *response(s)* to help fix up those misunderstanding, and 3) the number of follow up responses per student.

The list of specific students with whom the teacher interacted will be analyzed to determine 1) the total number of interactions observed and 2) the number of different students the teacher interacted with during the observation period. All data will be compared across observation periods to analyze any change in how the teacher is responding to different students.

Additionally, teachers' responses to students will be coded and sorted into six different categories of responses: 1) prompting, 2) questioning, 3) analogies, 4) elaborations, 5) remodeling, and 6) other. The first five categories are included because they were practiced and taught to teachers as part of the collaborative think aloud protocol during the second project training, and their use in the classroom will help to analyze changes in responses to students. The "other" category was included in an effort to code and evaluate any other responses to students not included in the first five categories. Detailed definitions of each category are outlined in the following sections.

Prompting. For the purpose of coding, prompting will be defined as any observed instructional technique in which the teacher makes a suggestion to a student as to what to think about next when the student is experiencing a cognitive misunderstanding while reading (*Think about what the character said earlier in the story*). The questions teachers ask to cue understanding will not be coded as prompting – only the suggestions teachers make in statement form to cue cognitive understanding will be considered prompting.

Questioning. For this project, questioning refers only to instances in which the teacher responds to students' cognitive understanding by asking specific questions to extend or clarify information (*Why do you think that? How did you figure that out?*). If the teacher offers *suggestions* to cue understanding, it will not be considered *questioning*.

Analogies. Analogies will be instances in which the teacher responds to students' cognitive understanding during reading by describing a similar, more familiar example (*It is like how someone feels when he finally learns to tie his shoes after trying for a long time*). Only analogies that are related to fixing up students' cognitive misunderstandings will be included in the coding. Similes, which are direct comparisons using like or as, as well as metaphors, which are indirect comparisons will be coded as analogies.

Elaborations. When the teacher responds to students' cognitive misunderstanding during reading by extending or clarifying their responses, it will be considered an elaboration. (*So you are trying to tell us is that the character was confused because he was excited to move to his new home, but he was upset about leaving his friends*). If the teacher simply restates the students' response, it will not be considered an elaboration. Only instances in which the teacher *extends* or *clarifies* a students' response will be considered elaborations.

Remodeling. Instances in which the teacher models the metacognitive process for the student in response to their cognitive understandings during reading will be considered remodeling (*When I read clues like the character is smiling and high-fiving his friends, I think to myself that this is something people usually do when they are happy or excited, so I can make an inference that the character is excited about something*). Restating the students' thinking will not be considered remodeling. Only teacher responses that include the thinking aloud of their own metacognitive processes will be considered remodeling.

Other. Any teacher response to students' cognitive understanding that could not be coded into the first six categories will be initially coded as "other." An additional inductive analysis will take place to look for themes in response coded as "other." If themes are identified, additional categories will be created and responses coded into those categories.

After teachers' responses to students are coded and sorted into different categories of responses, the total number of responses will be tallied for each category for each teacher and for all teachers combined. The responses will be ordered from greatest to least to determine the most and least common types of responses to students. Data collected during each of the four observation periods will be compared to examine any changes in the data throughout the project.

The types of responses before and after the project will be analyzed in an effort to find if the teachers use the five suggested responses presented in the project, or if they change their responses in to students in any way pre and post project. This data may shed light on how or if teachers use specific instructional strategies presented in the

collaborative think aloud protocol, which they used the most, and which they used the least. It may offer the researcher more detailed information about the connection between the project and teacher practice.

To conclude the data analysis for the project, the researcher will compare the changes in teacher knowledge from the interviews to changes in teacher practice from the observations. The researcher will look for similarities and differences between the two qualitative data sets and compare and contrast them as applicable.

Methods Summary. Changes teachers' responses to the interviews will provide insight into whether professional development in a collaborative think aloud protocol impacts teachers' *understanding* of how to teach reading comprehension using metacognitive modeling and responsive elaboration techniques. Changes in teacher responses pre and post project should provide the researcher with a picture of how teachers have changed (or possibly did not change) and their thinking about the teaching of reading comprehension.

Additionally, changes in teacher practices across the observation periods will provide evidence whether professional development in a collaborative think loud protocol changes teachers' metacognitive modeling and responsive elaboration techniques during reading comprehension *instruction*. Observed changes in classroom practice are arguably the best indicators of whether classroom practice was modified as a result of the project – at least in the short term. In addition, changes in classroom practice are the most important result of the project, as it will help teachers work with students to improve their reading comprehension.

Appendices

Appendix A

Session One Metacognitive Modeling PD

Part 1 - Presentation of Research on the Fourth Grade Slump

Presentation

The Fourth Grade Slump

There are a consistent percentage of students who were previously reading at grade level expectations and begin to develop reading problems at fourth grade. Many of these students have proficient decoding and spelling skills and read fluently, but struggle solely with reading comprehension. (Chall, 1990; Kucan & Paniscar, 2011; Pressley, 2006)

Teacher Activity

What factors contribute to the fourth grade slump in reading comprehension? (Teachers list their thoughts first in small groups, then sort their ideas on chart paper into text, activity, environment and reader factors)

Discussion will center around these topics:

Text Factors

* Shift to expository texts
* Unfamiliar text structures
* Unfamiliar concepts & language patterns
* Academic vocabulary

Task factors

* Purpose for reading
* Reading to learn instead of learning to read.
* Consequences of reading
* Reading to acquire knowledge instead of reading purely for engagement.

Environment

* Issues related to poverty such as exposure to and availability of literacy resources.
* Cultural mismatch with school.
* Lack of exposure to effective instruction.
* Lack of curricular resources in underfunded schools.
* Ineffective comprehension instruction..

Reader Factors

* Reader
* Language ability
* Vocabulary & concept knowledge
* Cognitive characteristics– attention, memory, critical analytical ability
* Non-verbal cognitive ability – planning
* Motivation
* Strategic or metacognitive knowledge

Activity/discussion

What are some factors that contribute to the fourth grade slump in reading comprehension that we can influence or change?

Teachers discuss and identify factors under their influence, using information on

chart papers.

Part 2 – Research on Reading Comprehension

Presentation

Focus on the instructional program for comprehension

* Differences in comprehension are often differences in metacognitive strategy knowledge.
* Metacognition
* Strategies that regulate our thinking.
* More important as text complexity increases.
* Younger readers use less effective strategies than older readers.
* Poor comprehenders use fewer and less productive strategies than good readers.

Strategies

1. Summarize
2. Predict
3. Clarify
4. Question

Teaching Metacognitive Strategies

Teacher Activity/Discussion

* What are some of your experiences with teaching reading strategies?
* What are some elements of strategy instruction that you feel comfortable with?
* What are some issues you have?

Part 3 – Think Aloud Research

Presentation

Think Alouds

* Overt expressions of covert mental processes.
* Explicitly demonstrate the metacognitive processes of an expert reader.
* Listeners observe how the reader is managing comprehension.
* Teach, model and assess strategy use.

What is the purpose of strategy instruction?

* Improve *students'* strategy use and comprehension!
* Must transfer the responsibility for using the strategy from the teacher to student!

Collaborative Think Alouds

* Verbal exchanges between the teacher and student about the metacognitive processes they use while reading.
* Cognitive development happens when two people solve cognitive problems together.
* Improve *students'* strategy use and comprehension!
* Must transfer the responsibility for using the strategy from the teacher to student!
* Scaffolded support in real reading situations.

Part 4 – Presentation/ Modeling/Guide Practice of the Think Aloud Protocol

Presentation

Collaborative Think Aloud Protocol

1. Teach, model, and practice the strategy.
2. Assess students' cognitive misunderstandings.
3. Help students fix-up cognitive misunderstandings.

Teach, model, practice
1. What the strategy is.
2. Why the strategy is important to improving reading ability.
3. When the strategy is used.
4. Model *how* to use the strategy.
5. Include guided and independent *practice* for students.

What the strategy is...
* State the name of the strategy.
* Clearly and explicitly define the strategy in kid-friendly terms.
* Explain that it is an adaptable strategy that can be used to solve problems when reading.

Modeling

Summarizing Example

* *Summarizing is retelling the important events (or information) in a text. When we summarize, we organize the important information from the text and retell it in our own words. We keep our summaries short – only a few sentences. We can summarize information from any type of text!*

Guided Practice

What activity...

Using your assigned strategy, create a kid friendly script for explicitly defining *what* the strategy.
* State the name of the strategy.
* Clearly and explicitly define the strategy
* Be prepared to define your strategy for the group!

Presentation

Why the strategy is important..
* Clearly explain *why* the strategy is useful when you read.
* Connect to a reading text.
* Give one or two examples.

Modeling

Summarizing Example

* *Summarizing is useful because it helps us to organize and remember the important information when we are reading. Sometimes texts have a lot of information. If we organize the main points in our own words it helps us to think about and remember what important information the author wants us to know!*
* *We're reading this book about George Washington with a lot of facts in it. I could summarize what I read in my own words to help me to remember and organize just the important facts about George Washington*.

Guided Practice

Why activity...

* Using your assigned strategy, create a script in kid-friendly terms for explaining *why* the strategy is useful.
* Explain why the strategy is useful in reading texts. * Connect it to a reading text.
* Give one or two examples.

Presentation

When the strategy is used

* Clearly explain how to recognize a problem in reading.
* Explain how choosing this strategy would help them solve the problem.
* Explain when NOT to use the strategy.

Modeling

Summarizing Example

If I am reading along in my George Washington book, and I realize that there is a lot of information, and I'm not sure what it means, I can stop and summarize what I have read so far to help me organize and remember just the important information. I can stop at any time during reading and summarize to help me organize and remember the information– even after a section or chapter that is difficult or has a lot of information. Sometimes I can summarize at the end of the whole book to help me organize and remember the whole story (or all of the information).

It is easy to confuse retelling with summarizing. Retelling is telling everything you can remember in a text and summarizing is telling just the important information. I would not use the summarizing strategy when I was asked to retell a text.

Guided Practice

When activity...

* Using your assigned strategy and your Journey's manual, create a script in kid-friendly terms for explaining *when* to use the strategy.
* Clearly explain how to recognize a problem in reading.
* Explain how choosing this strategy would help them solve the problem.
* Explain when you would not use the strategy.

Presentation

Model *how* to use the strategy...

1. Describe the explicit mental steps you follow when using the strategy.
   * Explain that the strategy may be adapted to different reading situations.
   * Think about how different text structures influence how to use the strategy.
2. Think aloud how to adapt the strategy using a natural, connected text.

3. Think aloud
   * Choose a connected, authentic text.
   * Model your metacognitive processes.
   * Make the invisible visible!
   * *(Read short story) and model thinking through summary.*

Modeling

Summarizing Version 1 *Narrative*

* *Summarizing can be used with all different types of books! It is helpful to think about the structure of what you are reading to help you summarize. T day I am reading a story. When you summarize a story, it helps to think about the setting, or where it took place, and the main characters. Then you could tell what happened at the beginning, middle and the end.*

Narrative Structure Map

Summarize Version 2 *Expository*

* *To summarize an article or book that tells you information about a subject. Now I am reading an informational article. It is helpful to think about the main idea and the important information that helps to understand the main idea.*

Informational Structure Map

How activity...

Using your assigned strategy, create a script in kid-friendly terms in which you model how to use the strategy.

1. Describe the explicit mental steps you follow when using the strategy.
* Explain that the strategy may be adapted to different reading situations.
* Think about how different text structures influence how to use the strategy.
2. Think aloud how to adapt the strategy using a natural, connected text.

Independent Teacher Practice Presenting the Strategy

Practice presenting your strategy

* Practice teaching and modeling your strategy with a partner!
* Give feedback to your partner on the clarity of the presentation using the *Metacognitive Planning & Reflection Worksheet*
* Teach and model your strategy for the class!

Presentation of How to Provide Guided & Independent Practice

Guided and Independent Practice

* Provide multiple opportunities for students to practice using the strategy in real reading situations.
* Encourage students to think aloud by making their thinking public and explaining their though processes.
* Focus on transferring the responsibility for using the strategy to the student!
* Provide practice with scaffolded support
* Plan for extensive support in first trials.
* Gradually lessen support until students are able to use the strategy independently.

Example of Lessening Support

* Extensive support - Teacher reads more of the story and elicits students' help to create summary.
* Less support - Students read more of the story and then create a summary with a

partner.
* No support - Students who are ready read more of story and create their own summaries independently.
* Plan for extensive support in first trials.
* Gradually lessen support until students are able to use the strategy independently.
Differentiation - Students who still need a little support work with a partner. Those who need more support work with the teacher.

Independent Teacher Activity
* Use the Soar to Success (2001) manual to help you plan for guided and independent practice for students for your strategy.
* Provide three activities in which support diminishes with successful practice so that students take responsibility for using the strategy in real reading.
* Consider differentiation for students who will still need more support in using the strategy.

Share your activities
* Share your activities with a partner.
* Check your partner's activities using the checklist.
* Share your activities with the group!

Part 6: Closure
Summarize
With your partner...
* Summarize what we have learned today.
* What was most helpful for you?
* What will you implement right away?
* Check your partner's activities using the checklist.
* Share your activities with the group!

What's Next?
* How to assess students' cognitive misconceptions.
* How to use responsive elaboration strategies to help students fix up misconceptions.

Appendix B
Metacognitive Modeling Planning & Reflection Sheet

Chosen Strategy:

1. *What* is the strategy? (State the name.)

   Clearly and explicitly define the strategy. Provide an example and a non-example.

2. *Why* is the strategy useful when you read?

   Connect explanation to a reading text.

   Give one or two examples of its usefulness.

3. *When* would you use the strategy?

   Clearly explain how to recognize a problem in reading.

   Explain how choosing this strategy would help them solve the problem.

   Explain when NOT to use the strategy

4. Model *how* to use the strategy.

   Model the explicit mental steps you follow when using the strategy in authentic text.
   Explain that the strategy may be adapted to different reading situations.

   How would different text structures influence how to use the strategy?

   Model how to adapt the strategy using a natural, connected text.

5. Include guided and independent *practice* for students.

   2-3 guided practice activities with lessening support for students:

   Independent practice activities that include repeated opportunities for practice with authentic texts:

   Differentiated support from peer/teacher for individual students who may continue to need help:

Reflect
What went well?
What questions do I have?

Appendix C
Session Two Responsive Elaboration PD

- Part 1 – Review/Discuss Metacognitive Modeling
  - Metacognitive Modeling
  - *What were some successes?
  - *What were some challenges?

- Part 2 – Create a Comprehension Construct
  - A Heuristic for Reading Comprehension - RAND Reading Study Group (2002)

  - Comprehension Construct
    - What must your students know in order to be good comprehenders?
    - What must they be able to do to be good comprehenders?

- Part 3 – Presentation of Responsive Elaboration
  - Presentation
  - Steps to Responsive Elaboration
  - Assessing students' cognitive misunderstanding.
  - Helping students "fix up" their cognitive misunderstanding.
  - Discussion - Assessing Cognitive Misunderstandings
    - How can you assess students' cognitive misunderstandings during comprehension instruction?
    - How will you know a student is experiencing a cognitive misunderstanding?
  - Presentation
  - Assessment of Misunderstanding
    - Have students verbalize all of the mental steps they used in applying a strategy efficiently.
  - Response to Misunderstanding
    - Respond to the assessed misunderstanding.
    - Explain & model the successful metacognitive processing.
    - Use a variety of "fix up" strategies.
    - Persist if multiple responses are necessary.

Five Possible Fix up Strategies

1.Prompting
2.Analogies
3.Questioning
4.Elaborations
5.Remodeling

Prompting
Make a suggestion or give a cue to a student as to what to think about next.
"Think about what the character said earlier in the story."

Questioning
Ask specific questions to extend or clarify information.

"Why do you think that? How did you figure that out?"

Analogies
Use a simile or metaphor to describe a similar, more familiar example.
"It is like how someone feels when he finally learns to tie his shoes after trying for a long time."

Elaboration
Extending or clarifying a student's response.
"So you are trying to tell us is that the character was confused because he was excited to move to his new home, but he was upset about leaving his friends."
More than a simple restatement!

Remodeling
Model the successful metacognitive process for the student in response to their cognitive understandings during reading.
"When I read clues like the character is smiling and high-fiving his friends, I think to myself that this is something people usually do when they are happy or excited, so I can make an inference that the character is excited about something."

Other Strategies…
What are some other effective instructional strategies you have used to fix up students' metacognitive misunderstandings?

Guided Practice Activity - Responsive Elaboration Role Play
Verbally assess misunderstanding.
Provide fix up strategies as needed.
Independent Classroom Practice
*Practice using responsive elaboration over the next three weeks.
*Record any questions or successes on your cheat sheets.
*Ask questions after I visit in the next few weeks.

Appendix D

Responsive Elaboration Planning and Reflecting Sheet

Responsive Elaboration

1. Assessing cognitive misconceptions
    - What are some possible misconceptions students may have about this strategy?

    - How will I assess students' understanding by verbally asking them to verbalize the mental steps in applying the strategy?

2. Responding
    - What is the specific cognitive misunderstanding the student has when using the strategy? How should I address this specific misunderstanding?

    - How can I model the successful cognitive processing of this strategy?

    - Which fix up strategy/strategies could I use first? What other strategies could I try to fix up the misunderstanding?

Reflect

What went well?

What questions do I have?

Appendix E
Observation Guide

Time entering: _____ Section of lesson observed: ____Beginning ____Middle ____End

Comprehension strategy observed:

Record the presence of these elements observed during the observation.

Section 1 - Metacognitive modeling

1. *What* – description or definition

2. *Why* - explanation of why the strategy is important

3. *When* - explanation of when the strategy should and should not be used

4. *How* - an explicit verbal explanation of how to use the strategy

5. *Guided practice for students*

6. *Independent practice for students*

Section 2 - Assessment of Students' Metacognitive Understanding

7. Elicits verbalizations of metacognitive processes

Appendix F
Response Recording Sheet

List students responded to, teacher response to misunderstanding, and number of follow up responses per student.

Student	**Teacher response to misunderstanding:**	**# of follow up responses per student**
1.		
Total interventions: **Total students:**		**Total # of follow ups:**

Appendix G
Observation Rubric (Duffy et al., 1986; Duffy et al., 1988; Anderson & Roit, 1993)

Section 1 - Metacognitive modeling

1. Rate how explicit the teacher is in informing students *what* the task is to be learned and that it is a strategy for solving a problem encountered in reading.
   0 - The teacher makes no statement about what strategy is to be learned.
   1 - The strategy is named, but there is little information beyond "We will learn about strategy x."
   2 – The strategy is named, and there is some explanation but it is vague, inconsistent, or implicit rather than clear, consistent, and explicit.
   3 - The strategy the students are to use while reading is clearly, consistently, and explicitly stated.
   4 - The strategy the students are to use while reading is clearly, consistently, and explicitly stated as an adaptive, flexible strategy to solve a problem encountered when reading.

2. Rate how explicit the teacher is in informing students *why* the strategy is useful as they read.
   0 –There is no statement of why the skill would be used.
   1 - The teacher only mentions that the skill is generally useful or useful in reading, but does not specify why.
   2 - The usefulness of the task is related to the future ("When you get in sixth grade…") or is vague or general in stating why it is related to a particular text ("It helps you get information…")
   3 - Clear and explicit reasons ("When you summarize the important ideas when you are reading, it helps you remember what you have read") for immediate use of the process are stated without contradiction.
   4-The teacher provides clear and explicit reasons for the immediate usefulness of the strategy in reading connected text in which one or more concrete examples are used to illustrate.

3. Rate how explicit the teacher is in telling students *when* to use the strategy to select for use when encountering a problem in reading.
   0 - There is no mention to students of when students should select this strategy during reading.
   1 - The teacher mentions that this strategy can be used to solve a problem or help them in reading, but provides no additional information.
   2 - The teacher mentions that this strategy can be used to solve a problem or help during reading and provides some information about how to choose the appropriate strategy.
   3 - The problem situation is explicitly specified – the teacher explicitly explains how he/she monitors comprehension and how to select an appropriate strategy is emphasized.
   4 - The teacher provides an exemplary statement of how to recognize that a problem exists (how he/she monitors comprehension) and how to select

the appropriate strategy, including specific examples from connected text of when and when not to use the strategy.

4. Rate how explicit the teacher is in thinking aloud through *how* to use the mental steps in identifying the problem, selecting the strategy, and applying the strategy.
   0 - The teacher does not model how to do the task at any point in the lesson.
   1 - The teacher models the procedural use of a rule.
   2 - The teacher models the steps to be followed as a procedure but does not include thinking aloud about his/her metacognitive processes.
   3 - The teacher models mental steps in using the strategy adaptively (models metacognitive processes), but uses unrelated text samples (e.g. teacher uses text unrelated to student reading to think aloud or thinks aloud as a memory of reading a text in the past).
   4 - The teacher provides an exemplary model of how to use metacognitive processes in applying the strategy adaptively to a sample of natural, connected text (e.g. thinks aloud using the same or similar texts that students are reading).

5. Rate how well the teacher shifts the instructional interaction from teacher regulation of the strategy to student control of the strategy.
   0 - The teacher does not provide any guided practice.
   1 - The teacher requires the students to provide answers to tasks that presumably call for the use of the strategy (in a recitation mode).
   2 - The teacher moves from teacher regulation (or use) of the metacognitive strategy to student regulation of the metacognitive strategy, but the emphasis is on correct answers to the teacher's questions rather than on how students used metacognitive processing to arrive at their answers.
   3 - The teacher moves from teacher regulation to student control and emphasizes student metacognitive processing rather than answers.
   4 - The teacher provides an exemplary series of trials, which are characterized by increased student metacognitive processing, by much teacher assistance early in the lesson, by teacher monitoring of students' use of mental processes, and by making reference to the monitoring of student responses in asking for subsequent responses.

6. Rate how well the teacher provides students with independent practice in using the mental processing in a contrived sample (workbook page, reader, etc.?)
   0 - The teacher did not provide independent strategy practice.
   1 – The independent practice is not appropriate for conducting the metacognitive processing of the strategy.
   2 - The teacher provides independent practice, but it is not totally relevant to and/or appropriate for the metacognitive processing necessary for the

strategy that was taught. The independent practice provides only one or two opportunities for students to use the metacognitive processing taught.
3 - The independent practice provided by the teacher calls for the repeated opportunities for student to use the metacognitive processing that was taught using contrived texts.
4 - The independent practice provided by the teacher calls for the repeated opportunities for student to use the metacognitive processing that was taught adaptively using authentic, natural texts.

