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USING THINK-ALOUDS TO INCREASE COMPREHENSION

The Use of Think-Alouds in Order to Increase

Comprehension in Struggling Readers at the

Middle School Level

By

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Abstract

This study assessed the effect that the use of the think-aloud strategy had on improving reading comprehension of struggling middle school readers. The study consisted of a six-week intervention in which the student were provided instruction in the use of the think-aloud strategy three days each week during their small-group reading class. Seven students, four boys and three girls, from an urban, public school near Milwaukee, Wisconsin, participated in this study. The researcher used marked think-aloud passages from the Qualitative Reading Inventory-V (Leslie & Caldwell, 2010), the Fountas and Pinnell reading assessment, and MAPs (Measures of Academic Progress) in order to obtain data before the onset of the study and at the end of the study in order to gauge its effectiveness. Additionally, the researcher monitored progress through the use of guided and independent practice on the use of think-alouds on high-interest reading passages. Data findings indicated that the treatment had a positive impact on the students' ability to answer explicit comprehension questions. The study did not positively impact the students' ability to answer implicit questions. Teachers who are considering using the think-aloud strategy should consider examining this study.

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CHAPTER ONE: INTRODUCTION

Over the years, an abundant amount of research has been conducted on the use of various

reading strategies to improve student comprehension. Educators continue to use research to

further explore what works best as the process of reading, namely comprehension, is a very

involved process. Comprehension has become much more than just students reading a story and

then demonstrating their comprehension abilities through answering questions at the end of the

story; it is now a process in which students engage in the text while reading and demonstrate

understanding by making predictions, connections, inferences and asking relevant questions.

Thus, determining research-based best practice has become critical. Loxterman, Beck, and

McKeown noted that researchers wanted to improve the quality of what students learn from

reading by teaching students to engage throughout their reading of text (2001). As a result, the

idea of the think-aloud strategy was born. In the past thirty years, various researchers have

suggested that providing students with modeling and practice of thinking aloud while reading has

been shown to increase metacognition and comprehension among students (Baker, 2002; Brown,

2002; Davey, 1983; Gambrell & Koskinen, 2002; Nist & Kirby, 1986; Wade, 1990; Wilhelm,

2002, as cited in Caldwell & Leslie, 2004). In Karahasanović, Hinkel, Sjøberg, and Thomas's

2009 study, they described how the think-aloud strategy can be used in two different ways. The

first way is to have students continuously jot down or verbalize their thoughts while reading.

This is referred to as "concurrent think-alouds". The second way is to have students verbalize

their thoughts at designated areas throughout the story. This is referred to as "retrospective think-

alouds". By thinking aloud while reading, students provide valuable information that allows

researchers and teachers alike to understand what comprehension strategies were utilized, what

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background knowledge students possess, how students arrive at an answer, and most

importantly, where the comprehension process breaks down (Karahasanović, Hinkel, Sjøberg, &

Thomas, 2009). Through the use of this window into the students' minds, teachers can create

more effective lessons that will teach students how to improve their comprehension skills

(Sainsbury, 2003).

In this report, I examine the effect the use of the think-aloud strategy had on the

comprehension abilities of struggling readers'. This chapter explains my rationale for selecting

this topic, design of the study, connections to the Common Core Standards, and provides

glossary of important terms used in this report. In the first section, I explain my rationale for

selecting this topic, based on the needs of the students in my classroom.

Rationale

As a child, my reading class instruction consisted of learning to read a passage,

answering the literal questions about the passage after reading it, looking back in the story to

answer the questions, always using complete sentences. The process was a routine that involved

little or no strategy instruction; I was expected to make sense of the text independently, in a

somewhat shallow sense. We used basal readers, which meant that the stories were not always

that interesting. Most were fictional stories that involved animals. Still, I loved to read, and

comprehending came naturally to me. I read all the time. I was the child who was caught reading

under her desk during class or under the covers with a flashlight at night. All of this independent

reading helped me become a good reader.

Fast forward years later, and I found myself teaching reading to students who struggled to

read the words on the page, much less understand and remember what they had just read. The

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students that I had the responsibility of teaching were operating with very different structures and

attitudes than I did as a learner. Additionally, reading instruction has changed dramatically in the

last decade. School districts have been adjusting to the increased demand of comprehension and

working towards improving instruction in an effort to increase test scores on the state test.

Because my school district's state test scores indicated a weakness in the area of reading, my

district had just signed up for a three-year contract with comprehension guru Stephanie Harvey.

This worked out well for me, since I had been trained to understand and utilize Stephanie Harvey

reading strategies through my coursework at Cardinal Stritch. Harvey's strategies directed

students to engage with what they were reading while they were reading as opposed to just at the

end. These strategies promoted engagement through active thinking during reading. Students

were taught how to make connections between what they had just read and their own life

experiences, ask questions, and create inferences based on background knowledge and

information in the text. These strategies seemed obvious to me as someone who is a fluent reader

and proficient at comprehending. However, I realized that for my students, these strategies were

what they needed to get them past their dislike and/or disinterest in reading in order to engage

them in text. Teaching students how to think and interact with text as they read would be a

critical part of increasing their understanding of the text. By engaging students with the text,

improved comprehension was likely to occur. There was one small catch: most of my students

were struggling writers as well as struggling readers. Their minds could think faster than they

could write. Since most of Harvey's strategies required writing, the strategy of thinking aloud

became very appealing. I decided to investigate how verbalizing thoughts while reading could

impact a struggling reader's comprehension abilities.

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Design of the Study

This study took place during a small-group reading intervention class designed for students with special needs. This class met five times per week for a period of forty-five minutes per session. This study monitored the effect of the think-aloud strategy with seven students, four boys and three girls, in an urban public school near Milwaukee, Wisconsin. All participants in this study had been identified as needing special education and had an Individualized Education Plan (IEP). Reading had been identified as a weakness for all students. As a result, this intervention was centered on improving reading comprehension abilities. I decided to conduct a six-week intervention using the think-aloud strategy as it directly aligned with my graduate coursework and district initiative regarding literacy development. Furthermore, I utilized three Common Core Standards in order to make sure that my study correlated with the rigorous national standards that have been recently adopted by the majority of states in our country.

Connections to Common Core Standards

The intervention I implemented incorporated Common Core Standards from the areas of reading literature and reading informational text. Students were guided to use background knowledge and context clues to determine the meanings of unfamiliar words (ELA-Literacy.RI.7.4). This thought process was verbalized, which allowed me to see which words caused the students difficulty and exactly what thought process they used to decipher and define the word. Additionally, both fiction and non-fiction texts were used during the intervention, which allowed students opportunities to comprehend both literature (ELA-Literacy.RL.7.10) and non-fiction (ELA-Literacy.RI.7.10) text. The particular work in this study directly aligned with these three Common Core Standards.

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Conclusion

  The study described in this chapter set out to investigate the use of think-alouds in order to increase comprehension among struggling middle-school readers. The idea for this study arose between my course work at Cardinal Stritch University and my school district's initiative to utilize the Stephanie Harvey strategies throughout the reading curriculum. Loxterman, Beck, and McKeown's 2001 study identified a need for comprehension strategies that engage students in text. Yet with so many strategies in existence, a decision had to be made as to which one should be used. Caldwell and Leslie's (2004) previous research determined that the think-aloud strategy could be very successful in increasing metacognition and comprehension through proper modeling and practice. The use of think-alouds also would provide important information about students' thought processes while reading, which would allow teachers to create more effective reading lessons. Based on the research I found, the think-aloud strategy appeared to be a good fit with the type of students I was working with. In the next chapter, a strong research base on the topic of the use of the think-aloud strategy is established. The research collected in Chapter Two served as the basis for the design, procedures, implementation, and data collection described in Chapter Three. Chapter Four will provide both narrative and visual data based on the various assessments that were employed in this study. In Chapter Five, the findings of this study are interpreted and explained. To conclude this study, recommendations for instruction and for research in this area will be made.

Glossary of Terms

Background Knowledge: information that a person already knows

Backtracking: a type of think-aloud statement identified as looking back in the story to help resolve a comprehension breakdown that occurred previously in a passage (Bereiter & Bird, 1985)

Comprehension: understanding what has been read

Concurrent Think-Aloud: the process of verbalizing thoughts continuously while reading

Demanding Relationships: a type of think-aloud statement identified as questions asked by the reader (Bereiter & Bird, 1985)

Explicit: information that is directly stated in the text

Fluency: the ability to read with speed, accuracy, and expression

Fountas-Pinnell Reading Assessment: an assessment designed by Irene Fountas and Gay Su Pinnell used to assess fluency and comprehension skills

Implicit: Information that is suggested, but not directly expressed by the text

Intervention: teacher-led instruction time used to work with struggling learners

Inference: a conclusion made based on information that is not directly expressed in the text

Measure of Academic Progress Assessment (MAPs): a computer-based assessment that assesses students in various strand areas that area aligned with the Common Core Standards in the areas of Reading, Math, and Language Usage

Metacognition: thinking about thinking, knowing what you do and do not know

Modeling: teacher-led demonstration of a specific skill

Problem Formulation: a type of think-aloud statement identified as the use of problem solving skills while reading to resolve issues with comprehension (Bereiter & Bird, 1985)

Qualitative Reading Inventory-V (QRI-V): **"**An individually administered informal reading inventory that is designed to give diagnostic information in the following areas; the conditions in which students can identify words and comprehend text successfully and conditions that seemingly result in unsuccessful word identification, decoding or comprehension," (Leslie & Caldwell, 2010, p. 1)

Restatement: a type of think-aloud statement identified as rephrasing the information to indicate understanding (Bereiter & Bird, 1985)

Retrospective Think-Aloud: the process of verbalizing thoughts at designated areas within the text

Think-Aloud: a process in which students verbalize their thoughts while reading text

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CHAPTER TWO: RESEARCH ON INCREASING COMPREHENSION THROUGH

THE USE OF THINK-ALOUDS

Introduction

In order to make meaning of texts, comprehension is crucial. Comprehension is a very involved, complex process that requires that a reader activate several forms of thinking in order to construct meaning from text. Specifically, a reader must synthesize information, make inferences, predict, determine importance, and most importantly, create meaning for what he or she has just read (Harvey & Goudvis, 2000). In order for readers to be able to possess these intricate, inexplicable skills, teachers must provide instruction that gives students the framework for thinking. One strategy that promotes comprehension to a high degree is the use of think-alouds. Recently, think-alouds have become an instructional tool that enables teachers to better understand the comprehension process by unveiling the thinking of the reader (Crain-Thoreson, Lippman, & McClendon-Magnuson, 1997). "Think-alouds involve the overt, verbal expression of the normally covert mental processes readers engaged in when constructing meaning from text" (Afflerbach & Johnson, 1986; Ericsson & Simon, 1980, 1984; and Garner, 1987, as cited in Baumann, Seifer-Kessell, & Jones, 1992, p. 144). Therefore, Karahasanović, Hinkel, Sjøberg, and Thomas (2009) determined that by using think-alouds, students reveal the thoughts of their working memory and provide insight into their cognitive processes, which exposes how students comprehend and where the comprehension process breaks down. Since teachers can figure out where comprehension deficits exist through this strategy, they are able to guide and repair students' thinking. Research also suggests that by using think-alouds, students' engagement with text will increase, thus increasing comprehension (Bereiter & Bird, 1985; Loxterman, Beck, &

McKeown, 2001). The reported effectiveness of this strategy led to the development and actualization of this action research study, "The Use of Think-Alouds to Increase Comprehension in Struggling Readers at the Middle School Level."

The purpose of this study was to investigate the effects of using think-alouds in order to increase comprehension among middle school aged, struggling readers. This chapter includes twelve research studies that have investigated the use of think-alouds with students at various levels and the affect of think-alouds on their comprehension. The first section of this chapter describes four studies that examine how think-alouds provide insight into what a reader was thinking. The second section includes six studies that show how think-alouds can help students produce more focused responses. Finally, the third section details two studies that demonstrate how think-alouds have been useful to specific learning populations, especially with groups of struggling learners. As the findings of these studies are synthesized, research-based best practices will be used to formulate this study's design.

Think-Alouds: A Window into the Reader's Mind

Comprehension, and the effective instruction of it, has challenged literacy gurus and educators for a long time. Loxterman, Beck, and McKeown (2001) noted that over the years, many researchers believed that difficulties in comprehension were merely caused by the difficulty level and features of a text. As a result, revised texts were created. Revised texts refer to texts that have been simplified by changing the words in the text and providing more explicitly stated information, rather than information that has to be inferred. However, while the use of revised texts significantly increased comprehension, this did not resolve all comprehension difficulties (Beck, McKeown, Sinatra, & Loxterman, 1991, as cited in Loxterman et al., 2001).

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Students still struggled with the literacy skills of making connections with the text, lack of background knowledge, and processing of information even though texts were adapted to be easier. The comprehension problem was not solved; thus, there was a need for further exploration of this topic. In order for researchers to have a better understanding of where these lapses in comprehension occurred, the idea of "thinking aloud" while reading was investigated by Olson, Duffy, and Mack (1984, as cited by Bereiter and Bird, 1985). By having students verbally express what they were thinking about during reading, their thought process was exposed to researchers and teachers alike. This allowed researchers and teachers to understand specifically where a student's comprehension began to break down and allowed strategies to improve comprehension to be born.

The following studies demonstrate that by using the think-aloud strategy as a tool for comprehension, teachers are provided deeper insight into what students are thinking about while they read. Given this information, educators have been able to determine what kind of comprehension skills students have attained (such as their ability to infer), as well as discovered which comprehension skills are still weak. Essentially, this serves as an opportunity to inform instruction. This is crucial to comprehension instruction because teachers can alter and differentiate their instruction based on the comprehension needs of the students.

Bereiter and Bird conducted a study in order to determine if thinking aloud impacted students' ability to utilize comprehension strategies while reading (1985). The researchers hypothesized that thinking aloud, combined with cognitive strategy instruction, and would increase strategy use and overall reading comprehension. For this study, the independent variable was the modeling and practice given to all students to think aloud. This was measured by the

dependent variable, the post-test scores of a reading comprehension test that was compared to the pre-test scores.

Eighty students, 40 male and 40 female, were used for this study. The students were in seventh and eighth grades in two southern Ontario schools in Canada. Ethnic and socioeconomic information of the study's participants were not specified. One school was in a rural area, and the other school was in a small city. Based on scores from the Spache Diagnostic Reading Scales and the Nelson Reading Skills test, 40 females and 40 males who were average or above-average oral readers and in the mid-range in silent reading comprehension were chosen to participate. Following pre-testing, students received three weeks of instruction and then were post-tested.

Prior to the experiment, all students received 40 minutes of instruction on how to think aloud while reading. Students received instruction in the four target strategies of backtracking, demanding relationships, problem formulation, and restatement, which Bereiter and Bird determined to be the most effective strategies for dealing with comprehension difficulties. Backtracking was defined as looking back in the story to help resolve a comprehension breakdown that occurred previously in a passage. Demanding relationships mainly consisted of questions the reader had about something that was read. Restatement is simply rephrasing the information to indicate understanding. Finally, problem formulation is the use of problem solving skills while reading to resolve issues with comprehension. In addition to the four strategies, 15 other specific and non-specific behaviors were taught. These included such behaviors as "imagery statements, associating information with previous experience, and expressing personal reactions" (Bereiter & Bird, 1985, p. 142). Students were also supervised

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while practicing thinking aloud and encouraged to verbalize their thoughts. Following the

training, students were randomly assigned to groups of six to eight students for the pre-tests;

nevertheless, all students tested individually. Students were given six passages to read and were

asked to verbalize their thoughts throughout. Their responses were audiotaped and transcribed.

After reading each passage, the students answered comprehension questions associated with the

story. The assessment indicated strategy usage and oral comprehension skills of the students.

Following the pre-test, students were again randomly assigned into one of three treatment

groups or the control group, creating equal groups of 20. The treatments were identified as

"modeling-plus-instruction", "modeling only", and "exercise condition". All treatment groups

were provided with instruction over nine 40-minute sessions during a period of three weeks. The

control group attended their language arts classes as usual during this time.