Section 1 total ____*/24*

Section 2 - Assessment of Students' Metacognitive Understanding

7. Rate how well the teacher elicits responses that require students to verbalize how they arrived at an answer.
   0 - The teacher does not elicit student responses.
   1 - The teacher elicits right answers and does not require students to state how they know the answer.
   2 - The teacher requires students to state how they got answers, but focuses on procedural recall rather than knowing how to get the answer.
   3 - The teacher requires students to explain how they got the answer but has individual students verbalize individual steps rather than having each student verbalize all the steps.
   4 - The teacher's elicitations are exemplary, requiring each student to verbalize all the mental steps used in applying the strategy efficiently.

Section 2 total ____*/4*

Section 3 - Response to Students' Misunderstanding

8. Rate how well the teacher helps students to fix up their metacognitive misunderstandings in connected text or talks to students about doing such guided application in the near future.
   0 - The teacher makes no attempt to help students fix up their metacognitive misunderstandings when using the strategy.
   1 – The teacher provides help that is not based on assessment of cognitive misunderstanding or focuses on helping students supply the correct answer.
   2 - The teacher attempts to help students fix up their metacognitive misunderstandings based on assessed cognitive misunderstandings, but such help is not clear or explicit.
   3 - The teacher provides explicit help for applying successful metacognitive processing to students based on assessed cognitive misunderstandings. The response provided by the teacher directly addresses the assessed misunderstanding.
   4 - The teacher uses a variety of strategies to provide explicit help for applying successful metacognitive processing to students based on assessed cognitive misunderstandings. The response provided by the teacher directly addresses the assessed misunderstanding. The teacher

persists with individual students with multiple responses if necessary.

Section 3 total ____*/4*

Total for Sections 1-3 ____/32

Appendix H
Interview Guide

Introduction

- Thank you for chatting with me
- Explain purpose of interview – to collect information about using think alouds during comprehension instruction.
- Explain that in the project I hope to help teachers find effective ways to use collaborative think alouds in comprehension instruction. The project results will be shared with all of the participants so that they may benefit from each other's knowledge.
- Assurance of confidentiality – No identifying information will be included in the results of this interview aside from fourth or fifth grade elementary teacher in a New Castle County Delaware school.
- Explain that I will be writing down answers in an effort to accurately note the teacher's oral responses. Thank you for being patient with me as I may need a minute to finish writing sometimes.
- Any questions for me?

Questions:

1. Describe how you teach reading comprehension.

2. What does metacognition mean to you for the teaching of reading?

3. Describe how you teach reading comprehension strategies.

4. Describe how you use think alouds when teaching reading comprehension strategies.

5. Describe how you provide practice for students in using reading comprehension strategies.

6. Describe how you know when a student is experiencing difficulty with understanding text.

7. Describe how you assess students' reading comprehension strategy use.

8. Describe how you help students correct their misunderstandings when reading.

Conclusion:

- Thank you for your insights and time.
- Reassurance that the comments will be kept confidential.
- Hopefully, they will help me to understand how think alouds are used for the teaching of reading comprehension. I will send them a copy of my results when finished.
- Any other questions for me?

Appendix I

Soar to Success Strategies (2001)
Summarize
Briefly retell the important events (or information) in a text.
Use your own words.
Organize ideas in a way that makes sense.
Do not change the meaning of the text.
Make the summary short. Use only a few sentences.

Predict
To make an inference, figure out what the author does not tell you.
Think about the clues in the text.
Think about what you already know.
To make a prediction, use text clues to figure out what will happen next.

Clarify
To monitor what you read, pay attention to how well you understand the text.
If you read a part that does not make sense, find a way to clarify or clear up what you don't understand.
Use what you already know.
Reread or read ahead. Find clues in the text.
Read more slowly.
Ask questions about the text.
Question
Ask yourself questions before, during, and after you read. Look for answers.
What does the author mean here?
Who or what is this about?
Why did this happen?
What is the main idea?
How does this work?

References

Anderson, V., & Roit, M. (1993). Planning and implementing collaborative strategy instruction for delayed readers in grades 6-10. *The Elementary School Journal*, 121-137.

Baumann, J. F., Jones, L. A., & Seifert-Kessell, N. (1993). Using think alouds to enhance children's comprehension monitoring abilities. *The Reading Teacher*, 47(3), 184-193.

Baumann, J. F., Seifert-Kessell, N., & Jones, L. And, O.(1992). Effect of think-aloud instruction on elementary students' comprehension monitoring abilities. *Journal of Reading Behavior*, 24(2), 143-172.

Baumann, J. F., & Schmitt, M. C. (1986). The what, why, how, and when of comprehension instruction. *The Reading Teacher*, 39(7), 640-646.

Coburn, C. E. (2004). Beyond decoupling: Rethinking the relationship between the institutional environment and the classroom. *Sociology of Education*, 77(3), 211-244.

Cooper, J. D., Boschken, I., & Pistochini, L. (2001). *Soar to success*. Boston: Houghton Mifflin Harcourt.

Dole, J.A. (2003). Professional development in reading comprehension instruction. In A. P. Sweet, & C. E. Snow, *Rethinking reading comprehension* (pp. 141-165). New York: The Guilford Press.

Dole, J. A., Duffy, G. G., Roehler, L. R., & Pearson, P. D. (1991). Moving from the old to the new: Research on reading comprehension instruction. *Review of Educational Research*, 61(2), 239-264.

Duffy, G. G., Roehler, L. R., & Herrmann, B. A. (1988). Modeling mental processes helps poor readers become strategic readers. *The Reading Teacher*, 41(8), 762-767.

Duffy, G. G., Roehler, L. R., Meloth, M. S., Vavrus, L. G., Book, C., Putnam, J., & Wesselman, R. (1986). The relationship between explicit verbal explanations during reading skill instruction and student awareness and achievement: A study of reading teacher effects. *Reading Research Quarterly*, 237-252.

Duffy, G. G., & Roehler, L. R. (1987). Improving reading instruction through the use of responsive elaboration. *The Reading Teacher*, 40(6), 514-520.

Duffy, G. G., Roehler, L. R., Sivan, E., Rackliffe, G., Book, C., Meloth, M. S., & Bassiri, D. (1987). Effects of explaining the reasoning associated with using reading strategies. *Reading Research Quarterly*, 347-368.

Flavell, J. H. (1979). Metacognition and cognitive monitoring: A new area of cognitive- developmental inquiry. *American psychologist*, 34(10), 906.

Garet, M., Porter, A., Desimone, L., Birman, B., & Yoon, K. S. (2001). What makes professional development effective? Results from a national sample of teachers. *American Education Research Journal*, *38*(4), 915–945.

Mesmer, H. A. E., & Karchmer, R. A. (2003). REAlity: How the Reading Excellence Act took form in two schools. *The Reading Teacher*, 56(7), 636-645.

Paul, R., & Elder, L. (2008). *How to read a paragraph: The art of close reading.* Dillon Beach: Foundation for Critical Thinking Press.

Patton, M.Q. (2002). *Qualitative research & evaluation methods.* Thousand Oaks: Sage Publications.

RAND Reading Study Group. (2002). *Reading for understanding: Toward an R & D program in reading comprehension*. Santa Monica, CA: RAND.

Snow, C.E, & Sweet, A.P. (2003). Reading for comprehension. In A. P. Sweet, & C. E. Snow, *Rethinking reading comprehension* (pp. 1-11). New York: The Guilford Press.

Yoon, K. S., Garet, M., Birman, B., Jacobson, R. (2006). *Examining the effects of mathematics and science professional development on teachers' instructional practice: Using professional development activity log*. Washington, DC: Council of Chief State School Officers.

Appendix G

COLLABORATIVE THINK ALOUD WHITE PAPER

Supporting Strategic Comprehension

Comprehension is the ultimate goal of reading. However, it is difficult to teach because there are so many factors that influence its success. Students must be able to easily *extract* meaning from text through their ability to quickly identify words, and subsequently *construct* meaning based on what they have read. In recent years, many reading interventions have focused on helping students quickly and efficiently *extract* meaning from text to create fluent readers. While fluency in word recognition is essential for comprehension, a consistent percentage of students develop reading comprehension problems. These students read fluently, but struggle solely with *constructing* meaning from text.

Many factors contribute to this difficulty with comprehension. One contributing factor is that as demands for comprehension become more difficult, readers' knowledge of *metacognitive* comprehension strategies and their ability to apply those strategies during reading becomes much more important. *Metacognition* is the reader's ability to regulate their thought processes about text. Simply stated - metacognition is thinking about thinking. Poor readers use fewer and less productive metacognitive strategies than good readers while reading.

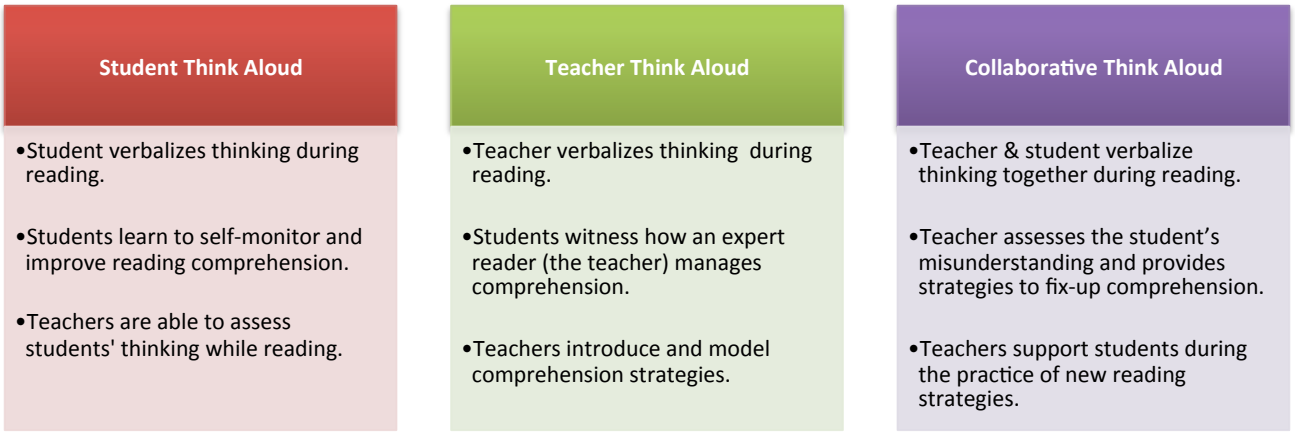
Further, readers' awareness of metacognitive comprehension strategies such as making predictions, determining the importance of information, categorizing, self-monitoring, making inferences, and visualizing texts helps to improve their overall comprehension. In fact, the ability to use metacognitive reading strategies effectively is related to reading comprehension.

Think Alouds

Think alouds are verbal expressions of the reader's internal metacognitive processes. During think alouds, the reader models how she manages reading comprehension. Think alouds are used to teach, model and assess metacognitive strategy use. Since strategy use is linked to improvement in reading comprehension, thinking aloud is linked with improved reading comprehension.

There are three categories of think alouds: *student*, *teacher,* and *collaborative*. Their definitions and usefulness for comprehension instruction and assessment are explained in Figure 8.

Figure 8: Student, Teacher, & Collaborative Think Alouds



Student Think Alouds

Student think alouds require students to talk about what they are thinking while they are reading. They are useful because asking students to verbalize their thoughts helps students learn to think more about what they are reading. As a result, students improve their ability to self-monitor their comprehension. The simple act of asking students to think aloud while reading has been shown to improve overall reading comprehension.

Student think alouds are also useful for assessing students' comprehension strategy use while reading. Asking students to think aloud about their reading helps teachers obtain a glimpse into the thought processes going on inside the student's head. That glimpse allows the teacher to assess the student's current strategy use and overall comprehension. The teacher is then able to plan instruction targeted to the student's needs.

Teacher Think Alouds

Teacher think alouds occur when the teacher verbalizes her thinking while reading a text. They often occur when a teacher is demonstrating her thought processes when using a specific comprehension strategy. For example, a teacher may stop while reading a text to the students to think aloud about how she uses her prior knowledge along with information she learned in a text to make an inference. Teacher think alouds help students to witness the mental processing of an expert reader. In short, teacher think alouds make the invisible steps to comprehension visible.

Teacher think alouds are useful for demonstrating the thinking processes of expert readers. While teacher think alouds are essential tools for improving reading comprehension, it is important to note that there is little evidence of their effectiveness at improving reading comprehension when used in isolation. They have only been shown to improve reading strategy use and overall reading comprehension when they are part of an instructional protocol that focuses on strategy instruction and on the gradual release of responsibility for thinking aloud from the teacher to the student.

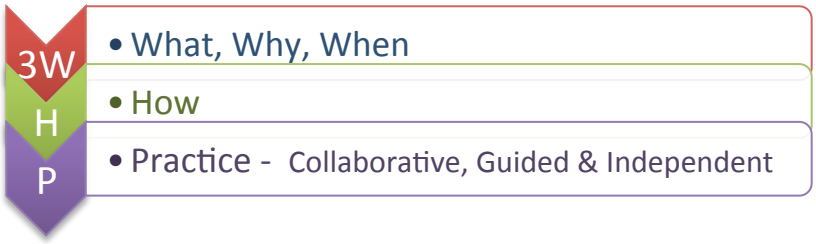
Collaborative Think Alouds

Student and teacher think alouds are effective instructional techniques for improving students' reading comprehension. However, the transfer of responsibility for implementing metacognitive strategies from the teacher's instructional model to the student's independent reading may be the most important step in strategy instruction. If students do not understand how to use strategies to help them solve problems while they are reading, there is little hope that metacognitive strategy instruction will improve comprehension. Students must learn to use metacognitive strategies independently.

Collaborative think alouds between teachers and students provide scaffolded support for students as they learn to apply metacognitive strategies in real reading situations. In general, collaborative models focus on the transference of metacognitive control to the student. Collaborative think alouds are very effective at improving overall reading comprehension because they require both teachers and students to construct meaning in an interactive manner. Teachers model their expert thinking and ask students to make their thinking public in real reading situations.

One method for presenting collaborative think alouds in the classrooms is a three-step process called 3W-H-P (see Figure 9). 3W stands for *What*, *Why* and *When.* Teachers define *What* the strategy is, *Why* it is helpful when you are reading, and *When* to use the strategy during reading. The *H* stands for How to use the strategy. The teacher uses a teacher think aloud to demonstrate her mental processes when she uses the strategy. The *P* stands for *Practice*.

Figure 9: 3W-H-P



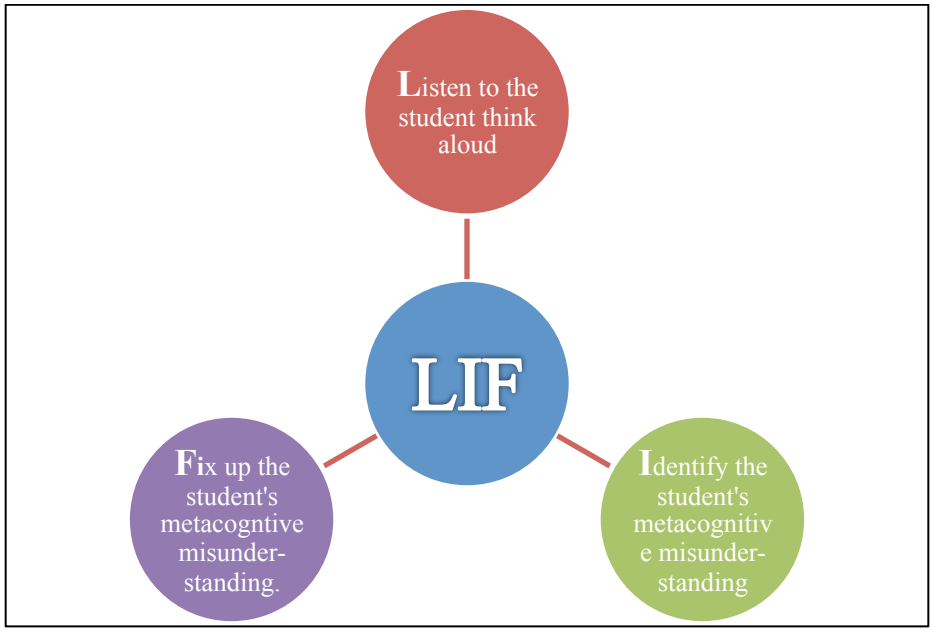
Listen – Identify – Fix-up (LIF)

Through a type of responsive explanation called *Listen – Identify – Fix-up (LIF)*, teachers learn to *listen* to students' think alouds, *identify* their metacognitive misunderstanding, and *fix up* that metacognitive misunderstanding.

Three events take place during LIF: The teacher 1) *listens* to the student think aloud, 2) *identifies* the student's difficulties through observation of their understandings of metacognitive strategies and through mental probing about metacognitive processing of strategies, and 3) *fixes up* misunderstanding by providing more explanation in order to help student reconstruct their understandings (see Figure 10). Teachers may use scaffolding strategies such as cuing, prompting, using analogies, metaphors, questioning, elaborations, and remodeling to help students fix-up their misunderstandings. LIF is collaborative in nature because both the teacher and students must mediate each other's responses. The teacher decides what to say next, and students decide how they will

modify their understanding. LIF also provides students with an active learning opportunity in a real reading situation

Figure 10: Listen-Identify-Fix-up (LIF)



Thinking aloud is an essential component for teaching metacognitive strategies to students in a natural manner. It is an effective way to demonstrate the covert mental processes that govern reading comprehension. Students gain a front row seat to the metacognitive processes of experts, and teachers are granted access to a window into the metacognitive processes that their students use. This window allows teachers to assess students' misconceptions, and to help students use reading strategies more effectively to improve their reading comprehension.

Implementing Think Alouds in the Classroom

Like many other instructional techniques, the teachers' implementation during daily instruction is essential for the effectiveness of think alouds to improve strategy use and reading comprehension. Specifically, there are certain characteristics of the teacher that will improve the effectiveness of think alouds.

Teachers must understand their own metacognitive processes

In order to explicitly teach and model effective reading strategies during authentic reading situations, teachers need to be distinctly aware of their metacognitive methods for solving reading problems. This may be initially difficult for some teachers, as their metacognitive processes may be so efficient that they do not need to think about them. Additionally, the process of verbalizing their mental processes may be foreign to them. Therefore, clearly verbalizing those processes may provide a challenge for some teachers. In order to provide effective teacher think alouds, teachers will need to learn how to talk

about their own metacognitive processes so that they are able to explain them to their students in a logical manner.

Teachers must learn to assess students' misunderstandings

During reading instruction, teachers need to listen to student think alouds in order to assess their metacognitive understandings. Accurate assessment of students' misunderstandings is essential for identification of students' underlying misconceptions.

Teachers must learn to effectively respond to students' cognitive misconceptions

Responding to students' metacognitive misconceptions cannot be scripted in a teacher's manual. Teachers need to respond to misconceptions when they occur during real reading situations. Effective instruction occurs when teachers help students think through their metacognitive problems and as a result students reshape their understanding.

Teachers must know when to let go

The goal of reading strategy instruction is to provide students with a tool to solve metacognitive problems during reading. Therefore, teachers must focus on transferring their verbal model to students' use in real reading situations. Think alouds are most effective when teachers provide scaffolded assistance, with the goal of students using strategies independently in real reading situations.

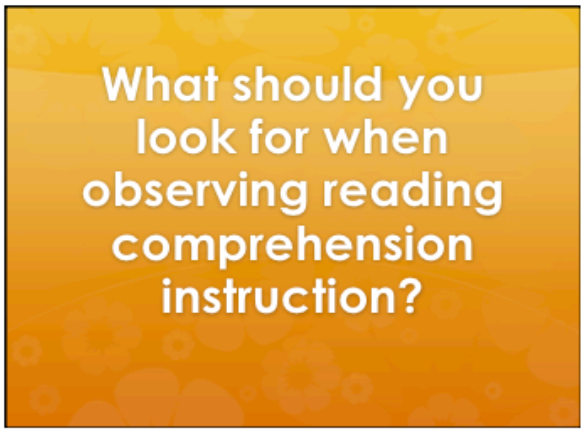
Teachers also need to know when to let go during collaborative think alouds among students in small-group situations. While teachers need to provide initial teaching and modeling of group procedures and content, they need to gradually assume a more facilitative approach by transferring responsibility for self-monitoring and discussion to students. While "letting go" or transferring responsibility for management and learning to students may be scary for some teachers, it is necessary for learning to occur. Groups are most effective when students engage in coherent collaborations with one another to solve metacognitive problems they encounter while reading text. Teachers are essential for monitoring group coherence and providing scaffolded support of learning when necessary.

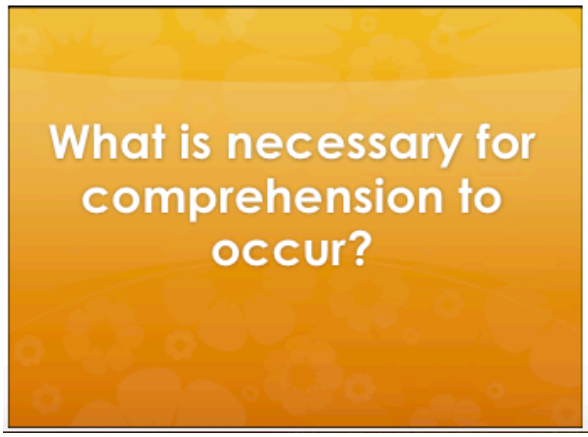
Include all types of think alouds in comprehension instruction

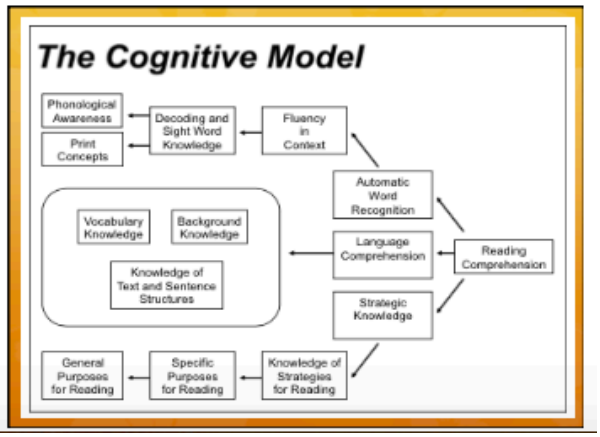
Teacher, student, and collaborative think alouds should be integrated into comprehension instruction. Teacher think alouds are effective for introducing new strategies and how they are used in real reading situations. Student think alouds help students clarify their understanding of text and help teachers assess students' metacognitive processes. Collaborative think alouds provide teachers with the opportunity to provide scaffolded support to help students correct and extend their metacognitive processes. Therefore, to improve reading strategy use and overall reading comprehension, students would be well served by an instructional program that includes all three types of think alouds.

Appendix H

WHAT TO LOOK FOR IN READING COMP FOR ADMINS



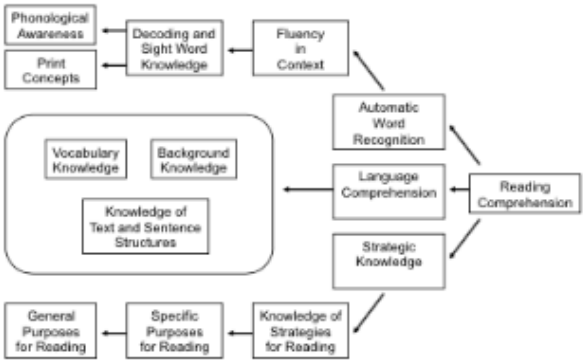




Comprehension in K-2

- READ ALOUDS
  - Spend time reading aloud and discussing texts
  - Listening comprehension exceeds reading comprehension
  - Teach vocabulary
- Focus on learning foundational skills to read fluently
  - Fluency at the end of grade one predicts comprehension at the end of grade 3
- Focus on language & WRITING
  - Learn to spell and to write fluently
  - Learn to recognize and write sentences
  - Learn to use spoken language

The Cognitive Model



Comprehension in 3-5

- Read Alouds
  - Spend time reading aloud above grade level texts
    - Listening comprehension exceeds reading comprehension
  - Teach vocabulary
    - Directly and through wide reading of texts
- Read a wide range of on-level texts together and independently
- Teach strategies for comprehension
- Focus on writing in relation to reading
  - Genre studies
  - Text-based writing and prompts

Comprehension Strategies & Self-Regulation

Differences in comprehension are sometimes differences in how well the reader uses reading strategies to organize and regulate their thinking

Reading Strategies

- Younger readers use less effective strategies than older readers.
- Poor comprehenders use fewer and less productive strategies than good readers.
- More important as text complexity increases.

Journeys Reading Strategies

Summarize
Analyze/ Evaluate
Infer/Predict
Monitor/Clarify
Question
Visualize

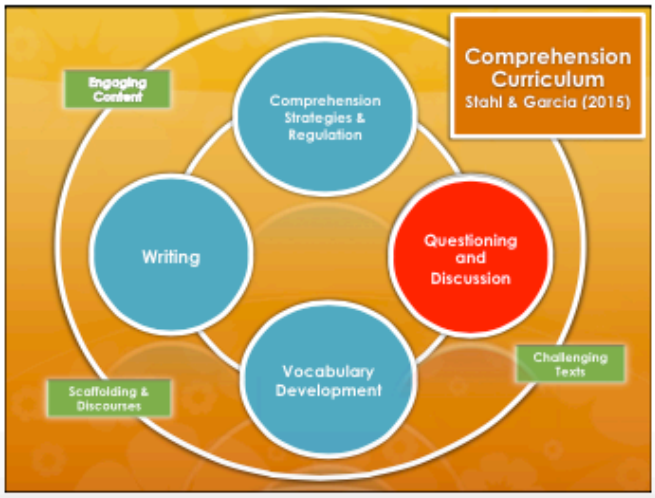
What is the purpose of strategy instruction?

- **Improve students' strategy use and comprehension!**
- **Must transfer the responsibility for using the strategy from the teacher to student!**

What should I look for during instruction that focuses on **strategy instruction & regulation?**

Look For

- Direct teaching of the strategy.
- Teacher models how he/she does the thinking for the strategy.
- The teacher and students practice using the strategies together
- Students practice using the strategy with lessening amounts of scaffolded support.



What should I look for during instruction that focuses on **questioning & discussion?**

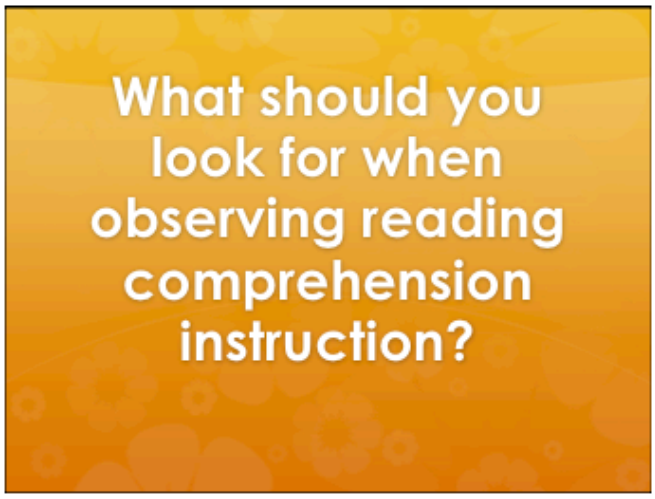
Questioning & Discussion

- Teacher and students ask and answer higher-level questions about shared readings and selections read.
- Teacher and students identify, ask, and answer questions about story elements.
- Students respond to questions verbally and in writing.
- Focus in developing student language as well as text comprehension.

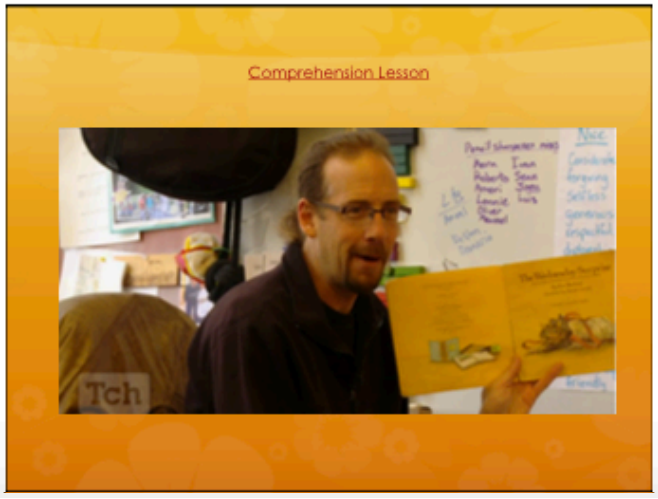
What should I look for during instruction that focuses on **vocabulary development?**

Vocabulary Development

- Teacher uses context to define unfamiliar words in read alouds and in stories students read using student-friendly explanations
- Direct vocabulary instruction is purposeful and ongoing.
  - Teacher categorizes key vocabulary and relates new words to prior knowledge.
  - Teacher instructs students on word parts and their meanings (morphemes).


What should you look for when observing reading comprehension instruction?


Comprehension Curriculum
Stahl & Garcia (2015)
Engaging Content
Comprehension Strategies & Regulation
Writing
Questioning and Discussion
Vocabulary Development
Challenging Texts
Scaffolding & Discourses


Comprehension Lesson

Comprehension Checklist

Comprehension Strategies & Regulation	Observed	Not Observed
Teacher provides clear explanation of what the strategy is, when to use it, and why it is important for reading.		
Teacher models how she thinks through using the strategy in a real reding situation		
Teacher focuses on the transfer of responsibility from the teacher model, to guided, then independent student strategy practice.		
Vocabulary Development		
Teacher uses context to define unfamiliar words in read alouds and in stories students read using student-friendly explanations		
Direct vocabulary instruction is purposeful and ongoing.		
Teacher categorizes key vocabulary and relates new words to prior knowledge.		
Teacher instructs students on word parts and their meanings (morphemes).		
Questioning and Discussion		
Teacher and students ask and answer higher-level questions about shared readings and selections read.		
Teacher and students identify, ask, and answer questions about story elements.		
Students respond to questions verbally and in writing.		
Focus is in developing student language as well as text comprehension.		
Writing		
Teacher provides multiple opportunities for students to respond to texts in writing		
Teacher instructs students in the writing process.		
Students write in different genre and text structures (narrative, persuasive, information).		
Students learn to write sentences and paragraphs.		
Students identify text structures and examine relationships in text using graphic and semantic organizers.		
Lexile level of the book is within the CCSS grade-level band		
Text is engaging and interesting for the students		
Time is allotted for whole group and partner/small group discussion		

Appendix I

PILOT STUDY DATA ANALYSIS

The professional development project that was the focus of this final Executive Leadership Project (ELP) was designed to help fourth- and fifth grade-teachers improve their comprehension knowledge and instructional techniques through professional development in a collaborative think aloud protocol. Collaborative think alouds, as defined for this project, include the teacher presenting reading comprehension strategies through metacognitive modeling, and teachers and students engaging in responsive elaboration as students begin to use metacognitive strategies in real reading situations. The project sought to answer two questions: How does professional development in a collaborative think aloud protocol change the following:

1. teachers' understanding of how to teach reading comprehension using metacognitive modeling and responsive elaboration techniques?
2. teachers' metacognitive modeling and responsive elaboration techniques during reading comprehension instruction?

The participants in this study were the Brandywine School District (BSD) reading specialists. All 11 reading specialists participated in the workshop portion of the PD project during our regularly scheduled PLC meetings. All 11 reading specialists were invited to participate in the full project through the informed consent process. Five of the

eleven reading specialists consented to participate in the interview, classroom observation, and feedback portions of the PD project.

Two types of data were included to answer these questions: teacher interviews and teacher observations. The teacher interviews were designed to examine changes in teacher understanding of how to teach reading comprehension using metacognitive modeling and responsive elaboration techniques. Two interviews occurred during the professional development project – one prior to the project, and one after the project. The teacher observations were designed to examine any changes in teachers' metacognitive modeling and responsive elaboration techniques during reading comprehension instruction. One observation occurred pre project, one occurred mid-project, and one occurred at the end of the project.

The purpose of this artifact is to 1) present and explain the data that were collected from the interviews and observations, and 2) to analyze changes in teacher understanding and classroom instruction in metacognitive modeling and responsive elaboration during the project. The presentation and analysis of teacher interview data will be detailed in the first section, followed by teacher observation data in the second section. The third section analyzes how both teacher interview and observation data help to answer the initial questions of the collaborative think-aloud professional development project. The concluding section describes the implications for future professional development in reading comprehension.

Teacher Interviews

In this section, the methods used for collecting teacher interview data are followed by a detailed description of the results. A summary of the implications of the data is included at the end of the section.

Methods

Two interviews occurred during the professional development project – one prior to the project, and one after the project. All interviews were conducted by the author and occurred in teachers' classrooms. After completion of all interviews, teacher responses were sent to Dr. Coker to be de-identified by both teacher name and interview period, and placed in random order. Next, the de-identified responses were sorted into idea units for each question, making it difficult to link responses with teachers..

The unit of analysis for this project was a spoken word or phrase that conveyed a unique idea (see *Code Book*, Appendix A). Once separated into these discrete units of analysis, each idea was coded using pre-determined codes for each question (see *Code Book*, Appendix A). Idea units that were unrelated to the pre determined question codes were processed in one of two ways: 1) If the unique idea helped to answer the research question but was unrelated to any of the projected topics, a code was created, and the ideas was added to the new code; 2) If the response was completely unrelated to the research questions in this project, it was coded as "unrelated."

While coding data, it was discovered that the answers for both questions one and three of the interview guide elicited the same information from teachers. Question one asked teachers to explain how they teach reading comprehension, and question three

asked teachers to explain how they teach reading comprehension strategies. Question three related to the teaching of reading strategies, which was more in line with the goals of this professional development project. As a result, it was decided that the answers to question three would be analyzed as part of this project, and that the answers to question one would not be included in the data analysis for this project, as they was more general and elicited the same information from teachers.

In an effort to assess the reliability of the coding, 1/3 of the questions were double coded by Dr. Coker. Specifically, questions three, four and five were double coded. The average inter-rater agreement (IRA) for the three double-coded questions ranged from 0.78 to 0.90. The total IRA ranged from 0.66 to 0.97 (see Table 8).

Table 8: Inter Rater Agreement (IRA) for Interview Questions Three, Four and Five

Question	IRA	Range
3	0.78	0.66 to 0.97
4	0.90	0.88 to 0.93
5	0.89	0.86 to 0.92

After each unique idea was coded for each teacher, the number of teachers with the same responses was recorded for each topic. Responses for each topic were ordered from most to least common for each interview period (pre project and post project). Next, the most common responses for each topic were compared between the two interview periods for individual teachers. Results for all teachers were then summarized as a whole

Results

Interview results are detailed in the next section. The section begins with analyses of the results for each question. The section concludes with a summary analysis of all responses from all questions.

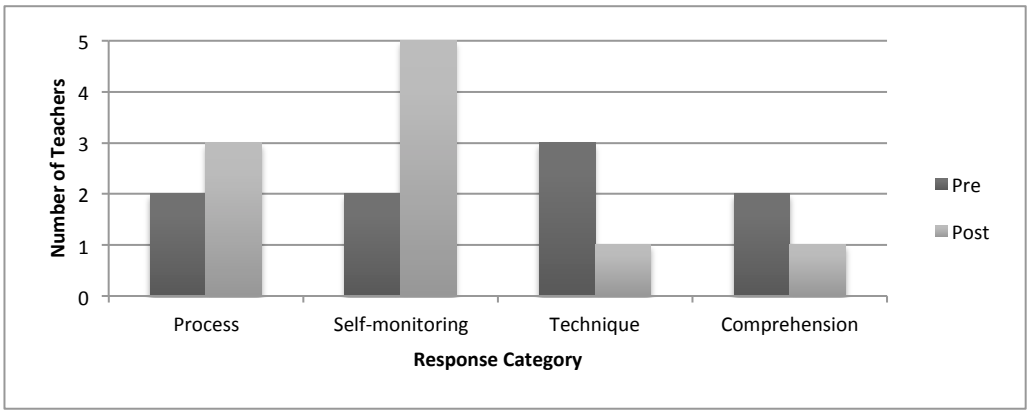
Question Two - What Does Metacognition Mean to You for the Teaching of Reading? Teacher responses to this question were sorted into four categories: 1) *process* - a series of specific steps used to complete an instructional goal or a learning goal, 2) *self-monitoring* - the behavior of regulating and closely attending to a task or a process that is initiated by ones self, 3) *technique* - a specific way or method that is employed to complete an instructional or learning task, and 4) *comprehension* - the act of understanding and meaning making (see Figure 11). In the pre project interview, responses were more evenly distributed across categories. Three teachers described instructional techniques that they associated with metacognition that involved using reading strategies and modeling think alouds. However, the responses in the pre project interview were varied, with teachers explaining metacognition in many different ways. Two teachers discussed metacognition as reading comprehension, two as a cognitive process, and two as self-monitoring.

Responses to this question in the post project interviews were quite similar. All five teachers discussed metacognition in terms of self-monitoring. Specifically, teachers described comprehension as monitoring or self-correcting their thinking or knowing what to do when they encounter a problem when reading. Additionally, three teachers discussed metacognition as a cognitive thinking process. One teacher mentioned

metacognition was an instructional technique used during strategy instruction, and one teacher mentioned that improved metacognition leads to a "deeper level" of comprehension.

The shift in the number of teachers mentioning self-monitoring demonstrated a change in how teachers answered the question about metacognition. Prior to the project, responses were more varied. After the project, responses were more centralized on metacognition as self-monitoring.

Figure 11: Question 2: Number of Teachers Mentioning Each Response Category Pre vs Post Interviews



Question Three - Describe How You Teach Reading Comprehension

Strategies. Responses to question three were sorted into five categories: 1) specific *strategies named* (i.e., inference, clarify, predicting, etc.), 2) *materials* and resources used in instruction (i.e., a graphic organizer, other visual tools), 3) specific *techniques* or methods that are employed to complete an instructional or learning task, 4) *assessment* or

evaluation either prior to instruction (pre assessment) or after instruction (post assessment) and 5) other responses not related to the first four categories (see Figure 12).

In the pre project interview, responses were limited to three categories – instructional techniques (discussion, visual aids), specific reading strategies taught (summarizing, predicting) and materials used (visual aids). In the post-project interviews teachers also discussed techniques, including specific reading strategies and materials used to teach reading comprehension strategies. However, one teacher also discussed the assessment of reading comprehension strategies.

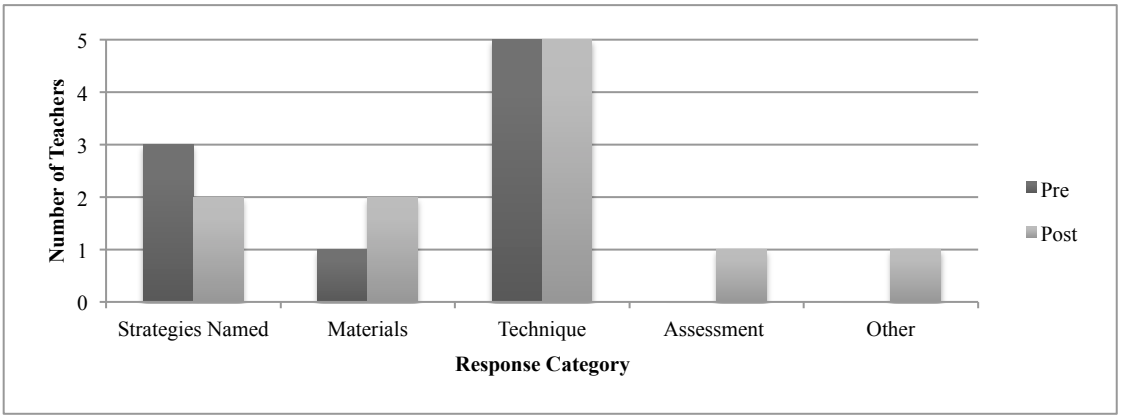
In both the pre- and post-project interviews, all teachers described the instructional techniques they used to teach reading comprehension strategies. Further, the majority of responses in both interviews included discussions of instructional techniques. However, there was a clear difference in the types of techniques described. In the pre-project interview, teachers only discussed instructional techniques they used in isolation, while all teachers in the post interview listed some of the steps in the instructional protocol for presenting strategies to students included in the project's workshop training.

Specifically, three out of the five teachers described teaching comprehension strategies by explicitly defining what the strategy is, why it is important, when it should be used, how to use it by modeling think aloud, and then including time for students to practice. One teacher explained that during instruction she presents the strategy clearly, models a think aloud and then uses a gradual release of responsibility to students to practice the strategy. The fifth teacher mentioned in the second interview that she uses modeling and think alouds during instruction, and that after participating in the project,

she now thinks about how to present strategies. She also made mention of the full collaborative think aloud protocol for teaching strategies in her answer to question four about think alouds during her second interview.

While there was not a major change in the number of teachers discussing each response, there was a notable change in the characteristics of responses between pre and post interviews. In the pre interview, interviewees generally discussed the teaching comprehension as isolated, unrelated instructional techniques. In the post interview, interviewees discussed the teaching of reading comprehension as an instructional protocol that included a specific set of instructional techniques. The change in the characteristics of most common responses of instructional techniques to include the instructional protocol presented in the project suggests a positive change in teacher understanding about teaching reading comprehension.

Figure 12: Question 3: Number of Teachers Mentioning Each Response Category Pre vs Post Interviews

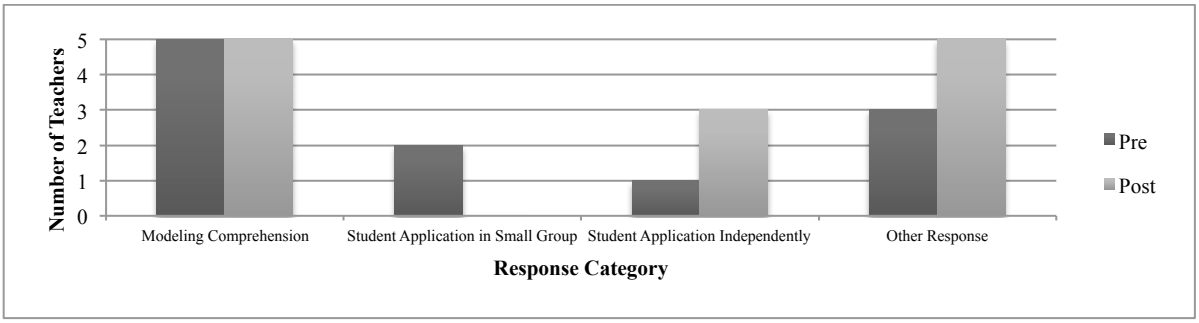


Question Four - Describe How You Use Think Alouds When Teaching Reading Comprehension. Teacher responses to this question were sorted into four categories: 1) the teacher *modeling comprehension* or thinking out loud the process of meaning making, 2) *student application* or thinking aloud in *small groups*, 3) *student independent application* of the strategy, and 4) *other responses* not related to the first three codes (see Figure 13). All five teachers discussed how they used think alouds to model reading comprehension strategies to students in both pre- and post-project interviews. Two teachers mentioned having students think aloud in small groups or partners in the pre interview, but none mentioned this in the second interview. In the first interview, one teacher mentioned students' independent application of think alouds, while three teachers mentioned this in the second interview, perhaps signaling a moderate change in the understanding of the importance of student practice for two teachers.

Additionally, there were changes in the teachers' *other responses.* In the pre project interview, three teachers made comments that were coded as *other response*, while all five teachers had comments coded in the *other response* category in the post-project interview. More importantly, there were several differences in the characteristics of *other response* answers between the pre and post interviews. For example, in the pre interview, one teacher stated, "I don't do this [think alouds] a lot." The other two teachers commented about how they teach reading comprehension strategies, not about how they their model metacognitive processing. In the post interviews, teacher commented that using think alouds was difficult because she teaches a prescribed program for fluency and comprehension intervention. Additionally, two teachers mentioned using authentic texts;

one teacher explained that she would make thinking aloud a focus of her instruction in the future. The last teacher mentioned the entire collaborative think-aloud protocol in her answer, citing all of the steps included in direct explanations of reading strategies.