The "modeling-plus-instruction" group consisted of three parts: explanation with

modeling and examples, identification practice, and oral practice. During the explanation with

modeling and examples, the instructor again presented the students with the four targeted

comprehension strategies: backtracking, demanding relationships, problem formulation, and

restatement. The instructor modeled each of these strategies by thinking aloud while reading.

The identification practice consisted of the instructor modeling a strategy by thinking aloud, and

then having the students identify which strategy was used. Finally, during the oral practice, the

students were given passages to read and mark where they used a strategy.

The "modeling only" group was made up of two parts: modeling and oral practice.

During the modeling, the instructor read a passage while thinking aloud and modeling the

strategies. However, the strategies were never directly mentioned to the students. The oral

practice was similar to that of the "modeling-plus-instruction" group, but the students were

merely asked to jot down their thoughts while reading, using language similar to what the

instructor had demonstrated.

The final treatment group, the "exercise condition", was comprised of three components:

oral exercises, written exercises, and a brief follow-up discussion of the written exercises. For

the oral exercise, the instructor called on and prompted students directly to make the kinds of

responses connected with each strategy. The written exercises were worksheets that were similar

to typical comprehension workbooks and test items. After the written exercises were completed,

a discussion of the answers and strategies used followed.

After the instructional period was over, post-tests were administered to all students. The

high school version of the Nelson Reading Skills test was used for the silent comprehension and

strategy and oral comprehension were tested using the pool of stories used in the pre-test, but

with two passages of greater difficulty added into the pool. The results of the post-tests indicated

that the "modeling-plus-instruction" group scored significantly higher than the other groups. The

other groups did not show any significant differences in results. The "modeling-plus-instruction"

group showed a gain of +2.7 grade levels, no gain for the "modeling only" group, a +0.8 grade

level increase for the "exercise condition", and +0.7 gain for the control group. Of the four

strategies, restatement showed the greatest increase from pre-test to post-test.

While the study was unable to form a direct correlation between strategy acquisition and

increased comprehension, the results suggested that the use of thinking aloud to model and apply

strategies is beneficial to increasing reading comprehension. Explicit modeling, direct strategy

instruction, and opportunities to practice are needed in order to acquire cognitive strategies.

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Modeling or providing exercises in the strategies are not enough to help students make significant gains in their reading comprehension; Bereiter and Bird (1985) found that additional steps must be taken. Instructional implications based on the findings of this study include the use of direct instruction and thinking aloud to the model the comprehension strategies of restatement, backtracking, and problem solving.

Baumann, Seifer-Kessell, and Jones's 1992 study examined the effectiveness of think-alouds in comparison to other comprehension monitoring strategies. Over the years, many researchers have promoted the use of think-alouds to increase comprehension abilities (Alverman, 1984; Davey, 1983; Nist & Kirby, 1986, as cited in Baumann, Seifer-Kessell, &, Jones, 1992). Yet, it was the work of Bereiter and Bird (1985) that interested the researchers the most. Therefore, the purpose of this study was to extend the work of Bereiter and Bird using younger students to determine the effectiveness of direct instruction of think-alouds (which the researchers referred to as "TA") to increase comprehension. The researchers also wanted to know if another comprehension instruction strategy, the Directed Reading-Thinking Activity (DRTA) (Stauffer, 1969, 1976, as cited in Baumann et al., 1992), would be as effective as the think-alouds, and how these two methods compared to a control group that participated in the Directed Reading Activity (DRA) (Tierney, Readence, & Dishner, 1990, as cited in Baumann et al., 1992).

Since the researchers wanted to continue the work of Bereiter and Bird but with younger children, fourth-grade students were selected to participate in this study. The 66 students came from a rural, mid-western school. Thirty-two girls and 34 boys comprised the group of 66 students. Information regarding ethnicity or socioeconomic background was not provided in this

study. The students were randomly assigned to one of the three groups: Think-Alouds (TA) Directed Reading-Thinking Activity (DRTA), and Directed Reading Activity (DRA). The result was 22 students per group. These three groups were the independent variable, and the quantitative scores and qualitative results from the four post-tests were the dependent variables. All students were administered two pre-tests, which indicated no significant differences in scores among the three groups. The same teacher provided instruction for 45 minutes per day, using the same 10 basal readers. Pre-testing, intervention, and post-testing occurred within a three-week period.

The instruction itself varied among the three groups. The TA group received ten lessons that were comprised of self-questioning, sources of information, understanding how to "think-aloud", review of thinking aloud, predicting, reading, and verifying of what was just read. In addition, instruction included understanding unstated information, retelling a story, rereading and reading on, and finally think-aloud and comprehension monitoring application. These lessons were used to promote comprehension monitoring and self-correction abilities among the students.

The DRTA's primary focus is prediction, which is an important strategy in comprehension monitoring. Therefore, the DRTA group instruction was made up of four steps that involved prediction. First, students made predictions. Then, they read part of the story and evaluated their initial predictions. After that, they made additional predictions. Finally they repeated the second and third steps one or two more times. The DRA group was introduced to new vocabulary, activating prior knowledge, completed guided reading of the passage, and finished with a discussion of the story that included summarizing and answering comprehension

questions. This format was chosen because it did not involve any explicit or implicit instruction in comprehension monitoring abilities, like the TA and DRTA groups did.

Following the three different methods of instruction, three post-tests were administered to all students. A fourth post-test was administered to four students from each group. These twelve students were chosen to gain more qualitative data on comprehension monitoring and think-aloud skills from each of the three treatments. These students were specifically chosen because they had communicated freely, without prompts, during the other tests, and therefore produced many responses that could be analyzed. Additionally, both high and low readers were represented: two high and two low readers from each treatment group. The first and second post-tests were similar to the two pre-tests. The first post-test measured error detection of sixteen inserted sentences. The DRTA group ("Directed Reading-Thinking Activity) scored the highest, followed by the TA group ("Think-Aloud"), and the DRA group ("Directed Reading Activity).

The second post-test questioned students as to which reading strategies they thought to be most effective. The TA group performed significantly higher than the DRTA and the DRA groups. The third post-test used the cloze format, in which the DRTA group scored the highest, but was not significantly higher than the TA or DRA groups. The fourth post-test measured the twelve students' reading behaviors while reading a particular passage. Students were asked to describe their thoughts, ideas, and reading behaviors before, during, and after reading, describe their reading habits, and then complete a task similar to Post-test 2. In addition, the students were asked to justify their answer. The students in the TA group not only totaled the most comprehension monitoring behaviors but also demonstrated the greatest variety of these behaviors.

The researchers found that both the think-aloud method and the Directed Reading-Thinking Activity were much more effective comprehension instruction methods than the Directed Reading Activity. Having some kind of teacher-directed instruction versus no direct instruction also supports the findings of Bereiter and Bird (1985) and Baumann and Schmitt (1986, as cited in Baumann et al., 1992). However, in comparing the effectiveness of DRTA versus the TA, the researchers were unable to draw any solid conclusions as to which method is better. Baumann, et al. (1992) did observe that the students who were in the DRTA group were much better at making predictions than those in the TA group. While these findings do not entirely support the use of think-alouds, they do demonstrate that think-alouds can be used effectively to increase the comprehension of young-aged students. Based on these findings, educators should always incorporate teacher-directed instruction into their reading comprehension lessons.

While Pressley and Afferbach had done extensive research that found that the use of verbal protocol analysis/think-alouds were the most successful among other theories of reading, their test subjects had only been adults (1995, as cited in Sainsbury, 2003). Sainsbury investigated the use of think-alouds as a means to understand elementary students' thought processes while reading. Based on the responses elicited from elementary students, the purpose of this study was to discover if the use of think-alouds while reading would provide useful insight for teachers. Sainsbury hypothesized that think-alouds could be a valuable tool for teachers to discover what their students understand and how their students' minds process the information that the students read.

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The researcher chose to study fluent readers, those who would be able to focus on the content of the story, rather than the words in the text in order to gain useful information from the students. Additionally, the researchers chose a text that would require the use of background knowledge to answer comprehension questions. The sample consisted of eight, seven-year-old students, including three boys and five girls, who all attended the same school on the outskirts of London, England. While the length of the study was not specified, it was comprised of a short training session, followed by an individual think-aloud assessment of each of the eight children. The training session consisted of two groups of four, in which students were given text that included stopping points written. Students were told to talk about what they were thinking of at each of the stopping points. Students were then given a second text to read after the training session was completed and this text contained no stopping points. Students' responses were videotaped and coded using vPrisim software, which allowed the author to compare the students' results.

While Sainsbury (2003) did not feel that this study provided enough information to make generalized statements about the overall effectiveness of think-alouds, the overall goal of the study was accomplished. The results of the study demonstrated that think-alouds provided useful information into the thought process of students. The think-alouds showed where students were able to draw on background knowledge, make predictions and inferences, and where there were deficits or gaps in a student's understanding of the material. It also indicated that think-alouds are a strategy that worked well with younger students. The information in this study supports the use of think-alouds as a way to understand a student's thought process while reading. Based on Sainsbury's (2003) findings, teachers using this strategy in their classrooms should choose texts

that are at students' reading abilities and do not have meanings directly stated in order to fully

understand the students' interactions with text.

Loxterman, Beck, and McKeown (2001) also sought to examine the thought processes of

students in regards to comprehension. As previously mentioned, existing research indicated that

the use of revised texts could be utilized in order to comprehension (Beck, McKeown, Omanson,

& Pople, 1984, as cited in Loxterman et al., 2001). Given this information, the researchers

wanted to determine if there were differences between reading silently and thinking aloud while

using revised texts versus regular texts. The researchers felt very strongly that a student's

engagement with the text promotes increased comprehension.

The sample consisted of 88, white, middle-class, sixth graders that attended two small

suburban public schools in Pennsylvania. The gender of these students was not specified. The

study was open to all students, but only those who were given parental permission were allowed

to participate. Participants were divided into four groups of 22 students for each of the following

conditions: original text/read silently, original text with think-alouds, revised text read silently,

and revised text with think-alouds. Using stratified random selection the students were assigned a

condition based on their reading comprehension scores from the Metropolitan Achievement Test,

a test that all students in the schools take. While the duration of the study is not specifically

mentioned, the procedure appears to indicate that the entire process of pre-testing, practicing

using think-alouds on a sample text, and testing occurred within the same day.

Once the students were assigned to their groups, an examiner recited a written script that

included an introduction, directions, recall prompts, and open-ended questions. If students were

in the think-aloud group (original or revised texts), they completed a practice test first, along

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with modeling from the examiner, to ensure that they understood how a think-aloud works. Their

story had sections covered with paper. The students were instructed to uncover one section of

paper, begin reading, and then respond to the text until they had reached the end of the

section. The students that read silently, original, or revised texts, were given the whole text all at

once. Additionally, the students were only asked if they thought that their peers would enjoy the

story. After reading, all groups were asked to recall what they read and were asked six open-

ended questions.

     After reading, the students recalled as many ideas as they could remember from the story.

The researchers determined that there were 40 possible key ideas in the original text and 44

possible key ideas in the revised text. Ultimately, the results supported both the previous

research of using revised texts, as well as answering the researchers original question: Which of

the following conditions would produce the highest comprehension? Of the students who read

the original text silently, they were able to recall 15.5% of the ideas. Of the students who read

the original text with the think-alouds, they were able to recall 20.7% of the ideas. With the

students who read the revised text silently, they were able to recall 24.6% of the ideas. Finally,

the students who read the revised text with the think-alouds were able to recall 28.1% of the

ideas after reading. These results indicate that students who thought aloud automatically

performed better than students who read silently. Being able to verbalize what was being read

created a connection between the information and the student, thus deepening the reader's

understanding. Additionally, when a simplified version of the text was provided, students could

spend more time on analyzing the information they were reading, rather than expending their

efforts on decoding unfamiliar words.

After recalling the main ideas of the story, the students were asked six open-ended

questions about the passage. Of the six open-ended questions, four of the questions were scored

0, 1, or 2, and two of the questions were scored 0 or 1. The students who read the original text

silently earned 29.1% of the possible points. The students who read the original text with the

think-alouds earned 42.7% of the possible points. Of the students who read the revised text

silently, they earned 54.1% of the possible points. Lastly, the students who read the revised text

with the think-alouds earned 70% of the possible points. Similar to the results of the idea recall,

students who thought aloud while reading scored higher than their silent reader counterpart.

Furthermore, students who read the revised text again scored higher than those students who read

the original text.

In addition to the quantitative results of the study, the researchers also made qualitative

discoveries. Since half of the students were forced to think aloud while they were reading, the

researchers were able to gain insight into the thought process that occurred while each student

was reading. Since the passage was about *El* Nino, some students were able to make connections

to background knowledge about flooding and its effects. The students who read the revised

passage were also able to make connections between how the warmer water causes fish to die

and then because the fish die, the birds in the area also die. This demonstrated that those students

were able to create inferential statements based off of what they had read. Knowing that the

combination of thinking aloud and using a revised text will increase the chances of producing

inferential statements, teachers can use this information to make adjustments in their reading

lessons. Therefore, these findings suggest that when teaching comprehension strategies, teacher

should actively seek out texts that contain simplified language and explicit meanings.

Based on the studies of Bereiter and Bird (1985), Baumann et al. (1992), Sainsbury

(2003) and Loxterman et al. (1994), it has been established that thinking aloud provides the

opportunity to understand how and what thought processes occur while reading. This enables

both teachers and researchers to understand where breakdowns in comprehension occur. In doing

so, teachers can determine specific areas needing targeted instruction. Furthermore, in order to

increase comprehension, not only should students think aloud while reading, but they should also

use revised texts that are at their appropriate reading level.

The Types of Responses Elicited by Think-Alouds

The research in the previous section demonstrates that think-alouds provide a window

into a student's mind and thought processes. Continuing forward, the following studies explore

how think-alouds allow teachers to understand what a student is thinking, noting specifically the

kinds of responses think-alouds can produce. These kinds of responses can range from main to

minor ideas, implicit to explicit statements, short to long in length, and forms of self-talk

students use while completing a task. Being able to gather and analyze this kind of information

from the think-alouds allows educators to gain powerful information for the planning of

comprehension instruction.

Karahasanović, Hinkel, Sjøberg, and Thomas's 2009 study examined the thought

processes and the types of responses generated by university students. This was accomplished

through the employment of three different methods: concurrent think-alouds ("CTA"),

retrospective think-alouds ("RTA"), and a feedback collection method ("FCM"). Descriptions

and explanations of said methods are described in the next paragraph. The purpose of this study

was to determine which of these methods was most beneficial to program comprehension. In

addition, Karahasanović, Hinkel, Sjøberg, and Thomas wanted to know about usefulness of the

responses, the costs, and how each method affected the subject's performance.

Knowing that think-alouds provide a richer set of data (Russo, Johnson, & Stephens,

1989; Shaft, 1997, as cited in Karahasanović, Hinkel, Sjøberg, & Thomas, 2009), two different

styles of think-alouds were tested: concurrent and retrospective. Concurrent think-alouds, CTAs,

required a subject to verbalize his/her thoughts to an observer (which were also audio recorded)

the entire time while performing a task. Retrospective think-alouds, RTAs, ask a subject to

verbalize his/her thoughts to an observer after performing a task. The feedback collection method

was similar to a think-aloud in that it asked a subject to state his/her thoughts, but the students

were prompted every fifteen minutes on a computer screen to type their thoughts at that moment

within a two minute period. The silent group (the control group) was not prompted to provide

any thoughts throughout the study.

Thirty-eight students from the Oslo University College and the University of Oslo, in

Oslo, Norway, voluntarily participated in this study, which occurred over a period of seven days.

All students were currently enrolled in their third or fourth year of computer programming

classes. The students, who ranged in age from 20 to 38 years old, were primarily males (37), and

one female. Ethnicities and socioeconomic status was not provided. Based on a background

questionnaire regarding their computer experience, the students were divided into two groups

labeled as "students" and "experienced students". After that, the students were randomly

assigned to one of the four test groups: CTA (9 students), RTA (10 students), FCM (12 students), or silent control (7 students). None of the students had any prior experience with think-alouds or FCM. The students in the CTA, RTA, and FCM groups were all provided with a day of training on each of their respective test methods.

All participants were given the same two tasks to complete over a six-hour, six-day period. The tasks were related to updating a library database system using Java script. The first task students were asked to perform was a deletion related to the ISBN number (of a book or magazine). The second task was to enable the library system to accept user's e-mail addresses. A third task of notifying patrons when their books were returned was added if students finished before the end of the six-hour period.

After the experiment concluded, the responses of the students were analyzed. Overall, the CTA method produced the most statements, 1215 in sum. However, this is not unexpected since the students in the CTA treatment group were required to verbalize their thoughts throughout the whole process. The students in the RTA group produced 237 statements. The FCM group produced the fewest amount of verbalized statements, a total of 149. These students only had a limited amount of time to respond, which may not have allowed the students to type everything that they were thinking. However, the RTA and FCM groups also provided much more explicit comments, and their responses were easier to code for analysis. The silent control group did not have any responses because they worked silently. Overall results of each group are listed below.

It was discovered that the students either utilized a "systematic strategy" of reading all the documentation provided before starting the task, or a "as-needed strategy" of starting the task

first without reading any of the provided documentation. After this, two samples of each strategy

from the CTA, RTA, and FCM groups were analyzed further. From these samples,

Karahasanović, et al. determined that the majority of statements made by the students were

related to the task they were performing. The second-most common type of statements made by

the CTA and FCM groups were planning, strategy, and reflection statements, while the RTA's

group made more comments about the experimental material. The FCM group made the largest

proportion of Comprehension statements, but this was only 10.1% of their total responses. It was

also observed that the FCM group made more statements about their frustrations with the tasks.

The researchers hypothesized that the students may have felt more comfortable expressing their

frustration to a non-human (meaning the computer) than those students in the CTA and RTA

groups who had an observer present. Yet, one benefit of all of these methods is that it allowed

the researchers to determine when students ran into problems and what processes students used

to solve the problems.

     Additionally, the researchers found that the FCM method was most cost-effective. One

reason was due to the fact that only one observer had to be present for that group of students.

Another reason was that it took less time to analyze the data, because it did not have to be

transcribed from the audiotapes. The FCM group also finished the task in the least amount of

time, with the fewest errors. In comparison, the silent control group finished in the second-

shortest amount of time, but struggled with the correctness of the second task. The researchers

determined that having to verbalize thoughts slowed down the students.

     Overall, while Karahasanović, et al. (2009) concluded that the feedback control method

was the most effective in gathering responses, cost, and performance. They determined several

benefits of the concurrent and retrospective think-aloud methods. The CTA method provided the

most statements, which gave the researchers a very detailed idea of what was going through the

students' minds while completing the tasks. Thus, it was apparent when comprehension or

breakdown of comprehension was occurring. The RTA method provided the researchers with

explanations for the problems in comprehension that occurred. With additional training in both

think-aloud methods, they can be used more effectively to gather information about the thought

process of completing a task as well as the various types of responses provided by the students.

Instruction implications from this study include that educators should have students verbalize

their thoughts throughout the reading process to attain the most accurate identification of

comprehension strategies used during reading.

In this next study, Caldwell and Leslie (2003) investigated the role that think-alouds have

in preparing middle school readers for high school reading. The purpose of their study consisted

of two parts. They wanted to see if eighth grade students could understand high school text,

while also determining if the use of think-alouds would be helpful when the students came across

difficult text. The researchers hypothesized that because the students they chose were proficient

readers, the students would be capable of reading high school text. The researchers also

hypothesized that think-alouds would be helpful in comprehending difficult texts because prior

research suggested that think-alouds could be a strategy for improving comprehension (Harvey

& Goudvis, 2002; Wilhem 2001, as cited in Leslie & Caldwell, 2003).

As previously stated, all students in the study were considered proficient readers. The

sample included six eighth-grade girls and two eighth-grade boys. Six students attended a

suburban private school and two attended a public urban school in Wisconsin. The researchers

did not provide information regarding the ethnicity or socioeconomic status of the students. All

were willing participants in this study that consisted of three, hour-long sessions that spanned

over several days.

Students were first assessed for their prior knowledge and then read the selection silently

before then retelling the story to the researchers. After retelling the story, students were asked

questions about the text. If students were unable to answer the question, they were allowed to

look back in the text. For the second section of the text, the researcher modeled the think aloud

strategies. On the third section, students initiated the think-aloud strategy whenever prompted by

the text to stop. Following these think-alouds, the researchers coded the students' responses on a

scale of 0-3 and divided the responses into eleven different categories. At the conclusion of the

think aloud portion, students retold that part of the text and once again answered questions about

the text. This procedure was done for three different text selections.

The results of the prior knowledge scoring indicated that across all passages there were

no significant differences. Therefore, the researchers were able to focus on the affects of other

units of data analysis. The results of the retelling indicated that the length of students' responses

were comparable for all three texts. The coherence of the retellings differed between the

passages. Depending on the difficulty of the texts, students were able to recall more important

ideas in some selections versus other selections.

All of these observations suggested that the difficulty of a text impacts a student's ability

to visualize and recall the text read. The results of the research indicate that the effectiveness of

think-alouds depended on the difficulty level of the text and how one is assessed on

comprehension. Additionally, after the use of think-alouds, students were able to include more main idea statements as opposed to several minor details. When answering questions about a text, researchers concluded that there was no real difference in the students' ability to answer questions without looking back in the text. The difficulty of text did not affect the students' ability to utilize the look-back strategy. Educators may want to consider exposing students more expository texts in a variety of subjects in order to increase background knowledge and text structures that exist in higher-level texts.

Crain-Thorenson, Lippman, and McClendon-Magnuson (1997) also analyzed the specific kinds of responses students gave while using think-alouds. Previous studies have indicated that individuals with higher amounts of background knowledge are able to produce more prediction and inferential statements (Hass & Flower, 1998; Lundeberg, 1987; Pritchard, 1990; Wineburg, 1991, as cited in Crain-Thorenson, Lippman, & McClendon-Magnuson, 1997). Crain-Thorenson et al. (1997) wanted to determine if there was an increased level of comprehension in adult readers who use background knowledge and metacognitive strategies while thinking aloud.

Twenty-four college-aged students from the state of Washington participated in this study. The students ranged in age from 20-38 years old, and were either juniors or seniors completing their undergraduate degree, or in a post-baccalaureate program. Seven were male and seventeen were female, and were all taking a required psychology course for a teaching certification. The ethnicity and socioeconomic status of the students was not provided. All students were given an individual scripted training session on the use of think-alouds prior to the experiment. The training and experiment was completed in approximately 60 to 90 minutes.

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During the training session, two passages (one marked with locations to respond, and one unmarked) similar to the experimental passages were used to train the students in the think-aloud method. After that, the students were then each given three passages to read (one marked, one unmarked, and one control). Based on Olson, Duffy, and Mack's (1984) research, the following format was used: two of the passages were set up in the standard think-aloud format with one marked with specific locations to respond, and one unmarked, as well as a control passage that was neither in the think-aloud format, or marked with spots to respond (as cited in Crain-Thorenson et al., 1997). All passages were considered to be at a college reading level. The independent variables were the use of a marked passage, an unmarked passage, and a control passage. The dependent variables were as follows were read aloud, students answered four written response comprehension questions after reading, and the same coding system used for scoring all passages.

Before reading each passage, the students were asked to share any background knowledge they had about the topic. After that, each passage was read aloud. After reading, the students were asked to complete four written response questions about the passage. They were not allowed to use the passage to answer the questions. After testing, the prior knowledge, think-aloud responses, and written responses were coded and compared in order to determine the effects each passage had on the student's comprehension.

Prior knowledge was scored using a rating from 3 to 1, with 3 indicating that the student knew four or more pieces of knowledge on the topic, and a 1 indicating that the student either did not recall any information or did not know any information on the topic. The think-aloud responses were coded as elaboration, monitoring-comprehension, monitoring-non-

comprehension, or text analysis/planning. The written responses were coded with 0-3 points for

questions 1 and 2, and 0-2 points for questions 3 and 4.

Based on the prior knowledge scores, none of the passages were more or less difficult to

comprehend, demonstrating that the passages were appropriate, unbiased selections. The use of

the think-aloud strategy neither improved comprehension, nor did the use of a marked passage

affect overall comprehension. However, it was noted that the type of think-aloud responses

differed between the high comprehenders (students who scored 7, 8, or 9 on the questions), and

low comprehenders (scores of 4 or 5). The high comprehenders had the highest amount of

monitoring-comprehension coded responses in both the marked and unmarked passages.

However, the low comprehenders, had several more monitoring-comprehension coded responses

on the unmarked passage than on the unmarked passage. In fact, the low comprehenders had

several more monitoring-non-comprehension responses on the marked passage. Yet, the highest

amount of responses for this group of students fell into the elaboration category.

Crain-Thorenson et al. (2007) maintained that because the marked passage forced the

students to respond, the responses showed the confusion and struggles the students had while

reading the passage. Although the think-alouds did not produce the expected results, they were

able to provide the researchers with other valuable information. The researchers found that when

students were able to paraphrase the information they had just read, their overall comprehension

scores were higher that those students who relied solely on prior knowledge. The think-alouds

gathered in these studies showed that students were able to provide much more concise and

focused responses, as opposed to when students did not use think-alouds. Based on these

findings, educators should not only teach students to think aloud while reading, but also how to summarize and paraphrase what they have read.

In Liang and Kamhi's study (2002), they used think-alouds to compare inferring abilities in average and below average readers. Previous studies suggested that below-level readers struggled to create inferences (Crais & Chapman, 1987; Oakhill, 1984, as cited in Liang & Kamhi, 2002). Since the ability to create inferences is key to understanding and connecting ideas within texts, readers must be versed in this skill (Graesser, Singer, and Trabasso, 1994, as cited in Liang & Kamhi, 2002). Based on the studies of Suh (1989) and Trabasso and Magliano (1996) (as cited in Liang & Kamhi, 2002), the researchers hypothesized that the greater the number of explanatory inferences created by a reader, the greater the number of comprehension questions answered correctly. Think-alouds would be the vehicle that would drive students to be able to generate different kinds of inferences in this study. The researchers defined an "explanatory inference" as "casual connections between actions and events in the story…they are usually responses to *why* questions…" (Liang & Kamhi, 2002, p.437). They also hypothesized that using think-alouds would be the most effective way of determining if students were creating explanatory inferences, as well as other kinds of inferences.

The sample for this study included 40 third-graders, from a rural, low-socioeconomic-status area. 80% of the students qualified for free lunch. As part of this three-session study, the students were equally divided into two groups based on their scores on the Woodcock Reading Mastery Test-Revised (WRMT-R), the Gray Oral Reading Test-3 (GORT-3), the Test of Nonverbal Intelligence (TONI-2), the Clinical Evaluation of Language Fundamentals (CELF-3), and the Peabody Picture Vocabulary Test-III (PPVT-III). The below-average readers scored

significantly lower on all reading and language tests. The average readers consisted of eight boys and 12 girls (13 African-American and seven European-American), while the below average readers consisted of 12 boys and eight girls (17 African-American and three European-American). None of the students were receiving special education services at the time of the study.

On her own, Liang completed all the testing over three sessions that lasted 45 to 60 minutes each. After the initial testing, students were then asked to perform a verbal working memory task that involved responding to true and false statements, as well as recall of the last word of a sentence. After that, all students were given four stories to listen to, which were adapted from the stories used in Trabasso and Magliano's study (1996, as cited in Liang & Kamhi, 2002). For two of the stories, students simply listened to both stories. For the other two stories, the students were asked after each sentence what they were thinking. After the first story in each condition, the students were then asked to recall the events of the story. Following each story, the students answered three literal and three inferential questions.

With the exception of one test area, the average reader group scored higher than the below-average reader group. Based on the think-alouds, the average readers created significantly more inferences, including correct inferences, than the below-average readers. The average readers created approximately 10 inferences, with 9 out of 10 being correct. The below-average readers created only an average of 7 inferences, with 4 out of 7 being correct. Within these results, both groups produced significantly more explanatory inferences, as opposed to predictive and associative inferences. However, the below-average group produced slightly more predictive inferences than the average group. Also, students were more likely to repeat exactly what they

had heard as opposed to paraphrasing the story. When comparing the results of the story recall and comprehension questions between the two conditions, both groups scored higher when thinking-aloud, as opposed to listening-through. Thus both of the researchers' hypotheses were correct. This again shows that think-alouds can be more beneficial to both average and below-average readers in increasing their comprehension abilities. Educators will want to consider providing below-level readers with additional instruction in inferencing, especially while using the think-aloud strategy.

Lodge, Tripp, and Harte examined kinds of responses and kinds of self-talk that students used during think-alouds in their 2000 study. This study was broken into three phases. The first phase's objective was to compare student's self-talk generated by think-alouds compared to verbal thought-listing. The second phase's objective was to determine if prior use of a think-aloud affected the kind of self-talk produced during thought-listing. Finally, the researchers wanted to know if when the students were put under the condition of mild anxiety caused by a timed math test, the types of responses differed from when not placed under a condition of anxiety.

The number of main ideas given by the student was the study's dependent variable. The level of anxiety was the independent variable. The researchers hypothesized that most students would be able to report some kind of self-talk, and that the majority of this self-talk would come from the think-alouds, rather than the verbal thought listing. They also believed that there would be a positive correlation between negative self-talk and mild anxiety.

This two-week study took place in New Zealand. The student sample consisted of 88 individuals, 46 females and 42 males, who ranged in age from eight to ten. The students came

from four suburban schools, with one considered "low-socioeconomic", two considered "mid-socioeconomic", and one considered "high socioeconomic" status (Lodge, Tripp, & Harte, 2000). Eighty-three percent of the students were white. All students agreed to participate in the student and had returned parental consent forms to participate. In the first of two sessions, all students were verbally administered the State-Trait Anxiety Inventory for Children (STAIC) to assess their anxiety levels. After this, students were paired by score and then divided into two equal groups.

During the second session, all students were informed that they were going to be given the five minutes to complete several math problems. Group 1 was given two minutes to state their thoughts about having to only have five minutes to complete the math problems. This was to increase anxiety and understand the kind of thought process and self-talk students produce in high-anxiety situations. Group 2 was not asked to report any information. The STAIC was then re-administered determine if there was an increase in anxiety levels among all the students.

After that, the students were allowed to complete the math problems. In Group 1, the students were told that while they worked on the problems, they should say everything that they were thinking and saying to themselves out loud. Two prompts were given if students did not say anything for 10 seconds. This was considered the "think-aloud" portion of the study. Group 2 was only told to work on the math problems. After the five minutes was up, both groups of students were asked what they were thinking before they were given the math problems and during the time they were working on the math problems. This was the thought-listing portion of the study. Students were prompted if they did not respond after 10 seconds. Students indicated

when they were finished stating their thoughts by raising their hand. Both the self-talk during the think-aloud and thought listing were audiotaped.

After analyzing the audiotapes, the researchers sorted the ideas ("units") into six categories: negative, positive, analytical, questioning, neutral, and directive. During Group 1's think-aloud, the most frequent kind of statement made was analytical, followed by negative and then questioning statements, totaling a mean of 44 statements. Group 1's thought-listing produced mostly positive statements, followed by negative statements, totaling a mean of 43 statements. Group 2's thought -listing had mostly negative statements, followed by analytical and then positive statements, totaling a mean of 38 statements. The results of the STAIC were also analyzed. In both groups, anxiety levels were significantly higher after the students were told about completing the math problems than before the math problems were mentioned. The researchers then compared the kinds of statements the students made to their level of anxiety. The researchers found that there was not a significant correlation between anxiety and negative self-talk during the think-aloud. However, there was a significant correlation between the number of negative statements and anxiety levels during the thought-listing.

Overall, the researchers were able to make some important determinations. This study demonstrated that using think-alouds could produce more statements than just thought-listing. Although using a think-aloud may not affect the type of self-talk used during thought-listing, it does appear to increase number of statements generated during thought-listing. Finally, there is a correlation between the level of anxiety and the number of negative statements made. Educators should consider that using think-alouds produces analytical statements, therefore giving educators a more precise picture of the methodology used by students to solve comprehension

problems. Additionally, when students feel anxiety, their responses will contain more negative self-talk.