Figure 13: Question 4: Number of Teachers Mentioning Each Response Category Pre vs Post Interviews

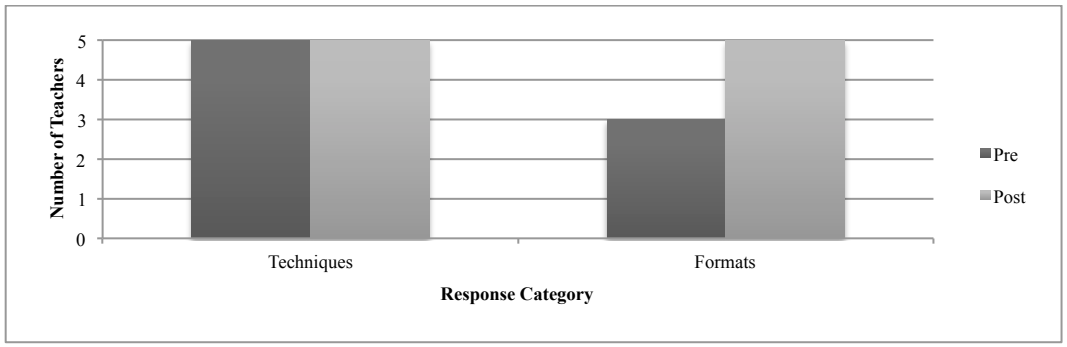


To summarize, the answers to question four demonstrated slight changes in the how teachers use think alouds for reading comprehension. More teachers in the second interview mentioned important elements of think alouds including the use of student think alouds, authentic texts, and the necessity of consistently using think alouds to teach reading comprehension strategies. However, it should be noted that teachers' descriptions of what teacher-performed think alouds are and their use for teaching reading strategies changed only slightly over the project. Teachers had a good initial understanding of the use of think alouds. Teacher understanding seemed to be expanded rather than changed in this area.

Question Five: Describe How You Provide Practice for Students in Using Reading Comprehension Strategies. Teacher responses to this question were categorized into individual instructional *techniques* or methods they used to help students

practice reading comprehension strategies (graphic organizers, homework, re-reading, lookbacks) and the *format* or condition under which the practice takes place in the classroom (whole group, partner work, independent) (see Figure 14). There was no change in the number of teachers describing specific instructional *techniques* they use to teach reading comprehension strategies. Five out of five teachers described *techniques* they used to provide reading comprehension practice in both the pre and post interviews.

Figure 14: Question 5: Number of Teachers Mentioning Each Response Category Pre vs Post Interviews



While there was no change in the number of teachers commenting about techniques, there was a change in the characteristics of their responses. In the pre interview, teachers generally listed unrelated techniques as a way for students to practice reading comprehension strategies. Four out of five teachers stated that they asked students to go back and reread texts to answer comprehension questions, three mentioned written homework as practice, and two mentioned asking students to discuss comprehension questions with partners as a way for students to practice comprehension strategies. Other techniques mentioned once included visualization, writing, revising and editing, probing students as to why they came up with an answer, repeated practice of a

strategy, and fostering a growth mindset. One teacher mentioned a gradual release of responsibility from the teacher to the student in the pre interview, stating, "There should be a slow release to students to allow them to do it with feedback."

In the post interview, teachers mentioned more techniques for reading comprehension practice and generally listed them as a process of lessening support. Four out of five teachers mentioned the protocol for strategy practice advocated by the study. This included modeling the reading comprehension strategy with the students using a graphic organizer, then providing guided practice with partners or in small groups, and moving to independent practice, scaffolding as needed. The fifth teacher described only partner discussions and questioning the students about their thought processes.

In regards to the *formats* or conditions under which the instruction took place, there was a change in the number of teachers mentioning formats between the pre and post interviews. Three out of the five teachers described the *format* they used for reading strategy practice in the pre interview, whereas all teachers described this instructional format in the post interview. Four out of five teachers referred to all of the types of practice discussed in the training: collaborative practice, partner practice, and independent practice. One teacher mentioned only working with the teacher and partner practice.

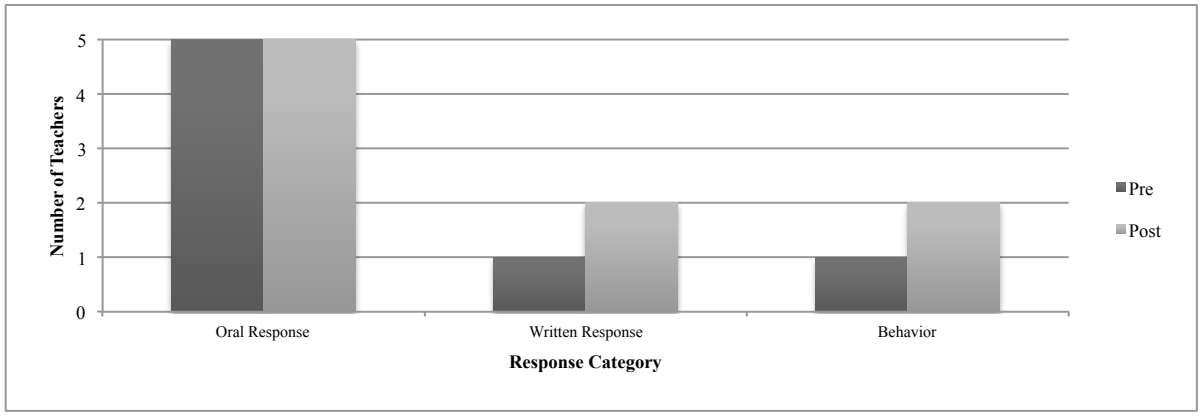
There was also a change in the number and characteristics of responses about formats between the pre and post interviews. Teachers provided three times as many responses about the format of student practice in the post interview than they did in the pre interview. With regard to the characteristics of responses, the majority of teachers

mentioned formats practicing reading comprehension strategies in an unrelated manner in the pre interview and as part of a protocol of lessening support for practice in the post interview. The change in the number of responses about instructional formats as well as the change in the characteristics of responses indicates a change in teacher understanding formats for reading comprehension practice.

Overall, the differences in teachers' responses about how they provide practice in reading comprehension strategies between pre and post interviews indicate a positive change in how they view practice for comprehension strategies. In general, teachers in the pre interview focused on isolated techniques and formats for practicing reading comprehension. However, answers in the second interview focused on using instructional techniques and formats to achieve a gradual release of responsibility from the teacher to the student for practicing a reading comprehension strategy.

Question Six: Describe How You Know When a Student is Experiencing Difficulty with Understanding Text. Teachers' responses to this question included their analysis of students' *oral*, *written*, and *behavioral cues* for assessment of comprehension difficulty (see Figure 15). With regard to the most common teacher responses, in both the pre and post-interviews all teachers mentioned students' oral responses during instruction as indicators of comprehension difficulty. Teacher comments focused mainly on students' answers to teacher questions and student statements unrelated to the discussion questions or topics during oral discussions. In general, the characteristics of teacher comments did not change between the pre and post-interviews. Similarly, the number of responses was only slightly higher for each category in the post interview.

Figure 15: Question 6: Number of Teachers Mentioning Each Response Category Pre vs Post Interviews



However, there were slight changes in teacher responses with regard to using written and behavioral cues that signal student misunderstanding. One teacher mentioned using written cues to assess student misunderstanding in the pre interview, and two different teachers mentioned using written cues in the post interview. One teacher mentioned behavioral cues in the pre interview, and that teacher plus one more mentioned behavioral cues in the post interview.

To recapitulate, there appears to be only a slight change in teachers' understanding of how they know a student is experiencing difficulty with text between and the pre- and post-project interviews. The teachers in this study, who were all reading specialists, seemed to be already aware of many student cues for when they are having difficulty reading text at the beginning of the study. Perhaps the professional development project did not supply them with a lot of new information in this area that would result in a greater change in understanding about cues that signal student misunderstanding.

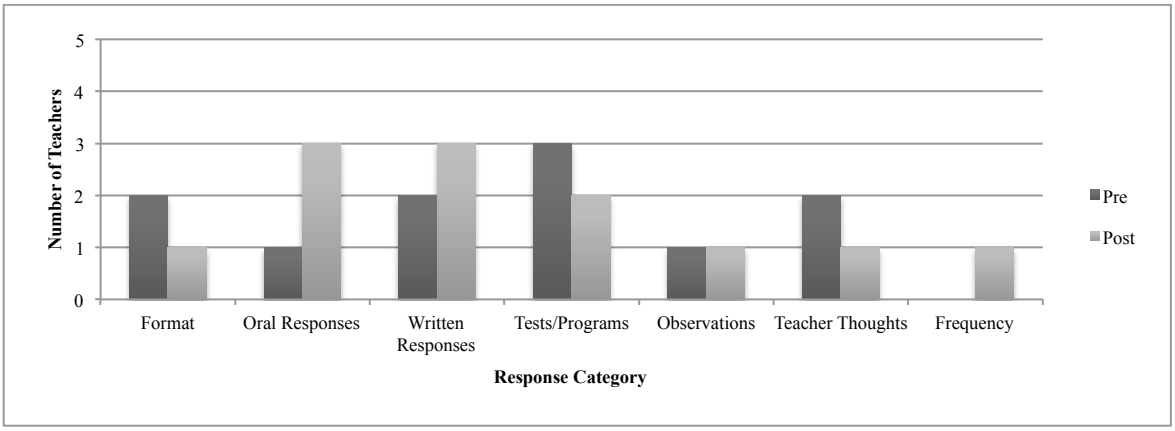
Question Seven: Describe How You Assess Students' Reading Comprehension Strategy Use.

Teachers' comments about specific reading strategy assessments were sorted into six categories: 1) *formats* or conditions under which they use an assessment in the classroom, 2) *written responses* used for assessment, 3) *tests* that are standardized or related to specific programs, 4) *observations* of students, 5) *teacher thoughts* about assessment, and 6) *frequency* of reading comprehension assessment (see Figure 16). In the pre interview, three teachers mentioned using standardized or program specific *tests* to assess reading comprehension. Two teachers mentioned the format under which comprehension took place in their classroom, although those formats varied widely (informally, independent work, formal assessment). Two teachers mentioned written responses (tickets out the door and graphic organizer completion). Two teachers also mentioned their thoughts about assessing comprehension ("tough" and "difficult"). One teacher mentioned that she listens to students' oral responses during discussions to assess comprehension, and one teacher said she observed children during partner reading to assess comprehension.

In the post-project interview, three out of five teachers discussed using oral responses and written responses to assess reading comprehension strategy use. Oral responses included listening to students' discussions, processes/explanations for making meaning, and explanation of strategy use. Written responses included written responses to reading and comprehension questions and graphic organizers. Two teachers mentioned standardized or program related tests used to monitor comprehension instruction. One teacher mentioned assessment during independent work, one mentioned observing

students' behavior during reading to assess, and one mentioned that they assess comprehension every four lessons. Finally, one teacher mentioned that she felt that assessing comprehension was difficult in the post-observation.

Figure 16: Question 7: Number of Teachers Mentioning Each Response Category Pre vs Post Interviews



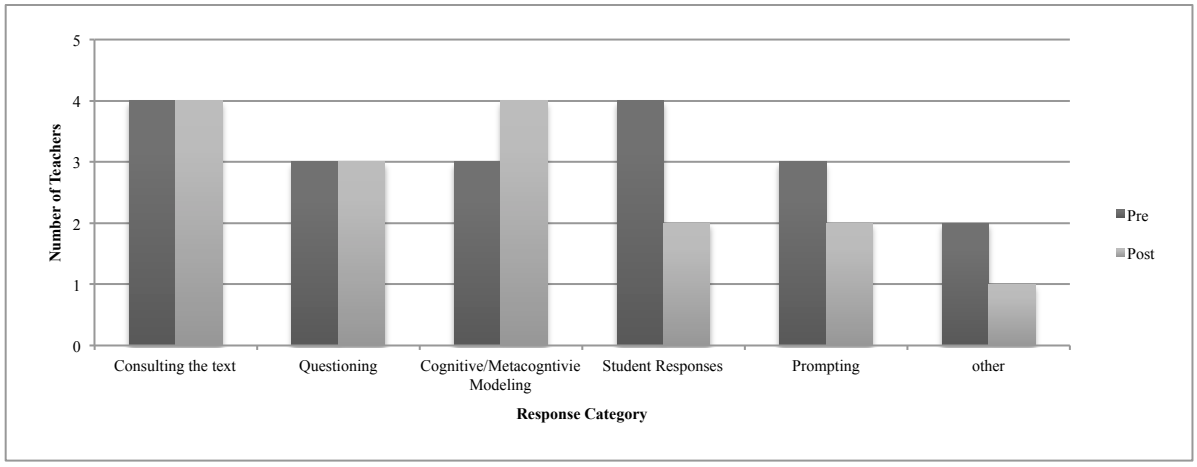
The shift in teacher responses from standardized testing to students' oral and written responses to reading suggests a change in teachers' understanding of reading comprehension assessment. However, the characteristics of the responses did not demonstrate a deep understanding of how to use those responses to plan instruction. Teachers talked about asking students questions and listening to discussion, but there was no indication of its meaning to their instruction. Further, teachers generally mentioned the assessment of comprehension, not reading comprehension strategy use. It is clear that most teachers do not differentiate how to assess strategy use as opposed to reading comprehension.

Question Eight: Describe How You Help Students Correct Their Misunderstandings When Reading. Teachers' answers to how they help students fix

up comprehension focused on six categories: 1) *consulting* (revisiting or rereading) *a text*, 2) *students'* verbal and written *responses* and replies to teachers, 3) *cognitive or metacognitive modeling* through teacher think alouds, 4) *questioning* students about what they read, 5) *prompting* (reminding or cuing) a student to help improve their understanding, and 6) *other* utterances not related to the first five codes (see Figure 17). With regard to the most common teacher responses, in the pre-project interviews, four out of five respondents shared that they focus on student responses and consulting the text to help students fix up their misunderstandings. Three out of the five interviewees discussed using questioning, teacher modeling, and prompting students to help them fix up misunderstandings. Two teachers mentioned other comments such as "using vocabulary in context" and "sometimes the kids just don't get it."

In the post-project interview, four out of five teachers mentioned that they asked students to consult the text and used metacognitive/cognitive modeling to help students correct cognitive misunderstandings. Three out of five teachers mentioned using questioning to help students to correct misunderstandings, and two teachers mentioned student responses and prompting as the method they used to help students fix-up comprehension difficulties. One teacher mentioned a comment not related to the code by explaining, "Students make up extra and give a lot of ancillary information."

Figure 17: Question 8: Number of Teachers Mentioning Each Response Category Pre vs Post Interviews



There were more similarities than differences in the characteristics of the responses between the pre and post interviews. Teachers mentioned the same type of information when discussing/consulting the text – asking students to refer back to or reread the story and showing students where the information could be found. Additionally, teachers mentioned mostly modeling their thinking in both the pre and post interview discussions of cognitive and metacognitive modeling. The same types of answers were observed in both the prompting and questioning categories with teachers asking leading questions or prompting students through statements to help them better understand text.

Finally there were some differences in making mention of student responses. In the pre interview, teachers mentioned asking students or other peers to explain their thought processes or their responses about what they read. In the post interview, only one teacher mentioned asking students to share their thinking. This difference may be of

concern because collaborative discussion and cognitive elaboration among peers is an essential and effective method for improving comprehension. However, it is important to note that many teachers explained that they ask students to explain their thinking in their response to interview question seven, which asked about the assessment of comprehension. Perhaps the shift away from discussing student responses may be attributed to seeing assessment and fix up of responses as two different entities.

With regard to question eight, interviewees changed slightly in their responses about how to help students fix up their misunderstandings between pre and post-interviews. There was a slight increase in the amount of discussion relative to cognitive and metacognitive modeling. However, the analysis of the types of answers the teachers provided showed little change between the pre- and post-project interview. Perhaps this suggests that the fixing up of cognitive misunderstanding training during this project did not effectively change teacher understanding on the subject.

Interview Data Summary. The interview rubric data show some mixed results for changes in teacher understanding about metacognitive modeling and responsive elaboration in reading comprehension instruction. There were some very positive shifts in teacher understanding, some areas where teacher understanding changed slightly, and some areas where their understanding did not change much overall. All three categories of results will be discussed in this section, beginning with the most positive changes in teacher understanding.

Some very positive changes were noted in teacher understanding about metacognitive modeling in reading comprehension strategy instruction over the

professional development project period. Specifically, positive changes happened in teachers' understanding of metacognition, comprehension strategy instruction, and how to provide comprehension strategy practice. Prior to the intervention, teachers' understanding of metacognition and its relevance to reading comprehension was varied and inconsistent. After the project, all five teachers could correctly define metacognition and its relationship to self-monitoring. Additionally, teachers' understanding of reading comprehension strategy instruction changed from isolated, unrelated techniques to a research-based instructional protocol that included metacognitive modeling and student practice. Teachers also changed their understanding about student practice of reading comprehension strategies. Their discussion of practice shifted from a series of unrelated instructional techniques and formats to implementing techniques and formats that allow for a gradual release of responsibility for performing the strategy from teacher to student.

There were also some areas where the teachers made slight changes in their understanding of metacognitive modeling over the project period. Specifically, teachers slightly changed their understanding of how to use think alouds to teach reading comprehension and how to assess reading comprehension strategy use. At the beginning of the project, teachers had a good idea about how think alouds could be used during reading comprehension instruction. However, at the end of the project, teachers discussed using think alouds as part of an instructional protocol, using them with authentic texts, and using them more frequently. Most teachers also mentioned the merit of integrating student think alouds into comprehension instruction as well. With regard to understanding of assessments, teachers shifted their responses from standardized

assessments of comprehension to more formative, oral and written assessments of student learning. These positive shifts in teacher understanding of using think alouds and authentic assessments of comprehension indicate a deeper level of understanding than prior to the project.

Additionally, it should be noted that teachers did not improve in their knowledge of how to assess strategies. Moreover, it was clear that teachers did not differentiate between reading comprehension assessment and the assessment of students' strategy knowledge. Perhaps the reason for this may be that while this differentiation between the assessment of reading comprehension versus the assessment of reading comprehension strategy use was discussed, it was not a major focus of the workshop. Perhaps future workshops may need to focus more directly on the differentiation between the two differences purposes for assessments.

However, the interview data did not demonstrate that teachers changed much in their responsive elaboration techniques. Specifically, there were two areas of responsive elaboration in which teachers did not seem to change their understanding at all. Teachers did not change their understanding about how to monitor when a student is experiencing comprehension difficulty or how to help students fix up their cognitive misunderstandings. It should be noted that some teachers were very adept at assessing cognitive misunderstandings prior to the project, which may be why they did not improve that much over the duration of the project. However, there were no changes in the types of instructional techniques that teachers used to help students fix up cognitive

misunderstandings, even though additional instructional techniques to respond to student misunderstandings were presented as part of the workshop trainings.

Finally, the interviews do show positive changes in teacher understanding in metacognitive modeling between pre- and post-project interviews in all but two focus areas. Teachers remembered the teaching protocol for presenting comprehension strategy lessons and were able to deepen their understanding of metacognition. Teachers also improved their understanding of think alouds and classroom assessments for comprehension. However, teacher did not change much in their understanding of responsive elaboration. They did not change their understanding of how to notice when a student is experiencing a misunderstanding or the instructional techniques they used to help students fix up their misunderstandings.

Teacher Observations

This section includes a description of the methods used for collecting teacher observation data and a detailed description of the results. First, the methods and data for the observation rubric are presented and discussed. Next, the data collected from types of responses are presented and discussed. A summative analysis of the data is included at the end of the section.

Methods

The teacher observations were designed to examine any changes in teachers' comprehension instruction throughout the professional development project. One observation occurred pre project, one occurred mid project, and one occurred at the end

of the project. All observations were completed by the author, were 30 minutes in length, and occurred during small group reading comprehension instruction.

Each teacher observations was analyzed for the presence of the elements of the collaborative thinking protocol - 1) metacognitive modeling, 2) assessment of understanding, and 3) responsive elaboration instructional techniques - during the observation period. The 30-minute reading comprehension lesson was analyzed in its entirety. Evidence of the presence or absence of the collaborative protocol was documented using the *Observation Guide* (see Appendix B) and the *Response Recording Sheet* (see Appendix C). The *Observation Guide* focused on the collection of specific evidence of metacognitive modeling and the assessment of student understanding. Additionally, the observer documented specific instances of teachers' responses to students' misunderstandings using the *Response Recording Sheet,* listing each student with whom the teacher interacted to fix up a cognitive misunderstanding, the teacher's response to the student, and the number of follow-up responses per student. The specific procedure for analyzing the observations is described below.

Immediately following each observation, the observer reread her notes from the *Observation Guide* and *Response Recording Sheet* and used the evidence collected to rate metacognitive modeling and responsive elaboration on the *Observation Rubric* (see Appendix D).

Observation Rubric. The *Observation Rubric* included eight items adapted from rubrics used in previously published and peer-reviewed studies (Duffy et al., 1986; Duffy et al., 1988; Anderson & Roit, 1993) that were divided into three sections: 1)

metacognitive modeling, 2) assessment of students' metacognitive understandings, and 3) response to students' misunderstandings. Each numbered item (one through eight) on the *Observation Rubric* directly corresponds to the same numbered item on the *Observation Guide*. The observer analyzed the evidence collected for each item on the *Observation Guide* to rate the characteristics of the corresponding item of the *Observation Rubric*. Similarly, the evidence collected in the *Response Recording Sheet* was used to rate each of the eight items on the *Observation Rubric*. A detailed description of the three sections of the rubric and how they were used to measure change in teachers' metacognitive modeling and responsive elaborations techniques is included in the following section.

Section One - *Metacognitive Modeling* was assessed using individual rubrics to measure change in each of six subsections: 1) what – how explicit the teacher was in informing students *what* the task was to be learned, 2) why - how explicit the teacher was in informing students *why* the strategy was useful as they read, 3) when - how explicit the teacher was in telling students *when* to use strategy to select for use when encountering a problem in reading, 4) how - how explicit the teacher was in telling student *how* to perform the strategy to solve the problem when reading real text, 5) guided practice - how well the teacher shifted the instructional interaction from teacher regulation of the strategy to student control of the strategy, 6) independent student practice - how well the teacher provided students with independent practice in using the mental processing.

Section Two - *Assessment of Students' Metacognitive Understanding* was assessed based on how well the teacher elicits responses that require students to verbalize how they arrived at an answer.

Section Three - *Response to Students' Misunderstanding* was assessed based on how well the teacher helped students to fix up their metacognitive misunderstandings in connected text.

Rubric ratings for each item in the rubric were reported from most to least common for each observation and compared for each observation period. Changes in the most and least common ratings were compared and analyzed across observation periods.

Finally, in an effort to look for connections between the interview and observation data, changes in teacher understanding from the interviews to changes in teacher practice from the observations were compared. Similarities and differences between the interview data that measured teacher knowledge in a specific aspect (such as metacognitive modeling, assessment, etc.) and the corresponding observation data that measured teacher practice were compared and contrasted them as applicable.