The final study in this section examined yet another type of response produced by a think-aloud. Gillam, Fargo, and Robertson (2009) studied the effect of think-alouds on students with and without language impairments. It gauged students' ability to produce explicit and implicit responses (referred to as "verbal protocol analysis") when reading expository texts. Few studies have been done on the use of think-alouds while reading expository texts (Crain-Thorerson et al., 1997) and even fewer studies have been done on the use think-alouds with students who have language impairments (Cote, Goldman, & Saul, 1998, as cited in Gillam, Fargo, & Robertson, 2009). The researchers also wanted to see if there was a correlation between thinking aloud and the use of a student's working memory to recall information.

The sample consisted of 40 fourth-grade students that attended the same country school in Tuscaloosa, Alabama. Twenty of the students had typical language (TI) skills, and 20 had been diagnosed with language impairments (LI) and were receiving special education services. The groups were similar in gender, with the TI group consisting of 13 females and seven males (12 African-American, eight Caucasian), while the LI group had 12 females and eight males (16 African-American, three Caucasian, and one Hispanic). No socioeconomic information was given. All students had been given parental consent to participate in the study. Group membership became the independent variable. The dependent variable was the number of correct comprehension questions and recalled details from the passage.

Prior to the study, students were assessed using the Clinical Evaluation of Language Fundamentals-Third Edition (CELF-3) and the Test of Nonverbal Intelligence-Third Edition

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(TONI-3) in order to determine if they qualified to participate in the study, and subsequently to determine which test group they would be a part of. Only students who had a standard score of 85 to 115 on both tests and had no history of special education services or had not repeated a grade were allowed into the TI group. Students who scored between a 75 and 125 on both tests and had received special education services were placed into the LI group. However, students in special education who had hearing, visual, gross neurological, emotional or social impairments were not used in the study. During the study, students' verbal working memory was assessed to determine how well a student was able to process and store information. Students had to answer true or false questions, as well as recalling the last word of a given phrase. To assess their think-aloud responses, students were told to listen to two of four, randomly selected, expository passages relating to either science or social studies topics. After each sentence, the researcher asked the student, "What do you know about the story now?" After the passage was finished, the researcher asked the students three implicit and three explicit comprehension questions and also asked the students to recall the passage. All student responses were recorded on tape and then scored by third party of graduate students.

Students were given one point each time they were able to correctly recall the last word in the verbal working memory task. Students were also given one point for each of the 15 details that they were able to recall in each passage. Students were also given a point for each of the comprehension questions answered correctly. Additionally, all responses obtained from the use of the think-aloud were coded as "explicit" or "implicit" and the number of responses in each category was totaled. It was also noted if the statements were accurate or incorrect.

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This study produced a variety of results. Overall, the students that had typical language skills scored higher than the students with language impairments. Yet, on verbal working memory and number of think-aloud comments subtests, there was no significant difference between the students with typical language skills and the students with language impairments. There were two areas in which the students with language impairments struggled: the comprehension questions and passage details subtests. Additionally, both groups of students were able to produce more explicit details than implicit details. In general, the students would paraphrase the text, as opposed to produce straight repetitions or inferences from the story. Those who were able to paraphrase the story scored higher than the students who did not paraphrase. Approximately 85% of the think-aloud comments made by the students with typical language skills was correct. Approximately two-thirds of the comments made by the students with language impairments were correct. These think-aloud statements also allowed the researchers to understand the students' thought processes and in turn, allow them to plan for more appropriate interventions in the future. Instructional implications include again using think-alouds to understand the thought process that students use to arrive at specific answers, as well as the continued instruction of summarizing, paraphrasing, and inferencing to increase comprehension skills.

By using think-alouds, students are able to produce focused responses. These responses can be analyzed in a variety of ways, such as in the form of major and minor ideas, explicit and implicit ideas, the length of responses, and the kinds of self-talk generated by using a think-aloud. This information is useful to both researchers and teachers when conducting future research and planning for effective classroom comprehension instruction with a variety of

students. Karahasanović et al. (2009) and Lodge et al. (2000) both found that think-alouds are a useful tool in understanding what comprehension strategies students used while reading. Through the use of think-alouds, the studies conducted by Crain-Thorenson et al. (1997), Liang and Kamhi (2002), and Gillam et al. (2009) determined that students who were able to summarize, paraphrase, and infer meaning from what they had read attained higher comprehension skills than those students who did not demonstrate those skills. Finally, Caldwell and Leslie (2003) concluded that through the use of think-alouds, increased background knowledge and familiarity with text structures help to increase comprehension.

Think-Alouds for Targeted Learners

Think-alouds benefit students with language impairments and can also be used with other groups of students who struggle with comprehension. The next two studies investigated the use of think-alouds with English Language Learners (ELL). Cassanave (1988) asserts that for students who struggle to learn second language think-alouds "…self-regulate the reading process and improve comprehension by employing 'fix-up strategies' where needed" (as cited in McKeown & Gentilucci, 2007, p. 136). McKeown and Gentilucci (2007) explored the affects of using think-alouds with second-language learners at the middle school level. Their study sought to determine if second language learners who used the think-aloud strategy would display higher comprehension in content areas those who did not employ the think-aloud strategy. Based on previous research, McKeown and Gentilucci (2007) hypothesized that students who utilized the think-aloud strategy would, in fact, demonstrate a higher level of comprehension in content areas.

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A total of twenty-seven eighth grade English-language learners participated in this six-week study in California. There were ten females and seventeen males. While the students' ethnicities were not specified, their native languages included Spanish, Urdu, Hebrew, and Tagolog. No socioeconomic status information was provided. The level of reading proficiency varied among students, with five students assessed at Level 2, 11 students at Level 3, and 11 students at Level 4 (2 being significantly below level, 3 being at an intermediate level, and 4 being at or above grade level). This is based upon the California English Language Development Test (CELDT).

For this study, all students were pre-tested, provided with instruction, and post-tested. The students were pre-tested with expository selections from the High Point Comprehension Assessment, a test that was already utilized in the school. Students were provided with texts at their instructional level. After that, a six-week process followed that included explicit teacher modeling by McKeown of the Think-Aloud Strategy developed by Bereiter and Bird (1985, as cited in McKeown & Gentilucci, 2007), teacher-monitored use of the strategy by the students, partner work, and guided independent practice. Additionally, instruction was given to provide students with fix-up strategies from Bereiter and Bird's program to supplement their comprehension. At the end of the six weeks, students were post-tested, again using the High Point Comprehension Assessment but with different expository selections.

The results of the post-test varied among the three English-learner leveled groups. The data suggested that not that all English-learners benefit from the use of the think-aloud strategy. The Level 2 group's scored stayed about the same. The Level 4 group's scores decreased. The only group that showed a significant increase for the majority of the participants was Level 3.

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McKeown and Gentilucci (2007) offered reasons for the findings. First of all, the post-test

selection was significantly longer than the pre-test passage. Secondly, the Level 2 group was

more of "bottom-up" readers that struggled with fluency of the passage and therefore were

unable to employ the use of a "top-down" strategy in the think-aloud. Third, since the Level 4

readers were either proficient or advanced, they relied more on their own background knowledge

and the use of inferences while reading. Finally, the Level 3 group benefitted from the use of the

think-alouds because they were fluent readers, and therefore possessed enough reading skills to

utilize a "top-down" strategy successfully. Based on McKeown and Gentilucci's (2007) study,

think-alouds were found to be most successful with fluent readers who struggled with

comprehension. As a result, educators will want to consider using think-alouds with English

Language Learners that are fluent readers to increase their comprehension.

    While McKeown and Gentilucci's (2007) study found that think-alouds were most

successful with students who possess some reading capabilities, the study conducted by Ghaith

and Obeid (2004) found that all readers who received think-aloud strategy instruction benefitted.

The researchers wanted to increase comprehension in the form of literal and higher-order

thinking through the use of think-alouds with second-language learners. The researchers felt

compelled to focus on higher-order thinking because it "…requires interpretation, analysis, and

synthesis of information and involves three types of interpretive, critical, and evaluative

comprehension" (Ghaith & Obei, 2004, p. 50). They also believed that the use of think-alouds

would be more effective than regular comprehension instruction.

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Consequently, Ghaith and Obeid (2004) hypothesized that there would be a relationship between the use of think-alouds and an increase higher-order comprehension and that think-alouds would be a more useful tool than regular instruction. The independent variable was whether or not the students received instruction in the use of think-alouds. The dependent variable was the use of a comprehension post-test given at the end of the study. The participants in this study were 32 eighth-graders (aged 12-13), of whom all were English-language learners. All students attended a private school in a Middle Eastern country. Specific information regarding the gender, ethnicity, and socioeconomic status of these students was not provided. The students were randomly assigned into the experimental or control groups, containing 16 students apiece. The experimental group received instruction in the use of think-alouds. The control group did not receive any additional instruction. The entire study lasted just over six weeks.

This study began with the researchers providing one week of instruction to the classroom teacher in the use of think-alouds (Phase I). However, the researchers do not state exactly what this instruction looked or sounded like. During Phase II, which lasted four weeks, the experimental group was given instruction in the use think-aloud strategies and was allowed to practice using the think-alouds. These strategies included predicting, picturing, comparing, identifying problems, and using fix-up measures (Ghaith & Obeid, 2004). The control group utilized the strategies included in their textbook, which were prediction, teacher explanation, question/answer, and vocabulary instruction. This four-week increment was broken down further. The first two weeks consisted of practicing the think-alouds individually and in pairs. The final two weeks involved additional demonstrations by the teacher, researchers, and students

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of the use of think-alouds. The same teacher taught both groups to maintain the validity of the

study. Phase III only lasted a single day and was spent administering the post-test.

During Phase III, all students were given a post-test. The test was very specific to the

study in that it was designed to measure four types of comprehension: literal, interpretive,

critical, and creative. Literal comprehension is defined as the ability to understand information

that is directly stated. Interpretive comprehension is inferring ideas that are not directly stated in

the reading. Critical comprehension involves comparing new information with background

knowledge and then drawing conclusions. Finally, creative comprehension is one's ability to

think beyond the information being read and thus creating new ideas. The students read a

passage that was unfamiliar to them and then answered 30 questions. The questions were written

to target each of four types of comprehension. The final Phase (IV) was one week long, and

assessed students who had been in the experimental group to determine how well they had

mastered the use of think-alouds. This involved individual interviews, in which students read and

utilized think-alouds. These tape-recorded interviews were later evaluated and level of mastery

was determined.

Two independent raters graded the results of the assessment. The results indicated that

there was a significant statistical correlation ($P < 0.01$) between the use of successful think-

alouds and overall reading comprehension. There was also a significant correlation between the

use of the think-alouds and the specific areas of interpretive ($P < 0.01$) and critical ($P < 0.05$)

comprehension. This supports the researchers' hypothesis. More importantly, there was

significant difference in the scores of the experimental group and control group in the critical

comprehension. However, the control group did score higher in the area of literal comprehension.

Ghaith and Obeid (2004) felt that the control group scored higher in the area of literal comprehension because they comprehended directly what they read. Whereas, by using the think-alouds, the experimental group had to verbalize and process more critically what they read, therefore giving them the higher score in critical comprehension. Generally speaking, the researchers felt that reading instruction should be based on the needs of the learner, and not just a singular approach for a whole group. The results of both studies indicate that think-alouds could be used with populations of struggling learners, specifically English-language learners. As long as the learners are able to decode successfully, they stand a better chance of improving comprehension by using think-alouds. More so, the students' critical comprehending skills will likely increase. As a result of these studies, teachers need to consider the individual needs and abilities of the students in their classroom in order to provide the best comprehension instruction.

Conclusion

Overall, while think-alouds did not always produce the expected results that the researchers hypothesized, each study provided insight as to the benefits of using think-alouds. This review has discussed the ways in which think-alouds have become a useful tool in the education world. Both Bereiter and Bird's (1985) and Baumann, et al. (1992) studies demonstrated how instructors could use the think-aloud strategy to model their own thought process to their students, therefore giving students a better understanding of how to develop their own thinking. However, Bereiter and Bird (1985) also used think-alouds to assess how well the students had learned the strategies that had been taught. Sainsbury (2003) also used think-alouds

to gain information about students' thought processes, especially to determine when a student's

comprehension ability began to break down. Based on the thoughts generated by the students in

their study, Loxterman, et al. (1994) discovered that through the use of think-aloud combined

with revised texts, students were able to easily make connections to the stories and thus their

comprehension scores were higher.

Researchers have also been able to categorize the types of responses generated by think-

alouds. Karahasanović et al. (2009) and Lodge et al. (2009) studies found that students utilized

different comprehension strategies depending on the way that the students solved problems.

Furthermore, through the use of think-alouds, Crain-Thorenson et al. (1997), Liang and Kamhi

(2002), and Gillam et al. (2009) all concluded that readers who were able to summarize,

paraphrase, and infer, also scored higher on comprehension measures. Meanwhile, Caldwell and

Leslie (2003) noted, as evidenced by think-alouds, skilled readers oftentimes drew on the

background knowledge they possessed to try to make connections with the text and answer

comprehension questions about the text.

Additionally, think-alouds can be used with specific populations of students with great

success. McKeown and Gentilucci's (2007) and Ghaith and Obeid's (2004) studies both assessed

the value of using think-alouds with English Language Learners. According to McKeown and

Gentilucci (2007), students who are able to decode effectively benefitted the most from thinking

aloud while reading. Moreover, these English Language Learners were also able to think more

critically when verbalizing their thoughts (Ghaith & Obeid, 2004). In conclusion, the results of

these twelve studies emphasize the positive impact that thinking aloud can have in increasing

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reading comprehension skills. Likewise, they also offer suggestions on how to incorporate and

utilize the think-aloud strategy successfully in a classroom setting.

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CHAPTER THREE: DESCRIPTION OF STUDENT SAMPLE, PROCEDURES, AND

DATA COLLECTION

The action research intervention described in this chapter aligns with the research detailed in Chapter Two that suggested the use of think-alouds in order to increase reading comprehension. The research studies of Bereiter and Bird (1985), Baumann, Seifer-Kessell, and Jones (1992), Sainsbury (2003), and Loxterman, Beck, and McKeown (1994) revealed that teachers can use think-alouds to gain a better understanding of a students' thought processes. In addition, studies conducted by Karahasanović, Hinkel, Sjøberg, and Thomas (2009), Caldwell and Leslie (2003), Crain-Thorenson, Lippman, and McClendon-Magnuson (1997), Liang and Kamhi (2002), Lodge, Tripp, and Harte (2000), and Gillam, Fargo, and Robertson (2009) indicated that teachers should use think-alouds to assess the types of responses that students provide while thinking aloud. These studies found that this was a critical part of comprehension because the responses would assist researchers and teachers understand where comprehension broke down and provided direction for instruction. Additionally, McKeown and Gentilucci (2007) and Ghaith and Obeid (2004) found that think-alouds can be used successfully to increase comprehension skills among struggling readers. Thinking aloud caused these students to think more critically throughout the reading process. To improve reading comprehension and the retention of information using research-based best practices, the researcher of this study taught her students how to verbalize their thoughts while reading. The researcher incorporated the use of the think-aloud strategy into small group reading intervention lessons. A thorough description of the student sample, study's procedures, and student sample will be provided in this chapter.

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This action research project followed a qualitative paradigm, in so being that the researcher observed the effects of the active use of one particular reading strategy on her students comprehension of articles used in their reading class. Ultimately, this action research project set out to examine the affect of using the think-aloud strategy on student comprehension. First in this chapter, the study's context will be explained. This will include a description of the school setting in which the study took place and information about the population of students that participated in the study. Next, the procedures and methods the researcher employed to test her hypothesis will be described. Finally, the measures used for collecting data in order to make observations and draw conclusions about the effectiveness of the study will be detailed.

Description of Site and Participants

Description of Site

The intermediate school in which this study took place is an urban, public school near Milwaukee, Wisconsin. It serves approximately 540 students in sixth through eighth grades. The population of the school are as follows: 43% are Caucasian, 18% are African-American, 34% are Hispanic, 2% are Native American, and 1% are Asian. Approximately 79% of the students receive free or reduced lunch. Seven students, including three girls and four boys, participated in this study. All students were in seventh grade; their ages ranged from 12 to 14 years of age. Two girls and three boys were Caucasian, one girl was Native American, and one boy was African-American. English was the first and primary language for all students that participated in this study. Six of the seven students in the study qualified for free or reduced lunch.