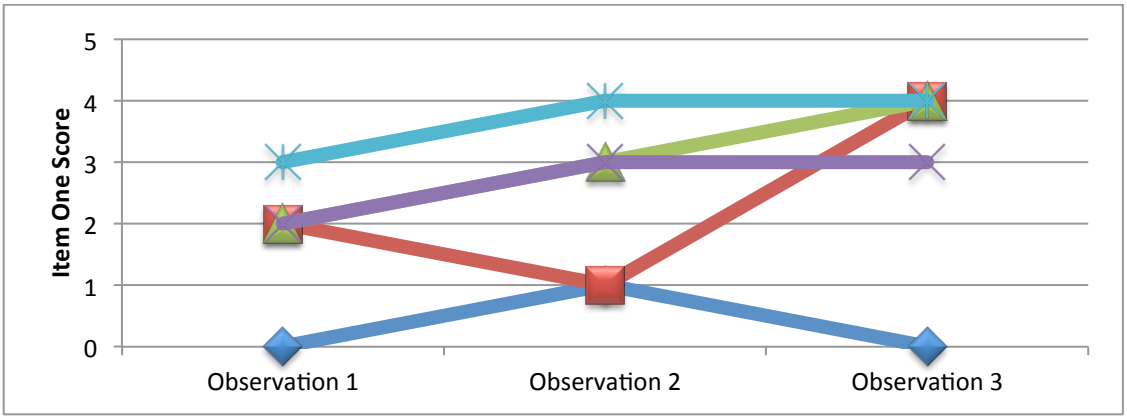
Results

Item One: What the Task Is. Item number one on the rubric was designed to rate the teacher's ability to explain *what* the task was to be learned. In the pre-project observation, three teachers received a score of two on the rubric, meaning that three teachers named the strategy taught, but did not give a clear explanation of its definition. One teacher received a three, explaining what the strategy was to be learned and providing a clear and explicit definition. One teacher received a zero, providing no explanation of what the strategy was to be taught. In the mid-project observation, two teachers received a three, two teachers received a one and one teacher received a four. This means that two teachers explained what the strategy was to be learned and gave a

clear and explicit definition, two teachers just named the strategy and one teacher gave an exemplary definition of the strategy, explaining that it can be used to solve a problem when reading. In the post-project observation, three teachers received a four, giving an exemplary definition, one teacher received a three, giving a clear and explicit definition and one teacher received a zero, not naming the strategy at all (see Figure 18).

All teachers increased their rubric score for the clarity of presentation of *what* is to be learned at some point during the project. However, one teacher improved from a zero to a one and then returned to a zero at the end of the project. The other four teachers improved, with three out of five teachers receiving the highest score of a four and providing an exemplary definition of *what* the strategy is and that it is used to solve problems when reading during the post project observations.

Figure 18: Changes in Observation Rubric Scores for Item 1 - What the Task Is

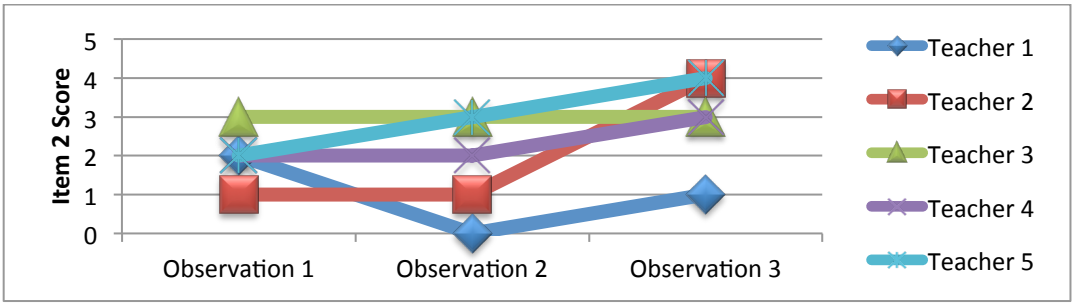


Item Two: Why the Strategy is Important. Item two rated how well the teacher explained *why* the strategy was important to learn to become a better reader. In the pre-project observation, three teachers received a two, providing only vague reasons why the strategy is important to reading. One teacher received a three, providing clear examples

why the strategy is important and one teacher received a one, discussing only that the strategy was useful, but not why. In the mid-project observation, two teachers received a three, providing a clear explanation of why the strategy is important, one teacher received a two providing a vague explanation, one teacher received a one with no explanation as to why a strategy was important, and one teacher received a zero with no reference to why the strategy is used. For the final observation, two teachers received a four providing a clear explanation as to why the strategy is important and providing a few examples of why, one teacher received a three providing a clear example, and one teacher received a one simply stating that the strategy is useful, but not explaining why (see Figure 19).

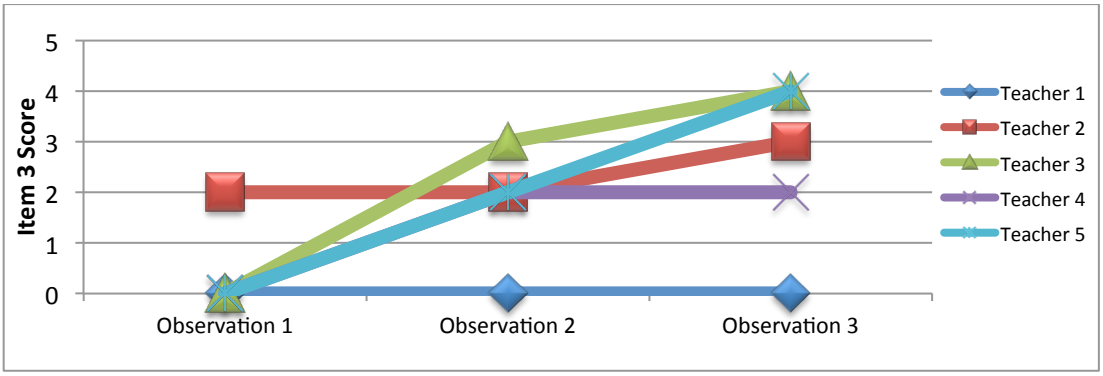
Three teachers improved their explanations about why a strategy is useful for solving problems when reading over the observation period. One teacher stayed the same throughout the observation period, beginning with a clear explanation and continuing throughout the project. One teacher decreased her score by the end of the period, explaining that the strategy was useful but not explaining why. However, the majority of teachers improved their skills in explaining *why* a strategy is important to learn according to rubric ratings.

Figure 19: Changes in Observation Rubric Scores Item 2 - Why the Strategy is Important to Learn



Item Three: When to Use a Strategy. Item three rated the teachers' ability to explain to students *when* to apply a reading strategy. Four teachers received a zero in the pre project observation, making no mention of when to use the strategy, and one teacher received a two, making some mention of when the strategy can be useful. In the mid-project observation, three teachers received a two, making a general mention of when to use the strategy, and one teacher received a three, explicitly explaining when to use the strategy and one teacher stayed at a zero, making no mention of when to use a strategy. For the post-project observation, two teachers were rated a four providing a clear explanation when the strategy should be chosen for use during reading and providing explicit examples. One teacher received a three, providing a clear explanation of when to use the explanation, one a two, providing a general explanation, and the same teacher stayed at a zero providing no explanation of when to use the strategy. Four out of five teachers improved their explanations to students of when to use a strategy to help fix up a problem in reading, and one teacher made no growth, receiving a score of zero for this item throughout the project (see Figure 20).

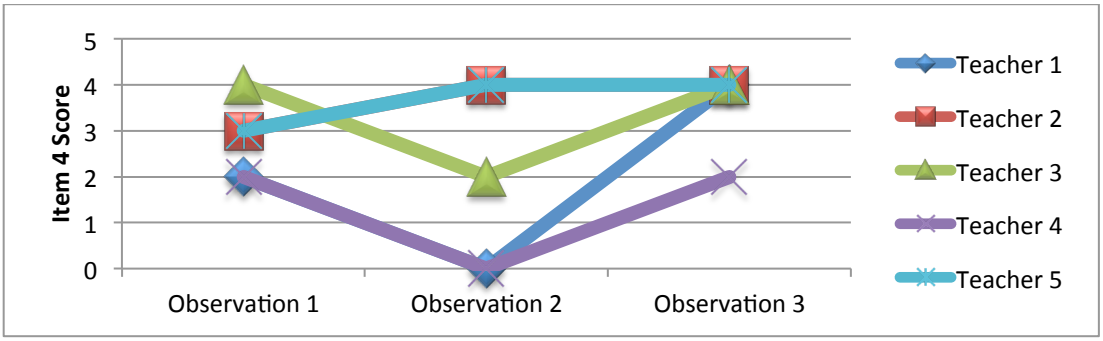
Figure 20: Changes in Observation Rubric Scores Item 3 - When to Use the Strategy



Item Four: How to Use the Strategy. Item four rated the teachers' ability to demonstrate or model *how* to use a reading strategy in a real reading situation. In the pre project observation, two teachers received a three, demonstrating how to use their metacognitive processes to solve reading problems using unrelated text examples. Additionally, two teachers received a two, modeling the steps students should follow using the strategy, but not modeling the metacognitive processes student should follow. One teacher offered an exemplary model of how to use the metacognitive processes in connected text and subsequently received a four in the pre project observation. For the mid-project observation, two teachers provided exemplary models and received fours, two teachers received zeros, not modeling how to use the strategy at all, and one teacher received a two, modeling the strategy as discrete steps to follow and not as a flexible strategy to use when reading. During the post-project observation, five teachers provided exemplary models of how to use the strategy, receiving fours, and one teacher continued to teach procedural steps instead of metacognitive strategies (see Figure 21).

The data for this rubric item show an ultimately positive trend toward teachers' ability to model *how* to use a strategy in a real reading situation. It should be noted that all teachers included some form of modeling how to use reading strategies at the beginning of the project. However, four out of five teachers improved their ability to model clearly how to use metacognitive processes in applying the strategy adaptively to a sample of natural, connected text, earning the highest score on the rubric.

Figure 21: Changes in Observation Rubric Scores Item 4 - How to Use the Strategy



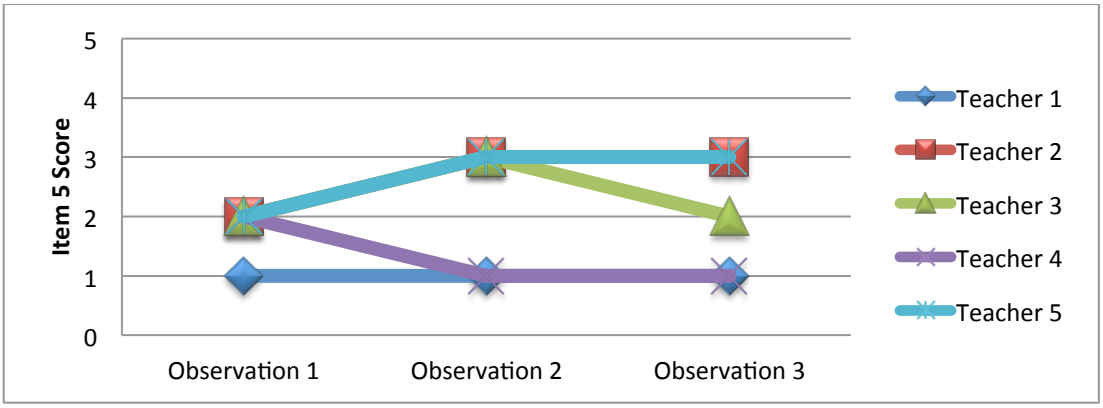
Item Five: Use of Scaffolded Practice. Item five rated the teachers' ability to provide a series of practice opportunities with lessening support, characterized by the following: increased student metacognitive processing, teacher assistance early in the lesson, teacher monitoring of students' use of mental processes, and teacher referencing the monitoring of student responses when eliciting subsequent responses. In the pre-project observation, four teachers received a rubric score of two, meaning that most teachers moved from teacher regulation (or use) of the metacognitive strategy to student regulation of the metacognitive strategy, but the emphasis was on correct answers to the teacher's questions rather than on how students used metacognitive processing to arrive at their answers. One teacher received a rubric score of one, meaning that she provided a task that presumably shifted the responsibility to students with no connection to the strategy or metacognitive processing required (Figure 22).

For the mid-project observations, the three teachers received a rubric score of three, meaning that they moved from teacher regulation to student control and emphasized student metacognitive processing. Two teachers received a rubric score of one, meaning that the teacher provided tasks that do not explicitly require students to use

the strategy. In the post-project observation, two teachers provided practice that moved from teacher regulation to student control and emphasized student metacognitive processing rather than answers, receiving a score of three. Two teachers received a score of one, providing unrelated student practice, and one teacher received a score of two, focusing primarily on correct answers rather than metacognitive processing.

Teacher results for this rubric item show little or no growth in the use of guided practice over the project. Two teachers improved slightly (from a two to a three), one teacher stayed the same (at a one) throughout the project, and two teachers decreased their rubric scores between pre- and post-project observations. It is clear that the project did not consistently help improve teachers' ability to implement effective guided practice for students in the use of reading strategies. This is an important finding about the effectiveness of the intervention because the gradual release of responsibility of mental processing from teacher to student is an essential element of strategy instruction that improves strategy use and overall reading comprehension.

Figure 22: Changes in Observation Rubric Scores Item 5 - Guided Practice for Students



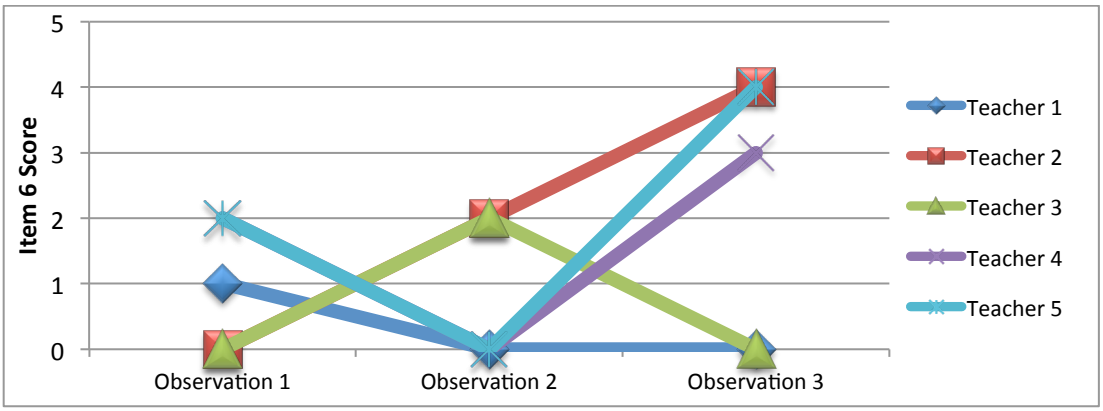
Item Six: Use of Independent Practice. Item six rated the teachers' use of effective independent practice over the professional development project. In the pre-project observation, two teachers received a two on the rubric, providing independent practice that did not offer many opportunities for students to practice the strategy. Additionally, two teachers provided no independent practice and received a zero, and one teacher provided independent practice not related to the strategy and received a one. In the mid-project observation, three teachers received a zero (no independent practice), and two teachers received a two (limited independent practice). For the post-project observation, two teachers received a four, providing multiple opportunities for students to practice the metacognitive processing for the strategy in an authentic reading situation. In addition, two teachers received a zero (no practice), and one teacher received a three, providing independent practice using a contrived worksheet (see Figure 23).

Three out of five teachers improved their rubric scores from pre- to post-project demonstrating that they improved their skills at implementing independent practice of metacognitive reading strategies. However, two teachers did not show improvement. One teacher's score decreased from a one to zero, and one teacher improved from a zero to a three mid-project, and then went back to a zero in the post-project observation. Despite a lack of improvement for two teachers, it is clear that there was a positive change for three teachers in the project.

It should also be noted that independent practice might not be observed during every lesson. Depending on students' needs, teachers could have decided to extend

guided practice, allowing time for students to work together to learn new strategies. As a result, independent practice may have occurred during the next class period.

Figure 23: Changes in Observation Rubric Scores Item 6 - Independent Practice for Students

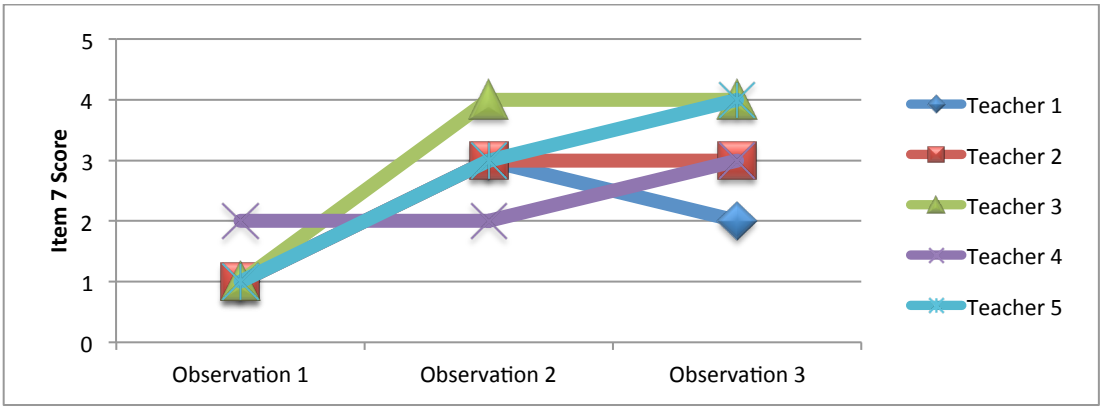


Item Seven: Eliciting Student Responses. Item seven on the rubric rated how well the teacher elicits responses that require students to verbalize how they arrived at an answer. In the pre-project observations, four out of five teachers received a one, which means they focused on correct responses and did not ask students how they arrived at an answer. The remaining one teacher received a two for the pre-project observation, asking students how they arrived at an answer, but focusing on procedural recall rather than the metacognition needed. For the mid-project observation, three teachers improved to a three, asking different students to explain parts of the metacognition needed rather than asking one student to verbalize all the steps. One teacher improved to a four, asking one student to verbalize all of the mental steps required to get to an answer. The one teacher remained at a two (focusing on procedural recall rather then metacognition). For the post-observation, two teachers received fours (exemplary assessment of metacognitive

processes), two teachers received threes (teacher elicits parts of responses from different students), and one teacher decreased to a two (focusing on procedural recall rather then metacognition) (see Figure 24).

All teachers improved in their ability to assess students' understanding between pre- and post-observations. Teachers' assessments of student understanding were focused solely on eliciting correct answers from students at the beginning of the project. However, after the project, four out of the five teachers were focused on eliciting students' metacognitive understanding rather than correct answers. These responses show a positive change in teachers' ability to elicit students' understanding of strategy use and metacognitive understanding.

Figure 24: Changes in Observation Rubric Scores Item 7 - Assessment of Student Understanding



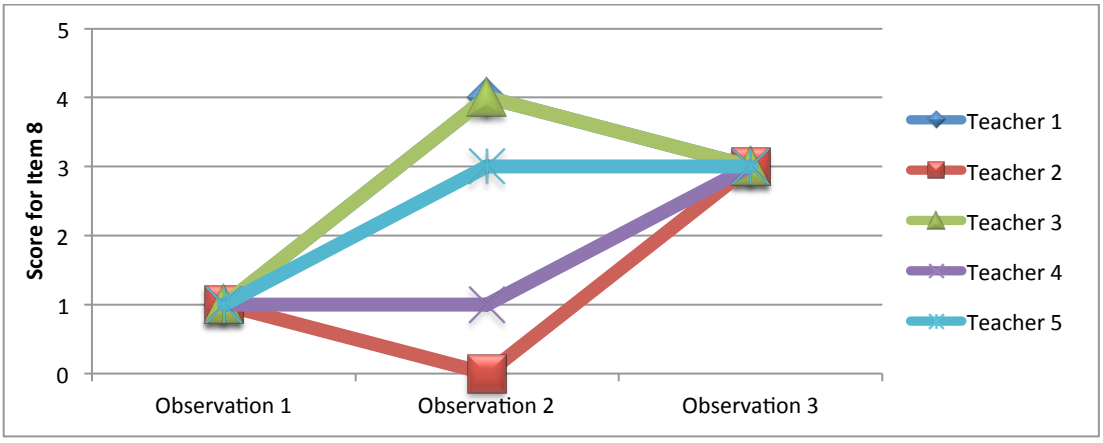
Item Eight: Fixing up Metacognitive Misunderstandings. Item eight rated how well the teachers helped students to fix up their metacognitive misunderstandings in connected text or talked to students about how to apply the strategy in the near future.

During the pre-project observation, all teachers received a rubric score of one, meaning that all teachers focused on helping students find the correct answer to a question.

During the mid-project observation four out of five teachers changed how they helped students fix up their metacognitive misunderstandings. The two teachers improved to a score of four, directly helping students to fix up their metacognitive processing and persisting with individual students when necessary. One teacher improved to a score of three, meaning that the teacher provided explicit help to students in metacognitive processing. Additionally, one teacher remained at a score of one, and one teacher's score decreased to a zero, providing no help to students with cognitive misunderstandings.

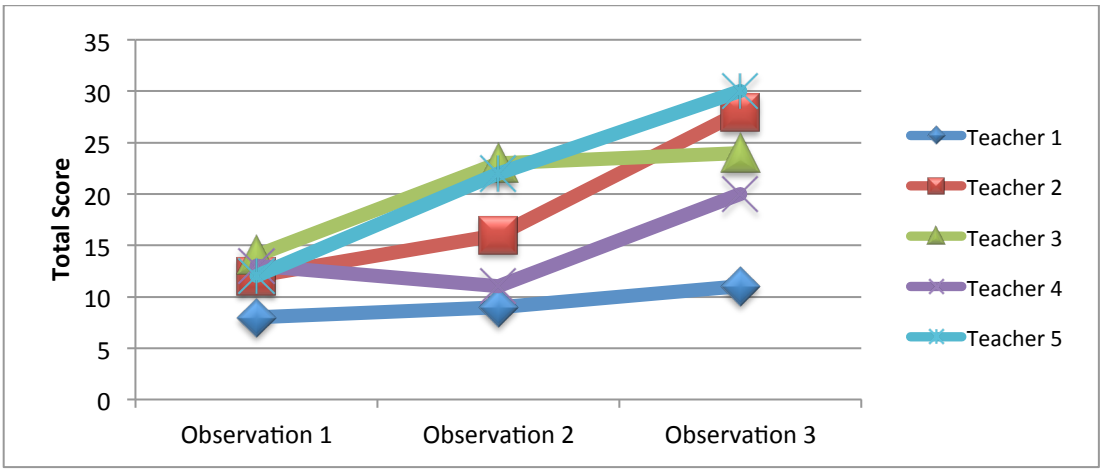
For the post-project observation, all five teachers received a three, which means that they all provided explicit help to students about metacognitive processing necessary to fix-up cognitive understandings. Two teachers scored a four on the mid-project observation and then decreased to a three for the post-project observation. These teachers did not receive a four for the post-project observation because no specific instances were observed when they needed to persist with one particular student. However, all five teachers improved in their responses to students' misunderstandings between pre and post-project observations. This indicates a positive change in teachers' metacognitive reading strategy instruction (see Figure 25).

Figure 25: Changes in Observation Rubric Scores Item 8 - Assessment of Student Understanding



Finally, when looking at the overall rubric scores of the teachers, all teachers improved across the project, suggesting a change in reading comprehension instruction from pre to post project. Additionally, all five teachers improved their metacognitive modeling scores as for presenting strategies, also suggesting a change from pre to post-project in reading comprehension instruction (see Figure 26).

Figure 26: Changes in Observation Rubric Scores - Total Score



Observation Rubric Data Summary

Results from the observation rubric responses show generally positive changes in teachers' metacognitive modeling and responsive elaboration techniques between pre- and post- project observations in almost all areas (see Figure 27). Specifically, the majority of teachers improved on five out of the six the rubric items related to metacognitive modeling. All five teachers improved in explaining what the strategy was to be taught, the assessment of students' misunderstanding, and the fix up of students' cognitive misunderstandings. Four out of five teachers improved their ability to explain why a strategy should be used and how to use it. Three out of five teachers improved in their ability to explain when to use a strategy and to provide effective independent practice. Additionally, teachers received the highest overall rubric scores for their think alouds of metacognitive processes on *how* to use the strategy (Item 4).

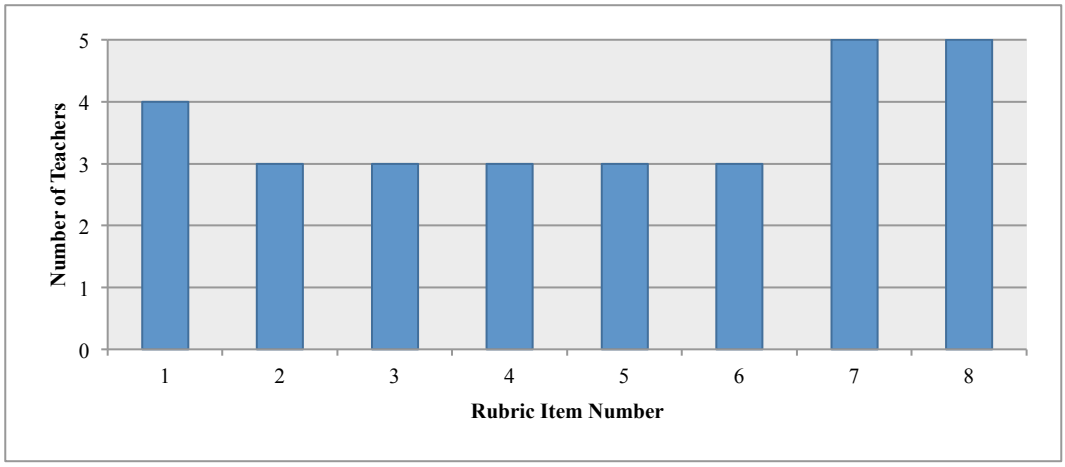
However, teachers did not show consistent improvement in providing guided practice to students. The majority of teachers provided guided practice that did not relate to the strategy instruction. While two teachers provided collaborative practice of metacognitive strategies, no teachers were observed providing a series of practice opportunities with lessening support for students.

Nevertheless, the remaining five rubric items related to metacognitive modeling indicate a positive change in the comprehension strategy instruction for the majority of teachers. While teachers struggled with the gradual release of responsibility through guided practice, they effectively improved their ability to present reading comprehension

strategies using the metacognitive modeling instructional protocol presented during the training.

Additionally, teachers improved in their responsive elaboration techniques. Specifically, they improved in their assessment of metacognitive misunderstandings and their ability to fix-up cognitive misunderstandings. Overall, data from the observation rubric support a positive change in teachers' metacognitive modeling and responsive elaboration techniques for reading comprehension instruction over the duration of the project based.

Figure 27: Total Number of Teachers Who Improved Rubric Ratings Pre Vs. Post Observation



Response Recording Sheet

In an effort to further analyze changes in the types and differentiation of responsive elaboration techniques teachers employed to help students fix up their metacognitive misunderstanding, a *Response Recording Sheet* (see Appendix C) was used in addition to *Observation Guide* (see Appendix B) during each observation. The

purpose of the *Response Recording Sheet* data was to collect information about changes in how teachers responded to students' misconceptions over the three observations (pre project, mid project, post project). On the recording sheet, the researcher listed the teacher's specific *response(s)* to help fix up misunderstanding.

Teachers' responses to students were coded and sorted into six different categories of responses: 1) prompting, 2) questioning, 3) analogies, 4) elaborations, 5) remodeling, and 6) other. The first five categories were included because they were practiced and taught to teachers as part of the collaborative think aloud protocol during the second workshop training, and their use in the classroom helped to analyze changes in responses to students. The "other" category was included in an effort to code and evaluate any other responses to students not included in the first five categories. Detailed definitions of each category are outlined in the following sections.

Prompting. For the purpose of coding, prompting was defined as any technique in which the teacher made a suggestion to a student as to what to think about next when the student is experiencing a cognitive misunderstanding while reading (*Think about what the character said earlier in the story*). The questions teachers ask to cue understanding were not coded as prompting – only the suggestions teachers made in statement form to cue cognitive understandings were considered prompting.

Questioning. For this project, questioning refers only to instances in which the teacher responded to students' cognitive understanding by asking specific questions to extend or clarify information (*Why do you think that? How did you figure that out?*). If the teacher offered *suggestions* to cue understanding, it was not considered *questioning*.

Analogies. Analogies were instances in which the teacher responded to students' cognitive understanding during reading by describing a similar, more familiar example (*It is like how someone feels when he finally learns to tie his shoes after trying for a long time*). Only analogies that were related to fixing up students' cognitive misunderstandings were included in the coding. Similes, which are direct comparisons using like or as, as well as metaphors, which are indirect comparisons were coded as analogies.

Elaborations. When the teacher responds to students' cognitive misunderstanding during reading by extending or clarifying their responses, it was considered an elaboration. (*So you are trying to tell us is that the character was confused because he was excited to move to his new home, but he was upset about leaving his friends*). If the teacher simply restated the students' response, it was not considered an elaboration. Only instances in which the teacher *extended* or *clarified* a students' response were considered elaborations.

Remodeling. Instances in which the teacher modeled the metacognitive process for the student in response to their cognitive understandings during reading were considered remodeling (*When I read clues like the character is smiling and high-fiving his friends, I think to myself that this is something people usually do when they are happy or excited, so I can make an inference that the character is excited about something*). Restating the students' thinking was not considered remodeling. Only teacher responses that included the thinking aloud of their own metacognitive processes were considered remodeling.

Other. Any teacher response to students' cognitive understanding that could not be coded into the first six categories was initially coded as "other." An additional inductive analysis took place to look for themes in response coded as "other." An additional category called "correct response" was added. Correct response refers to when the teacher supplies the student with a correct or desired answer when they have misunderstanding about a text.

After teachers' responses to students were coded and sorted into different categories of responses, the total number of responses was tallied for each category for each teacher and for all teachers combined. The responses were ordered from greatest to least to determine the most and least common types of responses to students. Data collected during each of the three observation periods was compared to examine any changes in the data throughout the project (see Figure 17).

The types of responses pre, mid and post project were analyzed in an effort to find whether the teachers used the five suggested responses presented in the project, or if they changed their responses to students in any way during the project. The purpose of this data analysis was to investigate how or if teachers used specific instructional strategies presented in the collaborative think aloud protocol, which strategies they used the most, and which they used the least.

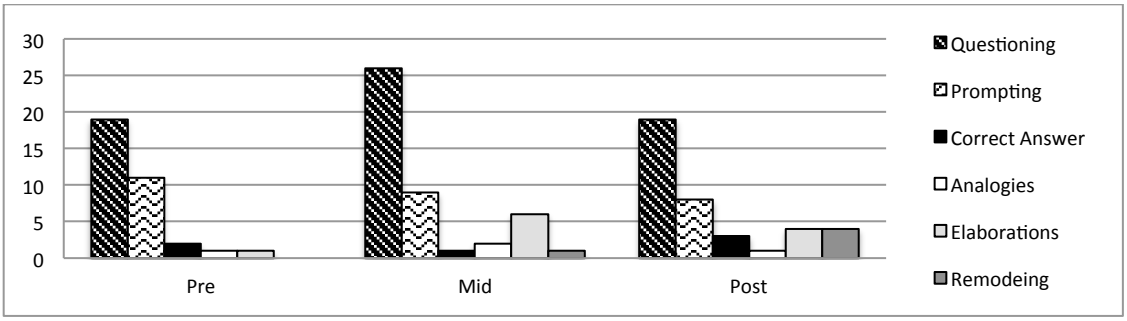
Response Recording Sheet Data Summary

The results of the analysis showed no relevant change in the most frequent types of instructional techniques used during responsive elaboration with students having difficulty between pre- and post-project observations. The data show that teachers

consistently used questioning most frequently when responding to students' misunderstandings. There was a slight increase in the number of elaborations and remodeling responses in the post project, with three more elaborations recorded and four more instances of remodeling recorded in the post-observations. Three out of the five teachers used elaboration and remodeling in the post observation compared to one teacher who used an elaboration and zero teachers who used remodeling to help students fix up misunderstandings in the pre observation.

While there was a slight shift in the number of instances of remodeling and elaborations over the project, there was little change in the types or number of fix-up responses teachers offered to students. It is clear that the workshop training focused on alternative instructional techniques to respond to students' misunderstandings were not effective at substantially changing teachers' instruction in this area (see Figure 18).

Figure 28: Teachers' Total Responses to Students' Misunderstandings



Summary of Teacher Observation Data

Results from the observation data show a positive change in teachers' ability to use the metacognitive modeling when teaching comprehension strategies to students. Specifically, teachers generally improved in their ability to explain *what* the strategy is,

why it is useful for reading comprehension, *when* to use the strategy, and *how* to use the strategy. Teachers also improved their responsive elaboration techniques. Specifically, they improved in their assessment of student misunderstandings. Instead of simply focusing on eliciting the correct answer from students, teachers more often asked students to explain their thinking when they responded incorrectly. Additionally, teachers improved in their persistence through multiple exchanges with individual students who were experiencing misunderstandings.

However, data from the response-recording sheet show that teachers did not change much in the specific instructional techniques they used to help students fix-up metacognitive misunderstandings. Specifically, teachers continued to rely primarily on questioning and prompting as a means to help students fix up misunderstandings, in spite of a 60-minute workshop about explaining how to use other instructional techniques to help students "fix-up" misunderstandings. This is a curious result, as all five teachers improved in their ability to persist with students who were experiencing misunderstanding.

Perhaps one reason for the increase in the rubric score and not in the variety of instructional techniques is that there was a qualitative change in the types of questions teachers asked over the project. At the beginning of the project, teachers generally asked questions that helped students arrive at the correct answer and did not ask students to explain how they arrived at their answer. At the end of the project, teachers generally asked questions that helped students explain their thinking and work through their misunderstanding.

Another reason for the difference may be that questioning and prompting were sufficient to help students "fix-up" misunderstandings that occurred during the observation period. Perhaps it may not always be necessary to use an analogy or to remodel for a student if a question or a prompt helps to clear up the student misunderstanding.

A third reason why all areas did not change to the same degree is that the workshop training was not effective at changing teacher instruction. Responses to misunderstandings cannot be scripted for teachers; therefore teachers need to be able to come up with responses in the moment. Perhaps the duration of the workshop was not long enough to help teachers become comfortable about when, why, or how to use the instructional technique. Perhaps the teachers needed more guided practice during the workshop to increase their comfort level when using it. Further, the teachers may have benefited from more in-classroom coaching support specific to responsive elaboration. Then, perhaps, teachers would have felt more confortable about choosing an appropriate instructional technique other than questioning at the moment when a student is experiencing a cognitive misunderstanding.

In addition to the lack of improvement in instructional techniques teachers during responsive elaboration, teachers did not improve their use of guided practice during metacognitive modeling over the project period. Perhaps this was because, like the responsive elaboration instructional techniques, teachers needed more time to learn about and practice how this would look in the classroom. Perhaps teachers also needed time to

make specific lesson plans for guided practice or needed some more concrete examples of what guided practice of reading comprehension instruction looks like in the classroom.

To summarize, the observation data show teachers' instruction changed in the more scripted and tangible aspects of the metacognitive modeling protocol that was the focus of this professional development project. Specifically, most teachers included the *what, why, when,* and *how* process of direct explanation when presenting a reading strategy. Additionally, most teachers improved their responsive elaboration techniques in their ability to provide authentic, independent practice for students and their ability to assess student misunderstandings and persist in helping students with their misunderstandings. However, there was little or no change in teachers' ability to provide a gradual release of responsibility to students during metacognitive modeling or to use other instructional strategies than questioning to help correct student misunderstandings during responsive elaboration.

Overall Summary & Implications

As previously stated, the interviews were designed to examine changes in teacher *understanding* of metacognitive modeling and responsive elaboration techniques before and after the professional development project. The classroom observations were designed to examine changes in metacognitive modeling and responsive elaboration *instruction* before, during, and after the project. The data from the teacher interviews and observations show some similarities and some differences between changes in teacher understanding and changes in classroom practice.

First, teachers changed both their understanding and classroom practice in the metacognitive modeling of reading comprehension strategies. Pre-project data showed that teachers discussed fragmented instructional techniques to teach reading comprehension strategies and used similar techniques to teach reading comprehension strategies during classroom observations. Post-project data showed teachers discussed the metacognitive modeling protocol presented in the project during interviews and were observed including most elements of the metacognitive modeling protocol during classroom instruction. Additionally, at the post-project interview most teachers mentioned providing independent reading strategy practice using authentic, instead of contrived texts. The shift to the use of authentic texts for independent strategy practice was also observed in the classrooms.

However, while the inclusion of the metacognitive modeling protocol in both the interview and observations does indicate a change in teacher understanding and classroom comprehension instruction, there were some limitations to the change. While teachers all mentioned the gradual release of responsibility of teacher to student through guided and then independent practice during the interviews, teachers did not change their classroom instruction in this area. In fact, no changes were observed during the observations of teachers providing practice with lessening support during comprehension strategy instruction. Perhaps teachers understood that the gradual release of responsibility is essential for learning strategies but were not sure how to plan or implement effective guided practice in a real classroom situation.

In addition, data from both the interviews and observations show some differences between changes in teacher understanding and changes in classroom practice for responsive elaboration. First, there were differences between understanding and practice in the area of reading comprehension assessment. Interview data showed changes in teacher understanding about the types of assessments for reading comprehension. Teacher responses at the pre interview were scattered, with most teachers mentioning formal reading program assessments and standardized testing. At the post *interview*, teachers focused on eliciting students' written and oral responses to determine understanding. However, teachers did not discuss how they used the data to help plan future instruction. Additionally, the post-project *interview* data show that teachers did not change their understanding about how to notice if a student is experiencing a cognitive misunderstanding or the types of instructional strategies they used to help students fix up metacognitive misunderstandings.

Conversely, post-project *observation* data showed a positive change in both teachers' assessment of misunderstandings and teacher persistence in helping students "fix up" metacognitive misunderstandings. Teachers in the post-project interview were observed asking students to explain the thinking behind their answer instead of supplying the correct answer. Additionally, post-project *observation* data showed that teachers persisted more with individual students who were experiencing difficulties. Initial analysis of these results appears to represent a difference between changes in teacher understanding as measured by the interviews and changes in teacher practice as measured by the interviews in the area of reading comprehension assessment.

Perhaps the difference between interview and observation data can be attributed to the fact that teachers already knew how to determine if a student has a metacognitive misunderstanding, but asked the wrong types of questions to assess the problem. Post-project interviews showed that all teachers improved their understanding of metacognition, and its use for self-monitoring. Perhaps the growth in their understanding of metacognition helped them to focus more on what's important in comprehension instruction. The increased understanding of metacognition and its relationship to comprehension may have helped teachers to focus on eliciting students' mental processing rather helping students to arrive at the correct answer. Additionally, eliciting mental processing may have helped teachers to better recognize and evaluate student misunderstanding. As a result, teachers may have been better equipped to persist in helping students correct cognitive misunderstandings and improve their already existing responsive elaboration instructional techniques.

However, while teachers were more persistent in their responses to students with misunderstandings, both interview and observation data show that teachers focused heavily on using questioning and prompting to help students correct cognitive misunderstandings during responsive elaboration. It is clear from both data sets that there was no change in the types of responses teacher gave students who were having comprehension difficulty after the professional development project.

To recapitulate, interview and observation data showed similarities between changes in teacher understanding and practice in most areas of metacognitive modeling and the types of instructional strategies used to help students correct cognitive

misunderstandings during responsive elaboration. Teachers improved both their understanding and instruction of metacognitive modeling, and showed no change in their understanding or instruction of the types of instructional strategies used to correct misunderstandings during responsive elaboration.

However, the data show that there were some differences in the changes in teacher understanding and practice in the area of reading comprehension assessment during responsive elaboration. Teachers improved their understanding of how to provide guided practice that focused on a gradual release of responsibility during metacognitive modeling, but little change was found in classroom instruction in this area. Additionally, teachers improved their ability to elicit mental processing and to persist with helping students to improve misunderstanding during responsive elaboration, but did not change much in their answers to interview questions designed to measure understanding in the same areas. However, teachers did improve in their understanding of metacognition and its link to self-monitoring, which may have attributed to the overall improvement of teachers' already existing responsive elaboration techniques.

Finally, data show that the project was generally successful at changing teacher understanding and classroom practice in both metacognitive modeling and responsive elaboration. In general, teachers were able to understand and to implement the structured metacognitive modeling protocol for teaching reading comprehension strategies. Teachers did not change the guided practice they provided for students, in spite of their increased understanding in that area. Teachers improved on their existing responsive elaboration instructional techniques. However, teachers did not change in their

understanding or practice of alternative instructional strategies to help students correct misunderstandings during responsive elaboration.

Implications for Future Professional Development

Overall, the project showed that a combination of workshop trainings, classroom practice and coaching feedback is generally effective in improving both teacher understanding and classroom instruction in reading comprehension. However, there are several lessons learned for future professional development in reading comprehension.

Teachers understand and implement structured instructional routines that may be easily adapted into classroom practice. They were most successful at implementing the very structured metacognitive modeling protocol presented in the project because it was easily adaptable to their current instruction routine. Future professional development in this model should include the same structured, metacognitive modeling protocol as well as many examples of how to adapt the protocol to instructional practice.

It is more difficult for teachers to understand and implement less structured instructional practices that could not be routinized. Teachers did not demonstrate an increased understanding or use alternative instructional methods to fix up student misunderstandings during responsive elaboration. Perhaps this is because student misunderstandings cannot be routinized, and require teachers to make a decision about which fix-up technique to use in the moment. This is inherently more difficult than implementing a routine, requiring cognitive empathy with the student. Perhaps a longer

professional development period with more opportunities for in-classroom coaching support would allow teachers time for more support and practice.

Longer professional development is needed to effectively improve unstructured instructional practices such as responsive elaboration. While teachers improved somewhat in their current assessment of student misunderstandings and fix-up strategies, they may have been able to better implement new types of instructional techniques to better help students if they receive additional time for in-classroom coaching feedback and support. Teachers may need professional development that lasts longer and that includes time for classroom feedback from an observer about how and when to use the strategies in real classroom situations.

Teachers need additional support in implementing scaffolded guided practice, including gradual levels of lessening support, into classroom strategy instruction. All teachers understood the necessity of slowly releasing responsibility to students, but they did not effectively implement their understanding into practice. Future professional development should include more examples of lesson plans demonstrating activities that allow the students to gradually take on more and more responsibility for the metacognitive processing involved in strategy use. Additionally, future professional development should allow time for teachers to create their own lesson plans based on a specific instructional routine for guided and independent practice.

Teachers must understand how new knowledge relates and can be used with their current instructional programs and routines. Teachers who struggled with the implementation of the workshop methods into their classrooms had difficulty

understanding how the information related to their current reading interventions. These teachers tended to see their current instructional program as too scripted to allow for metacognitive modeling and responsive elaboration. In order for the professional development to be more successful in the future, additional emphasis will need to be placed on how to integrate the methods into specific instructional intervention programs.

To conclude, although this project was generally successful at changing teacher understanding and practice in metacognitive modeling and responsive elaboration techniques for reading comprehension instruction, it is very limited in its generalizability due to the small sample size. Perhaps most importantly, the project is limited because it did not measure changes in students' strategy knowledge or overall reading comprehension. Future studies should include a larger sample size and a student growth measure to further investigate the effectiveness of this collaborative think aloud professional development model.

References

Anderson, V., & Roit, M. (1993). Planning and implementing collaborative strategy instruction for delayed readers in grades 6-10. *The Elementary School Journal*, 121-137.

Duffy, G. G., Roehler, L. R., Meloth, M. S., Vavrus, L. G., Book, C., Putnam, J., & Wesselman, R. (1986). The relationship between explicit verbal explanations during reading skill instruction and student awareness and achievement: A study of reading teacher effects. *Reading Research Quarterly*, 237-252.

Duffy, G. G., Roehler, L. R., Sivan, E., Rackliffe, G., Book, C., Meloth, M. S., & Bassiri, D. (1987). Effects of explaining the reasoning associated with using reading strategies. *Reading Research Quarterly*, 347-368.

Appendices

Appendix A
Interview Codebook

Unit of analysis: The unit of analysis for this project is a spoken word or phrase that conveys a unique idea.

Question 2

Process: Refers to a series of specific steps used to complete an instructional goal or a learning goal.
Self-Monitoring: The behavior of regulating and closely attending to a task or a process that is initiated by ones self.
Technique: Refers to a specific way or method that is employed to complete an instructional or learning task.
Comprehension: Refers to the act of understanding and meaning making.

Question 3

Strategies Named: Refers to the naming of specific strategies (i.e., inference, clarify, predicting, etc.)
Materials: Refers to resources used to support instruction (i.e., a graphic organizer, other visual tools).
Technique: Refers to a specific way or method that is employed to complete an instructional or learning task. Items will only be coded as techniques as they are described in isolation.
Assessment: Refers to a form of evaluation either prior to instruction (pre-assessment) or after instruction (post assessment).
Other Response: Refers to responses unable to coded into the first four categories.