All of this study's participants had been formally diagnosed with a disability and had an individualized education plan ("IEP") that was implemented at the school. As part of their daily

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IEP programming, these students participated in a small group reading intervention, taught by

the researcher. Testing prior to this intervention indicated that all students were at least two

grade-levels below in reading, based on the Fountas-Pinnell Benchmark Assessment System

(Fountas & Pinnell, 1996). Each of the students also participated in a supplementary reading

intervention class, SOAR, taught by a regular education teacher. Three of the boys also

participated in a Direct Instruction reading class, due to exceptionally low reading levels and

Measure of Academic Progress (MAPs) scores.

Procedures

The use of think-alouds is still relatively new for teachers and students alike. Through the

use of the Stephanie Harvey Reading Strategies (Harvey & Gouvis, 2000), students at this school

are being taught more effective strategies to monitor their comprehension while reading. While

the use of think-alouds had not been directly taught to the to the participants before the start of

this study, all of them have had exposure to the Harvey Reading Strategies in their various

reading classes.

Pre-tests

There were three pre- and post-assessments administered during this study. At the start of

the school year, all students were assessed using the Fountas-Pinnell Benchmark Assessment

System, as well as the Measure of Academic Progress (MAPS) Reading Test. The Fountas-

Pinnell Benchmark Assessment System measures decoding abilities, fluency, and

comprehension. For this assessment, students read a portion of a book aloud while the teacher

conducts a timed running record. Then the students read the remainder of the story silently. After

that, the teacher asks approximately eight pre-written comprehension questions. An accuracy

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score of 95% or higher in fluency indicates that a student is able to read the story at an

independent level. A score of six or higher on the comprehension portion indicates an ability to

comprehend at an independent level. When a student is unable to score at an independent level

on both the fluency and comprehension tests, that book's level is deemed as his or her current

reading level, which correlates with a particular grade level. This assessment would be useful to

this study because it assesses students' independent reading and comprehension abilities, which

allows a teacher to determine appropriate texts for each student. By using appropriate leveled

texts, students are more likely to successfully comprehend what they are reading.

      The second assessment employed in this study was the MAPs Reading test. MAPs is an

acronym that stands for "Measures of Academic Progress" and is used to gauge student growth

through RIT scores. This is a computer-based multiple-choice test that is given three times a

year: fall, winter, and spring. Students are assigned a growth target upon completion of their fall

test and are expected to meet that goal upon completion of the spring test. Students answer

questions in four different strand areas. These areas are Analyzing Text, Understanding Text,

Evaluating and Extending Text, and Word Meaning & Context. Upon completion of this 42-

question test, students receive a RIT score (Rausch Score) that indicates their overall reading

abilities, as well as an individual score for each strand area. MAPs data was useful to this study

because it exposed the specific strand areas in Reading in which students struggle.

      The third assessment used in this study was the Qualitative Reading Inventory. Prior to

instruction, all students were individually pre-tested using the Qualitative Reading Inventory-V

("QRI-V") (Leslie & Caldwell, 2010), using the Upper Middle School Think-Aloud passage,

"Immigration-Part 2". The purpose of this test was to assess the thought process of students

when prompted, as well as their ability to answer implicit and explicit comprehension questions. The QRI-V asks students to read either a narrative or expository passage and then answer comprehension questions about text. Since the passages were written above the students' reading levels, the researcher read the passages aloud to the students when they were individually assessed. The purpose for this was to decrease the potential for students to become stuck on decoding and lose focus on the think-aloud task. As a result, data on the participants' reading rates and accuracy were not available. All of the students were given a copy of the story to follow along while the researcher was reading. The researcher informed the students that at certain parts of the story; she would stop reading and ask the student what he or she thought about what the researcher had just read. (These spots were noted on the students' copies of the story as well.) When the researcher arrived at each designated spot, she again asked the student to state what he or she was thinking. After the story was finished, the students answered ten comprehension questions related to the story: five implicit questions and five explicit questions. Implicit comprehension questions require that students infer information from the story to answer the question; whereas, explicit questions have students use information directly stated in the story to answer the question. Following the pre-testing, the students received instruction three times a week, for 45 minutes a day, over a period of six weeks. This QRI assessment was valuable to this study because it provides information on the thought processes of students while reading, as well as their ability to comprehend through the use of implicit and explicit questions.

Intervention: Instructional Measures, Activities, and Procedures

During the six weeks of this intervention, the students in the researcher's class were provided with instructional modeling, guided practice, and independent practice in the use of the

think-aloud strategy. The first week consisted of the researcher introducing and modeling the

think-aloud strategy. The researcher provided students with high interest articles that were at

their reading levels. The articles were printed in a way that included additional space between

each line and in the margins. This was done so that the students had a place to write. Each day,

the researcher would read the article aloud, while the students followed along. The article was

projected onto the whiteboard, which allowed the researcher to write down her thoughts as she

read. Her thoughts consisted of questions, reactions, and attempts to determine meaning of

unfamiliar words. While reading a story about a boy who stole money from his family, the

researcher commented, "I wonder why he stole money from his family? Hopefully this

punishment will prevent him from doing it again." The students were instructed to copy down

what the researcher wrote so that they became familiar with the types of responses that would be

considered appropriate. While these responses may appear to be rather simple, it was the

researcher's goal to have the students become engaged with the text. Based on her research, the

researcher knew that the more engaged the students were with the text, the more likely their

comprehension of the text would increase.

The second week of the project was similar to the first week, in that the researcher again

provided copies of the article to the students, projected the article and provided her thinking. For

example, in response to a school fining students for offenses such as chewing gum, late

homework assignments, or receiving a detention, the researcher remarked, "I would wonder what

other offenses students could be fined for? What does the school do with the money? I bet

students really dislike paying for something as simple as chewing gum." However, at the end of

each sentence, the researcher stopped and asked the students if they had any of their own

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thoughts to add to the board. The researcher would add as many responses as the students gave.

Occasionally the researcher would ask follow-up questions to the students to attain more

information. For example, she may ask, "How would you feel about attending a school like

this?" All of these responses were written down alongside the researcher's thoughts.

During the third and fourth weeks of the project, the researcher moved into the guided

practice phase of the project. Students began class with a warm-up activity that consisted of three

short articles that the students had to read and write down what they thought about each one. One

such story consisted of the discovery of a purple squirrel. After all students had finished the

article, the researcher asked the students to share the thoughts they wrote on their paper. Students

responded with language such as, "That's a weird color for a squirrel," or "Finding a squirrel like

that would freak me out." The researcher would affirm students' responses with comments such

as, "That's a really good question. I was thinking that myself!" or "That comment really shows

some good thinking on your part." Otherwise, the researcher would ask for more information if a

student responded with a one or two word answer such as "Cool". The researcher would say,

"Why is that cool?" The researcher also contributed her thoughts to the discussion, such as, "If I

saw a purple squirrel, I'd probably think that someone dyed it that color." Following the warm-

up, the students were put into pairs and given an article to read. The students were instructed to

have one person share their thoughts while the other person read the article aloud and wrote

down what the other student said. The next class period, the students reversed roles using the

same article. Since this occurred over a two-week period, a total of three articles were read.

The fifth and sixth weeks focused on providing the students the opportunity to have

independent practice in the use of the think-aloud strategy. The students were still given warm-

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ups to complete with a brief class discussion afterwards. However, after that was completed, the

students were given their own article to read and write down their thoughts. The researcher also

inserted lines in specific spots within the article to force the students to respond. She chose

locations in the story that would naturally cause a reaction from a reader. Students were provided

with written feedback from the researcher to either encourage the students to continue with their

strong responses, or to provide more information to give the researcher a better idea of what the

student was thinking.

Post-test

At the end of the six weeks, students were post-tested using a different Upper Middle

School Think-Aloud passage from the QRI-V, "Life Cycles of Starts-Part 2" (Leslie & Caldwell,

2010). The same procedure from the pre-test was utilized where the researcher read the story to

the student, stopped at the marked locations and asked the students what they were thinking at

that point in the story. Upon completion of the story, the students were again asked five implicit

and five explicit comprehension questions that were taken from the passage. The responses and

results of the comprehension questions were compared to those of the pre-test. This was to

determine if the use of the think-aloud strategy was indeed useful to the students in increasing

their comprehension abilities. Additionally, all students were re-tested using the MAPs Reading

test and the Fountas-Pinnell Benchmark Assessment System (Fountas & Pinnell, 1996), and

these scores were compared to the students' scores from the beginning of the school year.

Conclusion

In this chapter, the groundwork for this action research was laid. The sample population,

procedures, and the data collected were described. This study took place at an intermediate

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school near Milwaukee, Wisconsin. Seven special education students that were part of a daily,

small-group reading intervention participated in this study. All students were provided with

instruction in the use of the think-aloud strategy. Data was taken from multiple sources: the

Qualitative Reading Inventory-V, the Measure of Academic Progress Reading Test, and the

Fountas-Pinnell Benchmark Assessment System. In the following chapter, the results and

findings of this study are described.

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CHAPTER FOUR: RESULTS

The purpose of this action research study was to investigate the effects of using the think-aloud strategy with struggling readers to increase comprehension. This study was incorporated into a daily reading intervention class for students in special education. As stated in Chapter Two, multiple researchers have studied outcomes of using the think-aloud strategy while reading. In order to assess the students' ability to use the think-aloud strategy while reading and the effect on students' comprehension, students shared their thoughts throughout the reading of a text and answered comprehension questions as part of a pre- and post-test. In addition to this pre- and post-test, students were also assessed using leveled texts and a computer-based examination that measured students' ability in specific reading strand areas. All three of these test scores were compared to the results of the assessments given prior to the start of the study. This chapter reveals the results from the pre- and post-tests in addition to detailing the steps taken by the researcher to monitor students' progress throughout the study. An analysis of the results will be provided in Chapter Five.

Pre- and Post-test Results

Prior to the six weeks of intervention, students had been assessed using three assessments: Fountas-Pinnell Benchmark Assessment System (Fountas & Pinnell, 1996), Measure of Academic Progress (MAPs), and the Qualitative Reading Inventory-V ("QRI-V") (Leslie & Caldwell, 2010). All students in reading intervention classes were assessed using the Fountas-Pinnell Benchmark Assessment System at the beginning and the end of the year for the purpose of measuring both fluency and comprehension. Students read leveled passages until they were no longer able to achieve 95% proficiency in oral fluency and/or lower than a 5 out of 8 on

the comprehension questions. The MAPs Reading assessment was also given in the beginning,

middle, and end of the year and used a multiple-choice format to assess students in the areas of

Analyzing Text, Understanding Text, Evaluating and Extending Text, and Word Meaning and

Context. All students in this study's school took this assessment. The only additional assessment

the participants of this study took was the Qualitative Reading Inventory. The QRI-V was given

specifically to the students in the intervention because it assessed students' ability to think-aloud

while reading. The researcher selected passages that were written at an upper-middle school

level, but chose to read the passages aloud to the students due to the level of difficulty. At

designated spots throughout the passage, students were asked to respond with what they were

thinking at that time. The researcher scribed these responses. After reading, the students were

asked to answer ten comprehension questions related to the passage, five explicit and five

implicit questions. The researcher hoped the Fountas-Pinnell Benchmark Assessment System,

MAPs and QRI-V would provide information regarding students' ability to comprehend, while

QRI-V would specifically offer a clearer picture of the students' thinking. Data from these

assessments is described in this chapter.

Pre-test Results

Fountas-Pinnell Benchmark Assessment System was one of the assessments given in

order to assess comprehension. This assessment gauges reading levels and can be used to

determine growth over time. The levels in the Fountas-Pinnell Benchmark Assessment System

are alphabetical from A to Z. By seventh grade, students are expected to be reading at a Level Y

or Z. Students in the intervention ranged in ability from a Level K to a Level S/T. Specific levels

for each student are detailed in Table 4.1 (below).

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Table 4.1 Fall Fountas-Pinnell Reading Assessment Scores

Student	Student 1	Student 2	Student 3	Student 4	Student 5	Student 6	Student 7
Fall Level	S	Q	K	O	S/T	S/T (winter)	O

The MAPs Reading Test was also used to assess the participants' comprehension.

Students answer 42 multiple-choice questions that adjust in difficulty dependent on how the

student answers previous questions. Students have unlimited time to complete the assessment.

The fall district average RIT score for a 7th grade student is 215. The Winter district average for a

7th grade student is 216. The students' fall and winter MAPs scores are detailed in Table 4.2

Table 4.2 Fall and Winter MAPs scores

Student	District Average	Student 1	Student 2	Student 3	Student 4	Student 5	Student 6	Student 7
Fall Level	215	191	199	175	196	218	(transfer student)	194
Winter Level	216	204	191	182	227	210	212	191

The QRI-V Comprehension Test. was a third assessment used to assess comprehension.

Again, the questions were derived directly from the passage that the researcher read to the

students. The researcher read the Upper Middle School Level passage entitled, "Immigration-

Part 2". Students were asked five explicit and five implicit questions. The results of the

comprehension questions are listed in table 4.3 (below). Students were given partial credit for

answers if they were able to provide some but not all of the pre-printed answer.

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Table 4.3 QRI-V Pre-Test Comprehension Questions

Student	Student 1	Student 2	Student 3	Student 4	Student 5	Student 6	Student 7
Explicit Correct	1/5	0/5	1/5	0/5	2.5/5	1/5	2.5/5
Implicit Correct	2/5	2.5/5	1/5	1/5	4.5/5	2.5/5	4/5
Total (out of 10)	3/10	2.5/10	2/10	1/10	7/10	3.5/10	6.5/10

Think-Aloud Responses on the QRI-V were also used as a data point. The responses of the students during the think-aloud portion were scored qualitatively due to the fact that they were open-ended responses. The students' seven responses were sorted into the four categories of Restatement, Backtracking, Demanding Relationships, and Problem Formulation, defined by Bereiter and Bird (1985). Backtracking was defined as looking back in the story to help resolve a comprehension breakdown that occurred previously in a passage. Demanding relationships mainly consisted of questions the reader had about something that was read. Restatement is simply rephrasing the information to indicate understanding. Finally, problem formulation is the use of problem solving skills while reading to resolve issues with comprehension. The types of responses used by the students are detailed in Table 4.4 (below). Since the story was read to the students, backtracking was not overtly evident, and therefore not included.

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Table 4.4 Types of Think-Aloud Responses (QRI-V Pre-Test)

Student/ Response	Student 1	Student 2	Student 3	Student 4	Student 5	Student 6	Student 7
Restatement	5	7	2	6	2	2	1
Demanding Relationships	0	0	5	0	0	0	0
Problem Formulation	2	0	0	1	5	5	6

Student 1 had several incorrect ideas regarding the story. He used his background knowledge of current issues with immigration to make sense of the information in the story. It was apparent that he had no knowledge that there was a surge in European immigration in the early 20th century. Student 2 simply summarized each section. Student 3 asked mostly questions, in an attempt to gain more information to clarify what he had just heard. Student 4 primarily restated the information directly stated in the paragraphs. Student 5 attempted to infer information to gain understanding. Most of her inferences were correct. Similarly to Student 5, Student 6 also attempted to infer information to draw conclusions. However, oftentimes her conclusions were incorrect. Student 7 also made many inferential statements, with about half of them being correct.

Post-Test Results

The post-test results of Fountas-Pinnell Benchmark Assessment System are discussed in this section. The spring levels for each student are detailed in Table 4.5 (below). Every student showed growth from fall to spring.

Table 4.5 Table 4.5 Fall and Spring Fountas-Pinnell Reading Assessment Scores

Student	Student 1	Student 2	Student 3	Student 4	Student 5	Student 6	Student 7
Fall Level	S	Q	K	O	S/T	S/T (winter)	O
Spring Level	U	R	L/M	P/Q	V	U	Q

The results MAPs Reading Test are provided in this section. The spring district average

for a 7th grade student is 218. The students' Spring MAPs scores are detailed in Table 4.6

(below). The school district measures growth from fall to spring, although the winter scores are

used to assess if students are making progress. All students showed growth from fall to spring,

with the exception of Student 6. She was a mid-year transfer, and her score decreased from

winter to spring.