Question 4

Modeling Comprehension: Making thinking visible to students through thinking out loud the process of meaning making.
Student Application in Small Group: Students think out loud in small groups.
Student Application Independently: Students apply the process independently.
Other Response: Not classified as either teacher modeling for comprehension, student small-group or independent application.

Question 5

Technique: Refers to a specific way or method that is employed to complete an instructional or learning task.
Format: Refers to the conditions under which the practice takes place in the classroom (i.e., whole group, small group, independently, etc.).

Question 6

Oral Responses: Verbal answers, comments, and statements.
Written Responses: Written comments and statements as a response to a question.
Behaviors: The way that a person acts toward another or within a setting.

Question 7

Format: Refers to the conditions/situations under which the assessment takes place in the classroom (i.e., formal/informal assessment, independent work, etc.).
Oral Responses: Verbal comments and statements for the purpose of assessment.
Written Responses: Written comments and statements for the purpose of assessment.
Tests/Programs: Refers to standardized tests or tests related to specific reading programs.
Observations: Paying close attention to students for the purpose of assessing reading comprehension.
Teacher Thoughts: Refers to the participant's thoughts and/or feelings about assessment.
Frequency: Refers to how often reading comprehension assessment is conducted in the classroom.

Question 8

Consulting the Text: Revisiting or rereading text.
Questioning: Asking a question during instruction.
Cognitive/Metacognitive Modeling: Making thinking visible to students through thinking out loud as an instructional technique.
Student Responses: Includes both the verbal and written replies and reactions of students.
Prompting: Reminding or cuing a student to bring about improved understanding or to correct misunderstanding.
Other: Utterances not related to the five codes for this question.

Appendix B
Observation Guide

Time entering: _____ Section of lesson observed: ____Beginning ____Middle ____End
Comprehension strategy observed:
Record the presence of these elements observed during the observation.
Section 1 - Metacognitive modeling

1. *What* – description or definition
2. *Why* - explanation of why the strategy is important
3. *When* - explanation of when the strategy should and should not be used
4. *How* - an explicit verbal explanation of how to use the strategy
5. *Guided practice for students*
6. *Independent practice for students*

Section 2 - Assessment of Students' Metacognitive Understanding

7. Elicits verbalizations of metacognitive processes

Appendix C

Response Recording Sheet

List students responded to, teacher response to misunderstanding, and number of follow up responses per student.

Student	**Teacher response to misunderstanding:**	**# of follow up responses per student**
1.		
Total interventions: **Total students:**		**Total # of follow ups:**

Appendix D
Observation Rubric (Duffy et al., 1986; Duffy et al., 1987; Anderson & Roit, 1993)

Section 1 - Metacognitive modeling

1. Rate how explicit the teacher is in informing students *what* the task is to be learned and that it is a strategy for solving a problem encountered in reading.
   0 - The teacher makes no statement about what strategy is to be learned.
   1 - The strategy is named, but there is little information beyond "We will learn about strategy x."
   2 – The strategy is named, and there is some explanation but it is vague, inconsistent, or implicit rather than clear, consistent, and explicit.
   3 - The strategy the students are to use while reading is clearly, consistently, and explicitly stated.
   4 - The strategy the students are to use while reading is clearly, consistently, and explicitly stated as an adaptive, flexible strategy to solve a problem encountered when reading.

2. Rate how explicit the teacher is in informing students *why* the strategy is useful as they read.
   0 –There is no statement of why the skill would be used.
   1 - The teacher only mentions that the skill is generally useful or useful in reading, but does not specify why.
   2 - The usefulness of the task is related to the future ("When you get in sixth grade…") or is vague or general in stating why it is related to a particular text ("It helps you get information…")
   3 - Clear and explicit reasons ("When you summarize the important ideas when you are reading, it helps you remember what you have read") for immediate use of the process are stated without contradiction.
   4-The teacher provides clear and explicit reasons for the immediate usefulness of the strategy in reading connected text in which one or more concrete examples are used to illustrate.

3. Rate how explicit the teacher is in telling students *when* to use the strategy to select for use when encountering a problem in reading.
   0 - There is no mention to students of when students should select this strategy during reading.
   1 - The teacher mentions that this strategy can be used to solve a problem or help them in reading, but provides no additional information.
   2 - The teacher mentions that this strategy can be used to solve a problem or help during reading and provides some information about how to choose the appropriate strategy.

3 - The problem situation is explicitly specified – the teacher explicitly explains how he/she monitors comprehension and how to select an appropriate strategy is emphasized.
4 - The teacher provides an exemplary statement of how to recognize that a problem exists (how he/she monitors comprehension) and how to select the appropriate strategy, including specific examples from connected text of when and when not to use the strategy.

4. Rate how explicit the teacher is in thinking aloud through *how* to use the mental steps in identifying the problem, selecting the strategy, and applying the strategy.
   0 - The teacher does not model how to do the task at any point in the lesson.
   1 - The teacher models the procedural use of a rule.
   2 - The teacher models the steps to be followed as a procedure but does not include thinking aloud about his/her metacognitive processes.
   3 - The teacher models mental steps in using the strategy adaptively (models metacognitive processes), but uses unrelated text samples (e.g. teacher uses text unrelated to student reading to think aloud or thinks aloud as a memory of reading a text in the past).
   4 - The teacher provides an exemplary model of how to use metacognitive processes in applying the strategy adaptively to a sample of natural, connected text (e.g. thinks aloud using the same or similar texts that students are reading).

5. Rate how well the teacher shifts the instructional interaction from teacher regulation of the strategy to student control of the strategy.
   0 - The teacher does not provide any guided practice.
   1 - The teacher requires the students to provide answers to tasks that presumably call for the use of the strategy (in a recitation mode).
   2 - The teacher moves from teacher regulation (or use) of the metacognitive strategy to student regulation of the metacognitive strategy, but the emphasis is on correct answers to the teacher's questions rather than on how students used metacognitive processing to arrive at their answers.
   3 - The teacher moves from teacher regulation to student control and emphasizes student metacognitive processing rather than answers.
   4 - The teacher provides an exemplary series of trials, which are characterized by increased student metacognitive processing, by much teacher assistance early in the lesson, by teacher monitoring of students' use of mental processes, and by making reference to the monitoring of student responses in asking for subsequent responses.

6. Rate how well the teacher provides students with independent practice in using the mental processing in a contrived sample (workbook page, reader, etc.?)
    0 - The teacher did not provide independent strategy practice.
    1 – The independent practice is not appropriate for conducting the metacognitive processing of the strategy.
    2 - The teacher provides independent practice, but it is not totally relevant to and/or appropriate for the metacognitive processing necessary for the strategy that was taught. The independent practice provides only one or two opportunities for students to use the metacognitive processing taught.
    3 - The independent practice provided by the teacher calls for the repeated opportunities for student to use the metacognitive processing that was taught using contrived texts.
    4 - The independent practice provided by the teacher calls for the repeated opportunities for student to use the metacognitive processing that was taught adaptively using authentic, natural texts.
    Section 1 total ____*/24*

Section 2 - Assessment of Students' Metacognitive Understanding

7. Rate how well the teacher elicits responses that require students to verbalize how they arrived at an answer.
    0 - The teacher does not elicit student responses.
    1 - The teacher elicits right answers and does not require students to state how they know the answer.
    2 - The teacher requires students to state how they got answers, but focuses on procedural recall rather than knowing how to get the answer.
    3 - The teacher requires students to explain how they got the answer but has individual students verbalize individual steps rather than having each student verbalize all the steps.
    4 - The teacher's elicitations are exemplary, requiring each student to verbalize all the mental steps used in applying the strategy efficiently.

Section 2 total ____*/4*

Section 3 - Response to Students' Misunderstanding

8. Rate how well the teacher helps students to fix up their metacognitive misunderstandings in connected text or talks to students about doing such guided application in the near future.
    0 - The teacher makes no attempt to help students fix up their metacognitive misunderstandings when using the strategy.
    1 – The teacher provides help that is not based on assessment of cognitive misunderstanding or focuses on helping students supply the correct answer.

2 - The teacher attempts to help students fix up their metacognitive misunderstandings based on assessed cognitive misunderstandings, but such help is not clear or explicit.
3 - The teacher provides explicit help for applying successful metacognitive processing to students based on assessed cognitive misunderstandings. The response provided by the teacher directly addresses the assessed misunderstanding.
4 - The teacher uses a variety of strategies to provide explicit help for applying successful metacognitive processing to students based on assessed cognitive misunderstandings. The response provided by the teacher directly addresses the assessed misunderstanding. The teacher persists with individual students with multiple responses if necessary.

Section 3 total ____*/4*
Total for Sections 1-3 ____*/32*

Appendix J

REVISED PROFESSIONAL DEVELOPMENT PROJECT

The revised professional development project is housed in the district Learning Management System (LMS), Schoology. The revised project is designed for fourth and fifth grade classroom teachers and incorporates the lessons learned from the pilot study into an interactive online module that includes lesson plan examples and allows for additional reflection and practice. Participants work through a series of seven folders designed to help them learn how to implement metacognitive modeling and responsive elaboration techniques into the *Journeys* (2013) target strategy instruction.

The seven folders included in the PD module group information in smaller chunks for teachers. The folders are title: 1) Before You Begin, 2) The Fourth Grade Slump, 3) Metacognition and Comprehension, 4) Improving Reading Comprehension Through Think Alouds, 5) Collaborative Think Alouds, 6) Responsive Elaboration, and 7) Final Thoughts (see Appendix on page 291). The Before You Begin Folder contains instruction for using the site and for attaining credit for completing the course. The other folders included in the revised PD focus on learning the collaborative think aloud protocol.

The Fourth Grade Slump folder is designed to help participants to think about their experiences with reading comprehension as a student and a teacher. It is designed to

help participants learn about the factors that contribute to the fourth grade slump in reading comprehension. In the final activity included in the folder, participants think about the factors they can change to help remediate the fourth grade slump with their students.

The next folder, Metacognition and Reading Comprehension, is designed to help participants deepen their understanding of metacognition and its relationship to reading comprehension instruction. Information about different types of think alouds and their effectiveness for teaching reading comprehension is presented. Finally, participants are introduced to the collaborative think aloud protocol, which focuses on the gradual release of responsibility for thinking aloud to move from the teacher to the student.

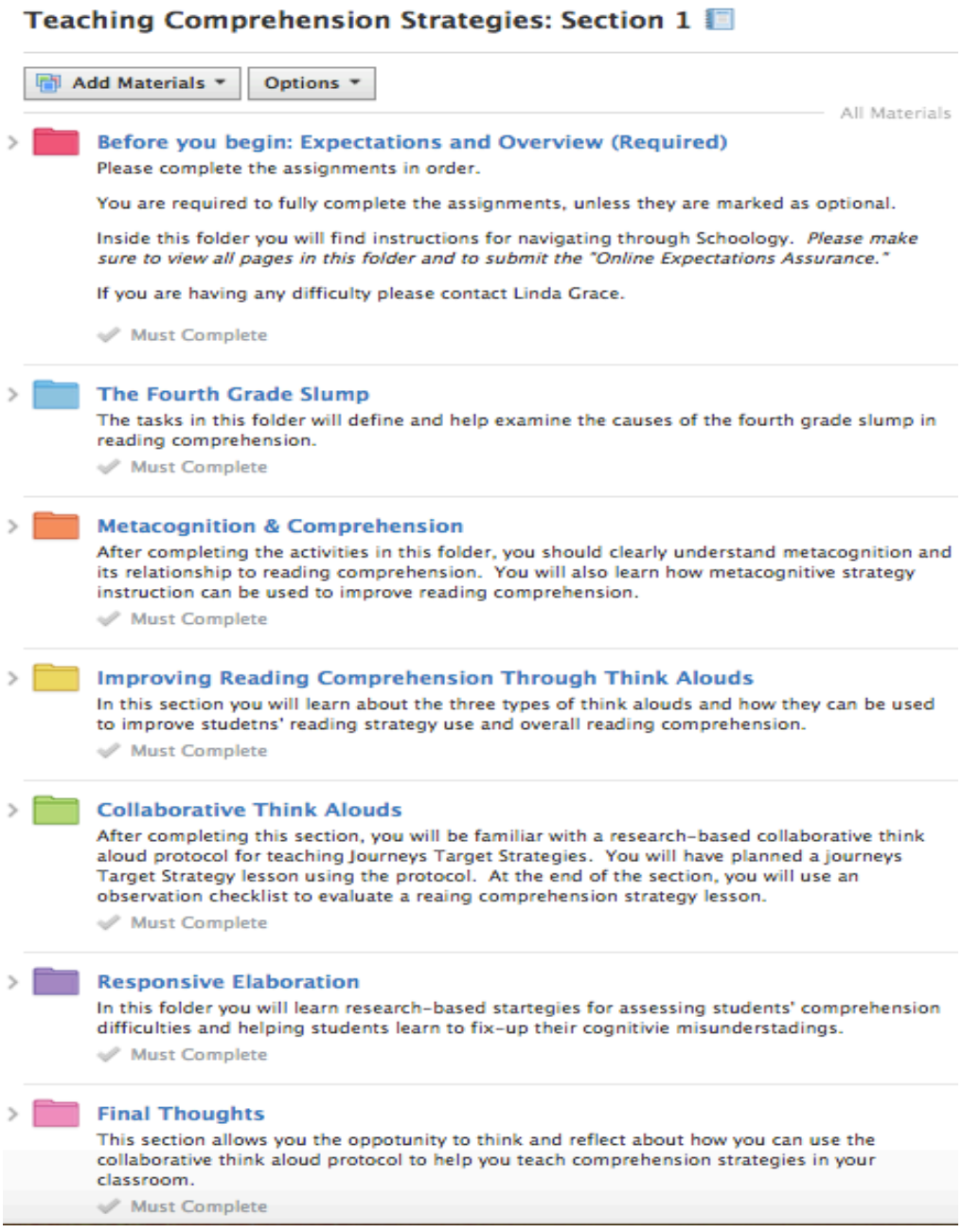
Participants then move on the Collaborative Think Aloud folder, which introduces them to the structured metacognitive modeling protocol. Teachers work through the steps of the protocol and create their own lesson plan based on their current classroom instruction. Finally, participants use a checklist to evaluate a comprehension strategy lesson.

After learning how to use the metacognitive modeling protocol, participants complete the Responsive Elaboration folder. This folder helps participants learn ways to assess students' cognitive misunderstandings by introducing them to the Listen, Identify, and Fix-Up strategy. Additionally, techniques are presented to help students fix-up their misunderstandings during reading.

The final folder, Summing It Up, provides teachers with recommendations for implementing collaborative think alouds in their classrooms. Additionally, the folder

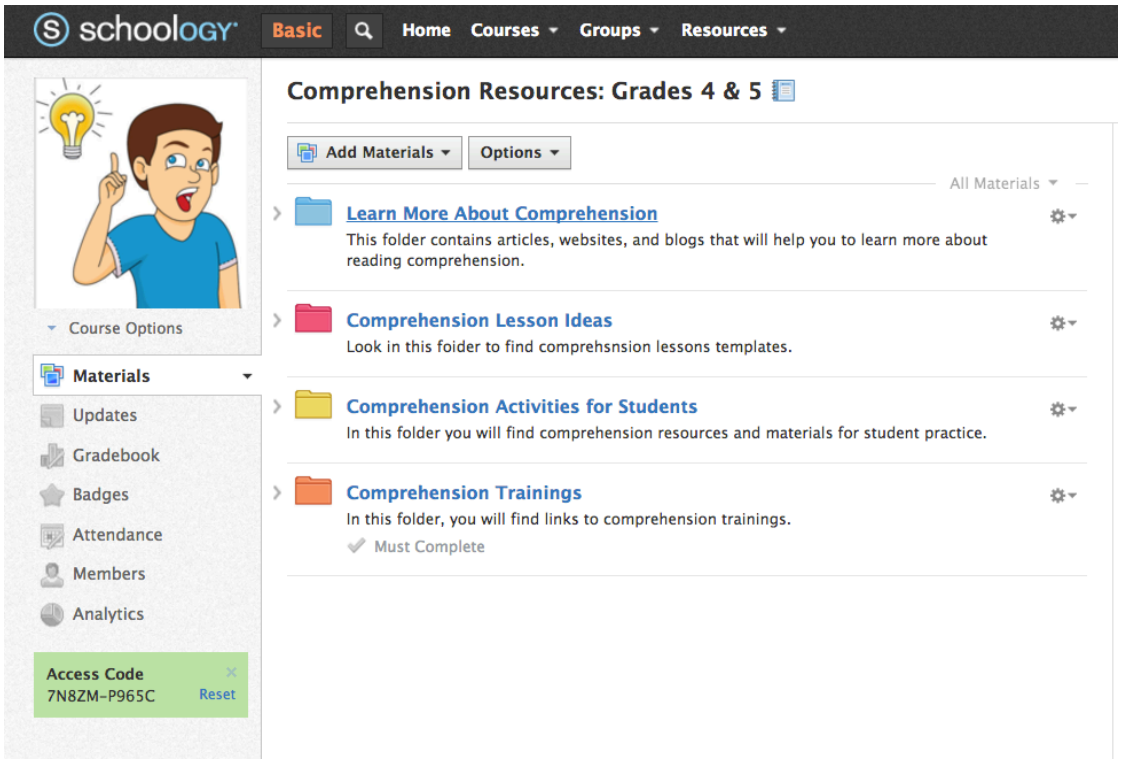
contains sample lessons for *Journeys* (2013) comprehension strategy lessons. Finally, participants are asked to reflect on what they learned and how they will use that learning to change classroom comprehension strategy instruction.

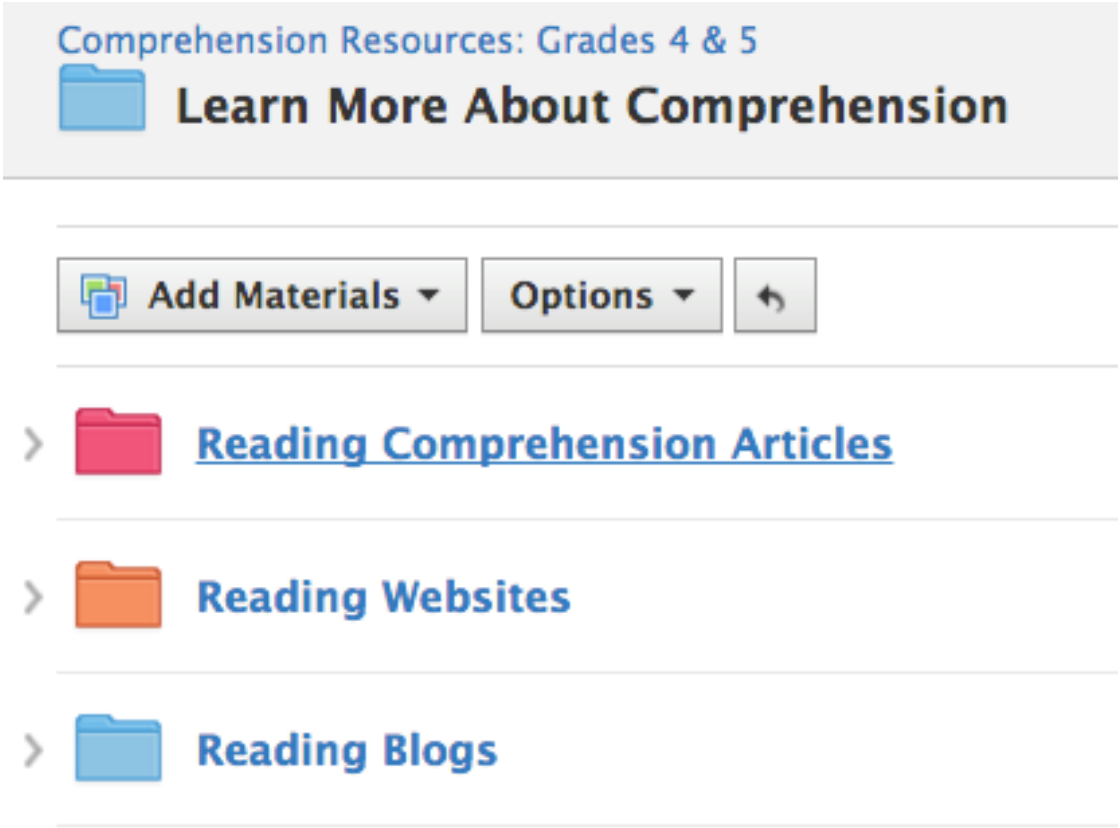
Screen Shot of Main Menu of the Revised PD Module on BSD Schoology Website



Appendix K

COMPREHENSION RESOURCES FOR TEACHERS

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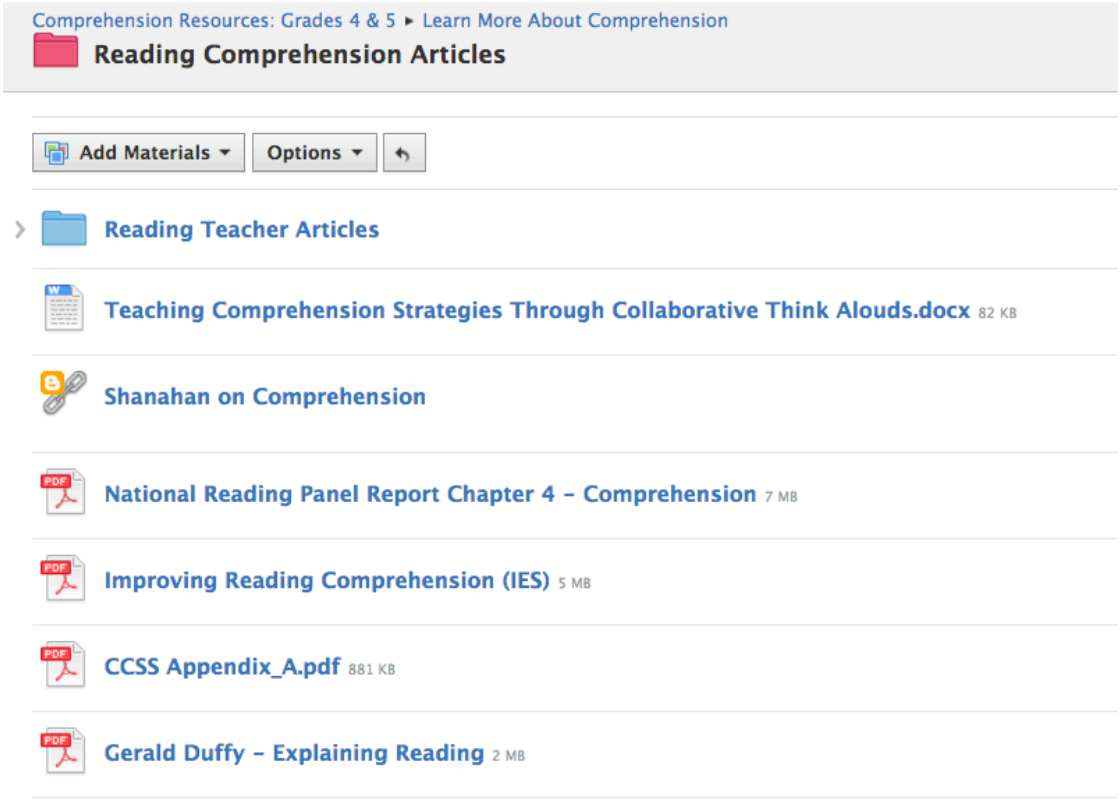
Learn More About Comprehension
Add Materials
Options
Reading Comprehension Articles
Reading Websites
Reading Blogs