Table 4.6 Fall, Winter and Spring MAPs Scores

Student	District Average	Student 1	Student 2	Student 3	Student 4	Student 5	Student 6	Student 7
Fall Level	215	191	199	175	196	218	(transfer student)	194
Winter Level	216	204	191	182	227	210	212	191
Spring Level	218	205	211	215	213	221	203	208

The post-test results of the Qualitative Reading Inventory-V are discussed in this section.

The researcher read another Upper Middle School Level passage entitled, "Life Cycles of Stars-

Part 2". Students were again asked five explicit and five implicit questions. The results of the

comprehension questions are listed in table 4.7 (below). Overall, Students 1 and 2 both had an

increase in the total number of questions answered correctly. Student 3 stayed the same. Students

Chapter Four

4, 5, and 6 all had a decrease in the total amount of questions answered correctly. Students 1, 2,

3, 4, and 7 all increased the number of explicit questions correct, while Student 6 stayed the

same, and Student 5 decreased. All students decreased in the number of implicit questions

answered correctly.

Table 4.7 QRI-V Pre-test and Post-test Comprehension Questions

Student	Student 1	Student 2	Student 3	Student 4	Student 5	Student 6	Student 7
Pre-Test Explicit Correct	1/5	0/5	1/5	0/5	2.5/5	1/5	2.5/5
Pre-Test Implicit Correct	2/5	2.5/5	1/5	1/5	4.5/5	2.5/5	4/5
Pre-Test Total (out of 10)	**3/10**	**2.5/10**	**2/10**	**1/10**	**7/10**	**3.5/10**	**6.5/10**
Post-Test Explicit Correct	3/5	5/5	2/5	3/5	1/5	1/5	4/5
Post-Test Implicit Correct	1/5	0.5/5	0/5	0/5	2/5	1/5	1/5
Post-Test Total (out of 10)	**4/10**	**5.5/10**	**2/10**	**3/10**	**3/10**	**2/10**	**5/10**

The post-test results of the think-aloud portion of the QRI-V are displayed in this section.

The students' seven responses were again sorted into the four categories of Restatement,

Backtracking, Demanding Relationships, and Problem Formulation. The types of responses used

by the students are detailed in Table 4.8 (below).

Table 4.8 Types of Think-Aloud Responses (QRI-V Post-Test)

Student/ Response	Student 1	Student 2	Student 3	Student 4	Student 5	Student 6	Student 7
Restatement	1	0	1	6	2	2	2
Demanding Relationships	6	7	4.5	0	5	1	2
Problem Formulation	0	0	1.5	1	0	4	3

Students 1 and 2 had a complete change in their types of responses. They switched from

mostly making Restatement comments, to asking questions. Student 3 continued to ask

questions, but also made some concluding statements (At one of the stopping points, the student

made two statements, one Demanding Relationships, and one Problem Formulation, thus

resulting in the half points). Student 4 had no change in his types of responses. Student 5

continued to make Restatement comments, but then switched from Problem Formulation

statements to Demanding Relationships comments. Students 6 and 7 continued to make Problem

Formulation and Restatement comments, although they added Demanding Relationships

comments.

Conclusion

Data collected as a part of this six-week intervention was presented in this chapter.

Additional data that demonstrated longitudinal growth was also included. This data came from

the Fountas-Pinnell Reading Assessment, the Measure of Academic Progress Reading Test, and

the Qualitative Reading Inventory-V. This data was used to measure the impact of the

intervention. The results of the longitudinal data (Fountas-Pinnell Reading Assessment and

MAPs) showed growth among all students, with the exception of one student who decreased her

score on the MAPs test. The Fountas-Pinnell Reading Assessment demonstrated growth in the

Chapter Four

areas of fluency and comprehension. The MAPs Reading Test showed growth among the four

strand areas of Analyzing Text, Understanding Text, Evaluating and Extending Text, and Word

Meaning & Context. These two assessments display an increase in comprehension, confirmed by

an increase in test scores. Within the data collected directly for the intervention (QRI-V), the

results were mixed. The results of the comprehension questions appear to be affected by the

types of think-aloud responses the students stated. Five of the students increased their number of

explicit questions correct, while one student stayed the same, and one student decreased. The

students who asked questions (Demanding Relationships responses) were typically able to

answer more explicit questions correctly. There was an overall increase in this type of response.

This was a strategy that was emphasized during the six weeks of instruction. However, because

the students were asking more questions, they were unable to make as many inferences. The

post-test results show a decrease in the amount of Problem Formulation statements (inferences),

and therefore impacted their ability to answer implicit questions correctly. Two of the students

had an increase in the total number of implicit questions answered correctly, one student stayed

the same, and three students had a decrease in the total amount of questions answered correctly.

Additional factors such as the difficulty of the vocabulary in the text, as well as the fact

that the students did not possess a lot of background knowledge on the topics of the passages,

may have also impacted the results. Further analysis of the results and outside factors will be

explored in the following chapter, as well as connecting the results to the research from Chapter

Two.

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CHAPTER FIVE: CONCLUSIONS

In this six-week study, the researcher examined the effect of using the think-aloud strategy in order to increase the comprehension of struggling middle school readers. The results of the pre- and post-test data, described in Chapter Four, indicated that use of the think aloud strategy had a positive effect in relation to helping students answer explicit comprehension questions. On the Fountas-Pinnell Reading Assessment, all students improved levels. Additionally, six of the seven students increased their Measure of Academic Progress Reading Test scores. Furthermore, the Qualitative Reading Inventory-V indicated that overall, students made gains in their ability to answer explicit questions. These findings are described in Chapter Four in great detail. In this chapter, connections will be made between this research project and existing research. The strengths and limitations of this study will be described, and recommendations for future research will be offered. The first section explains the results of this study and how the findings connect to existing research as well as instructional implications from them. The second section explores the strengths and limitations of this study in order to determine what was successful and what needed change in this study. Finally, potential directions of future research on the topic of think-alouds are described as well as connections to the Common Core Standards.

Explanation of Results

This section combines the results of Chapter Four with the research in Chapter Two as the results are explained. First, the increase in comprehension skills, specifically measured by the students' ability to answer explicit and implicit questions, is described. Secondly, the types of responses given while thinking aloud are analyzed. Both of these areas will be connected to existing research on increasing comprehension while using think-alouds. The researcher will

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connect findings in her research to previous research in order to create suggestions for best

practice in reading comprehension strategy instruction.

Based on the results of the three comprehension assessments, the Fountas-Pinnel Reading

Assessment, the Measure of Academic Progress (MAPs), and the Qualitative Reading Inventory-

V (QRI-V), the students' overall comprehension scores showed improvement from the pre-test to

the post-test. However, the participants' ability to answer explicit versus implicit questions,

based on the results from the QRI-V varied from pre- to post-test. On the post-test, the majority

of the students demonstrated an increase in the number of explicit questions that were answered

correctly. However, every student demonstrated a decrease in the number of implicit questions

answered correctly. The researcher speculated that there are several possible reasons why this

occurred. First of all, while the topics of the pre- and post-test were both expository, one covered

social studies content (immigration) and the other focused on science content (life cycles of

stars). The pre-test focused on families that immigrated to the United States around the turn of

the 20th century. It was apparent that students were able to make connections to the story in that

immigration is something that is still a popular issue in the United States, and thus the students

were able to infer how both the Americans and the immigrants were feeling at the time. The

participants most likely could connect to this topic because it involved people and human

experience and emotion. The post-test story was about the life cycles of stars, something that

most students were not familiar with; subsequently, students were more focused on the facts of

the story. It is likely that participants were less apt to connect to this topic; a human connecting

to a star versus a human connecting to a human is different fundamentally. Thus, it makes sense

that the participants latched onto the literal facts contained within the text versus any kind of

human emotion. Another reason why the participants may have struggled with answering

implicit questions in the post-test is that the Fountas-Pinnell Reading Assessment and the MAPs

test emphasize explicit comprehension questions. As a result, students became accustomed to the

language of those questions and were taught strategies throughout their various classes that

would increase their proficiency in answering explicit questions. Students have been conditioned

to look only for the explicit, "right there" answers and might tend to ignore the deeper levels.

Particularly with a sample of struggling readers, this makes sense. A reader must first be able to

answer explicit questions before delving into a deeper level, namely, implicit questions.

Instruction geared towards struggling readers may, in fact, overemphasize explicit questions as it

is a likely starting point. Furthermore, daily instruction might have also encouraged this trend.

Teachers are able to incorporate the teaching of explicit comprehension strategies into their

content areas more easily than implicit comprehension strategies since all subject area content

would contain factual information. Consequently, teachers often only question students on the

facts, rather than delve into the higher-order thinking that requires students to think beyond the

information presented directly in their texts. One final rationalization for the finding that students

decreased in their ability to answer implicit questions is that, based on the instruction of the

researcher, students were taught to ask questions as part of thinking aloud. Students can gain

answers that are explicitly stated by asking questions that begin with "Who", "What", "Where",

"When", "Why", or "How". As a result of all these types of instruction, students were taught to

focus more on the information that was explicitly stated, instead of learning how to infer

information from the content presented. Also, given that all of these students are identified as

struggling readers, they were more likely adhere to the instruction of information that is directly

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stated, as opposed to instruction of information that is implied. Thus, it truly makes sense that the

findings of this study were that the majority of students were able to increase their ability to

answer explicit questions, while all students suffered a decrease in their ability to answer implicit

questions.

The types of responses students gave while thinking aloud was another important facet of this

study. The goal in coding these responses was to allow the researcher to better understand what

kinds of strategies the students used while attempting to comprehend the passage. Using the

types of think-aloud comments identified in Beireter and Bird's 1985 study, the researcher

identified which types of comments the students in this study used in the pre- and post-tests. The

researcher hoped that by examining these comments, it would aid in identifying weak areas in

the students' comprehension. During the pre-test, three of the students made the majority of

restatement comments, repeating what was stated in the story. Two of the three students were

considered low-level in comparison of their peers in this study, which suggests that these

students were utilizing bottom-up processing, in which they focus on small details. One student

made mostly demanding relationships comments by asking questions. This student was the

lowest reader in the study based on his Fountas-Pinnell reading level and MAPs score. Based on

the questions he asked, he simply did not understand what was being read to him. The final three

students made mostly problem formulation (inferencing) statements during the pre-test. Two of

the three students were more advanced readers when compared to the other students. Typically,

proficient readers rely on background knowledge and inferencing to understand text. On the

post-test, four students made primarily demanding relationships statements. This was likely due

to a lack of background knowledge on the topic. Had both topics been on social studies topics,

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students may have had an easier time relating to the topic, and therefore would have been able to increase other comprehension skills, such as inferring. Two of the students who made mostly problem formulation statements on the pre-test, did so again on the post-test. Again, these were students who had demonstrated higher-level comprehension skills. Finally, the same one student made mostly restatement comments, and continued to demonstrate bottom-up processing. For four of the seven students, the main type of response that they gave in the pre-test and the post-test did not change. For the other three students, their type of response changed to demanding relationships. During the post-test, six of the seven students asked questions as part of their responses. Again, due to the lack of background knowledge on the topic of stars, this appeared to be an obvious response to the text. On a positive note, it was encouraging that the students' curiosity was piqued and that they attempted to gain more information about the concepts addressed in the text. This also tied into the heavy instructional emphasis of asking questions. Still, teaching students to infer, especially struggling readers, is more difficult than teaching them to answer explicit questions. Yet it appeared that two of the students had built a strong enough ability to maintain inferencing skills, while learning other appropriate responses while thinking aloud. In summation, while the researcher hoped to find what comprehension strategies the students used, she found that the students relied heavily on background knowledge, but severely lacked in their ability to infer information as demonstrated by a lack of inferential statements.

Strengths and Limitations

This next section discusses the strengths and limitations of this study. First of all, this study has several strengths. The primary strength was that based on the results of all three assessments, students were able to make gains in their reading comprehension abilities. This can

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be attributed to several factors. As Karahasanović, Hinkel, Sjøberg, and Thomas (2009) suggested, think-alouds are most beneficial when used in a small-group setting. This study only contained seven students, and therefore provided a smaller setting for think-aloud instruction to be provided. Additionally, students were able to learn a variety of responses to use while thinking aloud, which will structure their comprehension process. Finally, and most importantly, students who lacked solid comprehension skills were able to benefit from the think-aloud instruction, demonstrated by their increase in ability to correctly answer explicit comprehension questions. The small group setting was a primary strength and contributing factor of the successes of this study.

Another strength of this study included the use of assessments and their data; all assessments were ones that the school already utilized. No additional, costly, or unfamiliar tools were necessary. The Fountas-Pinnell Reading Assessment and MAPs tests were both tests that were given at the beginning and end of the year, and therefore provided longitudinal data on students without having to administer additional testing.

Finally, this study could be easily replicated without any financial strain on a school or district. By having an employee of the school district conduct the study, no costs were incurred from hiring someone outside of the school district in order to deliver an intervention. Additionally, the study was conducted within the school day and therefore no one had to be paid for working outside of the school day. Also, no money was spent on the assessment tools because two of the assessments, Fountas-Pinnell Reading Assessment and MAPs test, were provided by the school district and the third (QRI-V), had already been previously purchased by the researcher for her coursework at Cardinal Stritch.

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Despite the many strengths of this study, there were also several limitations. A significant limitation was the tests used from the QRI-V for the pre- and post-tests. These tests were part of the "Upper Middle School" passages. While these passages matched the grade level of the students, they did not match the ability levels of the students. While the researcher attempted to resolve this issue by reading the passages aloud to the students, it was apparent that the topics of these two passages were still written at a much higher level than the reading and comprehension levels of the students. This likely played a key role in the post-test, in which the students did not possess a lot of background knowledge on the topic of life cycles of stars, and therefore higher-level comprehension skills were not evident. Another limitation included the use of a non-school administered assessment. While the QRI-V was used for two key data points, instructional time was lost in order to administer this test. A third limitation was the amount of instructional time for the size of the group. Since this group of students was comprised of students that had all been identified as struggling readers, more intense instruction is required for these types of students. Having a smaller group of students, who were more similar in reading abilities, would have been much more effective. The researcher would have been able to spend more time providing direct instruction to the students at their working ability level. This recommendation is one of many for those considering future research in the use of think-alouds. Finally, in her attempt to stress the importance of asking questions, the researcher inadvertently ended up directing her instruction towards the retention of explicit of information. As a result, the students' abilities to answer implicit were negatively impacted. Students who previously had demonstrated solid ability to make inferences demonstrated a decrease in their scores, while students who had little ability to make inferences did not show an increase.

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Connections to Existing Research

There are several specific connections between the researcher's study and the research described in Chapter Two. First of all, one of the four methods used by Karahasanović, Hinkel, Sjøberg, and Thomas (2009), the concurrent think-aloud method, had students consistently verbalize their thoughts while performing a task. This provided the researchers with the most statements out of the four methods used. These statements offered a significant amount of information about the types of comprehension strategies their subjects used while performing the given tasks. Unlike Karahasanović, Hinkel, Sjøberg, and Thomas's study, this study did not have students verbalize their thoughts throughout the entire pre- and post-testing, but still utilized this particular process during the instructional period. Additionally, all responses were analyzed to gain understanding of comprehension strategies used by the students. Karahasanović, Hinkel, Sjøberg, and Thomas also found that students were more likely to complete the given task correctly while consistently verbalizing than two of the other methods used. Likewise in this study, there was an increase in scores among three of the students from pre- to post-testing after the instruction of thinking aloud was taught.

In another study, Bereiter and Bird (1985) found that the use of direct modeling coupled with the use of specific examples was the most effective method of teaching the think-aloud strategy. Using this information, the researcher in this study also chose to model different types of acceptable responses, using articles that the students would likely have read on their own. Also, because Bereiter and Bird's results found a lack of think-aloud responses that contained questions, this researcher chose to stress the importance of asking questions while reading. Based on the overall positive results of this study, the use of modeling plus examples was an effective

instructional method. Additionally, there was a significant amount of responses that contained

questions, therefore resolving the issue of a lack of questions asked in Bereiter and Bird's study.

Because the researcher focused much of her instruction on asking questions while

reading, she incorporated the questioning strategies used in Baumann, Seifert-Kessell, and

Jones's 1992 study. While this study's researcher did not necessarily employ the reporter-

interviewer style that Baumann et al. did, she did teach students to stop frequently, share what

they were thinking, make connections to background knowledge, and then ask themselves,

"Does this make sense?" (1992, p. 153). However, Baumann et al did find that the think-alouds

were a much more effective method than the Direct Reading Activity, which taught no

comprehension strategies. As reflected in this researcher's results, the think-aloud strategy did

show a positive increase in comprehension scores.

In addition to Baumann et al (1992), Crain-Thoreson, Lippman, and McClendon-

Magnuson (1997) also found success with students who were able to appropriately utilize

background knowledge to make connections to text. Those students were able to make more

accurate predictions and inferences. The results of this study also demonstrated that having

background knowledge on a topic increased a student's ability to create inferences while reading.

When there was a lack of background knowledge, students relied more on recalling information

that was explicitly stated in the text, rather than creating inferences.

Yet before instruction could begin, the researcher needed to put together a plan for

instruction in the use of the think-aloud strategy. She chose to incorporate McKeown and

Gentilucci's (2007) multi-week plan for instruction. This plan focused on McKeown spending

two weeks providing explicit modeling to the students in the use of think-alouds. During this

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time, McKeown read a story aloud to the students, stopping every two to three lines to state what

she was thinking, ask a question, clarify previous information, or make a prediction. Following

those two weeks, the next two weeks were spent having the students practice using think-alouds

while being monitored by McKeown. This was done in both partners and individually. The

researcher of this study adopted this format for the procedure her study, with a slight

modification. This study extended the time that students had to work in partners and individually

from one week each to two weeks each. McKeown and Gentilucci also found that students who

had already established good comprehension skills, but lacked in fluency skills did not benefit as

much from the think-alouds as students who had decent fluency skills, but poor comprehension

skills. Similar to McKeown and Gentilucci's results, this researcher found that students who

were able to make inferential statements in the pre-testing most likely have achieved higher-level

comprehension skills. Consequently, those who made more restatement comments in the pre-

testing did so because they were lacking in comprehension skills. Therefore, it makes sense that

the latter group of students benefitted the most from think-aloud instruction.

Recommendations for Future Research

The researcher of this study attempted to design instruction that would successfully

employ think-alouds in order to benefit students who struggled with reading comprehension. She

did succeed in helping to raise the reading levels of all students. Furthermore, the researcher was

able to integrate three of the Common Core Standards between the areas of Reading:

Informational Text and Reading: Literature into her study. In the area of Reading: Informational

Text, students could verbalize their thoughts on a confusing word, while making connections to

other parts of the text and background knowledge to determine the word's meaning (ELA-

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Literacy.RI.7.4). Additionally, between the pre-test, post-test and intervention instruction,

students learned to comprehend both literature and non-fiction texts, through the use of a

scaffolded strategy (ELA-Literacy.RL.7.10 and ELA-Literacy.RI.7.10). However, based on the

limitations of this study, the researcher makes additional recommendations.

First, when considering the population of students to work with, one should choose

students with similar reading comprehension abilities. This would provide stronger comparable

data, as well as a smaller group of students to provide more intense instruction. Also, the pre-

and post-tests used should be written at the students' current reading level. This might also

alleviate the use of topics that students lack background knowledge in. Subsequently, since the

tests would be at the students' reading level, the students could read the passages themselves,

instead of having the researcher read them. By doing this, a more authentic picture of deficits

between fluency and comprehension will come into view. Additionally, the backtracking type of

comment that was in Bereiter & Bird (1985) would most likely be present, since the students

would be reading the story, instead of the researcher. This would also help to align the study

more strongly to the Common Core standards in Reading: Literature and Reading: Informational

Text. A final thought to consider would be to decide if the focus of the study would be solely

based on the students' ability to answer explicit and implicit questions, or on the types of

responses give by students when thinking aloud.

Conclusion

This study demonstrated that the use of the think-aloud strategy can positively impact

students who have poor comprehension skills in their ability to answer explicit questions. While

the instruction provided in the use of the think-aloud strategy caused a decrease in some

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students' ability to answer implicit questions, this is likely due to the fact that those students already possessed stronger comprehension skills. These results reflect the studies detailed in Chapter Two. Using the information in this study, including the recommendations from the researcher, future research should continue to examine the effects of using of think-alouds to increase struggling readers' comprehension abilities.

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APPENDIX A

PRE-TEST STUDENT PASSAGE

Immigration—Part 2

The Long Voyage

Leaving home required great courage. The voyage across the Atlantic or Pacific was often miserable. Most immigrants could afford only the cheapest berths. Ship owners jammed up to 2,000 people in steerage, as the airless rooms below decks were called. On the return voyage, cattle and cargo filled these same spaces. In such close quarters, diseases spread rapidly. STOP

For most European immigrants the voyage ended in New York City. There, after 1886, they saw the giant Statue of Liberty in the harbor. The statue was a gift from France to the United States. The Statue of Liberty became a symbol of the hope and freedom offered by the United States. STOP

Adjusting to the New Land

Many immigrants had heard stories that the streets in the United States were paved with gold. Once in the United States, the newcomers had to adjust their dreams to reality. They immediately set out to find work. European peasants living on the land had little need for money, but it took cash to survive in the United States. Through friends, relatives, labor contractors, and employment agencies, the new arrivals found jobs. STOP

Most immigrants stayed in the cities where they landed. The slums of the cities soon became packed with poor immigrants. By 1900, one such neighborhood on the lower east side of New York had become the most crowded place in the world. STOP

Ethnic Neighborhoods

Immigrants adjusted to their new lives by settling in neighborhoods with their own ethnic group. An ethnic group is a group of people who share a common culture. Across the United States, cities were patchworks of Italian, Irish, Polish, Hungarian, German, Jewish, and Chinese neighborhoods. Within these ethnic neighborhoods, newcomers spoke their own language and celebrated special holidays with food prepared as in the old country. STOP

Becoming Americans

Often newcomers were torn between the old traditions and American ways. Still, many struggled to learn the language of their new nation. Learning English was an important step toward becoming a citizen. The process of becoming part of another culture is called assimilation. Many Americans opposed the

increase in immigration. They felt the newcomers would not assimilate because their languages, religions, and customs were too different. However, they were wrong. **STOP**

Children assimilated more quickly than their parents. They learned English in school and then helped their families learn to speak it. Because children wanted to be seen as American, they often gave up customs their parents honored. They played American games and dressed in American-style clothes. **STOP**

APPENDIX B

PRE-TEST TEACHER PASSAGE

Level: Upper Middle School

Social Studies

Concept Questions:

What is a symbol?

_____

_____

_____ (3-2-1-0)

What is the difference between a dream and reality?

_____

_____

_____ (3-2-1-0)

What do we mean by culture?

_____

_____

_____ (3-2-1-0)

Why might it be difficult to move to another country?

_____

_____

_____ (3-2-1-0)

Score: _____ /12 = _____ %

_____ FAM _____ UNFAM

Prediction:

_____

_____

"Immigration—Part 2"

The Long Voyage

Leaving home required great courage. The voyage across the Atlantic or Pacific was often miserable. Most immigrants could afford only the cheapest berths. Ship owners jammed up to 2,000 people in steerage, as the airless rooms below decks were called. On the return voyage, cattle and cargo filled these same spaces. In such close quarters, diseases spread rapidly. **STOP**

_____

_____

_____

_____

For most European immigrants the voyage ended in New York City. There, after 1886, they saw the giant Statue of Liberty in the harbor. The statue, a gift from France to the United States, became a symbol of the hope and freedom offered by the United States. **STOP**

_____

_____

_____

_____

Adjusting to the New Land

Many immigrants had heard stories that the streets in the United States were paved with gold. Once in the United States, the newcomers had to adjust their dreams to reality. They immediately set out to find work. European peasants living on the

Level: Upper Middle School

land had little need for money, but it took cash to survive in the United States. Through friends, relatives, labor contractors, and employment agencies, the new arrivals found jobs. STOP

_____

_____

_____

_____

Most immigrants stayed in the cities where they landed. The slums of the cities soon became packed with poor immigrants. By 1900, one such neighborhood on the lower east side of New York had become the most crowded place in the world. STOP

_____

_____

_____

_____

Ethnic Neighborhoods

Immigrants adjusted to their new lives by settling in neighborhoods with their own ethnic group. An ethnic group is a group of people who share a common culture. Across the United States, cities were patchworks of Italian, Irish, Polish, Hungarian, German, Jewish, and Chinese neighborhoods. Within these ethnic neighborhoods, newcomers spoke their own language and celebrated

special holidays with food prepared as in the old country. STOP

_____

_____

_____

_____

Becoming Americans

Often newcomers were torn between the old traditions and American ways. Still, many struggled to learn the language of their new nation. Learning English was an important step toward becoming a citizen. The process of becoming part of another culture is called assimilation. Many Americans opposed the increase in immigration. They felt the newcomers would not assimilate because their languages, religions, and customs were too different. However, they were wrong. STOP

_____

_____

_____

_____

Children assimilated more quickly than their parents. They learned English in school and then helped their families learn to speak it. Because children wanted to be seen as American, they often gave up customs their parents honored. They

Upper Middle School

Level: Upper Middle School

played American games and dressed in American-style clothes. **STOP**

_____

_____

_____

_____

_____

(417 words)

_____

Adapted from *The American Nation* by James West Davidson, Pedro Castillo, and Michael B. Stoff © 2002 by Pearson Education, Inc., publishing as Pearson Prentice Hall. Used by permission.

Number of Total Miscues
(Total Accuracy): _____

Number of Meaning-Change Miscues
(Total Acceptability): _____

Total Accuracy		Total Acceptability
0–10 miscues ____ Independent		____ 0–10 miscues
11–43 miscues ____ Instructional		____ 11–22 miscues
44+ miscues ____ Frustration		____ 23+ miscues

Rate (If you used this passage as a think-aloud passage, you cannot compute rate):

417 × 60 = 25,020/____ seconds = ____ WPM

____ WPM – ____ errors = ____ CWPM

Retelling Scoring Sheet for "Immigration—Part 2"

Main Idea

____ Leaving home required courage.
____ great courage.

Details

____ The voyage was miserable.

____ Most immigrants could only afford the cheapest berths.
____ Ship owners jammed people
____ up to 2,000 people
____ in steerage,
____ the airless rooms
____ below decks.
____ On the return voyage,
____ cattle and cargo filled these spaces.
____ In such close quarters
____ diseases spread rapidly.

Main Idea

____ For most European immigrants
____ the voyage ended in New York City.

Details

____ They saw the Statue of Liberty.
____ The statue was a gift from France.
____ The Statue of Liberty became a symbol
____ of hope.

Main Idea

____ Once in the United States,
____ the newcomers had to adjust their dreams
____ to reality.

Details

____ Immigrants had heard
____ that streets were paved with gold
____ streets in the United States.
____ They set out to find work.
____ It took cash
____ to survive.
____ Through friends
____ and relatives
____ they found jobs.

Main Idea

____ Most immigrants stayed in the cities
____ where they landed.

Details

____ The slums became packed
____ with poor immigrants.

APPENDIX C

PRE-TEST QUESTIONS

Level: Upper Middle School

____ One neighborhood became the most crowded place
____ in the world
____ neighborhood on the lower east side
____ of New York.

Main Idea

____ Immigrants adjusted by settling in neighborhoods
____ with their ethnic group.

Details

____ Cities were patchworks
____ of Italian,
____ Irish,
____ Polish,
____ Hungarian,
____ German,
____ Jewish,
____ and Chinese neighborhoods.
____ Newcomers spoke their own language
____ and celebrated holidays.

Main Idea

____ Many struggled to learn English.

Details

____ Learning English was an important step
____ toward becoming a citizen.
____ Becoming part of another culture
____ is called assimilation.
____ Many Americans opposed immigration.
____ They felt the newcomers would not assimilate.
____ They were wrong.

Main Idea

____ Children assimilated more quickly.

Details

____ They learned English
____ in school
____ and helped their families learn it.
____ Because children wanted to be seen as American,

____ they often gave up customs
____ their parents honored.
____ They played American games
____ and dressed
____ in American clothes.

69 Ideas

Number of ideas recalled _____

Other ideas recalled including summary statements and inferences:

Questions for "Immigration—Part 2"

1. What is this passage mainly about?
   Implicit: How immigrants came to America and how they settled and adjusted

2. Give one reason why ocean voyages were so difficult.
   Explicit: immigrants could only afford the cheapest berths; they were too crowded; there was not much air; *or* disease spread rapidly

3. Why did disease spread so fast on the ocean voyages?
   Implicit: immigrants were too crowded; there was no good air; *or* cattle filled the spaces on the return voyage

4. What was one way in which the immigrants found jobs?
   Explicit: Through friends, relatives, labor contractors, *or* employment agencies

Level: Upper Middle School

5. Why was cash so important to an immigrant?
   Implicit: they needed it for food, clothing, and rent

6. Why did immigrants stay in the crowded slums?
   Implicit: they were too poor to move; or they were with their own ethnic group

7. What is assimilation?
   Explicit: the process of becoming part of another culture

8. Name one element of a common culture that is mentioned in the passage.
   Explicit: language; holidays; or food

9. Why did some Americans oppose immigration?
   Explicit: they did not feel that the immigrants would be able to assimilate; or they thought the immigrants were too different

10. What might cause disagreements between immigrant children and their parents?
    Implicit: children giving up honored customs; children wanting to act like Americans; or children acting different from their parents

Without Look-Backs

Number Correct Explicit: _____

Number Correct Implicit: _____

Total: _____

_____ Independent: 9–10 correct

_____ Instructional: 7–8 correct

_____ Frustration: 0–6 correct

With Look-Backs

Number Correct Explicit: _____

Number Correct Implicit: _____

Total: _____

_____ Independent: 9–10 correct

_____ Instructional: 7–8 correct

_____ Frustration: 0–6 correct

Think-Aloud Summary

Think-Aloud Statements That Indicate Understanding

Paraphrasing/Summarizing	_____
Making New Meaning	_____
Questioning That Indicates Understanding	_____
Noting Understanding	_____
Reporting Prior Knowledge	_____
Identifying Personally	_____

Think-Aloud Statements That Indicate Lack of Understanding

Questioning That Indicates Lack of Understanding	_____
Noting Lack of Understanding	_____

Upper Middle School

APPENDIX D

TYPES OF THINK-ALOUD RESPONSES (BEIRETER & BIRD, 1985)

TABLE 1
Comprehension Strategies Identified in Adult Protocols

Condition	Action	Example
Rejuvenate		
Unfamiliar expression	Rephrase, using inferred equivalents	Each year millions of these fish return from their three or four year sojourn in the Pacific [What's a sojourn? Must be a rest or visit] Ocean . . .
Complex statement	Paraphrase in simpler terms	Most crimes are punished by fine; if the offender cannot pay he is sold as a slave. Debtors who cannot pay their debts, or refuse to, are also made slaves; but their friends may redeem them. [Okay, so criminals and debtors . . . are made slaves, but debtors can go free if their friends pay for them.]
Unclear intent	Infer macroproposition	In the East lived the tradesmen, persons belonging to offices, professionals. In the West, where streets are rough and narrow and houses built close together, live the merchants and workers. [So the East is upper class and the West is lower class.]
Unstated referent	Paraphrase with inserted referent	Though slavery may at first seem inhuman, yet the traders have as much to plead in their own excuse, namely the advantages of it [of slavery.]
Nonspecific confusion	"When in doubt, summarize"	[Okay, so far we know he studies fish and has heard about a really rare one being caught.]
Backtracking		
Comprehension failure	Reread from beginning of confusing segment	
Loss of connection	Reread previously comprehended part	
Demanding Relationships		
Missing cause or effect	Set "watchers" for cause or effect	No one knows exactly when crude stone tools were discarded in favor of tools made of more pliable metals, but [Why did they want more pliable stuff?] . . .
Lack of warrant for assertion	Set "watcher" for reason	The cougar is one of the greatest animals on earth. [What makes him say that?]
Lack of orientation	Set "watcher" for scope of topic, setting, time of writing, time of reference, etc.	[Are they going to tell me about Mozart's career, or just his early life?] [Where is the—Europe?] [Is this a recent article?] [Is this long ago they're talking about?]
Topic incoherence	Set "watcher" for link between topics	[Why are we talking about salmon? Up here it's about dams.]
Problem Formulation		
Anomalous information	Formulate problem and try to dispose of it by (a) inference, (b) closer examination of text, (c) rejection of information	(a) [But how could he say she's lazy when she works so hard? Maybe she's lazy when it comes to other things.] (b) [Oh, it says "as well as," not "instead of."] (c) [He says slaves were well treated? Yes he does. Well I certainly disagree with him on that!]