Comprehension Resources: Grades 4 & 5 ▸ Learn More About Comprehension
Reading Comprehension Articles
Add Materials
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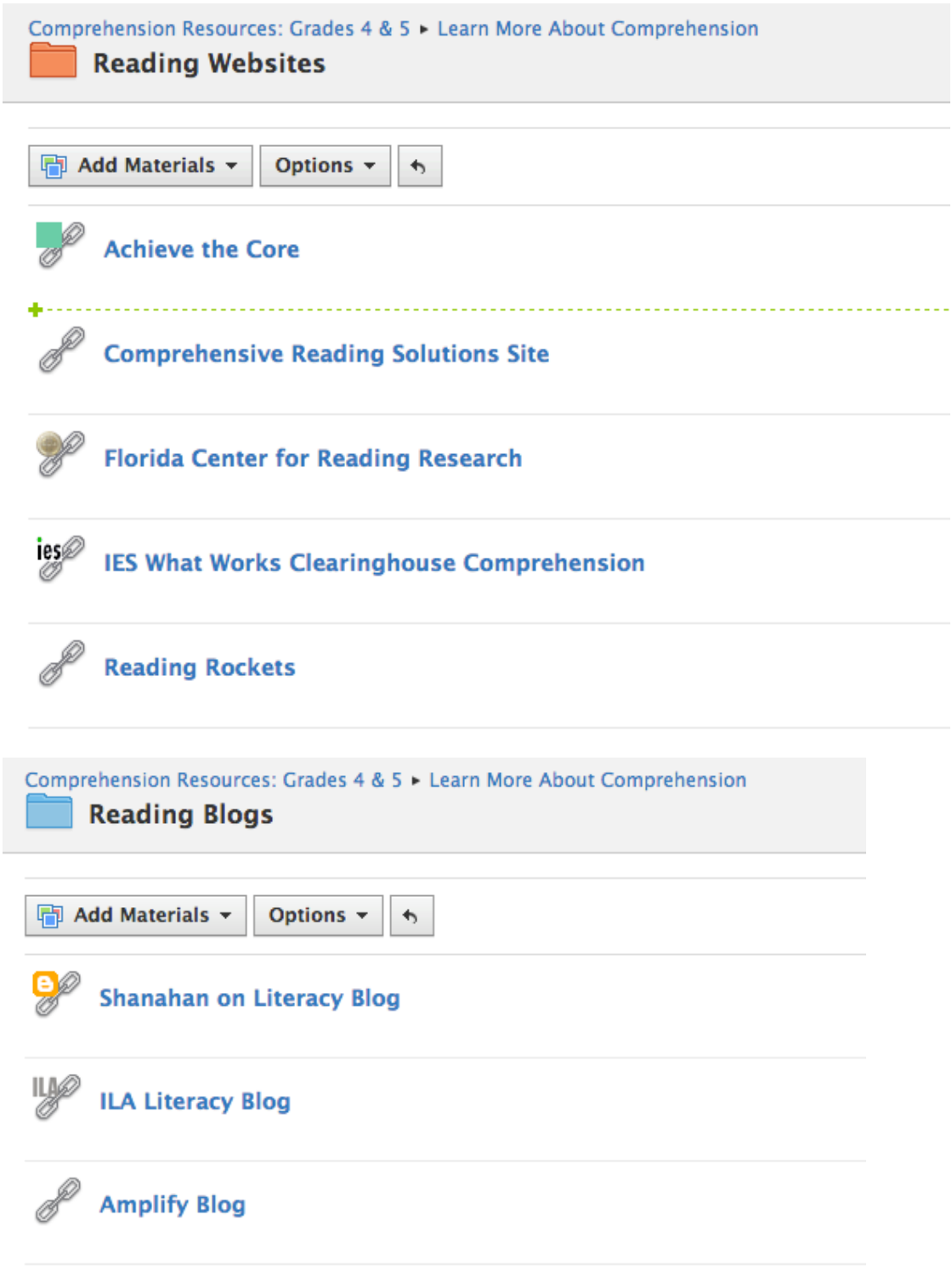
Shanahan on Comprehension
National Reading Panel Report Chapter 4 – Comprehension 7 MB
Improving Reading Comprehension (IES) 5 MB
CCSS Appendix_A.pdf 881 KB
Gerald Duffy – Explaining Reading 2 MB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Reading Websites
Add Materials
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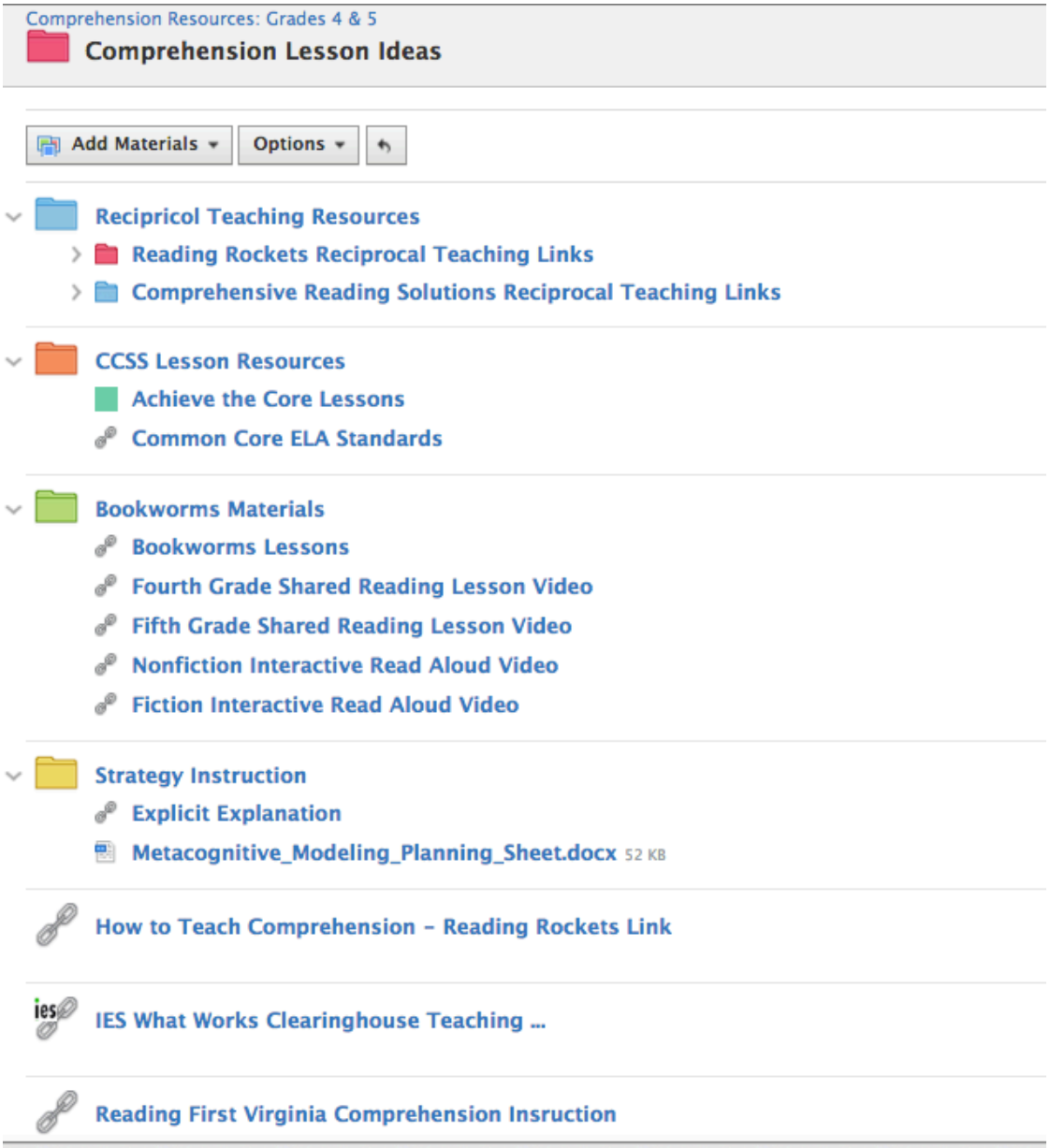
Comprehensive Reading Solutions Site
Florida Center for Reading Research
IES What Works Clearinghouse Comprehension
Reading Rockets
Comprehension Resources: Grades 4 & 5 ▸ Learn More About Comprehension
Reading Blogs
Add Materials
Options
Shanahan on Literacy Blog
ILA Literacy Blog
Amplify Blog


Comprehension Resources: Grades 4 & 5
Comprehension Lesson Ideas
Add Materials
Options
Recipricol Teaching Resources
Reading Rockets Reciprocal Teaching Links
Comprehensive Reading Solutions Reciprocal Teaching Links
CCSS Lesson Resources
Achieve the Core Lessons
Common Core ELA Standards
Bookworms Materials
Bookworms Lessons
Fourth Grade Shared Reading Lesson Video
Fifth Grade Shared Reading Lesson Video
Nonfiction Interactive Read Aloud Video
Fiction Interactive Read Aloud Video
Strategy Instruction
Explicit Explanation
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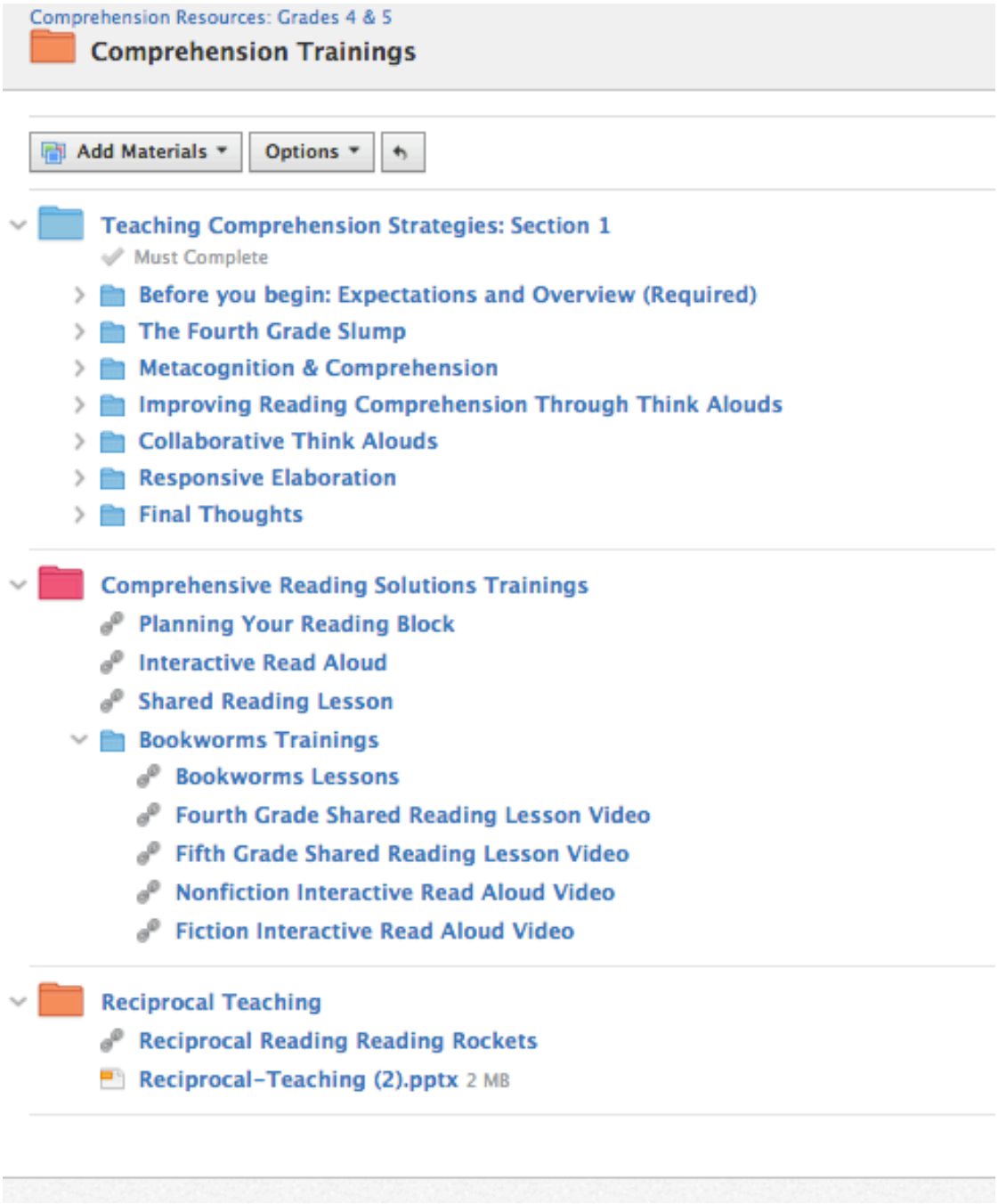
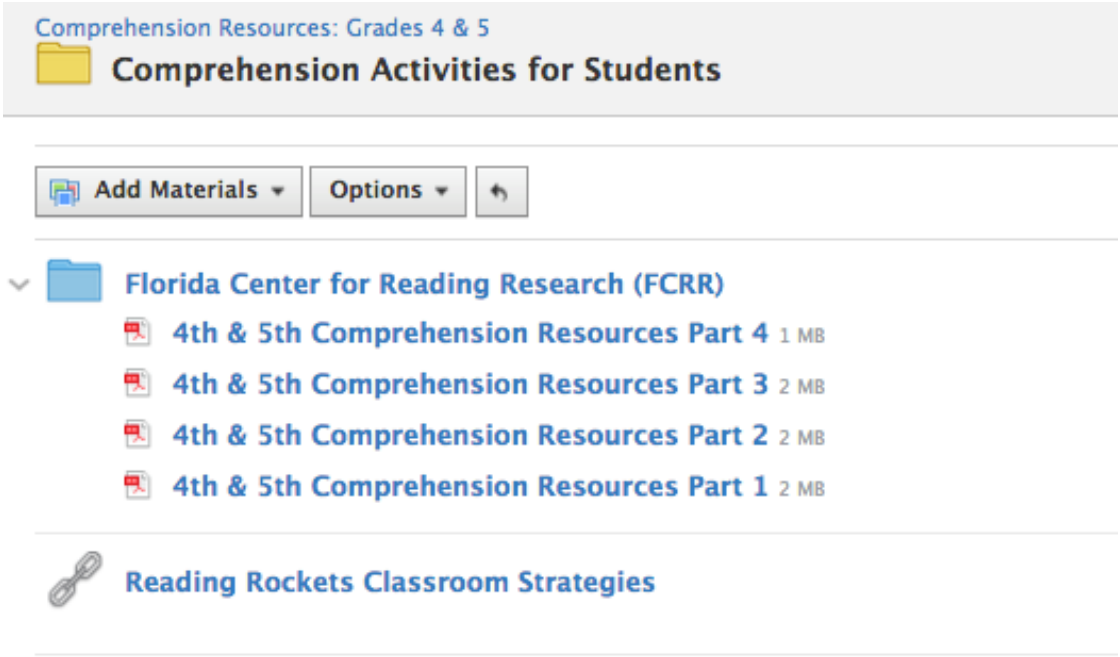
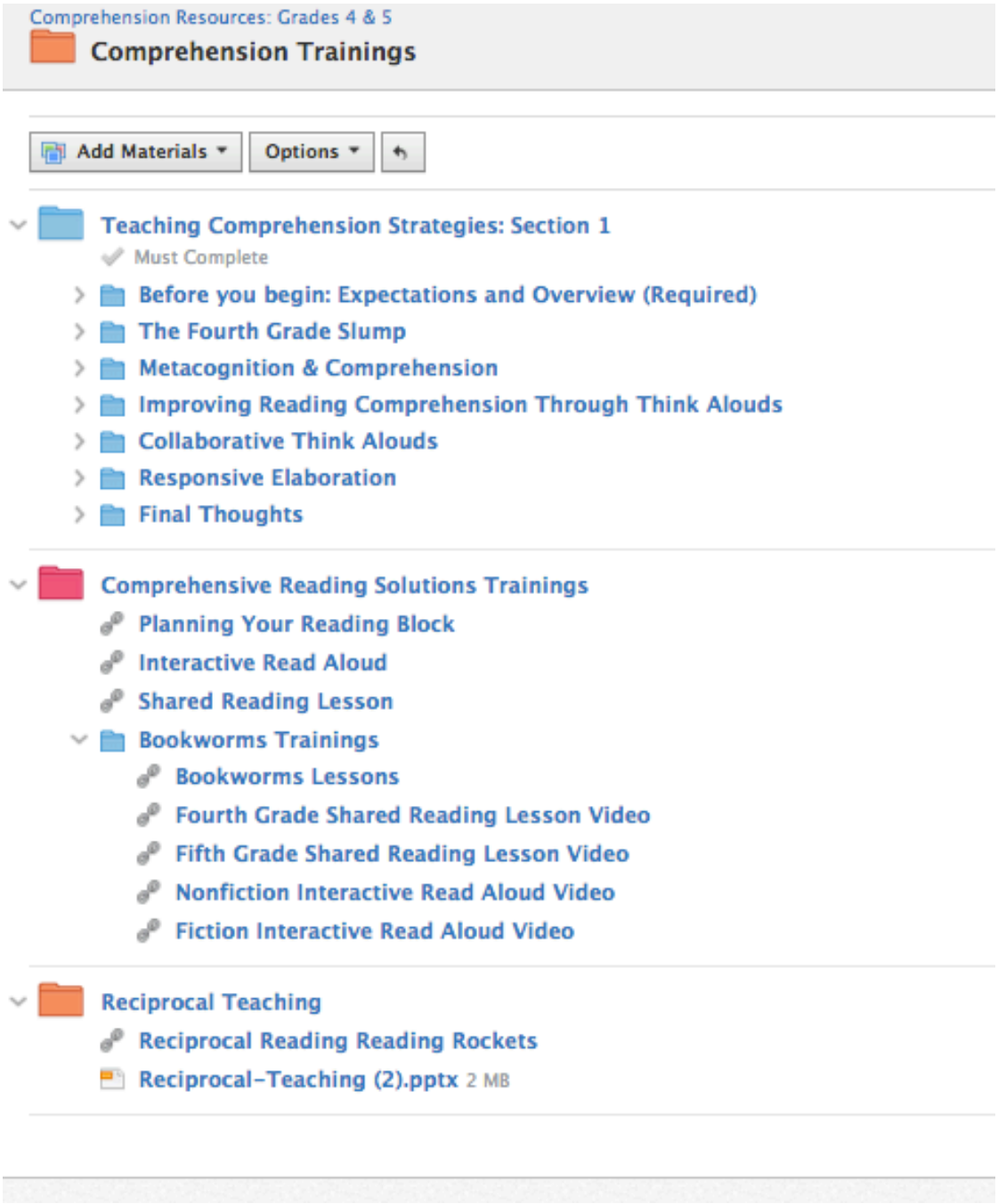
How to Teach Comprehension - Reading Rockets Link
IES What Works Clearinghouse Teaching ...
Reading First Virginia Comprehension Insruction


Comprehension Resources: Grades 4 & 5
Comprehension Trainings
Add Materials
Options
Teaching Comprehension Strategies: Section 1
Must Complete
Before you begin: Expectations and Overview (Required)
The Fourth Grade Slump
Metacognition & Comprehension
Improving Reading Comprehension Through Think Alouds
Collaborative Think Alouds
Responsive Elaboration
Final Thoughts
Comprehensive Reading Solutions Trainings
Planning Your Reading Block
Interactive Read Aloud
Shared Reading Lesson
Bookworms Trainings
Bookworms Lessons
Fourth Grade Shared Reading Lesson Video
Fifth Grade Shared Reading Lesson Video
Nonfiction Interactive Read Aloud Video
Fiction Interactive Read Aloud Video
Reciprocal Teaching
Reciprocal Reading Reading Rockets
Reciprocal-Teaching (2).pptx 2 MB


Comprehension Resources: Grades 4 & 5
Comprehension Activities for Students
Add Materials
Options
Florida Center for Reading Research (FCRR)
4th & 5th Comprehension Resources Part 4 1 MB
4th & 5th Comprehension Resources Part 3 2 MB
4th & 5th Comprehension Resources Part 2 2 MB
4th & 5th Comprehension Resources Part 1 2 MB
Reading Rockets Classroom Strategies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Nonfiction Interactive Read Aloud Video
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Reciprocal Reading Reading Rockets
Reciprocal-Teaching (2).pptx 2 MB

Appendix L

DETERMINATION OF EXEMPT STATUS

RESEARCH OFFICE

210 Hullihen Hall
University of Delaware
Newark, Delaware 19716-1551
Ph: 302/831-2136
Fax: 302/831-2828

DATE:	November 6, 2014
TO:	Linda Grace
FROM:	University of Delaware IRB
STUDY TITLE:	[670165-1] Using Collaborative Think Alouds to Improve Reading Comprehension
SUBMISSION TYPE:	New Project
ACTION:	DETERMINATION OF EXEMPT STATUS
DECISION DATE:	November 6, 2014
REVIEW CATEGORY:	Exemption category # *(1,2)*

Thank you for your submission of New Project materials for this research study. The University of Delaware IRB has determined this project is EXEMPT FROM IRB REVIEW according to federal regulations.

We will put a copy of this correspondence on file in our office. Please remember to notify us if you make any substantial changes to the project.

If you have any questions, please contact Nicole Farnese-McFarlane at (302) 831-1119 or nicolefm@udel.edu. Please include your study title and reference number in all correspondence with this office.