Note. Brackets indicate statements interjected by reader.

APPENDIX E

TEACHER SAMPLE OF AN ARTICLE

Should chewing gum at school cost you $5.00? *NO!*

Noble Network of Charter Schools charges students at its 10 Chicago high schools $5 for detentions stemming from infractions that include chewing gum and having untied *That's a lot of money?* shoelaces. Last school year it collected almost $190,000 in *That's crazy!* discipline "fees" from detentions and behavior classes — a policy complaints from parents and teachers.

I wonder how much it costs? Officials at the school say the fees offset the cost of running the detention program and help keep small problems from becoming big ones. Critics say Noble is nickel-and-diming its mostly low-income students over insignificant, made-up rules that force out kids administrators don't want.

"We think this just goes over the line ... fining someone for having their shoelaces untied *I agree.* (or) a button unbuttoned goes to harassment, not discipline," said Julie Woestehoff, executive director of the Chicago advocacy group Parents United for Responsible Education, which staged protests last week over the policy after Woestehoff said she was approached by an upset parent.

Students at Noble schools receive demerits for various infractions — four for having a cellphone or one for untied shoelaces. Four demerits within a two-week period earn them a detention and $5 fine. Students who get 12 detentions in a year must attend a summer behavior class that costs $140. *That stinks for those kids!*

Superintendent Michael Milkie said the policy teaches the kids — overwhelmingly poor, minority and often hoping to be the first in their families to attend college — to follow rules and produces in a structured learning environment. He points to the network's average ACT score of 20.3, which is higher than at the city's other non-selective public schools, and says more than 90 percent of Noble graduates enroll in college.

I'm glad they want to teach students to follow rules, but I think it's pretty expensive for the kids.

APPENDIX F

SAMPLE LESSON PLAN

<u>**Week 3, Day 1 Lesson Plan**</u>

Learning Target: Students will be able to verbalize and notate their thinking while reading.

Materials: Warm-Up articles (Purple Squirrel)
Partner article (Speed Car)

Instruction: As a whole group, the teacher will hand out the warm-up articles (purple squirrel, _____, & _____). Have the students read each article and write their reactions on the lines provided below each article. After all students have finished, the teacher will ask students to share what they wrote down.

Then the students will get into partners. One person will be the reader/writer. His/Her job will be to read the article and write down the thoughts of their partner. The other person will be the responder. His/Her job will be to state his/her thoughts while the other person is reading. The teacher will monitor the groups as they work, checking in to make sure the correct procedure is being followed.

Closing: the teacher will have the students who were the responders share one thought they had regarding the article.

APPENDIX G

WARM-UP PASSAGES FROM SAMPLE LESSON

Name: _____

A squirrel of a different color – purple A central Pennsylvania couple say they've captured a purple squirrel in their backyard. Jersey Shore resident Percy Emert says he and his wife, Connie, caught the purple squirrel Sunday in a trap with peanuts. He says even the insides of its ears were purple.

My thinking:

_____

_____

_____

Man runs up 1,5726 steps in 628 seconds A German runner has won an annual race up 86 flights of stairs at the Empire State Building for a record seventh straight time. Stuttgart resident Thomas Dold completed the Empire State Building Run-Up on Wednesday in 10 minutes and 28 seconds.

My thinking:

_____

_____

_____

High heels knock models off their feet New York Fashion Week begins Thursday, and amid all those images of sleek models showing off the newest designer creations are sure to be a few pictures of something far less glamorous: Models falling down.

My thinking:

_____

_____

_____

APPENDIX H

PARTNER PASSAGE FROM SAMPLE LESSON

Kids' crazy car gets 160 miles per gallon

Although it's decorated with flaming duct tape and its driver is equipped with a crash helmet, a harness-style seatbelt and a fire extinguisher, the main point is not how fast Edgerton High School's super vehicle can go.

It's all about the gas mileage.

With unleaded gasoline topping $3.90 a gallon, the Wisconsin high school's Supermileage Vehicle Club could be the envy of any driver stuck with a fuel-guzzling pickup truck or SUV.

The eight-member, engineering class/student club, which is in its third year, is finishing work on two gas-powered super-mileage vehicles built to compete in two fuel-efficiency competitions this spring.

One of the vehicles, a one-seat, three-wheeled model that students built last year, got 160 mpg in a competition last spring.

Edgerton's Supermileage Vehicle Club is a fall-semester, for-credit course that morphs into a club activity in the spring. Students who take the class spend thousands of hours engineering, designing, building and rebuilding one-seat vehicles.

The project starts with a frame and wheels and gets more complex as work on the transmission, engine and steering systems comes into play. Every decision students make — from wheel type to body weight to gear ratio — must factor in friction, drag and aerodynamics.

In competitions this spring, Edgerton will face other student clubs from around the state, some with vehicles capable of running at 300 to 500 mpg.

APPENDIX I

POST-TEST STUDENT PASSAGE

Life Cycles of Stars—Part 2

Red Giant Stage

As the hydrogen in the core of a low-mass star is used up, the core starts to collapse. The core of the star becomes denser and hotter. The increased temperature causes another kind of nuclear reaction. Helium is converted to carbon. This nuclear reaction gives off great amounts of energy, causing the star to expand. It becomes a red giant. STOP The red giant stage in a star's life is relatively short. The sun will be a main-sequence star for a total of 10 billion years. But the sun will be a red giant for only about 500 million years. STOP

Dwarf Stage

Eventually, most of the helium in a red giant's core is changed into carbon. Nuclear fusion slows. The star cools, and gravity makes it collapse inward. The matter making up the star is squeezed together very tightly, and the star becomes a white dwarf. STOP A typical white dwarf is about the size of Earth. But its matter is far denser than any matter on Earth. Eventually, the star becomes a burned-out black chunk of very dense matter that gives off no visible light. Then it is called a black dwarf. STOP

Life of a High-Mass Star

Stars more than six times as massive as the sun have a very different life cycle than low-mass stars. A high-mass star uses up its hydrogen at a much faster rate. After only about 50 to 100 million years, a high-mass star has no hydrogen left. At this time, the core collapses and the outer layers expand greatly. The star becomes a super giant. STOP Eventually, the core of the super giant can no longer stand the pressure of the outside layers of the star. The outside layers crash in very suddenly, causing a tremendous explosion that gives off an extraordinary amount of light. Great shells of gases fly off the star. The star becomes a supernova. A supernova explosion is the most violent event known to happen in the universe. STOP

Stellar Evolution
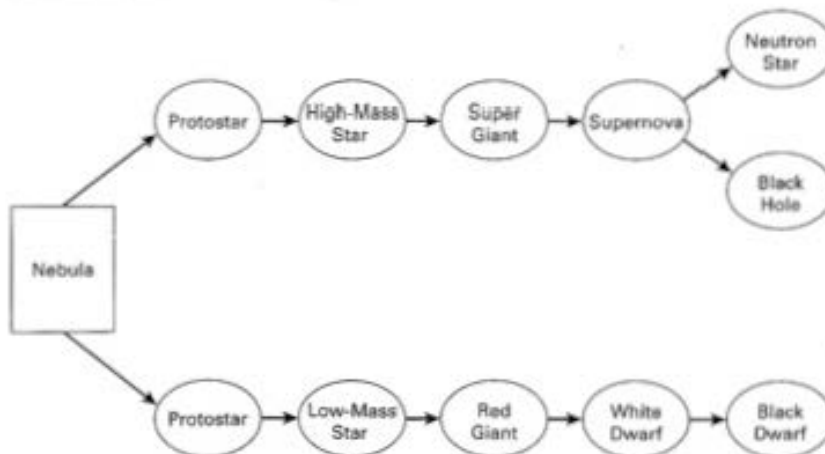
Life Cycles of Stars—Part 2

Red Giant Stage

After a supernova explodes, only the tiny core of the star remains. This core, made up of neutrons, is called a neutron star. Neutron stars are extremely dense. Astronomers hypothesize that after a massive star undergoes a supernova explosion, it may also become a black hole. A black hole is so dense and its gravity is so strong that nothing can escape from it, not even light. Do black holes really exist? So far, scientists have no real proof. Black holes do not release light so they can't be observed directly. **STOP**

APPENDIX J

POST-TEST TEACHER PASSAGE

Level: Upper Middle School

Science

Concept Questions:

How do stars change over time?

_____

_____

_____ (3-2-1-0)

What is a supernova?

_____

_____

_____ (3-2-1-0)

What is density?

_____

_____

_____ (3-2-1-0)

What is a black hole?

_____

_____

_____ (3-2-1-0)

Score: _____ /12 = _____ %

_____ FAM _____ UNFAM

Prediction:

_____

_____

"Life Cycles of Stars—Part 2"

Red Giant Stage

As the hydrogen in the core of a low-mass star is used up, the core starts to collapse. The core of the star becomes denser and hotter. The increased temperature causes another kind of nuclear reaction. Helium is converted to carbon. This nuclear reaction gives off great amounts of energy, causing the star to expand. It becomes a red giant. **STOP**

_____

_____

_____

_____

The red giant stage in a star's life is relatively short. The sun will be a main-sequence star for a total of 10 billion years. But the sun will be a red giant for only about 500 million years. **STOP**

_____

_____

_____

_____

Dwarf Stage

Eventually, most of the helium in a red giant's core is changed into carbon. Nuclear fusion slows. The star cools, and gravity makes it collapse inward. The matter making up the star is squeezed together very tightly, and the star becomes a white dwarf. **STOP**

_____

_____

_____

_____

Upper Middle School

Level: Upper Middle School

A typical white dwarf is about the size of Earth. But its matter is far denser than any matter on Earth. Eventually, the star becomes a burned-out black chunk of very dense matter that gives off no visible light. Then it is called a black dwarf. **STOP**

_____

_____

_____

_____

Life of a High-Mass Star

Stars more than six times as massive as the sun have a very different life cycle than low-mass stars. A high-mass star uses up its hydrogen at a much faster rate. After only about 50 to 100 million years, a high-mass star has no hydrogen left. At this time, the core collapses and the outer layers expand greatly. The star becomes a super giant. **STOP**

_____

_____

_____

_____

Eventually, the core of the super giant can no longer stand the pressure of the outside layers of the star. The outside layers crash in very suddenly, causing a tremendous explosion that gives off an extraordinary amount of light. Great shells of gases fly off the star. The star becomes a supernova. A supernova explosion is the most violent event known to happen in the universe. **STOP**

_____

_____

_____

After a supernova explodes, only the tiny core of the star remains. This core, made up of neutrons, is called a neutron star. Neutron stars are extremely dense. Astronomers hypothesize that after a massive star undergoes a supernova explosion, it may also become a black hole. A black hole is so dense and its gravity is so strong that nothing can escape from it, not even light. Do black holes really exist? So far, scientists have no real proof. Black holes do not release light so they can't be observed directly. **STOP**

_____

_____

_____

_____

(421 words)

APPENDIX K

POST-TEST QUESTIONS

Level: Upper Middle School

Main Idea

____ After a supernova explodes,
____ only the core remains.

Details

____ This core is called a neutron star.
____ It is made up of neutrons.
____ Neutron stars are dense
____ extremely dense.
____ After a star undergoes a supernova,
____ it may become a black hole.
____ A black hole is so dense
____ and its gravity is so strong
____ that nothing can escape from it,
____ not even light.
____ Scientists have no real proof.
____ Black holes do not release light
____ so they can't be observed directly.

64 Ideas

Number of ideas recalled _____

Other ideas recalled, including summary statements and inferences:

Questions for "Life Cycles of Stars—Part 2"

1. What is this passage mainly about?
   Implicit: stages in a star's life

2. What causes all life cycle changes in stars?
   Implicit: nuclear reactions

3. What series of events causes a star to go into the red giant stage?
   Explicit: the core collapses when hydrogen is used up, it becomes denser and hotter, another kind of nuclear reaction occurs and the star expands

4. How long will the sun remain as a red giant?
   Explicit: 500 million years

5. How big is a typical white dwarf?
   Explicit: the size of Earth

6. What is the stage when the star becomes a chunk of dense matter that gives off no visible light?
   Explicit: black dwarf stage

Level: Upper Middle School

7. What causes the core of a high-mass star to collapse?
   Implicit: lack of hydrogen

8. What is one thing a star can become after a supernova explosion?
   Explicit: a neutron star or a black hole

9. Why doesn't a neutron star give out light?
   Implicit: it is too dense

10. Why have scientists been unable to prove the existence of a black hole?
    Implicit: they can't be observed directly because they do not give off light

Without Look-Backs

Number Correct Explicit: ____

Number Correct Implicit: ____

Total: ____

____ Independent: 9–10 correct

____ Instructional: 7–8 correct

____ Frustration: 0–6 correct

With Look-Backs

Number Correct Explicit: ____

Number Correct Implicit: ____

Total: ____

____ Independent: 9–10 correct

____ Instructional: 7–8 correct

____ Frustration: 0–6 correct

Think-Aloud Summary

Think-Aloud Statements That Indicate Understanding

Paraphrasing/Summarizing	____
Making New Meaning	____
Questioning That Indicates Understanding	____
Noting Understanding	____
Reporting Prior Knowledge	____
Identifying Personally	____

Think-Aloud Statements That Indicate Lack of Understanding

Questioning That Indicates Lack of Understanding	____
Noting Lack of Understanding	____

APPENDIX L

FOUNTAS-PINNELL SCORNG SHEET

Summary Forms

Benchmark Independent Level* _____

Benchmark Instructional Level** _____

Recommended Placement Level _____

Student _____ Grade _____ Date _____

Teacher _____ School _____

Assessment Summary Form

List the titles read by the student from lowest to highest level.

Title	System 1 or 2	Fiction/Nonfiction	Level	Accuracy	Comprehension	Independent * (check one)	Instructional ** (check one)	Self-Correction	Fluency (Level G–Z)	Rate (Level J–Z (optional))	Writing About Reading (optional)

Summary Forms

*Independent Level:

Levels A–K: Highest level read with 95–100% accuracy and excellent or satisfactory comprehension.

Levels L–Z: Highest level read with 98–100% accuracy and excellent or satisfactory comprehension.

**Instructional Level

Levels A–K: Highest level read with 90–94% accuracy and excellent or satisfactory comprehension or 95–100% accuracy and limited comprehension.

Levels L–Z: Highest level read with 95–97% accuracy and excellent or satisfactory comprehension or 98–100% accuracy and limited comprehension.

Comprehension

Levels A–K		Levels L–Z	
6–7	Excellent	9–10	Excellent
5	Satisfactory	7–8	Satisfactory
4	Limited	5–6	Limited
0–3	Unsatisfactory	0–4	Unsatisfactory

Additional Comments:	Instructional Implications:

APPENDIX M

SAMPLE DISTRICT END-OF-THE-YEAR REPORT

2011-12 End-of-Year Report

Teacher:	Hornak	School:	WML
Student:		Grade:	7

WKCE	Reading	Math	WAA-SwD	Reading	Math
Notes:					

MAP Reading				
Fall	Winter	Spring	Growth Target	Met?
Notes:				

MAP Math				
Fall	Winter	Spring	Growth Target	Met?
Notes:				

MAP Language Arts				
Fall	Winter	Spring	Growth Target	Met?
Notes:				

Guided Reading Level	Fall	Winter	Spring
Notes:			